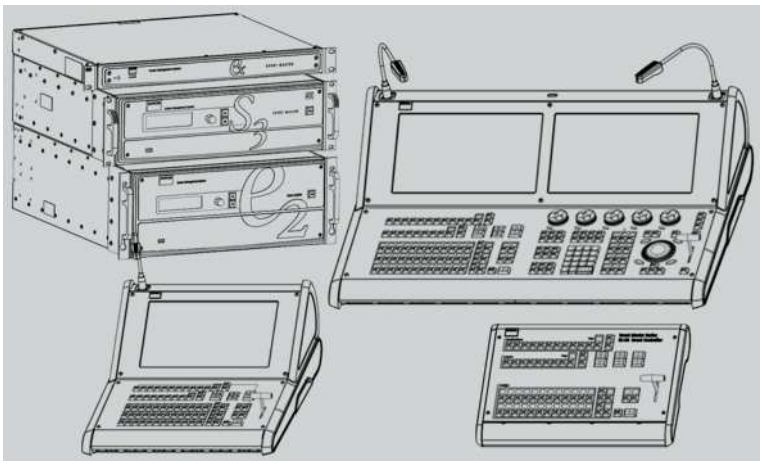
Event Master Devices



User's Guide

Barco Inc, Image Processing
3078 Prospect Park Drive, Rancho Cordova, CA , 95670, USA
www.barco.com/en/support
www.barco.com

Registered office: Barco NV
President Kennedypark 35, 8500 Kortrijk, Belgium
www.barco.com/en/support
www.barco.com

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Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

FCC responsible:	Barco Inc. 3059 Premiere Parkway Suite 400 30097 Duluth GA, United States Tel: +1 678 475 8000

EN55032/CISPR32 Class A Multimedia Equipment

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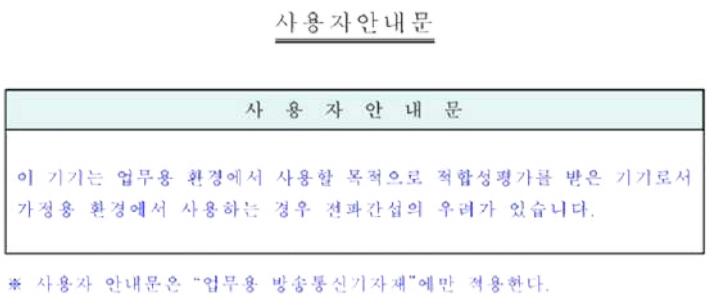

Warning statement:

EMC Registration is done on this equipment for business use only. It may cause interference when the product would be used in home.

- This warning statement applies to a product for business use.

사용자 안내문

이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.

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1.1 About this guide

This manual

This User's guide describes how to install and operate the Event Master units (E2 and S3 series) and their controllers (EC-50 and EC-200/EC-210). The User's Guide is designed to be a reference tool in the everyday work of the user with the product. It contains a complete description of the hardware components and the control software. The manual also includes all the necessary instructions on how to upgrade firmware, install spare parts and perform any hardware upgrades.

Barco provides a 3-year parts and labor warranty for all hardware components. Please refer to Appendix E (“Warranty”, page 575) for specific details regarding the warranty terms.

Available System documentation

This guide is part of the documentation set describing the Event Master products.

Guide	Article number
User Guide	R5905948
E2 Quick Start Guide	26-1205004-00
S3 Quick Start Guide	26-1401004-00
EX Quick Start Guide	26-1502004-00
EC-30 Quick Start Guide	60600356
EC-50 Quick Start Guide	60600332
EC-200 Quick Start Guide	60600333
E2 Safety Guide	R5905947
S3 series Safety Guide	R5906016
EC series Safety Guide	R5906018
EX Safety Guide	R5906020
Service Guide	R5905949 (Only available to Customer Service partners)

A printed copy of Safety Guides and Quick Start Guides is included in the shipping box of the Event Master devices. Please check online for the other documents.

Always check for the latest version of all documents on www.barco.com.

1.2 Record of changes

Overview

Revision	Changes
00	Initial version
01	• Changes initiated by: - New software version (V2.0). - S3-4K and EC-50 product releases. • In the entire of the document, the references to **E2** have been replaced by reference to the **Event Master processors**. • A record of changes (this section) has been added. • S3–4K product has been added. Chapters concerned by this new Event Master processor have been modified: - Description in **General** chapter + How to install S3 in a rack. - Detailed explanations concerning new hardware in the **Hardware Orientation** chapter.

Revision	Changes
	• EC–50 product has been added. Chapters concerned by this new controller have been modified or added: - Description in **General** chapter. - New chapters dedicated to **Controller Orientation**, **Controller Configuration** and **Controller Operation**. • A new version of Event Master Toolset is available (V2.0). The **GUI orientation** chapter and the **System setup** procedure have been updated. • Two units can be linked. A section in the **GUI orientation** chapter describes how set up a linked System. • A new chapter concerning the maintenance of the S3–4K has been added. • A new chapter concerning the maintenance of the EC–50 controller has been added. • Annex: - New section with S3 specifications. - Remote command **ATRN** updated. - New chapter “THIRD PARTY SOFTWARE ACKNOWLEDGEMENTS” added.
02	• Changes initiated by: - New software version (V3.0). - EC-200 product release. • EC–200 product has been added. Chapters concerned by this new controller have been modified or added: - Description in **General** chapter. - New chapters dedicated to **Controller Orientation**, **Controller Configuration** and **Controller Operation**. • The **Front Panel Menu orientation** chapter has been updated: - a modification in the front menu panel of the "Event Master Processor" to take into account a configuration created offline and transferred via USB device. • A new version of Event Master Toolset is available (V3.0). The **GUI orientation** chapter has been partially updated. A more complete update of this chapter will be performed at the next version of the document. - Win 10 has been added in the list of Operating Systems that accepts the "Event Master Toolset" Software. - A new section describes the Controller menu. • A new chapter concerning the maintenance of the EC–200 controller has been added. • Annex: - New short section with EC-50 specifications.
03	• Changes initiated by: • Updated RoHS table, taking into account the March 2016 changes.
04	• Changes initiated by new software version (V4.1). - “Complete” vs “Relative” Preset configuration, see “Programming Menu > Adjustment area > Presets configuration”, page 235. - Destination Groups, see “Programming Menu > Adjustment area > Dest Group configuration”, page 228. - Firmware upgrade for EC-200, see “EC-200/EC-210 Firmware Upgrade”, page 360 and “Settings Menu > Web App area > Tools > Manage Software”, page 264. - Added “Backgrounds as Inputs.” Refer to “Programming Menu > Resources area”, page 198, and see the “Backgrounds as Inputs” subsection., and see the “Backgrounds as Inputs” subsection. - Linking Event Master units, see “Configuration Menu > Linking”, page 178. - Added MVR slot configuration. Refer to “Configuration Menu > Adjustment > Unit Configuration”, page 118, and see the Description of the Setup tab.. - Updates to Output configuration and Destination configuration; refer to “Configuration Menu > Adjustment > Output Configuration”, page 136 and “Configuration Menu > Adjustment > Destination Configuration”, page 145. - Preset Conflict Mode: Off, see “Configuration Menu > System modifier area”, page 115.

Revision	Changes
	- Descriptions of the subtabs in the Settings Menu, Resources area, see “Settings Menu”, page 253. - Soft-Off button in the EC-200 GUI, see “How to power down and restart the EC-200/EC-210”, page 360. - Split-Mode configuration, see “Configuration Menu > System diagram area”, page 112. - Added JSON RPC section to the Remote Control Protocol appendix, see “Event Master series processor JSON RPC remote control”, page 555.
05	• Changes initiated by: - EC-30 product release - New software version (4.2). ◦ EX support for two VPU cards: refer to “Event Master series processors features”, page 31 and see the Program screens table, and see the Specifications table in “VPU Card”, page 81. ◦ More Configuration Menu > Linking examples: refer to “Configuration Menu > Linking”, page 178 and see "How to Link an E2 Unit and two S3-4K Units" and "How to Link an S3-4K Unit and an EX Unit with two VPU cards. ◦ "Basic Mode" and "Expert Mode" for Data-doubling: refer to “Configuration Menu > Adjustment > Destination Configuration”, page 145 and see "Data-doubling submenu—Basic Mode" and "Data-doubling submenu—Expert Mode." ◦ Pick Hue: refer to “Programming Menu > Adjustment area > Layer configuration”, page 218 and see "Pick Hue." ◦ Updated Complete and Relative Presets: refer to “Programming Menu > Adjustment area > Presets configuration”, page 235 and see "Presets configuration menu description" and "Complete vs Relative."
06	• Changes initiated by software updates (versions 4.2 and 5.0): - Updated the procedure to create and transfer an offline configuration to a live unit: refer to “System menu > USB device (Backup/Restore)”, page 90 and see How to create a configuration offline and transfer it to a live unit. - Added instructions for changing the last slot from Multiviewer (MVR) to Output and from Output to MVR: refer to “Configuration Menu > Adjustment > Unit Configuration”, page 118 and see Last slot as MVR or Output in the simulator. - Updated Input, Background, and Output menu descriptions with new options: refer to “Configuration Menu > Adjustment > Input Configuration”, page 122, “Configuration Menu > Adjustment > Background Configuration”, page 133, and “Configuration Menu > Adjustment > Output Configuration”, page 136 and see the menu descriptions. - Added Output rotation icons to the Assign Menu for Destination configuration: refer to “Configuration Menu > Adjustment > Destination Configuration”, page 145 and see Assign Menu. • Changes initiated by new hardware: - Added description of Tri-Combo Input card: refer to “Tri-Combo Input Card”, page 68. - Added “EX Maintenance”, page 501. - Added “EC-30 Maintenance”, page 519.
07	• Changes initiated by software updates (version 5.1): - Corrected HDCP support for the quad-channel DisplayPort output card; see “Quad Channel DisplayPort 1.2 Output Card”, page 70. - Added instructions and descriptions for importing a PNG with alpha channel (transparency) information preserved for Key Cut + Fill layers: refer to “Presentation System overview”, page 43, “Programming Menu > Resources area”, page 198, and “Programming Menu > Drop Sources, Layers into Screen Destinations & Sources into layers”, page 295. - Refer to “Configuration Menu > System diagram area”, page 112: updated the Diagram area image and color-code description to include the tri-combo input and

Revision	Changes
	output cards and split-mode on the quad-channel DisplayPort output card and the tri-combo output card. - Added instructions for creating Super Destinations: refer to “Configuration Menu > Adjustment > Destination Configuration”, page 145 and also to “Programming Menu”, page 196 and “Programming Menu > Adjustment area > Dest Group configuration”, page 228. - Added several linking examples, covering more than two E2, S3–4K, or EX units and EX units with VPUs: refer to “Configuration Menu > Linking”, page 178. - Updated the JSON listPresets API and added the 3dControl API: refer to “Event Master series processor JSON RPC remote control”, page 555 and see **listPresets** and **3dControl**. • Changes initiated by new hardware: - Added description of Tri-Combo Output card: refer to “Tri-Combo Output Card”, page 75.
08	• Updated contact information: refer to “Contact information”, page 531. • Added tri-combo input card and tri-combo output card assembly and disassembly instructions: refer to “Tri-Combo Input and Tri-Combo Output Card Disassembly and Assembly”, page 391.
09	• Updated the code examples in the JSON RPC remote control section: refer to “Event Master series processor JSON RPC remote control”, page 555.
10	• Changes initiated by software updates (version 6.0): - Added Cue functionality, refer to “Cue Menu”, page 240, “Cue Menu > Adjustment area”, page 241, “Cue Menu > Cue Workspace area”, page 242, and “Cue Menu > Command resource area”, page 244. - Added External Device control functionality: refer to “Configuration Menu > Adjustment > External Devices Configuration”, page 175. - Added “PGM only” canvas mode: refer to “Configuration Menu > System modifier area”, page 115. - Updated the JSON RPC remote control section, refer to “Event Master series processor JSON RPC remote control”, page 555 and see **Use JSON from the web application**, **activateCue** , and **listCues**. • Changes initiated by new hardware: - Added EC-210 content: refer to “Event Master devices overview”, page 26, “Event Master controllers features”, page 37, “Initial inspection”, page 44, “Controller Orientation”, page 327, “Controller Configuration”, page 351, “Controller Operation”, page 359, “EC-200/EC-210 maintenance actions”, page 381, “EC-200/EC-210 Maintenance”, page 525, and “”, . - Added description of Quad HDMI 2.0 input card: refer to “Quad HDMI 2.0 Input Card”, page 67.

Revision	Changes
11	• Changes initiated by software updates (version 6.2): - Added Barcolink Ultra (4K) for SDI output on the Tri-Combo output card. Refer to “Tri-Combo Output Card”, page 75. - Increased the maximum number of Cues to 120. Refer to “Cue Menu > Cue Workspace area”, page 242. - Added instructions for creating, populating, and manipulating Super AUX destinations. Refer to “Configuration Menu > Adjustment > Destination Configuration”, page 145 and “Configuration Menu > Adjustment > Destination Configuration > Adjust Panel”, page 157. • Changes initiated by new hardware: - Updated the altitude specifications and maximum ambient operating temperature for EC-200/EC-210. Refer to “Installation requirements”, page 44. - Added description of quad-channel DisplayPort 1.2 input card. Refer to “Quad Channel DisplayPort 1.2 Input Card”, page 65. - Added description of quad HDMI 2.0 output card. Refer to “Quad HDMI 2.0 Output Card”, page 73. - Updated the disassembly and assembly instructions for the Tri-Combo input and Tri-Combo output cards. Refer to “Tri-Combo Input and Tri-Combo Output Card Disassembly and Assembly”, page 391.
12	• Changes initiated by software updates (versions 6.3, 6.5, and 7.0): - Added "Admin lock" mode in front panel of E2/S3 under the System menu. Refer to “System menu > Admin Lock”, page 98. - Added VPU Resource tab to the system diagram area of the configuration menu. Refer to “Configuration Menu”, page 109. - Added a list to show last 100 status bar messages on the bottom status bar. Refer to “Configuration Menu”, page 109. - Added EDID DisplayID block checkbox for DP 1.2 inputs. Refer to “Configuration Menu > Adjustment > Input Configuration”, page 122, and see the “DVI, HDMI and DisplayPort input types – bottom half” subsection. - Added Gamma FX and Colorimetry for DisplayPort and HDMI. Refer to “Configuration Menu > Adjustment > Input Configuration”, page 122, and see the “Input adjustment panel > Main page” subsection, and refer to “Configuration Menu > Adjustment > Output Configuration”, page 136, and see the “Output adjustment panel > Connector menu” subsection. - Added Flicker Filter controls for AUX Destination interlaced outputs. Refer to “Configuration Menu > Add Screen Destinations & Layers”, page 285, and see the “Output menu – Color submenu” subsection. - Added a VESA calculator to the Custom Format Adjust tab. Refer to “Configuration Menu > Adjustment > Custom Formats Configuration”, page 172, and see the “Custom Format Adjust tab – bottom half” subsection. - Added **+Add Barco Projector** and **+Add Event Master XML** buttons to the External Devices tab. Refer to “Configuration Menu > Adjustment > External Devices Configuration”, page 175, and see the “External Devices tab” subsection. - Added "Freeze" mode as a User Key parameter. Refer to “Programming Menu > Adjustment area > User Keys configuration”, page 232, and see the “User Keys configuration menu description” subsection. - Added "Auto Layout Dest" to Multiviewer. Refer to “Multiviewer Menu > Modifier area”, page 249, and see the “Auto Layout Dest” subsection, and refer to “Multiviewer Menu > Drop Inputs, Backgrounds and Destinations ”, page 299, and see the “(Optional) Auto Layout Destination” subsection. - Updated JSON APIs: ◦ Added "activateDestGroup". ◦ Added "TestPattern" parameter to "changeContent" and "changeAuxContent". ◦ Added "CueChanged" to "subscribe" and "unsubscribe" APIs. Refer to “Event Master series processor JSON RPC remote control”, page 555. • Changes initiated by new hardware:

Revision	Changes
	- Added support for E2-Gen2 video processor. Refer to “Event Master devices overview”, page 26, and see the “About E2 Gen 2” subsection. - Added support for 4K Quad HDMI 2.0 Output card as a Multiviewer. - Added CXP Input/Output card. Refer to “CXP Input/Output Card”, page 79.

1.3 Symbols, pictures and fonts

Symbol overview

The following icons are used in the manual :

	Caution
	Warning
	Info, term definition. General info about the term
	Note: gives extra information about the described subject
	Tip: gives extra advice about the described subject

Picture overview

Images and pictures given in the manual are used as illustration. The content of the images can be slightly different with the reality, e.g. version numbers, device types, installed modules, form and position of software windows on screen ...

1.4 The 4K screen management system

The presentation systems E2 and S3–4K

Raising the bar for live screen management, the Event Master screen management system provides superior image quality, exceptional input and output density, great expandability, and purpose built durability. Supporting native 4K input and output with up to 60 Hz refresh rates and 4:4:4 color, it is the most modular system available to manage blended 4K projectors with refresh rates up to 60 Hz and full range color sampling. Being a truly versatile system, the Event Master offers a large range of scaled AUX outputs and PGM outputs for full show control with a single box.

Native 4K input and output

With native 4K input and output, the Event master devices provide impressive pixel processing power. Whether native or scaled inputs, two connectors or four, this HDCP-compliant system manages it all.

With up to 32 inputs and 14 outputs, the E2 system offers full show control, including 32 independent PIP layers, 12 outputs and a dedicated two channel Multi-viewer. Thanks to its linkable chassis, it can easily expand beyond the single chassis capacity, without the need for additional external processing and routing to distribute the signals. And as its inputs and layers can also be extended, the E2 is even capable of managing a blend of up to 32 4K projectors.

Simple servicing and control

The Event Master devices come with a straightforward cross-platform user interface that provides touchscreen ergonomics. As the presets are stored on the chassis, it enables easy control via third-party

systems. Multiple users can control a system simultaneously, and the API allows third-party developers to create custom control programs and interfaces. Thanks to their modular designs, users can simply add a new input or output card to support future signal interfaces. This modularity also ensures great serviceability, as users can easily swap a specific input or output card in the case of damage, without needing to ship or replace the entire box.

Designed for life on the road

Designed for the live event industry, the rugged Event Master devices feature a steel chassis that's able to withstand the challenging conditions of life on the road. What's more, they offer screen control in a compact form factor of only four rack units (3 RU for the S3), which makes them easy to ship and install. And thanks to their modular cards and dual redundant power supplies, the Event Master devices are extremely reliable and easy to service in the field.

2 Safety

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2.2 Important safety instructions 22

About this chapter

Please read this chapter carefully. It contains important information to prevent personal injury while installing and operating Event Master devices. Furthermore, it includes several cautions to prevent damage to the Event Master devices. Ensure that you understand and follow all safety guidelines, safety instructions and warnings mentioned in this chapter before you begin installation. After this chapter, additional “warnings” and “cautions” are given depending on the installation procedure. Read and follow these “warnings” and “cautions” as well.

2.1 General considerations

General safety instructions

- Before operating these devices please read this manual thoroughly and retain it for future reference.
- All warnings in the documentation manual should be adhered to.
- All instructions for operating and use of these devices must be followed precisely.
- All local installation codes should be adhered to.

Notice on safety

This equipment is built in accordance with the requirements of the international safety standards IEC60950-1, EN60950-1, UL60950-1 and CAN/CSA C22.2 No.60950-1, which are the safety standards of information technology equipment including electrical business equipment. These safety standards impose important requirements on the use of safety critical components, materials and insulation, in order to protect the user or operator against risk of electric shock and energy hazard and having access to live parts. Safety standards also impose limits to the internal and external temperature rises, radiation levels, mechanical stability and strength, enclosure construction and protection against the risk of fire. Simulated single fault condition testing ensures the safety of the equipment to the user even when the equipment's normal operation fails.

Certificates

Image 2-1: CE mark

These products comply with the essential requirements of Council Directives 2004/108/EC or 2014/30/EU (EMC), 2006/95/EC or 2014/35/EU (LVD) and 2011/65/EU (RoHS).

Image 2-2: EAC mark

This product complies with the Safety of Low-Voltage Equipment (LVE Technical Regulation 004/2011, CU TR 004/2011) and the Electromagnetic Compatibility of Technical Products (EMC Technical Regulation, CU TR 020/2011).

2.2 Important safety instructions

To prevent risk, personal injury and Event Master devices damages

Please read this chapter carefully. It includes several cautions to prevent damage to Event Master devices. Ensure that you understand and follow all safety guidelines, safety instructions and warnings mentioned in this chapter before installing Event Master devices. After this chapter, additional “warnings” and “cautions” are given depending on the installation procedure. Read and follow these “warnings” and “cautions” as well.

- Read and follow all installation and operation instructions.
- Only trained technicians may install Event Master devices.
- Installation of Event Master devices must be done in a dust free area.
- Only use attachments/accessories specified by the manufacturer.
- **CAUTION:** Troubleshooting must be performed by a trained technician. To reduce the risk of electrical shock, do not attempt to service this equipment unless you are qualified to do so.
- Refer all servicing to qualified service personnel. Servicing is required when the system has been damaged in any way, such as liquid has been spilled or objects have fallen into the system, or the system has been exposed to rain or moisture, does not operate normally, or has been dropped.
- **FRAGILE:** Event Master devices are fragile. Handle these devices with care at all times.
- To prevent injury, minimum 2 persons are required to carry an Event Master series processor or an EC–200 controller.

- Do not remove any covers or panels during normal operation. Removal any of these items will expose sensitive electronic circuits and the unit may be damaged.
- During maintenance operations, always switch off the device and unplug power cords before removing one of the covers.
- Always wear a wrist band which is connected to the ground while handling the ESD sensitive parts.
- Wear insulating gloves during the execution of the installation and maintenance actions to avoid short-circuit.
- Be careful never to drop anything into the device assembly during the service procedures.
- Be careful to always follow the procedures during maintenance operations (spare parts replacement).
- This product is intended to operate from a power source that will not apply more than 230 volts rms between the supply conductors or between both supply conductor and ground. A protective ground connection by way of grounding conductor in the power cord is essential for safe operation.
- This product is grounded through the grounding conductor of the power cord. To avoid electrical shock, plug the power cord into a properly wired receptacle before connecting to the product input or output terminals. A protective-ground connection by way of the grounding conductor in the power cord is essential for safe operation. For 110V installations the power supply cord should be rated at 13amps. For 220V installations the power supply cord should be rated 10amps.
- Use only the power cord and connector specified for your product. Use only a power cord that is in good condition. Refer cord and connector changes to qualified service personnel.
- Replace spare parts only with the same parts supplied by Barco.
- Save the original shipping carton and packing material. They will come in handy if you ever have to ship your equipment. For maximum protection, repack your set as it was originally packed at the factory.
- Rated maximum ambient operating temperature, t_a= 40°C (104°F).
  Note: Rated maximum ambient operating temperature for EC-200/EC-210, ta=35°C (95° F).
- Do not operate this product in an area containing explosive materials.

Safety Data Sheets for Hazardous Chemicals

For safe handling information on chemical products, consult the Safety Data Sheet (SDS). SDSs are available upon request via safetydatasheets@barco.com.

General

3

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About this chapter

This chapter is designed to introduce you to the Event Master series products.

3.1 Event Master devices overview

General

Event Master devices are the most advanced video processing and presentation control systems on the market today. These systems provide source selection, advanced windowing features, seamless switching, video effects and integrated control for professional video presentations. Thanks to their modular and scalable architecture, Event Master devices can support a wide variety of show configurations.

The Event Master series products are the following:

- E2, 4K screen management system (Event Master processor).
- E2 Jr., 4K screen management system (Event Master processor).
- E2 Gen 2, 4K screen management system (Event Master Gen 2 processor).
- EX, expansion box (Event Master processor).
- S3–4K , compact 4K screen management system (Event Master processor).
- S3–4K Jr., compact 4K screen management system (Event Master processor).
- EC-30, compact Event Master controller.
- EC-50, compact Event Master controller.
- EC-200, large Event Master controller. (EoL 2018.)
- EC-210, large Event Master controller. (This is an internal controller upgrade, with minor connector and button changes.)

About E2

Image 3-1: E2

E2 is a modular, scalable digital video processor, designed to manage multiple display destinations and large video walls. The E2 screen management system provides superior image quality and an exceptional input and output density, within a single 4RU rack mount chassis. Supporting native 4K I/O cards, it is the first and only screen management system on the market that can manage a 4K projector blend with refresh rates up to 60Hz. A truly versatile system, it offers up to 32 inputs and 14 outputs (up-to eight PGM, Multiviewer, and four scaled Aux outputs) for full show control. Multiple E2 units can be linked in order to achieve a combination of Layer, Canvas, Input and Output expansion. The control interface is performed through a GUI application running Windows, Linux* or Mac platforms. E2 covers multiple markets including Rental & Staging, Corporate AV, Simulation, Control Rooms and Broadcast.

Thanks to its modular design, users can also simply add a new input or output card to support future signal interfaces. This modularity also ensures field serviceability, as users can easily swap a specific input or output card in the case of damage or failures, without needing to ship or replace the entire box.

About E2 Gen 2

Image 3-2: E2 Gen 2

With up to 40 inputs and 18 outputs, the E2 Gen 2 processor provides full screen control. The E2 Gen 2 offers 16 4K inputs and 8 4K outputs enabling impressive pixel processing power with increased processing speed. Whether native or scaled inputs, single cable 4K60p, two connectors or four, this HDCP-compliant system manages it all. Thanks to its linkable chassis, it can easily expand beyond the capabilities of a single box without the need for additional external processing and matrix routing to distribute the signals.

Presets are stored on the chassis, which enables easy control via third-party systems. Multiple users can control the system simultaneously, and the API allows third-party developers to create custom control programs and interfaces. Thanks to its modular design, users can simply add new input or output cards to support future signal interfaces.

The rugged E2 Gen 2 is easy to ship and install, and thanks to its modularity and the improved dual redundant power supplies, the E2 Gen 2 is extremely reliable and easy to service in the field.

About E2 Jr.

Image 3-3: E2 Jr.

The E2 Jr. comes with 16 inputs, 8 outputs, and 8 mixers (or 16 single layers) in the same 4-RU form factor as its bigger brother, E2. It offers the same performance and features as the E2 offers, but it is ideally suited for applications that require more capacity than the compact S3–4K but do not require the full capacity of the E2.

E2 Jr. can use the same modular cards as E2 uses, and thanks to its modular design, the E2 Jr. can be upgraded to a fully loaded E2 system at any time.

About EX

Image 3-4: EX

When linked to the Event Master system (E2 or S3–4K) it acts as an input and/or output expansion box to increase the capacities available to the system. Via the link cable, a fiber extension can be used to extend the distance between the EX and the E2 or S3 processor. EX allows the user to place the unit close to a large concentration of sources or outputs (for example, on a stage with demo computers) and use a single cable to deliver the signals to and from the main processor. EX helps reduce the cost in terms of equipment and labor hours required to set up an event.

The Ex can also be used as a stand-alone unit to scale, switch, and convert video signals to multiple displays. As a stand-alone unit it can be thought of as a 4x4 scaling matrix.

EX can use the same modular cards as E2 uses.

About S3–4K

Image 3-5: S3

Featuring 12 input channels, 4 PROGRAM outputs, 4 AUX outputs and 2 dedicated Multiviewer outputs, the S3–4K screen management system is a compact version of the E2. Smaller (only 3RU rack mount chassis), its operation is similar to that the E2, and it is operated in the same manner.

S3 and E2 use the same modular cards.

About S3–4K Jr.

Image 3-6: S3–4K Jr.

The S3-4K Jr comes with 8 inputs, 4 outputs, and 2 mixers in the same 3 RU form factor as its bigger brother, the S3-4K. It offers the same performance and features as the S3– 4K offers, but it is ideally suited for applications that do not require the full capacity of the S3–4K.

S3–4K Jr. can use the same modular cards as E2 uses, and you can upgrade the S3-4K Jr. to a fully loaded S3-4K system at any time; simply purchase and install additional cards into your system.

About EC-30

Image 3-7: EC-30

The EC-30—the most compact version of the EC-series Event Master controllers—provides instant access to the most crucial features for everything from a tradeshow booth to a large corporate event, even a music tour. The EC-30 offers a compact surface, simplified workflow, and fingertip control where budget and space are the deciding factors. As an extension of the Event Master toolset, the EC-30 gives you essential selections for sources, presets, layers, and destinations. As a USB peripheral added to your existing Event Master control computer, the EC-30 is the most cost effective and compact alternative to a full sized controller.

About EC-50

Image 3-8: EC-50

The Event Master EC-50 event controller delivers instant access and great situational awareness for everything from trade show booths to large corporate events and even music tours. Its small footprint makes it suitable for most control environments, while simultaneously packing all the power and durability needed for instant access to crucial functions. As an extension of the Event Master toolset and the EC-200/EC-210, the EC-50 brings sources, presets, layers, and destination selection at your fingertips, along with another, touch enabled display.

About EC-200

Image 3-9: EC-200

The Event Master EC-200 event controller is replaced by the EC-210 controller. Most of the operation for the EC-200 is the same as that for the EC-210.

About EC-210

Image 3-10: EC-210

The Event Master EC-210 event controller is a dedicated hardware console specifically designed to support the Event Master Series Processors and devices. Based on an industrial operating system with optimized hardware, it runs the Event Master Toolset Software. Recommended for small events as well as for stadium sized shows, it provides the same functionality as its accessory, the EC-50 controller, with additional features and capabilities delivered in a compact package. The tactile operation style of the EC-210 with buttons and touch screens gives the operator plenty of programming room in an effective layout. Expandable with its large choice of connectivity, the controller can support additional external Event Master compatible devices over network and USB.

EC-210 is the infrastructure that will keep you in control of Barco Event Master series devices, now and in the future.

In our efforts to support our existing customers and respect their investment, we have created an upgrade kit that takes any EC-200 to the same functionality and capacity as a factory assembled EC-210, with only minor cosmetic differences.

3.2 Event Master series processors features

Inputs

Model	E2 Gen 2	E2	E2 Jr.	S3–4K	S3–4K Jr.	EX
Input cards	8x	8x	4x	3x	2x	2x

Each Gen 1 card accommodates either 4x HD inputs, 2x 2560 x 1600 inputs, or 1x 4K input. Each Gen 2 input card accomodates 2x 4K input.

The EX expansion box does not ship with cards; cards must be purchased separately. Each EX expansion box has two general purpose card slots, each of which may support any E2 input or output card.

Card type	Connector Type
HDMI/DisplayPort input card (Gen 1)	2x HDMI 1.4 connectors 2x DisplayPort 1.1 connectors
Dual Link DVI input card (Gen 1)	2x Dual Link DVI-D connectors
SDI input card (Gen 1)	4x BNC connectors supporting 3G-SDI
HDMI 2.0 input card (Gen 2)	4x HDMI 2.0 connectors
Quad Channel DisplayPort input card (Gen 2)	4x DP 1.2 connectors
Tri-Combo input card (Gen 2)	1x DP 1.2 connector 1x HDMI 2.0 connector 4x BNC connectors supporting 12G-SDI
Genlock input	2x BNC connectors (Input and loop output) Supports black burst* and tri-level analog signals

* All processors support black burst input; EX uses a regenerated genlock output and does not support black burst output.

Depending on the model, each Event Master processor is shipped with the following input cards:

Model	Inputs via input cards
E2 Gen 2	• 40 inputs via 8 Event Master Series 2 input cards: - Up to 16x 4K inputs or up to 40 HD inputs – each input card supports up to 2x 4K@60p - 16x SD/HD/3G/6G/12G connectors - 12x HDMI 2.0 (600 MHz max) - 12x DisplayPort 1.2 (660 MHz max)
E2	• 32 inputs via 8 Event Master Series 1 input cards: - Up to 8x 4K inputs – each input card supports up to 1x 4K@60p - 12x SD/HD/3G SDI - 10x HDMI 1.4 (297 Mpix/sec max) - 10x DisplayPort 1.1 (300 Mpix/sec max) - 4x Dual Link DVI (330 Mpix/sec max)
E2Jr.	• 16 inputs via 4 Event Master Series 1 input cards: - Up to 4x 4K inputs – each input card supports up to 1x 4K@60p - 4x SD/HD/3G SDI - 6x HDMI 1.4 (297 Mpix/sec max) - 6x DisplayPort 1.1 (300 Mpix/sec max)
S3–4K	• 12 inputs via 3 Event Master Series 1 input cards: - Up to 3x 4K inputs – each input card supports up to 1x 4K@60p - 4x SD/HD/3G SDI

Model	Inputs via input cards
S3–4K Jr.	- 4x HDMI 1.4 (297 Mpix/sec max) - 4x DisplayPort 1.1 (300 Mpix/sec max) • 8 inputs via 2 Event Master Series 1x input cards: - Up to 2x 4K inputs – each input card supports up to 1x 4K@60p - 4x SD/HD/3G SDI - 2x HDMI 1.4 (297 Mpix/sec max) - 2x DisplayPort 1.1 (300 Mpix/sec max)
EX	• Two card slots, each of which may support any E2 input or output card - Up to 8 inputs via 2 input cards or 8 outputs via 2 output cards (same cards as E2 Event Master processor) (4 inputs and 4 outputs, using one card of each type) - Inputs can be distributed to other processors via the link cable or to a locally installed output card.

Outputs

Model	E2 Gen 2	E2	E2 Jr.	S3–4K	S3–4K Jr.	EX
Output card slots	3x	3x	3x	2x	2x	2x
Multiviewer card slots	1x	1x	1x	1x	1x	NA

The last slot on E2 Gen 2, E2, and E2 Jr. (Slot #14) and on S3–4K and S3–4K Jr. (Slot #9) may be designated as either a Multiviewer (MVR) card slot or as an Output card slot. See“Configuration Menu > Adjustment > Unit Configuration”, page 118 for more details.

Card type	Connector Type
DisplayPort output card (Gen 2)	4x DisplayPort 1.2 connectors
HDMI output card (Gen 1)	4x HDMI 1.4 connectors
SDI output card (Gen 1)	4x BNC connectors supporting 3G-SDI
HDMI 2.0 output card (Gen 2)	4x HDMI 2.0 connectors
Tri-Combo output card (Gen 2)	1x DP 1.2 connector 1x HDMI 2.0 connector 4x BNC connectors supporting 12G-SDI
HDMI Multi-viewer card (Gen 1)	4x HDMI 1.4 connectors
HDMI 2.0 Multiviewer card (Gen 2)	4x HDMI 2.0 connectors

The EX expansion box does not ship with cards; cards must be purchased separately. Each EX expansion box has two general purpose cards slots, each of which may support any E2 input or output card.

Depending on the model, each Event Master processor is shipped with the following output cards:

Model	Outputs via output cards	Program outputs
E2 Gen 2	• Up to 18 output connectors among 4 output cards (Event Master Series 2 cards): - Up to 8x 4K outputs – each output card supports up to 2x 4K@60p - 4x SDI (SD/HD/3G/6G/12G) - 13x HDMI (up to 600 MHz) ◦ **NO MVR:** Up to 8x 4K60p outputs ◦ **WITH MVR:** Up to 6x 4K60p outputs and either 4x HDMI for FHD Multi-viewers (1920x1200 max) **or** 1x HDMI for UHD/4K60p Multi-viewer. - 1x DisplayPort(up to 660 MHz)	• Sixteen (16) program outputs configurable as single screens or tiled/ blended widescreens - Configurable from 16x 2048 × 1200@60 max to 8x 4096 × 2400@60 max - Independent edge blending/ feathering control for all four sides - Unused outputs may be used as scaled auxiliary outputs.
E2	• Up to 16 outputs via 4 output cards (Event Master Series 1 cards): - Up to 4x 4K outputs – each output card supports up to 1x 4K@60p - 4x SD/HD/3G SDI - Up to 12x HDMI 1.4a (297 Mpix/sec max) - Or up to 8x HDMI 1.4a for Program and 2x HDMI 1.4a for Multiviewer (297 Mpix/sec max)	• Sixteen (16) program outputs configurable as single screens or tiled/ blended widescreens - Configurable from 16x 2048 × 1200@60 max to 4x 4096 × 2400@60 max - Independent edge blending/ feathering control for all four sides - Unused outputs may be used as scaled auxiliary outputs.
E2 Jr.	• Up to 12 outputs via 3 output cards (Event Master Series 1 cards): - Up to 3x 4K outputs – each output card supports up to 1x 4K@60p - 4x SD/HD/3G SDI - 8x HDMI 1.4a (297 Mpix/sec max) - Or up to 4x HDMI 1.4a for program and 2x HDMI 1.4a for Multiviewer (297 Mpix/sec max)	• Eight (8) program outputs configurable as single screens or tiled/blended widescreens - Configurable from 8x 2048 × 1200@60 max to 2x 4096 × 2400@60 max - Independent edge blending/ feathering control for all four sides - Unused outputs may be used as scaled auxiliary outputs.
S3–4K	• Up to 12 outputs via 3 output cards (Event Master Series 1 cards): - Up to 3x 4K outputs – each output card supports up to 1x 4K@60p - 4x SD/HD/3G SDI - 8x HDMI 1.4a (297 Mpix/sec max) - Or up to 4x HDMI 1.4a for program and 2x HDMI 1.4a for Multiviewer (297 Mpix/sec max)	• Twelve (12) program outputs configurable as single screens or tiled/ blended widescreens - Configurable from 12x 2048 × 1200@60 max to 3x 4096× 2400@60 max - Independent edge blending/ feathering control for all four sides - Unused outputs may be used as scaled auxiliary outputs.

Model	Outputs via output cards	Program outputs
S3–4K Jr.	• Up to 8 outputs via 2 output cards (Event Master Series 1 cards): - Up to 2x 4K outputs – each output card supports up to 1x 4K@60p - 8x HDMI 1.4a (297 Mpix/sec max) - Or up to 4x HDMI 1.4a for Program and 2x HDMI 1.4a for Multiviewer (297 Mpix/sec max)	• Eight (8) program outputs configurable as single screens or tiled/blended widescreens - Configurable from 8x 2048 × 1200@60 max to 2x 4096 × 2400@60 max - Independent edge blending/ feathering control for all four sides
EX	• Two card slots, each of which may support any E2 input or output card - Up to 8 outputs via the 2 output cards (same cards as E2 Event Master processor) - Sources for the outputs can be from remote systems via the link connection or from a locally installed input card.	• Up to 8 program outputs for destinations created in a linked E2 or S3-4K processor. - Unused outputs may be used as scaled auxiliary outputs.

An EX expansion box supports screen-destination program outputs and auxiliary outputs, up to a maximum total of eight (8) video links (destinations or inputs) from main processor on a link cable to another expansion box.

User interface

User interface	Details
Event Master Software	GUI based configuration and control application Cross platform (Mac/Windows)
Event Master Console EC-50 and EC-200	Dedicated hardware panels specifically designed to support Event Master processors

Processing and latency

- 12 bits/color
- 36 bits/pixel
- 1 frame processing latency for progressive sources

PIP layers (per chassis)

Up to 32 PIP or Key overlay layers:

Model	PIP layers
E2 or E2 Gen 2	• 2K mode: 32x seamless PIP or Key overlay • DL mode: 16x seamless PIP or Key overlay • 4K mode: 8x seamless PIP or Key overlay
E2 Jr.	• 2K mode: 16x seamless PIP or Key overlay • DL mode: 8x seamless PIP or Key overlay • 4K mode: 4x seamless PIP or Key overlay
S3–4K	• 2K mode: 8x seamless PIP or Key overlay • DL mode: 4x seamless PIP or Key overlay • 4K mode: 2x seamless PIP or Key overlay
S3–4K Jr.	• 2K mode: 4x seamless PIP or Key overlay • DL mode: 2x seamless PIP or Key overlay • 4K mode: 1x seamless PIP or Key overlay
EX	NA

Background mixer

Each PGM screen destination has an unscaled seamless background mixer supporting the full resolution of the destination

- Any live input type can be a background source
- Matte color generator
- Still store as background

Destinations (single chassis)

Model	Destinations
E2 or E2 Gen 2	Eight (8) Program Outputs configurable as single screens or tiled/blended widescreens.
E2 Jr.	Four (4) Program Outputs configurable as single screens or tiled/blended widescreens.
S3–4K	Four (4) Program Outputs configurable as single screens or tiled/blended widescreens.
S3–4K Jr.	Four (4) Program Outputs configurable as single screens or tiled/blended widescreens.
EX	NA

Program screens

Model	Program Screen Resources		
	Max. number of 4K outputs	Max. number of Dual-Link outputs	Max. number of HD (2K) outputs
E2 or E2 Gen 2	• 4x single screens • 2x blended (2 outputs)	• 8x single screens • 4x blended	• 16x single screens • 8x 2 output blended (2 output per blend) up to 16x 1 output blended
E2 Jr.	• 2x single screens • 1x single screen (Has only one VPU bank; does not support 4K blending.)	• 4x single screens • 2x blended	• 8x single screens • 2x 2 output blended (2 output per blend) up to 4x 1 output blended
S3–4K	• 3x single screens	• 4x single screens • 2x blended	• 12x single screens • 6x 2 output blended (2 output per blend) up to 12x 1 output blended
S3–4K Jr.	• 2x single screens	• 4x single screens • 2x blended	• 8x single screens • 4x 2 output blended (2 output per blend) up to 8x 1 output blended
EX	• 2x single screens • 1x blended (2 outputs)	• 4x single screens • 2x blended	• 8x single screens • 4x 2 output blended (2 output per blend) up to 8x 1 output blended

The EX expansion box can have a combination of Input and Output cards, or it can have two VPU cards.

Auxiliary Outputs

Model	Auxiliary Outputs
E2 Gen 2	User definable from 18x 2048 x 1200 at 60 Hz to 8x 4K at 60 Hz
E2	User definable from 16x 2048 x 1200 at 60 Hz to 4x 4K at 60 Hz
E2 Jr.	User definable from 12x 2048 x 1200 at 60 Hz to 3x 4K at 60 Hz
S3–4K	User definable from 12x 2048 x 1200 at 60 Hz to 3x 4K at 60 Hz
S3–4K Jr.	User definable from 8x 2048 x 1200 at 60 Hz to 2x 4K at 60 Hz
EX	User definable from 8x 2048 x 1200 at 60 Hz to 2x 4K at 60 Hz

Model	Aux Scaling Mode Max. number of 4K outputs	Max. number of Dual-Link outputs	Max. number of HD (2K) outputs
E2 Gen 2	• 8x Scaled AUX output	• 16x Scaled AUX output	• 18x Scaled AUX output
E2	• 8x Scaled AUX output	• 16x Scaled AUX output	• 16x Scaled AUX output
E2 Jr.	• 6x Scaled AUX output	• 12x Scaled AUX output	• 12x Scaled AUX output
S3–4K	• 6x Scaled AUX output	• 12x Scaled AUX output	• 12x Scaled AUX output
S3–4K Jr.	• 4x Scaled AUX output	• 8x Scaled AUX output	• 8x Scaled AUX output
EX	• 2x Scaled AUX output	• 4x Scaled AUX output	• 8x Scaled AUX output

Multiviewer

Output Card Type	Max. Number of Outputs
HDMI 1.4a Quad Output	• 2x HD/WUXGA MVR output
HDMI 2.0 Quad Output	• 1x 4K@60 or 4x HD/WUXGA MVR output

Still stores

User-assigned still stores

- Live capture
- Loaded via PNG file

Presets

1,000 user definable presets

Expandability

Model	Chassis per system
E2 or E2 Gen 2	Link up to: • 2x S3-4K chassis, or • 8x EX chassis, or • 1x S3-4K plus 4x EX chassis, or • 7 more E2 (or E2 Gen 2) chassis.
E2 Jr.	E2 Jr. does not support linking, although linking is available as an upgrade option.
S3–4K	Link up to: • 1x E2 chassis, or • 4x EX chassis, or • 7 more S3-4K chassis.
S3–4K Jr.	S3–4K Jr. does not support linking, although linking is available as an upgrade option.
EX	2 Ex chassis can be linked for standalone operation, or an EX can be linked to either an E2 or an S3–4K.

Chassis

E2 Gen 2[1], E2, and E2 Jr.

- 4RU
- Dual Redundant PSU
- Modular field swappable processing and I/O cards
- Variable flow cooling
- Rugged steel chassis

S3–4k and S3–4k Jr.

- 3RU
- Dual Redundant PSU[2]
- Modular field swappable processing and I/O cards
- Variable flow cooling
- Rugged steel chassis

EX

- 1RU
- Rugged steel chassis
- Modular field swap
- Variable flow cooling

[1] E2 Gen 2 chassis use Gen 2 power supplies, which provide 1100 W. E2, E2 Jr., S3–4k, and S3–4k Jr. chassis use Gen 1 power supplies, which provide 760 W. Gen 2 power supplies and Gen 1 power supplies are not interchangeable.

[2] The S3–4K Jr. comes with a single power supply; the redundant power supply is optional.

3.3 Event Master controllers features

Connectivity

EC-30	EC-50	EC-200	EC-210
USB connection from Event Master Toolset host computer (OSX or Windows 7 and higher)	USB connection from Event Master Toolset, either from a control computer or the EC-200 controller	• 4 USB connectors in the back can be used for keyboard and mouse and other supported USB devices. • 1 USB connector in the middle of the top of the console is on delivery fitted with a USB memory.	• 4 USB connectors in the back can be used for keyboard and mouse and other supported USB devices. • 1 USB connector in the middle of the top of the console is on delivery fitted with a USB memory.
NA	DVI input for touchscreen monitor	2 connectors DVI-D (Screen output 1 and 2)	• 1 HDMI output connector to show a third EMTS window on an external monitor, supporting up to 2560 x 1080. • 1 HDMI input connector to for video to be shown on the left touchscreen.
NA	NA	2 Ethernet connectors (outlet 1 to your Event Master Device Network for static IP address and outlet 2 for a DHCP assigned IP address)	2 Ethernet connectors (outlet 1 to your Event Master Device Network for static IP address and outlet 2 for a DHCP assigned IP address)

User controls

EC-30

- 24 assignable buttons with customizable LCD displays
- 8 dedicated Layer selection buttons and dedicated Background Layer button with multi-page functionality
- 12 user definable Destination buttons with multi-page functionality
- 2 User Assignable System/ Layer Function buttons
- 1 Cut button
- 1 All Trans button
- High-resolution T-Bar

EC-50

- 36 assignable buttons with customizable LCD displays
- 8 dedicated Layer selection buttons and dedicated Background Layer button with multi-page functionality
- 12 user-definable Destination buttons with multi-page functionality
- 4 User Assignable System/ Layer Function buttons
- 1 Cut button
- 1 All Trans button
- High-resolution T-Bar
- 1x Internal 15.6-inch wide touch screen

EC-200/EC-210

- 36 assignable buttons with customizable LCD displays
- 8 dedicated Layer selection buttons and dedicated Background Layer button with multi-page functionality
- 12 user-definable Destination buttons with multi-page functionality
- 4 User Assignable System/ Layer Function buttons
- 1 Cut button
- 2 All Trans buttons
- 1 On Screen Keyboard Button
- 1 Console Lock Button
- 1 Save All Button
- High-resolution T-Bar with enable/disable button
- 1 System Function Button Group
- 1 Direct Selection Button Group
- 1 Syntax Entry Button Group
- 1 Numpad
- 1 Contextual Display Button Group
- 1 Live Function Button Group
- 1 Arrow Button Group
- 1 Trackball with 4 modifier buttons
- 2 Barco Eye Buttons
- 5 Rotary Encoders referred to as wheels with modifier buttons
- 1 Future Expansion Button Group*
- 2x Internal 15.6-inch wide touch screen

* The EC-210 has “Play/Pause” and “Stop” buttons in the Future Expansion Button Group.

Dimensions and weight

	EC-30	EC-50	EC-200/EC-210
Dimensions (HxWxD)	105.4 x 465.6 x 321.0 mm 4.15 x 18.33 x 12.63 inches	244.34 x 511.56 x 610.0 mm 9.62 x 20.14 x 24.0 inches	244.34 x 901.19 x 575.36 mm 9.62 x 35.49 x 22.65 inches
Weight	3.18 kg (7 lbs.)	12.33 kg (27.2 lbs.)	20.41kg (45 lbs.)
Screen	NA	1x Internal 15.6-inch wide touch screen with 10 point multi-touch	2x Internal 15.6-inch wide touch screens with 10 point multi-touch

Other

EC-30

- USB port for connection to host computer
- Status LEDs and color coded LCD displays
- Auto-ranging 12v, 2.08a power supply (100-250 VAC)

EC-50

- 1x work light (flexible support)
- 2x flexible ribbon LED (backlight in front face and back face)
- Auto-ranging mains input (90-250 VAC)

EC-200/EC-210

- 2x work lights (flexible support)
- 2x flexible ribbon LED (backlight in front face and back face)
- Auto-ranging mains input (90-250 VAC)

3.4 Terms and definitions

3G

A 3 Gbit/s serial digital 10-bit or 12-bit video interface (SMPTE 424M and 425M).

AUX (auxiliary Output)

A video output that can show any source and seamlessly cut between them.

Background (BG)

Typically an unscaled source originating from a computer's multi-head graphics card, or a frame grab from a scaled source. An Event Master processor can use any input signal and assign it as a Background source, provided it is at the same resolution as is the destination. The Background appears at the system's lowest layer priority and does not use any system scaler resources.

Chroma Key

A type of key where the hole-cutting information is derived from a color rather than from a video level. An common example on television, is when the weatherman appears to be standing in front of a map. The map itself is a video signal, and the weatherman is in fact standing in front of a green (or blue) screen. On the switcher, the Chroma Key process electronically subtracts the color from the foreground image, and replaces it with video from the background image to form a composite image.

Clip, Gain, Opacity

In switcher terminology, the process of fine-tuning a key of any type (luminance, linear, or chroma). Clipping sets the threshold for the hole cutting circuitry, while "gain" defines the range and sensitivity of adjustment. The "opacity" is the transparency or density of the key, as revealed over a background.

Colorspace

All video signals have a colorspace. Versions are RGB, YUV or YrYbYc. They also have a range like 16 -235 = Reduced or Full 0-255.

There is also a color processing scheme that allow bandwidth saving. Full would be 4:4:4 and versions include 4:2:2 and 4:2:0

Computer Video

A generic term indicating video that originates from a computer platform. A progressive scan signal that follows VESA (Video Electronics Standards Association) standards, with typical resolutions of 800 x 600, 1920 x 1080, UHD and 4K etc.

Crosspoint

Traditionally the button that selects the input required on a particular switcher bus. But in Event Master device the actual backbone of the processors who routes the internal video signals.

Cut

Cut is an instantaneous switch from one video source to another.

DA (Distribution Amplifier)

A video device that inputs one video signal, and outputs multiple “identical” signals.

Destination (DST)

A Destination is a location to which you can route the output of an Event Master device. A destination can be configured as a group of one or more outputs that feed the same screen.

A Destination can be a single, widescreen or multi-screen. Mixing Layers are assigned to Destinations.

A Destination can transition Backgrounds and Mixing Layers.

Event Master Control Software (EM GUI)

This user's guide refers to the Event Master control software as the EM GUI. The software consists of several menus and tabs that enable you to configure your system, setup the input sources and output Destinations, manage the dedicated Multiviewer and create your presentation’s overall “look.” Refer to the chapter “EM GUI orientation”, page 103 for more information about the EM GUI.

Event Master Series Processor (EMP)

Any Event Master series processor—E2 Gen 2, E2, E2 Jr., S3–4K, S3–4K Jr., or EX—may be referred to as an EMP.

Event Master Toolset Software (EMTS)

Event Master Toolset Software is an easy to use GUI running on a PC or MAC. It provides all the Event Master series processors with control and configuration.

Fader

See **T-Bar**.

GUI (Graphical User Interface)

A term that describes a status display based on graphics and icons, rather than strictly on numbers and letters.

Input

The actual input connector of a processor.

Key

An electronic (and visual) process whereby one image is electronically superimposed over another source or background. Keys are typically used for titles, logos, and banners.

Keyframe

In a PIP “move,” a keyframe is a point where an action or change occurs. For example, when a PIP moves from the upper right corner to full screen, keyframe 1 is the upper right position, and keyframe 2 is the full screen position of the PIP.

Key Fill

The video which fills the hole cut by the keying circuitry. Typically, switchers provide a variety of choices for the fill source — internal mattes, external video, or "self" fill are several examples.

Key Signal

Also known as **Key Source**. The signal that electronically cuts the hole in the background video signal. Key signals typically originate from external inputs such as character generators or cameras.

Layer

An image display element (such as a PIP, Key or Background) that has an associated visual priority — either in front (or in back) of another layer.

Linear Key

Linear key is a keying mode in which the edges of anti-aliased key sources (such as character generators) are reproduced clearly. Typically, two separate signals are required from a linear key source: a cut and a fill.

Menu

A term used to describe buttons and functions on the high-resolution color LCD touch screen.

Mix

Also known as a **Dissolve**. A transition between two video sources in which one source fades out as the other fades in.

Mixer

Circuitry that enables you to seamlessly transition (and scale) PIPs and Keys over a background.

MVR (Multiviewer)

A video output that previews sources, backgrounds, destinations and Auxiliaries in scaled down windows with a border and a text label.

NTSC

National Television Standards Committee. The oldest standard for color picture broadcasting. NTSC is a standard definition format that operates at a frequency of 60Hz, with 525 lines, 60 fields and 30 frames per second.

PAL

Phase Alternating Line. PAL is the NTSC equivalent TV standard in Europe. PAL is a standard definition format that operates at a frequency of 50Hz, with 625 lines, 50 fields, and 25 frames per second.

PGM (Program)

The switcher's main output signal.

PIP

Picture-in-Picture, an on-screen configuration in which one picture (typically of reduced size) is positioned over another background image — or another PIP. PIPs can be reduced, enlarged, bordered, shadowed, and mixed on and off Program. PIPs can overlap each other, depending on their visual priority. In E2, the multiviewer PIPs are not allowed to overlap.

Preset

Storage register in which you can store (and recall) the entire configuration or “look” of your destination(s).

PVW (Preview)

The video that will appear next on program (main) outputs.

RGB

The red, green and blue color signal components.

Scaler

An electronic circuit that reduces or enlarges source images, thus creating PIPs and Keys that can be positioned (and transitioned).

SDI (Serial Digital Video)

SD / HD / 3G / 6G / 12-SDI is a digital representation of the video signal that is distributed via a single coaxial cable with BNC connectors. (SMPTE 259M / 274M / 296M / 424M / 2082M). Example formats are 480i and 525i.

Source file

The adjusted and saved file that describes the settings for the processor to use.

System

A Event Master system is all processors and devices included in one configuration of the control software.

T-Bar

Also known as a Fader, the T-Bar is the lever on a switcher that manually controls the progress of an effect. The position of the fader controls the amount of the BG (Background) Bus signal and the PVW (Preview) Bus signal that contributes to the mix, wipe or key.

Z-order

All layers of an Event Master processor will be in a z-order, typically with the BG as the lowest.

3.5 Control overview

General

There are several ways to control Event Master Series Processors.

Settings and Diagnostics:

- **Front Panel**.
- **Web interface** running directly from an Event Master series processor.

Operational Set up and Programming:

- **Event Master Toolset** running on a Windows 7, 8.1, or 10 PC or Apple Mac with OSX.
- **EventMaster Controller EC-30/EC-50** or **EC-200/EC-210**.

Remote recall and non-Barco device connectivity:

- **External ASCII protocol** connected devices like PresetManager.

Not all of these do the same thing, below the immediate differences. Several of these all work at the same time, providing multiple points of control.

Front Panel

The Event Master series processor front panel includes a power switch, a USB port and a dimmable display that works in conjunction with the ADJUST knob and SEL and ESC buttons. Through the front panel menus you can perform basic system functions such as factory reset, set network parameters and basic diagnostics. A front-panel USB port is provided for downloading and restoring images and system configurations. Refer to the chapter “Front panel”, page 54 for more information about the about the Event Master Series processor front panel menus.

Web interface

Via the local network and a computer the user can access a web page server running on Event Master series processor. Basic system functions similar to the ones available from the front panel menus are accessible through the web page server. Refer to the chapter “Settings Menu”, page 253 for more information about the Event Master Series Web interface.

Event Master Toolset (EMTS)

Event Master Toolset Software is an easy to use GUI running on Windows, MAC, or Linux. It provides all the Event Master Series of product with control and configuration.

The software consists of several menus and tabs that enable you to configure your system, setup the input sources and output destinations, manage the dedicated multiviewer and create your presentation’s overall “look”.

In addition, since the configuration parameters and presets are stored on the Event Master processor unit, multiple instances of the GUI can be run simultaneously on different computers expanding the control possibilities.

Refer to the chapter “EM GUI orientation”, page 103 for more information about the GUI. Subsequently in this User's Guide, the Event Master Control Software will be referred as the EM GUI.

Event Master Controller

The Event Master Controllers are dedicated hardware consoles specifically designed to support the Event Master Series Processors, devices and systems created from several of them.

It runs from the same software as the Event Master ToolSet, but EC-200/EC-210 on an industrial operating system with optimized hardware. All of them include tactile operation style with buttons and touch screen displays allowing for easy and direct control.

Rudimentary Preset recall protocol for a single Processor is the same as for earlier products like Encore™ and FSN Production Switching system.

An API based on JSON (*JavaScript Object Notation*) is available for developers who need to create custom control programs and interfaces.

3.6 Presentation System overview

Advanced video processing

The Event Master processors are the most advanced video processing and presentation control systems on the market today. These systems provide source selection, windowing, seamless switching, video effects and integrated control for professional presentations. The modular and scalable architecture of the Event Master processors allow support for a wide variety of show configurations.

A word about Layers

A layer is an image display element stacked on top of another or a background. Within the Event Master processor, each mixer has two layers, **A** and **B**, and one **Background** layer. For complete flexibility, each layer can be assigned to either **PIP** or **Key** functionality.

The **Background** layer has the lowest priority. Any input or inputs can be used as a background. This layer visually appears behind all other PIPs and keys. The system can transition between two background sources.

PIP layer appears over backgrounds and under other layers of higher priority. PIP effects include mixes, smooth moves, resizing, adjustable aspect ratio, borders and drop shadows.

Key layer also appears over backgrounds and under other layers of higher priority. Key effects include luminance (luma) keys, chrominance (chroma) keys, and cut + fill (linear) keys.

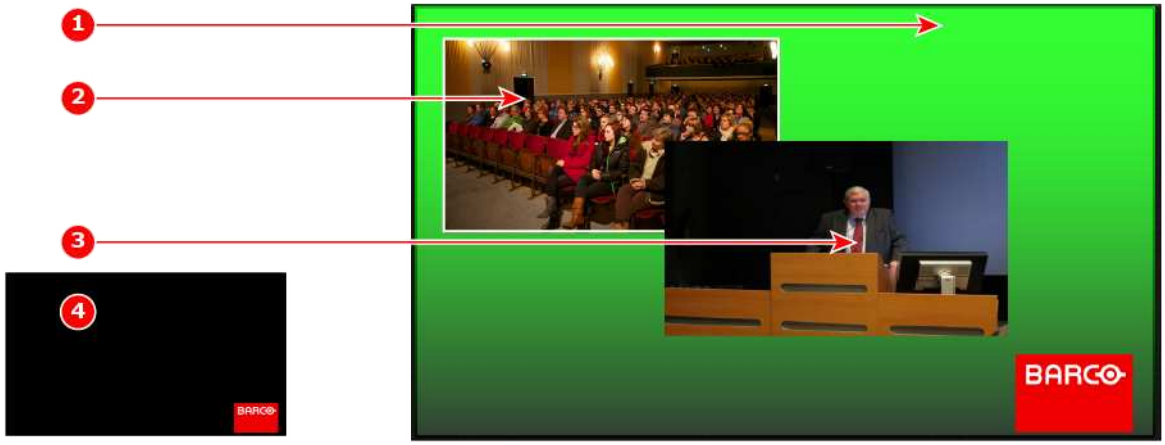

Image 3-11: Layers overview

1 Background
2 Mixer Layer 1: Z-Order 1 (with border)
3 Mixer Layer 2: Z-Order 2
4 Key Layer: Luma

A word about Destinations

Destination is a location where the user assigns the outputs.

We can consider two destination types:

- Single/Multiple Screen Destination (e.g. one or more projectors)
- AUX Destination (e.g. a monitor dedicated for camera adjustments)

There are several rules that apply when defining an Destination configuration. For details on destination setup procedures, please refer to the chapter “Configuration Menu > Adjustment > Destination Configuration”, page 145.

3.7 Installation requirements

Environment conditions

Table below summarizes the physical environment in which the Event Master devices and their controllers can be operated or stored.

Environment	Operating	Non-Operating
Ambient Temperature (E2 Gen 2, E2, E2 Jr, S3–4K, S3–4K Jr, EC-30, EC-50)	0°C (32°F) to 40°C (104°F)	-10°C (14°F) to 60°C (140°F)
Ambient Temperature (EC-200/210)	0°C (32°F) to 35°C (95° F)	-10°C (14°F) to 60°C (140°F)
Air cleanliness	Clean office environment (equivalent with cleanroom standard ISO 14644-1 ISO Class 9)	n.a.
Humidity	5% to 85% RH Non-condensed	0% to 95% RH Non-Condensed
Altitude (EX)	-60 (-197Ft) to 2000m (6561Ft)	-60 (-197Ft) to 10000m (32810Ft)
Altitude (E2 Gen 2, E2, E2 Jr, S3–4K, S3–4K Jr, EC-30, EC-50, EC-200/210)	-60 (-197Ft) to 3000m (9843Ft)[1]	-60 (-197Ft) to 10000m (32810Ft)

CAUTION: Let the Event Master devices and their controllers acclimate to the ambient temperature after unpacking. Ensure that the humidity is within the specification. Neglecting this may result in startup failure of these devices.

Software package

Verify that the Event Master device is loaded with the latest software version available on the Barco web site (URL:*https://www.barco.com/*). Refer to the chapter “Updating firmware”, page 301 for more information about the device upgrading software.

3.8 Initial inspection

General

Before shipment, all the devices were inspected and found to be free of mechanical and electrical defects. As soon as the devices are unpacked, inspect for any damage that may have occurred in transit. Save all packing material until the inspection is completed. If damage is found, file claim with carrier immediately. The Barco Sales and the Service office should be notified as soon as possible.

1: For PRC (People's Republic of China) the certified altitude is specified on the product label.

Unpacking

At delivery, Event Master devices are packed in a shipping case. Place the shipping case of the device on a stable (solid), flat and insulated support during all the unpacking. Open the case from the top. Remove the device that is packaged in an antistatic bag. Check the box content after unpacking.

After unpacking let the device acclimate to the room temperature which must be higher than 0°C (32°F) and lower than 40°C (104°F) (lower than 35°C (95°F) for EC-200/EC-210). Neglecting this may result in startup failure of the device.

Save the original shipping case and packing material, these will be necessary if you ever have to ship your device. For maximum protection, repack your device as it was originally packed at the factory.

When shipping an E2 in a Barco-supplied case, make sure that the rear connector protectors are installed to prevent damage.

Box content

After unpacking an Event Master device, it is recommended that it be checked to see if all accessories were included.

Depending on the product, the following accessories should be included.

Product	Contains	Accessories included
R9009203 (E2 Gen 2)	• 4RU–V2 rack mount chassis	• E2 Gen 2 assembly
	• 2x 14-9750004-90	• European Power Cord CEE7 (not included with units shipped to China)
	• 2x B1959864	• US Power Cord NEMA 5/15 (not included with units shipped to China)
	• 2x B1959865	• China Power Cord GB 2099 (included only with units shipped to China)
	• 2x B1959860	• CXP Expansion Link Cables
	• 2x 09-0106032-91	• Rear Rack Mount Support Plates
	• 8x 13-0081012-90	• 8-32 x .38 Pan Head Screws for Rear Rack Mount Support Plates
	• 2x 09-0106031-90	• Rear Rack Mount Brackets
	• 07-1205500-00	• USB Thumb Drive (Contains Users Guide, System Software and Control GUI)
	• R5905947	• Safety manual
	• 26-1803004-00	• Quick Start Guide
R9004799 (E2)	• 4RU rack mount chassis	• E2 assembly
	• 2x 14-9750004-90	• European Power Cord CEE7 (not included with units shipped to China)
	• 2x B1959864	• US Power Cord NEMA 5/15 (not included with units shipped to China)
	• 2x B1959865	• China Power Cord GB 2099 (included only with units shipped to China)
	• 2x B1959860	• CXP Expansion Link Cables

Product	Contains	Accessories included
	• 2x 09-0106032-91	• Rear Rack Mount Support Plates
	• 8x 13-0081012-90	• 8-32 x .38 Pan Head Screws for Rear Rack Mount Support Plates
	• 2x 09-0106031-90	• Rear Rack Mount Brackets
	• 07-1205500-00	• USB Thumb Drive (Contains Users Guide, System Software and Control GUI)
	• R5905947	• Safety manual
	• 26-1205004-00	• Quick Start Guide
R9004777 (E2 Jr.)	• 4RU rack mount chassis	• E2 Jr. assembly
	• 2x 14-9750004-90	• European Power Cord CEE7 (not included with units shipped to China)
	• 2x B1959864	• US Power Cord NEMA 5/15 (not included with units shipped to China)
	• 2x B1959865	• China Power Cord GB 2099 (included only with units shipped to China)
	• 2x 09-0106032-91	• Rear Rack Mount Support Plates
	• 8x 13-0081012-90	• 8-32 x .38 Pan Head Screws for Rear Rack Mount Support Plates
	• 2x 09-0106031-90	• Rear Rack Mount Brackets
	• 07-1205500-00	• USB Thumb Drive (Contains Users Guide, System Software and Control GUI)
	• R5905947	• Safety manual
	• 26-1205004-00	• Quick Start Guide
R9004757 (S3–4K)	• 3RU rack mount chassis	• S3 assembly
	• 2x 14-9750004-90	• European Power Cord CEE7 (not included with units shipped to China)
	• 2x B1959864	• US Power Cord NEMA 5/15 (not included with units shipped to China)
	• 2x B1959865	• China Power Cord GB 2099 (included only with units shipped to China)
	• 1x B1959860	• CXP Expansion Link Cables
	• 2x 09-0106032-91	• Rear Rack Mount Support Plates
	• 8x 13-0081012-90	• 8-32 x .38 Pan Head Screws for Rear Rack Mount Support Plates
	• 2x 09-0106031-90	• Rear Rack Mount Brackets
	• 07-1205500-00	• USB Thumb Drive (Contains Users Guide, System Software and Control GUI)
	• R5906016	• Safety manual
	• 26-1401004-00	• Quick Start Guide

Product	Contains	Accessories included
R9004778 (S3–4K Jr.)	• 3RU rack mount chassis	• S3 Jr. assembly
	• 1x 14-9750004-90	• European Power Cord CEE7 (not included with units shipped to China)
	• 1x B1959864	• US Power Cord NEMA 5/15 (not included with units shipped to China)
	• 1x B1959865	• China Power Cord GB 2099 (included only with units shipped to China)
	• 2x 09-0106032-91	• Rear Rack Mount Support Plates
	• 8x 13-0081012-90	• 8-32 x .38 Pan Head Screws for Rear Rack Mount Support Plates
	• 2x 09-0106031-90	• Rear Rack Mount Brackets
	• 07-1205500-00	• USB Thumb Drive (Contains Users Guide, System Software and Control GUI)
	• R5906016	• Safety manual
	• 26-1401004-00	• Quick Start Guide
R9004776 (EX)	• 1RU rack mount chassis	• EX assembly
	• 1x 14-9750004-90	• European Power Cord CEE7 (not included with units shipped to China)
	• 1x B1959864	• US Power Cord NEMA 5/15 (not included with units shipped to China)
	• 1x B1959865	• China Power Cord GB 2099 (included only with units shipped to China)
	• 1x R9871179	• Rear Rack Mount Support Kit, includes brackets, side support plates, screws, and washers
	• 2x 09-0904021-90	• Rear Connector Protectors
	• 4x 13-0211010-90	• 8-32 x .38 Pan Head Screws for rear connector protectors (x2 per protector)
	• 07-1205500-00	• USB Thumb Drive (Contains Users Guide, System Software and Control GUI)
	• R5906020	• Safety manual
	• 26-1502004-00	• Quick Start Guide
R9004783 (EC-30)	• EC controller	• EC-30 assembly
	• 1x 90803038EF	• US Power Cord NEMA 5/15 (not included with units shipped to China)
	• 1x 14-9750004-90	• European Power Cord CEE7 (not included with units shipped to China)
	• 1x B1959865	• China Power Cord GB 2099 (included only with units shipped to China)
	• 1x 99070037EF	• Power supply (25W, 12V)
	• 1x R9080003	• Dust Cover

Product	Contains	Accessories included
R9004772 (EC-50)	• 1x 90409546EF	• USB Type A to Type B Cable
	• 07-1205500-00	• USB Thumb Drive (Contains Users Guide, System Software and Control GUI)
	• R5906018	• Safety manual
	• 60600356	• Quick Start Guide
	• EC controller	• EC-50 assembly
	• 1x 90803038EF	• US Power Cord NEMA 5/15 (not included with units shipped to China)
	• 1x 14-9750004-90	• European Power Cord CEE7 (not included with units shipped to China)
	• 1x B1959865	• China Power Cord GB 2099 (included only with units shipped to China)
	• 1x 61100005	• Desk Light
	• 1x R9080001	• Dust Cover
R9004771 (EC-200)	• 1x 90409546EF	• USB Type A to Type B Cable
	• 1x 90409545EF	• DVI-D to DVI-D Cable
	• 07-1205500-00	• USB Thumb Drive (Contains Users Guide, System Software and Control GUI)
	• R5906018	• Safety manual
	• 60600332	• Quick Start Guide
	• EC controller	• EC-200 assembly
	• 1x 90803038EF	• US Power Cord NEMA 5/15 (not included with units shipped to China)
	• 1x 14-9750004-90	• European Power Cord CEE7 (not included with units shipped to China)
	• 1x B1959865	• China Power Cord GB 2099 (included only with units shipped to China)
	• 2x 61100005	• Desk Light
	• 1x R9080002	• Dust Cover
R9004790 (EC-210)	• 07-1205500-00	• USB Thumb Drive (Contains Users Guide, System Software and Control GUI)
	• R5906018	• Safety manual
	• 60600333	• Quick Start Guide
	• EC controller	• EC-210 assembly
	• 1x 90803038EF	• US Power Cord NEMA 5/15 (not included with units shipped to China)
	• 1x 14-9750004-90	• European Power Cord CEE7 (not included with units shipped to China)
	• 1x B1959865	• China Power Cord GB 2099 (included only with units shipped to China)

Product	Contains	Accessories included
	• 2x 61100005	• Desk Light
	• 1x R9080004	• Dust Cover
	• 07-1205500-00	• USB Thumb Drive (Contains Users Guide, System Software and Control GUI)
	• R5906018	• Safety manual
	• 26–1701004–00	• Quick Start Guide

Mechanical check

This check should confirm that there are no broken parts and the unit is free of dents or scratches. Your Barco Sales representative should be notified as soon as possible if this is not the case.

3.9 Rack-Mount Procedure

General

The chassis of the Event master devices (E2, S3 series, and EX) are designed to be rack mounted. The devices are supplied with front rackmount hardware.

Please note the following important points:

- The E2 is 4RU in height, the S3 is 3RU in height, and the EX is 1RU in height.
- The maximum ambient operating temperature is 40° C.
  Note: the maximum ambient operating temperature for EC-200/EC-210 is 35° C.
- Leave sufficient front and rear space to ensure that airflow through the unit is not restricted.
- When installing equipment into a rack, distribute the units evenly to prevent hazardous conditions that may be created by uneven weight distribution.
- Connect the unit only to a properly rated supply circuit.
- Reliable grounding (earthing) of rack-mounted equipment should be maintained.
- Rack mount the unit from the front rack ears using four rack screws (not supplied). Threads may be metric or otherwise, depending upon the rack type.

Rack-mount procedure is different depending the Event master device type (E2 or S3).

CAUTION: At a minimum, an E2 chassis weighs 31 kg (68 lbs) and a S3 chassis weighs 24 kg (53 lbs). To avoid injury, it is recommended that two people rack mount these chassis.

How to install E2 in a rack

Use the following steps to rack mount the E2:

1. The E2 is shipped with side rails included in the shipping case and not installed onto the chassis. These side rails, when they are properly installed and adjusted, assist with the distribution of chassis (and cable) weight within your rack. Use the following steps to properly adjust the side rails:
   1. Measure and install the two supplied mounting brackets on your rear rack rails.

Image 3-12

2. Measure the distance between the front and rear rack rails. Remove the four mounting screws that secure each side rail to the E2, and then adjust the spacing of each side rail as necessary.

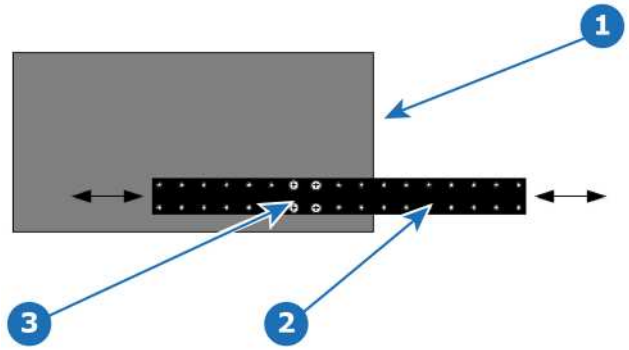

Image 3-13

1 Chassis rear
2 Side rail
3 Mounting screws

3. Re-install the mounting screws. When properly adjusted, the end of each side rail will protrude through the slot in the rear mounting bracket, once the chassis is rack mounted.

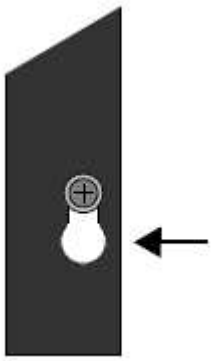

Image 3-14

To take advantage of this feature, ensure that there is at least 1/2” of clearance above the chassis.

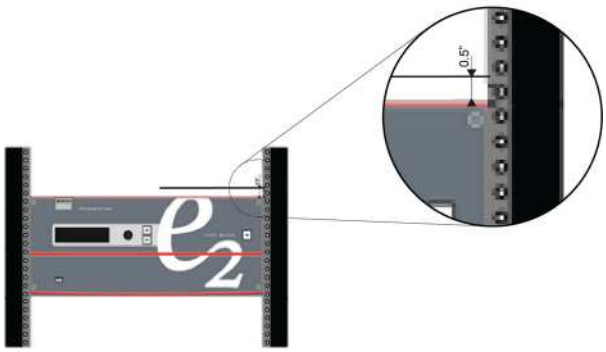

Image 3-15

2. For the E2’s two keyhole slots, measure and install two rack screws in your equipment rack’s front rails. Allow each screw to protrude approximately 3/4” from the surface of the rails.
3. Lift the chassis, and while supporting it, slide the side rails through the slots in the rear mounting brackets.
4. While continuing to support the chassis, slide the screws (in the front rails) through the two keyholes, and let the chassis settle up into the keyhole slots.

5. Tighten the two lower screws, then install and tighten the two uppers screws in the rack rail.

How to install S3 or EX in a rack

Use the following steps to rack mount the S3 or the EX:

1. S3 and EX units are shipped with side rails included in the shipping case and not installed onto the chassis. These side rails, when they are properly installed and adjusted, assist with the distribution of chassis (and cable) weight within your rack. Use the following steps to properly adjust the side rails:
   1. Measure and install the two supplied mounting brackets on your rear rack rails.

Image 3-16

   2. Measure the distance between the front and rear rack rails. Remove the mounting screws that secure each side rail to the chassis, and then adjust the spacing of each side rail as necessary. The S3 uses four mounting screws on each side rail; the EX uses two mounting screws on each side rail.

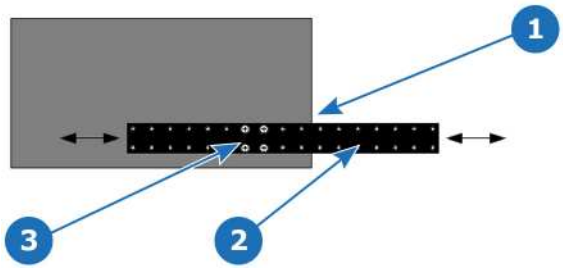

Image 3-17: S3–4K series side rail and mounting screws

1 Chassis rear
2 Side rail
3 Mounting screws

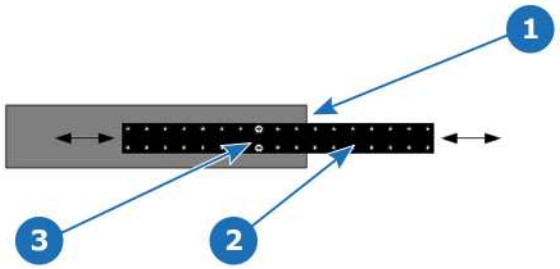

Image 3-18: EX expansion box side rail and mounting screws

1 Chassis rear
2 Side rail
3 Mounting screws

   3. Re-install the mounting screws. When properly adjusted, the end of each side rail will protrude through the slot in the rear mounting bracket, once the chassis is rack mounted.

2. Lift the chassis, and while supporting it, slide the side rails through the slots in the rear mounting brackets.
3. While continuing to support the chassis, install and tighten the two lower screws.
4. Finally, install and tighten the two uppers screws in the rack rail.

Hardware orientation

4

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4.3 SDI Input Card 60
4.4 Dual Link DVI Input Card 62
4.5 HDMI/DisplayPort Input Card 64
4.6 Quad Channel DisplayPort 1.2 Input Card 65
4.7 Quad HDMI 2.0 Input Card 67
4.8 Tri-Combo Input Card 68
4.9 Quad Channel DisplayPort 1.2 Output Card 70
4.10 HDMI Output Card 72
4.11 Quad HDMI 2.0 Output Card 73
4.12 SDI Output Card 74
4.13 Tri-Combo Output Card 75
4.14 Expansion Link Card 78
4.15 CXP Input/Output Card 79
4.16 VPU Card 81

About this chapter

This chapter explains the Event Master series processors hardware in detail.

4.1 Front panel

About front panel

See Image 4-1 for an illustration of the front panel of Event Master E2 (and E2 Jr.) and S3–4K (and S3–4K Jr.) series processors. See Image 4-2 for an illustration of the front panel of the Event Master EX processor.

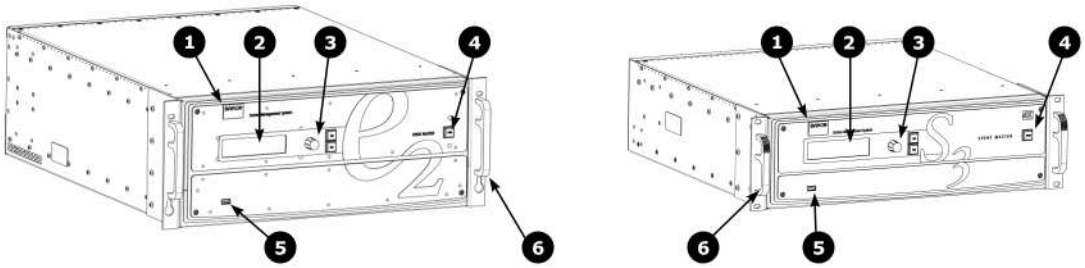

Image 4-1: E2 and S3 series front panel

1 Barco logo
2 Display screen
3 Menu navigation buttons
4 Power ON/OFF button
5 USB port
6 Chassis handles

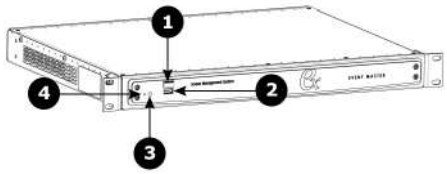

Image 4-2: EX front panel

1 Barco logo
2 USB 2.0 port
3 Power light
4 Recessed reset switch

Chassis Handles

Two Chassis Handles are provided for ease of installation and transportation.

When transporting the chassis by its handles, do not set it down with the rear connectors towards the ground. If you do, you may damage the rear connectors.

Display screen

The 4-line x 24-character screen shows all Event Master processors menus, sub-menus, and messages. The display is dimmable.

At system startup, or when no menu buttons are selected, the screen displays the **Status** Menu. The following illustration shows a sample **Status** Menu. For information about the contents of this menu, refer to the chapter titled “Front Panel Menu orientation”, page 83.

Image 4-3: e.g. E2 display screen.

Menu navigation controls

The navigation in the menus is assumed by three controls:

- Turn the ADJUST knob to scroll through the menu items on the screen.
  - Turn the knob counter-clockwise to scroll down.
  - Turn the knob clockwise to scroll up.

  A navigation cursor (>) to the left of a menu item indicates the position of the scroll bar, as shown in the following illustration.

Image 4-4

- Press the SEL button to:
  - Enter the **Setup** Menu tree from the **Status** Menu
  - Select the menu item indicated by the navigation cursor
  - Change or accept a parameter
  - Answer **Yes** to menu queries

- Press the **ESC** button to exit a menu without making changes, to cancel an operation, to answer **No** to menu queries, or to return to the **Status** Menu. Each press takes you back up the menu tree one level.

Power ON/OFF button

This button switches the unit on and off.

USB port

The USB port is provided to support uploading and downloading system configurations and upgrading Event Master series processors firmware.

4.2 Rear panel

About rear panel

See Image 4-5 for an illustration of the rear panels of the Event Master E2 and S3–4K series processors. See Image 4-6 for an illustration of the rear panels of the Event Master E2 Jr. and S3–4K Jr. series processors. See Image 4-7 for an illustration of the rear panel of the Event Master EX processor.

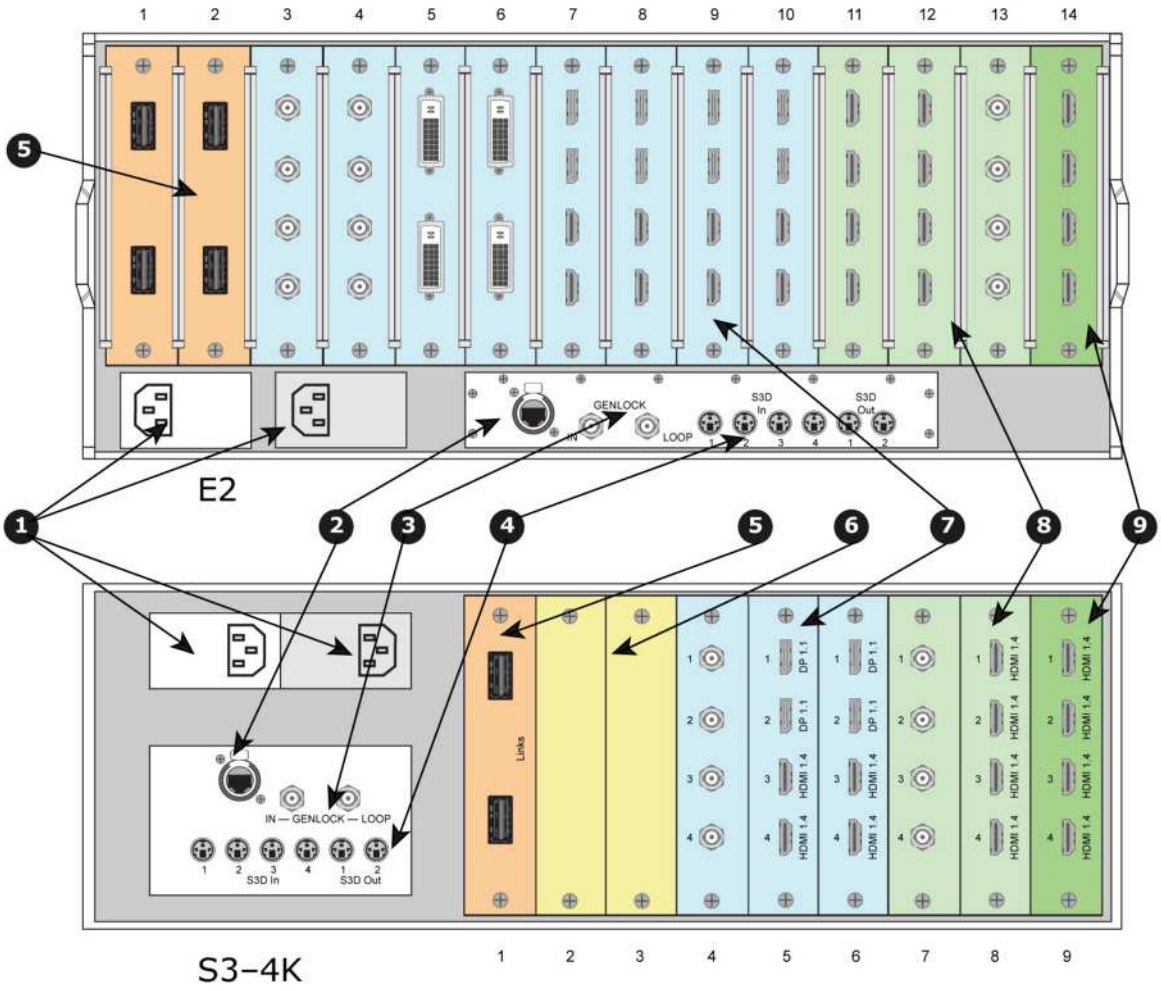

Image 4-5: E2 and S3–4K series rear panels

1 AC connectors
2 RJ-45 connector for 10/100/1000 BaseT Ethernet communications
3 Genlock Input BNC with passive Loop-through
4 S3D In and S3D Out
5 Expansion Link cards
6 VPU cards
7 Input cards (HDMI/DP, SDI, DVI)
8 Outputs cards (DVI, SDI)
9 Multiviewer card (HDMI)

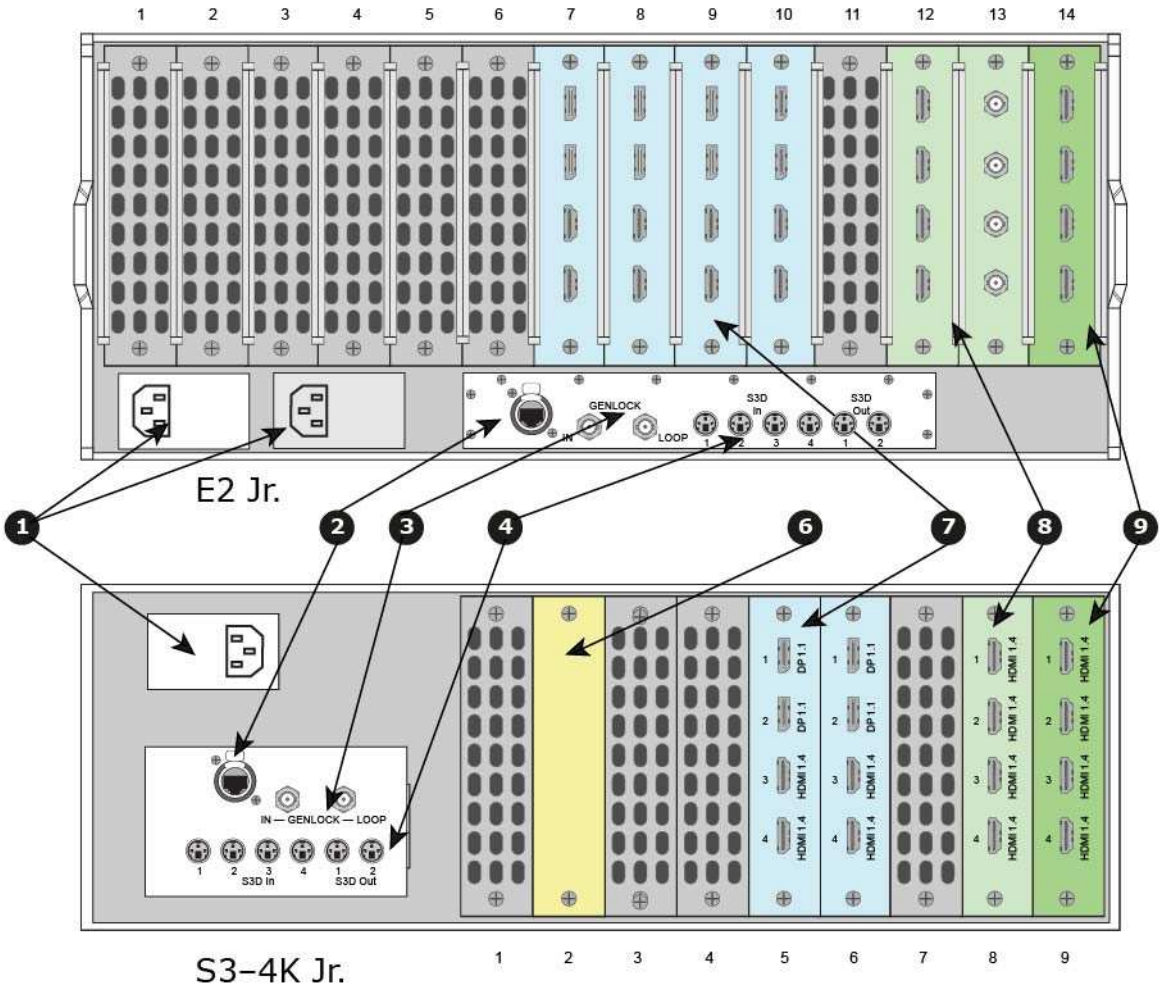

Image 4-6: E2 Jr. and S3–4K Jr. series rear panels

1 AC connectors
2 RJ-45 connector for 10/100/1000 BaseT Ethernet communications
3 Genlock Input BNC with passive Loop-through
4 S3D In and S3D Out
– –
6 VPU card
7 Input cards (HDMI/DP, SDI, DVI)
8 Outputs cards (DVI, SDI)
9 Multiviewer card (HDMI)

The S3–4K Jr. comes with a single power supply; a redundant power supply is optional.

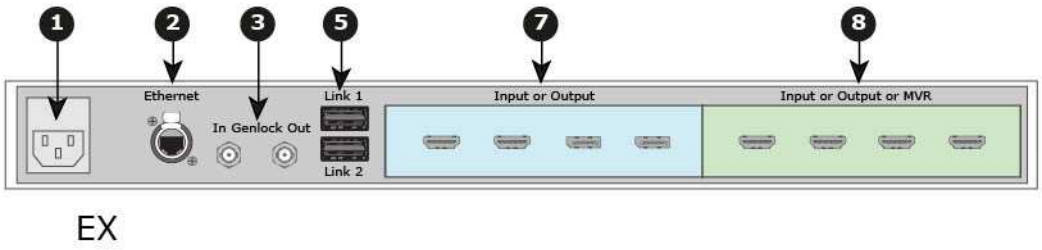

Image 4-7: EX rear panel

1 AC connector
2 RJ-45 connector for 10/100/1000 BaseT Ethernet communications
3 Genlock BNC Input and Output
– –
5 Expansion Links
– –
7 Input cards (HDMI/DP, SDI, DVI)
8 Outputs cards (DVI, SDI)
8 Multiviewer card (HDMI)

The EX image in Image 4-7 is an example only. The EX expansion box does not ship with cards; cards must be purchased separately.

	Description	E2	E2 Jr.	S3–4K	S3–4K Jr.	EX
1	AC connectors	2	2	2	1	1
2	RJ-45 connector for 10/100 BaseT Ethernet communications	1	1	1	1	1
3	Genlock Input BNC with passive Loop-through	2	2	2	2	NA[1]
4	S3D In and S3D Out	4 In, 2 Out	4 In, 2 Out	4 In, 2 Out	4 In, 2 Out	NA
5	Expansion Link cards	2	NA[2]	1	NA[2]	NA[3]
6	VPU cards	8[4]	4[4]	2	1	NA
7	Input cards	8	4	3	2	≤ 2[5]
8	Outputs cards	4	3	3	2	≤ 2[5]
9	Multiviewer card	1	1	1	1	NA

Table 4-1: Comparison of Event Master rear-panel connections

[1] The EX expansion box internally generates genlock output.
[2] E2 Jr. and S3–4K Jr. do not have expansion Link cards.
[3] The EX has two (2) Expansion Links integrated in the chassis.
[4] VPU cards in the E2 and E2 Jr. are internally mounted.
[5] Each EX expansion box has two general purpose card slots, each of which may support any E2 input or output card.

AC connectors

Event Master E2, E2 Jr., and S3–4K series processors are equipped with two redundant power supplies. During normal operation the load is shared equally by both supplies. If one supply fails, the second carries the whole load. Two AC Connector are provided to connect Event Master series processors to your facility's AC power source through the supplied power cords. A second power supply is optional on the S3–4K Jr.

Input Power Specification: 100-240 VAC, 47-63 Hz

On each power supply there are 3 LED lights that provide status information as follows:

- DC Output Power LED: when Green, the supply is outputting valid DC power.
- Status LED: when amber indicates that an error has occurred.
- AC Input Power LED: when green it indicates that the supply is connected to a valid AC power.

Therefore, during normal operating conditions, the input AC and Output DC LEDs will turn green.

Note that the power supplies are installed upside down in the E2 model, so the silkscreen markings will also appear upside down. Power supplies in the S3 model are installed in the correct orientation for reading silkscreen markings.

Ethernet port

One RJ-45 connector is provided for 10/100/1000 BaseT Ethernet communications with the Event Master series processor. The port is used for running the Web Interface and for connection to an external device.

The Ethernet connector is compatible with:

- Standard RJ-45 Ethernet cables
- Neutrik EtherCon® series cables

For pinout details, refer to the section dedicated to the pinout in Appendix A, “Standard connector pinouts”, page 549.

Genlock Input BNC (with passive Loop-through)

The Genlock input supports analog NTSC and PAL Blackburst, as well as HD tri-level sync signals, per SMPTE 274M and SMPTE 296M. The passive loop-through connector passes the Genlock signal to another device downstream of the Event Master series processor. The Loop-through output will continue to function even when the device is turned off. When the device is genlocked and the lock source is lost, the output of the unit will automatically switch to “free-run” state without any discernible “glitching” on the output display device. As the loop-thru is passive a 75Ohm termination is necessary for stable operation.

For Genlock connections details, refer to the Specifications Appendix.

Expansion Link cards

When event requirements exceed the capacity of a single unit in terms of input, output, or number of layers, multiple Event Master processors can be linked together through the Expansion Link cards. The cards are connected with Barco-supplied, high-bandwidth, bi-directional Expansion Link cables. These cables are also commercially available.

Depending on the Event Master processor model, two, one, or no slots are reserved at left side of the rear panel for Expansion Link cards.

E2	E2 Jr.	S3–4K	S3–4K Jr.	EX
1, 2	NA[1]	1	NA[1]	NA[2]

[1] E2 Jr. and S3–4K Jr. do not have Link cards, but these models can be upgraded with Link cards, which would go into the same slots as the Link cards on the E2 and the S3–4K.
[2] The EX has two (2) Expansion Links integrated in the chassis.

For more details on capabilities of expansion, refer to the section “Expansion Link Card”, page 78.

VPU cards

VPU (Video Processing Unit) cards are at the heart of the Event Master Series of products. All scaling, layer effects and image compositing happens within these cards. Each card supports the scaling requirements for the product line with the award-winning Athena scaling technology at resolutions up to 4K. Due to their reprogrammability any future video processing capabilities will be implemented in these cards. Current capabilities include:

- Support for 2K, Dual-Link, and 4K Scaling
- Layer compositing over unscaled Backgrounds
- Layer effects, including Borders and Shadows
- Keying effects
- Key frame effects

On an E2 and E2 Jr. units, the VPU cards are not accessible through the rear panel. On S3–4K and S3–4K Jr. units, slots 2 and 3 are reserved for the VPU cards. The EX expansion box has no VPU cards.

For more details on VPU card, refer to the section “VPU Card”, page 81.

Input cards

Each input card supports resolutions of up to 4K. The ability of the Event Master processors to support up to 40 inputs (E2 Gen 2) eliminates, in most cases, the need to have upstream routers or scalers.

On an E2 (or an E2 Jr.) processor, slots 3 through 10 are reserved for input cards. On an S3–4K (or an S3–4K Jr.) processor, slots 4 through 6 are reserved for input cards. Both slots of an EX expansion box may hold input cards, but if the EX has both an input and an output card, the input card should go in slot 1.

The following sections describe each type of card in detail:

- “SDI Input Card”, page 60
- “Dual Link DVI Input Card”, page 62
- “HDMI/DisplayPort Input Card”, page 64
- “Quad Channel DisplayPort 1.2 Input Card”, page 65
- “Quad HDMI 2.0 Input Card”, page 67
- “Tri-Combo Input Card”, page 68

Outputs cards

Event Master series processors support HDMI and SDI output cards. Each output card supports resolutions of up to 4K.

On an E2 (or an E2 Jr.) processor, slots 11 through 13 are reserved for output cards. On an S3–4K (or an S3–4K Jr.) processor, slots 7 and 8 are reserved for output cards. Both slots of an EX expansion box may hold output cards, but if the EX has both an input and an output card, the output card should go in slot 2.

The following sections describe each type of card in detail:

- “Quad Channel DisplayPort 1.2 Output Card”, page 70
- “HDMI Output Card”, page 72
- “Quad HDMI 2.0 Output Card”, page 73
- “SDI Output Card”, page 74
- “Tri-Combo Output Card”, page 75

Multiviewer (MVR) card

The Multiviewer card is physically identical to the HDMI output card, but when it’s plugged in the last slot it operates as a Multiviewer (MVR), supporting either two (2) HD outputs on the HDMI 1.4 output card, or four (4) HD outputs on the HDMI 2.0 output card. The Multiviewer card is a dedicated, fully integrated monitoring solution that allows multiple displays to be shown together on a single display. Up to 63 MVR windows (sources, backgrounds, or destinations) can be displayed across two (2) outputs: 63 windows for Inputs and 63 windows for Outputs.

From the Multiviewer menu in the EM GUI the user can create customized layouts, texts, backgrounds, borders, or colors for the monitors. The MVR includes several alarms such as Frozen and Loss-of-Signal indicators. For more details on Multiviewer features, refer to the section “Multiviewer (MVR) Menu”, page 245.

4.3 SDI Input Card

General

This card provides 4 BNC connectors supporting Single Link SD, HD, and 3G-SDI inputs, as well as Ultra HD (UHD) formats as Quad Link HD and 3G-SDI input.

The figure below illustrates the SDI Input card's rear panel connectors:

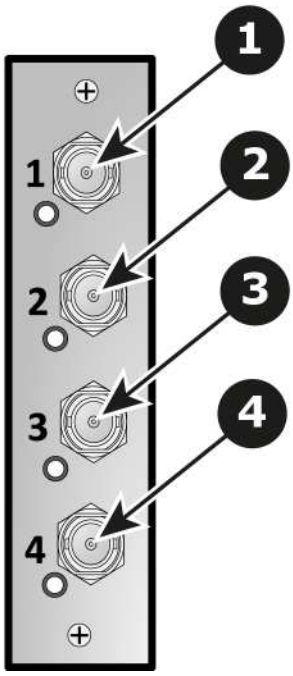

Image 4-8: SDI Input Card Rear Panel

1	BNC connector — SDI 1 with an LED that turns on green when a valid sync has been detected
2	BNC connector — SDI 2 with an LED that turns on green when a valid sync has been detected
3	BNC connector — SDI 3 with an LED that turns on green when a valid sync has been detected
4	BNC connector — SDI 4 with an LED that turns on green when a valid sync has been detected

Features

- Provides up to 4 independent signals
- Automatic SD, HD, and 3G SDI Switching
- Single Link SD/ HD/ 3G SDI Input
- Quad Link UHD input as 4x HD/ 3G-SDI Input
- Each input channel includes an LED that turns green when a valid sync is detected.

Specifications

- Supported format:

Signal type	Min. BNC connector number	Max channels per card	Standard	Examples
SD	1	4	SMPTE 259M-C	480i, 576i (NTSC/PAL)
HD	1	4	SMPTE 292M	1920x1080 @ 59.94i/50i 1920x1080psf @ 23.98/24/25/29.97/30 720x480 @ 60p/50p
3G	1	4	SMPTE 424M Barcolink	1920x1080 @ 60p/50p 1920x1200 @ 60p/50p
4K / UHD	4	1	SMPTE 292M SMPTE 2048-2	**Image mapping: Quadrants** 3840x2160 @ 23.98/24/25/29.97/30 as 4x HD-SDI 4096x2160 @ 23.98/24/25/29.97/30 as 4x HD-SDI

4K / UHD	4	1	SMPTE 424M SMPTE 2048-2	**Image mapping: Quadrants** 3840x2160 @ 50/59.94/60 as 4x 3G-SDI 4096x2160 @ 50/59.94/60 60 as 4x 3G-SDI Level A and B supported
4K / UHD	4	1	SMPTE ST 425-5	**Image mapping: 2 Sample Interleave Subdivision (2SI)** 3840x2160 @ 23.98/24/25/29.97/30 as 4x HD-SDI 4096x2160 @ 23.98/24/25/29.97/30 as 4x HD-SDI 3840x2160 @ 50/59.94/60 as 4x 3G-SDI 4096x2160 @ 50/59.94/60 60 as 4x 3G-SDI Level A and B supported

SDI
Serial Digital Interface (SDI) is a serial link standardized by the Society of Motion Picture and Television Engineers (SMPTE). SDI transmits uncompressed digital video over 75-ohm coaxial cable within studios, and is seen on most professional video infrastructure equipment.

4.4 Dual Link DVI Input Card

General

The dual link DVI input card includes two DVI-I dual-link connectors that can support a single or dual-link DVI video signal.

Although the DVI-I connectors includes pins that support analog signals, the DVI card doesn't support analog signals. If you need to connect an analog signal to the unit, you need to employ an external A/D converter.

The figure below illustrates the dual link DVI input card's rear panel connectors:

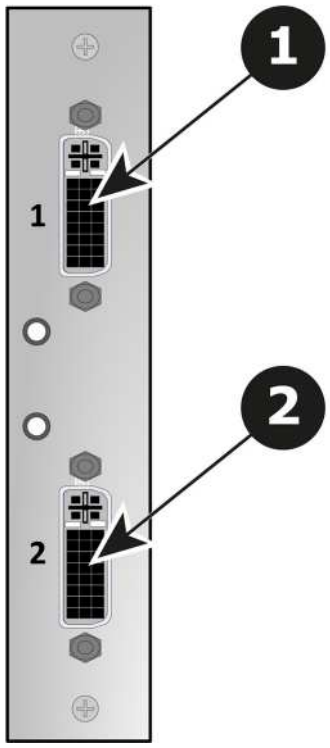

Image 4-9: Dual Link DVI Input Card Rear Panel

1	DVI-I dual-link connector — DVI 1 with an LED that turns on green when a valid sync has been detected
2	DVI-I dual-link connector — DVI 2 with an LED that turns on green when a valid sync has been detected

Features

- Process up to 2 signals independently
- 2x DVI-I dual-link connector
- Support for single or dual-link DVI video signal
- Each input channel includes an LED that turns green when a valid sync is detected.

Specifications

- DVI 1.0 Specification
- Maximum H Active: 4,096, Maximum V Active: 3,072
- Supported format:
  - All single link DVI formats up to 165 MHz
  - All dual link DVI formats up to 330 MHz
  - 4K/UHD Supported:
    - 3,840x2,160/ 23.98/24/25/29.97/30 input via 1x DVIDL, 2x DVISL (L and R half) or 4x DVISL (quadrants)
    - 3,840x2,160/ 50/59.94/60 input via 2x DVIDL (L and R half) or 4x DVISL (quadrants)
    - 4,096x2,160/ 23.98/24/25/29.97/30 input via 2x DVISL (L and R half) or 4x DVISL (quadrants)
    - 4,096x2,160/ 50/59.94/60 input via 2x DVIDL (L and R half) or 4x DVISL (quadrants)
    - 4,096x2,400/ 23.98/24/25/29.97/30 input via 2x DVISL (L and R half) or 4x DVISL (quadrants)
    - 4,096x2,400/ 50/59.94/60 input via 2x DVIDL (L & R half) or 4x DVISL (quadrants)
  - EDID version 1.3 compatible
  - HDCP version 1.4 compatible

DVI
Digital Visual Interface is a display interface developed in response to the proliferation of digital flat panel displays.

The digital video connectivity standard that was developed by DDWG (Digital Display Work Group). This connection standard offers two different connectors: one with 24 pins that handles digital video signals only, and one with 29 pins that handles both digital and analog video. This standard uses TMDS (Transition Minimized Differential Signal) from Silicon Image and DDC (Display Data Channel) from VESA (Video Electronics Standards Association).

DVI can be single or dual link.

4.5 HDMI/DisplayPort Input Card

General

The HDMI/DisplayPort input card has two 19-pin HDMI connectors which can support an HDMI video signal, and two 20-pin DisplayPort connectors supporting DisplayPort video signal.

The figure below illustrates the HDMI/DisplayPort input card's rear panel connectors:

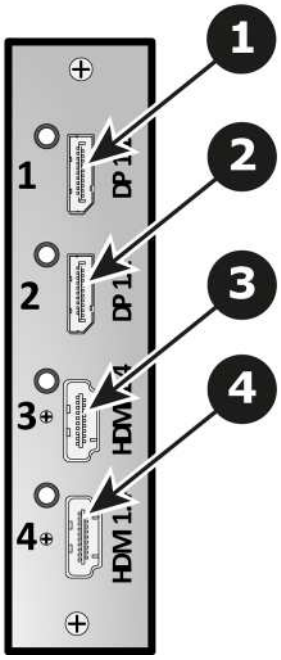

Image 4-10: HDMI/DisplayPort Input Card Rear Panel

1	Displayport connector — Displayport 1 with an LED that turns on green when a valid sync has been detected
2	Displayport connector — Displayport 2 with an LED that turns on green when a valid sync has been detected
3	HDMI connector — HDMI 1 with an LED that turns on green when a valid sync has been detected
4	HDMI connector — HDMI 2 with an LED that turns on green when a valid sync has been detected

Features

- Process up to 4 signals independently
- 2x 19–pin HDMI connector (Type A)
- 2x 20–pin Displayport connector
- Each input channel includes an LED that turns green when a valid sync is detected.

HDMI specifications

- HDMI per 1.4a specifications
- Supported format:
  - formats up to 2,560x1,600@60 and 3,840x1,200@60 (30 bits)
  - 4K/UHD Supported:
    - 3,840x2,160/ 23.98/24/25/29.97/30 input via 1x HDMI, 2x HDMI (L and R half) or 4x HDMI (quadrants)
    - 3,840x2,160/ 50/59.94/60 input via 2x HDMI (L and R half) or 4x HDMI (quadrants)
    - 4,096x2,160/ 23.98/24/25/29.97/30 input via 1x HDMI, 2x HDMI (L and R half) or 4x HDMI (quadrants)
    - 4,096x2,160/ 50/59.94/60 input via 2x HDMI (L and R half) or 4x HDMI (quadrants)
- EDID version 1.3 compatible
- HDCP version 1.4 compatible

DisplayPort specifications

- DisplayPort per 1.1a specifications
- Supported format:
  - formats up to 2,560x1,600@60 and 3,840x1,200@60 (30 bits)
  - 4K/UHD Supported:
    - 3,840x2,160/ 23.98/24/25/29.97/30 via 1x DP, 2x DP (L and R half) or 4x DP (quadrants)
    - 3,840x2,160/ 50/59.94/60 via 2x DP (L and R half) or 4x DP (quadrants)
    - 4,096x2,160/ 23.98/24/25/29.97/30 via 2x DP (L and R half) or 4x DP (quadrants)
    - 4,096x2,160/ 50/59.94/60 via 2x DP (L and R half) or 4x DP (quadrants)
- EDID version 1.3 compatible
- HDCP version 1.3 compatible

HDMI
HDMI (High-Definition Multimedia Interface) is a compact audio/video interface for transferring uncompressed video data and compressed/uncompressed digital audio data from a HDMI-compliant device ("the source device") to a compatible computer monitor, video projector, digital television, or digital audio device. HDMI is a digital replacement for existing analog video standards.

DisplayPort
Digital display interface developed by the Video Electronics Standards Association (VESA). This royalty-free interface is primarily used to connect a video source to a display device such as a computer monitor, though it can also be used to transmit audio, USB, and other forms of data. VESA designed it to replace VGA, DVI, and FPD-Link. Backward compatibility to VGA and DVI by using active adapter dongles enables users to use DisplayPort fitted video sources without replacing existing display devices.

4.6 Quad Channel DisplayPort 1.2 Input Card

General

The quad channel DisplayPort 1.2 input card has four 20-pin DisplayPort connectors that can accept a DisplayPort signal.

Upgrade the E2/S3/EX software version to 6.2 or higher before using the quad-channel DisplayPort 1.2 input card.

The figure below illustrates the DisplayPort 1.2 input card’s rear panel connectors:

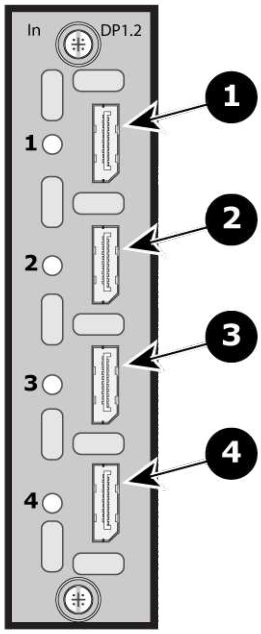

Image 4-11: Quad Channel DisplayPort 1.2 Input Card Rear Panel

1	DP connector — DP 1 with an LED
2	DP connector — DP 2 with an LED
3	DP connector — DP 3 with an LED
4	DP connector — DP 4 with an LED

Features

- Four channels of DisplayPort video input, each on a full-size DisplayPort external connector
- Allows up to four (4) independent signals
- Each input channel includes an LED that turns green when a valid sync is detected.

Specifications

- DisplayPort per 1.2 specification
- Pixel clock up to 620 MHz
  - Max pixel clock at 24 bits/pixel = 620 Mpix/sec
  - Max pixel clock at 30 bits/pixel = 576 Mpix/sec
  - Max pixel clock at 36 bits/pixel = 480 Mpix/sec
- Supported formats:
  - formats up to 4,096x2,160@60 (30 bits)
  - 4K/UHD Supported:
    - 3,840x2,160/ 23.98/24/25/29.97/30 via 1x DP, 2x DP (L and R half) or 4x DP (quadrants)
    - 3,840x2,160/ 50/59.94/60 via 1x DP, 2x DP (L and R half) or 4x DP (quadrants, or columns)
    - 4,096x2,160/ 23.98/24/25/29.97/30 via 1x DP, 2x DP (L and R half) or 4x DP (quadrants)
    - 4,096x2,160/ 50/59.94/60 via 1x DP, 2x DP (L and R half) or 4x DP (quadrants or columns)
- Multi-Stream Transport (MST)—**not** supported
- EDID version 1.4 compatible
- HDCP version 1.3 supported on all input connectors

DisplayPort
Digital display interface developed by the Video Electronics Standards Association (VESA). This royalty-free interface is primarily used to connect a video source to a display device such as a computer monitor, though it can also be used to transmit audio, USB, and other forms of data. VESA designed it to replace VGA, DVI, and FPD-Link. Backward compatibility to VGA and DVI by using active adapter dongles enables users to use DisplayPort fitted video sources without replacing existing display devices.

4.7 Quad HDMI 2.0 Input Card

General

The Quad HDMI 2.0 input card has four 19-pin HDMI connectors, which can support a HDMI video signal.

The figure below illustrates the Quad HDMI 2.0 input card's rear panel connectors:

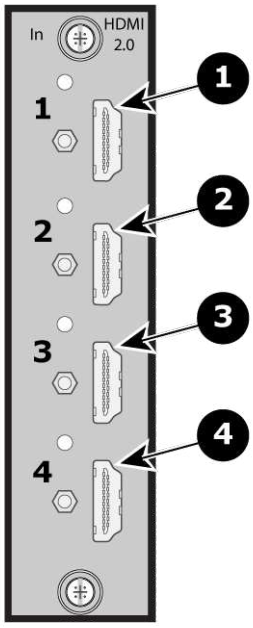

Image 4-12: Quad HDMI 2.0 Input Card Rear Panel

1	HDMI 2.0 connector —HDMI 1 with an LED and standoff screw
2	HDMI 2.0 connector —HDMI 2 with an LED and standoff screw
3	HDMI 2.0 connector —HDMI 3 with an LED and standoff screw
4	HDMI 2.0 connector —HDMI 4 with an LED and standoff screw

Features

- Accepts up to 4 signals independently
- 4x 19–pin HDMI connector (Type A)
- Each input channel includes an LED that turns green when a valid sync is detected.

Specifications

- HDMI per 2.0 specifications
- Supported format:
  - up to UHD@60p 4:2:2 12 bit
  - 4 high-speed (Dual Link Type) inputs or 2 UHD@60p inputs per card
  - 4K/UHD Supported:
    - 3,840x2,160/ 23.98/24/25/29.97/30 input via 1x HDMI, 2x HDMI (L and R half) or 4x HDMI (quadrants)
    - 3,840x2,160/ 50/59.94/60 input via 2x HDMI (L and R half) or 4x HDMI (quadrants)
    - 4,096x2,160/ 23.98/24/25/29.97/30 input via 1x HDMI, 2x HDMI (L and R half) or 4x HDMI (quadrants)
    - 4,096x2,160/ 50/59.94/60 input via 2x HDMI (L and R half) or 4x HDMI (quadrants)
- Custom EDID
  - User selectable bit depth and color space

- HDCP 1.x or HDCP 2.2 when an HDCP 2.2 compliant signal chain is present
  - User-selectable HDCP modes
    - Auto acquire and configure
    - Custom settings for color adjustments and gamma

HDMI
HDMI (High-Definition Multimedia Interface) is a compact audio/video interface for transferring uncompressed video data and compressed/uncompressed digital audio data from a HDMI-compliant device ("the source device") to a compatible computer monitor, video projector, digital television, or digital audio device. HDMI is a digital replacement for existing analog video standards.

4.8 Tri-Combo Input Card

General

This card provides one 20-pin DisplayPort connector, supporting DisplayPort video signal; one 19-pin HDMI connector, supporting an HDMI video signal; and 4 BNC connectors, supporting Single Link, Dual Link, and Quad Link signals, in SD, HD, 3G, 6G, and 12G SDI formats.

The figure below illustrates the tri-combo input card's rear panel connectors:

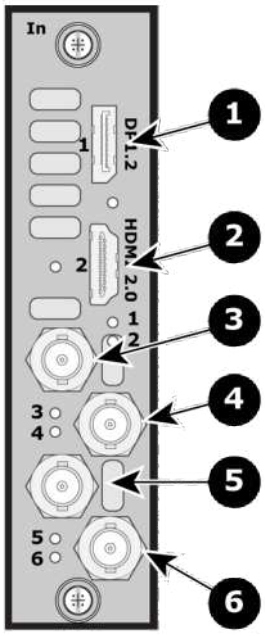

Image 4-13: Tri-Combo Input Card Rear Panel

1	DP connector — with an LED that turns on green when a valid sync has been detected
2	HDMI connector — with an LED that turns on green when a valid sync has been detected
3	BNC connector — SDI 1 with an LED that turns on green when a valid sync has been detected
4	BNC connector — SDI 2 with an LED that turns on green when a valid sync has been detected
5	BNC connector — SDI 3 with an LED that turns on green when a valid sync has been detected
6	BNC connector — SDI 4 with an LED that turns on green when a valid sync has been detected

Features

- Provides up to six (6) independent signals
- One channel of DisplayPort video on a full-size DisplayPort connector.
- One channel of HDMI video on a Type A connector.

- Process up to four independent SDI signals with support for SD, HD, 3G, 6G and 12G in Single Link, Dual Link (1.5G) or Quad Link (3G)
- Each input channel includes an LED that turns green when a valid sync is detected.

Specifications

DisplayPort

- DisplayPort per 1.2 specification
- Pixel clock up to 620 MHz
  - Max pixel clock at 24 bits/pixel = 620 Mpix/sec
  - Max pixel clock at 30 bits/pixel = 576 Mpix/sec
  - Max pixel clock at 36 bits/pixel = 480 Mpix/sec
- Supported formats
  - formats up to 4096x2160@60 (30 bits)
  - 4K/UHD Supported:
    - 3840x2,400/ 50/59.94/60 via 1x DP
    - 4096x2,160/ 50/59.94/60 via 1x DP
    - 3840x2,160/ 50/59.94/60 via 1x DP
- Supply up to 500 mA @ 3.3V on pin 20
  - Allows the DP connector to power an external device
  - Overcurrent protection provided by means of a re-settable fuse
- Multi-Stream Transport (MST)—not supported
- EDID version 1.3 compatible
- HDCP version 1.3 compatible

HDMI

- HDMI per 2.0 specification
- Pixel clock up to 600 MHz
  - Max pixel clock at 24 bits/pixel = 600 Mpix/sec
  - Max pixel clock at 30 bits/pixel = 480 Mpix/sec
  - Max pixel clock at 36 bits/pixel = 400 Mpix/sec
- Supported formats
  - formats up to 2560x1600@60 and 3840x1200@60 (30 bits)
  - 4K/UHD Supported:
    - 3840x2400/ 50/59.94/60 input via 1x HDMI
    - 4096x2160/ 50/59.94/60 input via 1x HDMI
    - 3840x2160/ 50/59.94/60 input via 1x HDMI
- EDID version 1.3 compatible
- HDCP version 1.4 and version 2.2 compatible

SDI

- Supported formats:

Signal type	Min. BNC connector number	Max channels per card	Standard	Examples
SD	1	4	SMPTE 259M-C	480i, 576i (NTSC/PAL)
HD	1	4	SMPTE 292M	1920x1080 @ 59.94i/50i 1920x1080psf @ 23.98/24/25/29.97/30 720x480 @ 60p/50p
3G	1	4	SMPTE 424M Barcolink	1920x1080 @ 60p/50p 1920x1200 @ 60p/50p
6G	1	1	SMPTE 2081-10	3840x2160 @ 23.98/24/25/29.97/30 4096x2160 @ 23.98/24/25/29.97/30
12G	1	1	SMPTE 2082-10	3840x2160 @ 50/59.94/60 4096x2160 @ 50/59.94/60

4K / UHD	4	1	SMPTE 292M SMPTE 2048-2	**Image mapping: Quadrants** 3840x2160 @ 23.98/24/25/29.97/30 as 4x HD-SDI 4096x2160 @ 23.98/24/25/29.97/30 as 4x HD-SDI
4K / UHD	4	1	SMPTE 424M SMPTE 2048-2	**Image mapping: Quadrants** 3840x2160 @ 50/59.94/60 as 4x 3G-SDI 4096x2160 @ 50/59.94/60 60 as 4x 3G-SDI Level A and B supported
4K / UHD	4	1	SMPTE ST 425-5	**Image mapping: 2 Sample Interleave Subdivision (2SI)** 3840x2160 @ 23.98/24/25/29.97/30 as 4x HD-SDI 4096x2160 @ 23.98/24/25/29.97/30 as 4x HD-SDI 3840x2160 @ 50/59.94/60 as 4x 3G-SDI 4096x2160 @ 50/59.94/60 60 as 4x 3G-SDI Level A and B supported

DisplayPort
Digital display interface developed by the Video Electronics Standards Association (VESA). This royalty-free interface is primarily used to connect a video source to a display device such as a computer monitor, though it can also be used to transmit audio, USB, and other forms of data. VESA designed it to replace VGA, DVI, and FPD-Link. Backward compatibility to VGA and DVI by using active adapter dongles enables users to use DisplayPort fitted video sources without replacing existing display devices.

HDMI
HDMI (High-Definition Multimedia Interface) is a compact audio/video interface for transferring uncompressed video data and compressed/uncompressed digital audio data from a HDMI-compliant device ("the source device") to a compatible computer monitor, video projector, digital television, or digital audio device. HDMI is a digital replacement for existing analog video standards.

SDI
Serial Digital Interface (SDI) is a serial link standardized by the Society of Motion Picture and Television Engineers (SMPTE). SDI transmits uncompressed digital video over 75-ohm coaxial cable within studios, and is seen on most professional video infrastructure equipment.

4.9 Quad Channel DisplayPort 1.2 Output Card

General

The quad channel DisplayPort 1.2 output card has four 20-pin DisplayPort connectors that can provide a DisplayPort signal.

The figure below illustrates the DisplayPort 1.2 output card’s rear panel connectors:

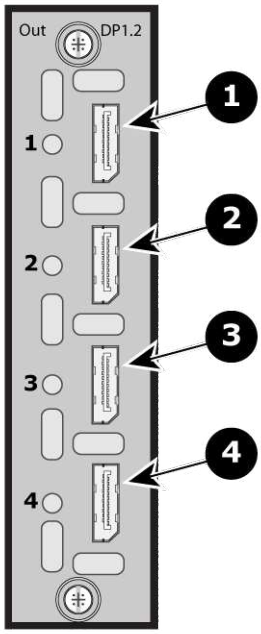

Image 4-14: Quad Channel DisplayPort 1.2 Output Card Rear Panel

1	DP connector — DP 1
2	DP connector — DP 2
3	DP connector — DP 3
4	DP connector — DP 4

Features

- Four channels of DisplayPort video output, each on a full-size DisplayPort external connector
- Provides up to four (4) independent signals

Specifications

- DisplayPort per 1.2 specification
- Pixel clock up to 620 MHz
  - Max pixel clock at 24 bits/pixel = 620 Mpix/sec
  - Max pixel clock at 30 bits/pixel = 576 Mpix/sec
  - Max pixel clock at 36 bits/pixel = 480 Mpix/sec
- Supported formats:
  - formats up to 4,096x2,160@60 (30 bits)
  - 4K/UHD Supported:
    - 3,840x2,160/ 23.98/24/25/29.97/30 via 1x DP, 2x DP (L and R half) or 4x DP (quadrants)
    - 3,840x2,160/ 50/59.94/60 via 1x DP, 2x DP (L and R half) or 4x DP (quadrants, or columns)
    - 4,096x2,160/ 23.98/24/25/29.97/30 via 1x DP, 2x DP (L and R half) or 4x DP (quadrants)
    - 4,096x2,160/ 50/59.94/60 via 1x DP, 2x DP (L and R half) or 4x DP (quadrants or columns)
- Supply up to 500 mA @ 3.3V on pin 20
  - Allows the DP connector to power an external device
- Multi-Stream Transport (MST)—**not** supported
- EDID version 1.4 compatible
- HDCP version 1.3 supported on connectors 1 and 2

DisplayPort
Digital display interface developed by the Video Electronics Standards Association (VESA). This royalty-free interface is primarily used to connect a video source to a display device such as a computer monitor, though it can also be used to transmit audio, USB, and other forms of data. VESA designed it to replace VGA, DVI, and FPD-Link. Backward compatibility to VGA and DVI by using active adapter dongles enables users to use DisplayPort fitted video sources without replacing existing display devices.

4.10 HDMI Output Card

General

The HDMI output card has four 19-pin HDMI connectors which can provide a HDMI video signal.

The figure below illustrates the HDMI output card's rear panel connectors:

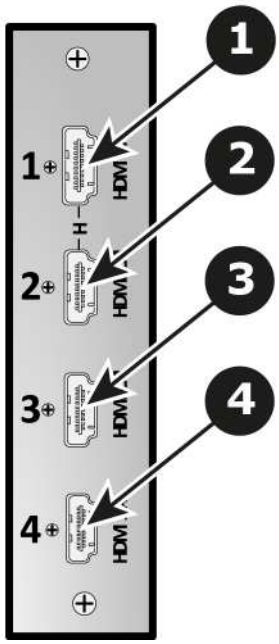

Image 4-15: HDMI Output Card Rear Panel

1	HDMI connector — HDMI 1
2	HDMI connector — HDMI 2
3	HDMI connector — HDMI 3
4	HDMI connector — HDMI 4

Features

- Provide up to 4 independent signals
- 4x 19–pin HDMI connector (Type A)
- The top two connectors support single and dual link signals up-to 300 MHz.

Specifications

- HDMI per 1.4a Specification
- Supported format:
  - formats up to 2,560x1,600@60 and 3,840x1,200@60 (30 bits)
  - 4K/UHD Supported:
    - 3,840x2,160/ 23.98/24/25/29.97/30 input via 1x HDMI, 2x HDMI (L and R half) or 4x HDMI (quadrants)
    - 3,840x2,160/ 50/59.94/60 input via 2x HDMI (L and R half) or 4x HDMI (quadrants)

  - 4,096x2,160/ 23.98/24/25/29.97/30 input via 1x HDMI, 2x HDMI (L and R half) or 4x HDMI (quadrants)
  - 4,096x2,160/ 50/59.94/60 input via 2x HDMI (L and R half) or 4x HDMI (quadrants)
- EDID version 1.3 compatible
- HDCP version 1.4 compatible

4.11 Quad HDMI 2.0 Output Card

General

The Quad HDMI 2.0 output card has four 19-pin HDMI connectors, which can support a HDMI video signal.

Upgrade the E2/S3/EX software version to 6.2 or higher before using the quad HDMI 2.0 output card.

The figure below illustrates the Quad HDMI 2.0 output card's rear panel connectors:

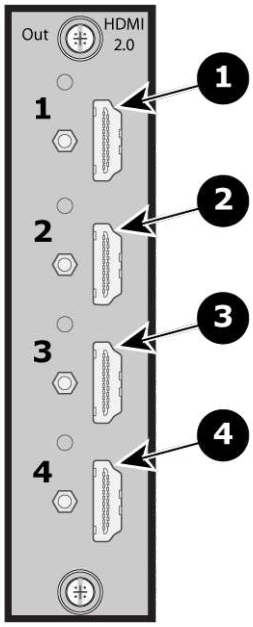

Image 4-16: Quad HDMI 2.0 Output Card Rear Panel

1	HDMI 2.0 connector —HDMI 1
2	HDMI 2.0 connector —HDMI 2
3	HDMI 2.0 connector —HDMI 3
4	HDMI 2.0 connector —HDMI 4

Features

- Process up to 4 signals independently
- 4x 19–pin HDMI connector (Type A)

Specifications

- HDMI per 2.0 specifications
- Supported format:
  - up to UHD@60p 4:2:2 12 bit
  - 4 high-speed (Dual Link Type) outputs or 2 UHD@60p outputs per card

  - 4K/UHD Supported:
    - 3840x2160/ 23.98/24/25/29.97/30 output via 1x HDMI, 2x HDMI (L and R half) or 4x HDMI (quadrants)
    - 3840x2160/ 50/59.94/60 output via 2x HDMI (L and R half) or 4x HDMI (quadrants)
    - 4096x2160/ 23.98/24/25/29.97/30 output via 1x HDMI, 2x HDMI (L and R half) or 4x HDMI (quadrants)
    - 4096x2160/ 50/59.94/60 output via 2x HDMI (L and R half) or 4x HDMI (quadrants)
- Custom Format
  - User selectable bit depth and color space
- HDCP 1.x or HDCP 2.2 when an HDCP 2.2 compliant signal chain is present
  - User-selectable HDCP modes
    - Auto acquire and configure
    - Custom settings for color adjustments and gamma

HDMI
HDMI (High-Definition Multimedia Interface) is a compact audio/video interface for transferring uncompressed video data and compressed/uncompressed digital audio data from a HDMI-compliant device ("the source device") to a compatible computer monitor, video projector, digital television, or digital audio device. HDMI is a digital replacement for existing analog video standards.

4.12 SDI Output Card

General

Process up to four independent SDI signals with support for SD, HD, and 3G in Single Link, Dual Link (1.5G) or Quad Link (3G).

The figure below illustrates the SDI Output Card's rear panel connectors:

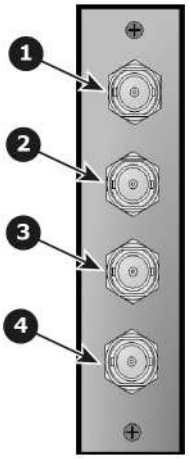

Image 4-17: SDI output Card Rear Panel

1	BNC connector — SDI 1
2	BNC connector — SDI 2
3	BNC connector — SDI 3
4	BNC connector — SDI 4

Features

- Provides up to 4 independent signals
- Automatic SD, HD, and 3G SDI Switching
- Single Link SD/ HD/ 3G SDI Output
- Quad Link UHD output as 4x HD/ 3G-SDI Output

Specifications

- Supported format:

Signal type	Min. BNC connector number	Max channels per card	Standard	Examples
SD	1	4	SMPTE 259M-C	480i, 576i (NTSC/PAL)
HD	1	4	SMPTE 292M	1920x1080 @ 59.94i/50i 1920x1080psf @ 23.98/24/25/29.97/30 720x480 @ 60p/50p
3G	1	4	SMPTE 424M Barcolink	1920x1080 @ 60p/50p 1920x1200 @ 60p/50p
4K / UHD	4	1	SMPTE 292M SMPTE 2048-2	**Image mapping: Quadrants** 3840x2160 @ 23.98/24/25/29.97/30 as 4x HD-SDI 4096x2160 @ 23.98/24/25/29.97/30 as 4x HD-SDI
4K / UHD	4	1	SMPTE 424M SMPTE 2048-2	**Image mapping: Quadrants** 3840x2160 @ 50/59.94/60 as 4x 3G-SDI 4096x2160 @ 50/59.94/60 60 as 4x 3G-SDI Level A and B supported
4K / UHD	4	1	SMPTE ST 425-5	**Image mapping: 2 Sample Interleave Subdivision (2SI)** 3840x2160 @ 23.98/24/25/29.97/30 as 4x HD-SDI 4096x2160 @ 23.98/24/25/29.97/30 as 4x HD-SDI 3840x2160 @ 50/59.94/60 as 4x 3G-SDI 4096x2160 @ 50/59.94/60 60 as 4x 3G-SDI Level A and B supported

SDI
Serial Digital Interface (SDI) is a serial link standardized by the Society of Motion Picture and Television Engineers (SMPTE). SDI transmits uncompressed digital video over 75-ohm coaxial cable within studios, and is seen on most professional video infrastructure equipment.

4.13 Tri-Combo Output Card

General

This card provides one 20-pin DisplayPort connector, supporting DisplayPort video signal; one 19-pin HDMI connector, supporting an HDMI video signal; and 4 BNC connectors, supporting Single Link, Dual Link, and Quad Link signals, in SD, HD, 3G, 6G, and 12G SDI formats.

The figure below illustrates the tri-combo output card’s rear panel connectors:

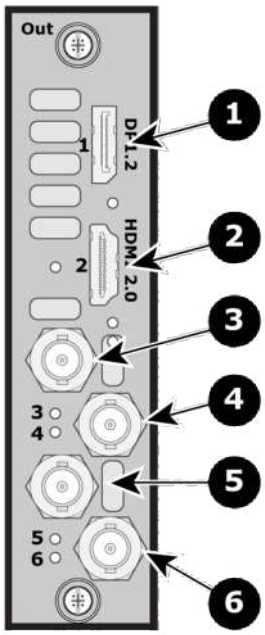

Image 4-18: Tri-Combo Output Card Rear Panel

1	DP connector
2	HDMI connector
3	BNC connector — SDI 1
4	BNC connector — SDI 2
5	BNC connector — SDI 3
6	BNC connector — SDI 4

Features

- Provides up to six (6) independent signals
- One channel of DisplayPort video on a full-size DisplayPort connector.
- One channel of HDMI video on a Type A connector.
- Process up to four independent SDI signals with support for SD, HD, 3G, 6G, and 12G in Single Link, Dual Link (1.5G) or Quad Link (3G)

Specifications

DisplayPort

- DisplayPort per 1.2 specification
- Pixel clock up to 620 MHz
  - Max pixel clock at 24 bits/pixel = 620 Mpix/sec
  - Max pixel clock at 30 bits/pixel = 576 Mpix/sec
  - Max pixel clock at 36 bits/pixel = 480 Mpix/sec
- Supported formats
  - formats up to 4096x2160@60 (30 bits)
  - 4K/UHD Supported:
    - 3840x2,400/ 50/59.94/60 via 1x DP
    - 4096x2,160/ 50/59.94/60 via 1x DP
    - 3840x2,160/ 50/59.94/60 via 1x DP
- Supply up to 500 mA @ 3.3V on pin 20
  - Allows the DP connector to power an external device
  - Overcurrent protection provided by means of a re-settable fuse
- Multi-Stream Transport (MST)—not supported
- EDID version 1.3 compatible

- HDCP version 1.3 compatible

HDMI

- HDMI per 2.0 specification
- Pixel clock up to 600 MHz
  - Max pixel clock at 24 bits/pixel = 600 Mpix/sec
  - Max pixel clock at 30 bits/pixel = 480 Mpix/sec
  - Max pixel clock at 36 bits/pixel = 400 Mpix/sec
- Supported formats
  - formats up to 2560x1600@60 and 3840x1200@60 (30 bits)
  - 4K/UHD Supported:
    - 3840x2400/ 50/59.94/60 via 1x HDMI
    - 4096x2160/ 50/59.94/60 via 1x HDMI
    - 3840x2160/ 50/59.94/60 via 1x HDMI
- EDID version 1.3 compatible
- HDCP version 1.4 and version 2.2 compatible

SDI

- Supported formats:

Signal type	Min. BNC connector number	Max channels per card	Standard	Examples
SD	1	4	SMPTE 259M-C	480i, 576i (NTSC/PAL)
HD	1	4	SMPTE 292M	1920x1080 @ 59.94i/50i
				1920x1080psf @ 23.98/24/25/29.97/30
				720x480 @ 60p/50p
3G	1	4	SMPTE 424M	1920x1080 @ 60p/50p
			Barcolink	1920x1200 @ 60p/50p
6G	1	1	SMPTE 2081-10	3840x2160 @ 23.98/24/25/29.97/30
				4096x2160 @ 23.98/24/25/29.97/30
12G	1	1	SMPTE 2082-10	3840x2160 @ 50/59.94/60
				4096x2160 @ 50/59.94/60
			Barcolink Ultra (4K)	3840x2400 @ 50/59.94/60
4K / UHD	4	1	SMPTE 292M	**Image mapping: Quadrants**
			SMPTE 2048-2	3840x2160 @ 23.98/24/25/29.97/30 as 4x HD-SDI
				4096x2160 @ 23.98/24/25/29.97/30 as 4x HD-SDI

4K / UHD	4	1	SMPTE 424M SMPTE 2048-2	**Image mapping: Quadrants** 3840x2160 @ 50/59.94/60 as 4x 3G-SDI 4096x2160 @ 50/59.94/60 60 as 4x 3G-SDI Level A and B supported
4K / UHD	4	1	SMPTE ST 425-5	**Image mapping: 2 Sample Interleave Subdivision (2SI)** 3840x2160 @ 23.98/24/25/29.97/30 as 4x HD-SDI 4096x2160 @ 23.98/24/25/29.97/30 as 4x HD-SDI 3840x2160 @ 50/59.94/60 as 4x 3G-SDI 4096x2160 @ 50/59.94/60 60 as 4x 3G-SDI Level A and B supported

DisplayPort
Digital display interface developed by the Video Electronics Standards Association (VESA). This royalty-free interface is primarily used to connect a video source to a display device such as a computer monitor, though it can also be used to transmit audio, USB, and other forms of data. VESA designed it to replace VGA, DVI, and FPD-Link. Backward compatibility to VGA and DVI by using active adapter dongles enables users to use DisplayPort fitted video sources without replacing existing display devices.

HDMI
HDMI (High-Definition Multimedia Interface) is a compact audio/video interface for transferring uncompressed video data and compressed/uncompressed digital audio data from a HDMI-compliant device ("the source device") to a compatible computer monitor, video projector, digital television, or digital audio device. HDMI is a digital replacement for existing analog video standards.

SDI
Serial Digital Interface (SDI) is a serial link standardized by the Society of Motion Picture and Television Engineers (SMPTE). SDI transmits uncompressed digital video over 75-ohm coaxial cable within studios, and is seen on most professional video infrastructure equipment.

4.14 Expansion Link Card

About Expansion link

When event requirements exceed the capacity of a single unit in terms of input, output, or number of layers, multiple Event Master processors can be linked together through the Expansion Link cards.

CXP
CXP is a copper connector system specified by the InfiniBand Trade Association. It provides twelve 10 Gbit/s links suitable for single 100 Gigabit Ethernet, three 40 Gigabit Ethernet channels, or twelve 10 Gigabit Ethernet channels or a single Infiniband 12× QDR link. The connector has 4 rows, each of 21 pin, total 84 pins.

[Note 1]: The C is the Roman numeral for 100.

General

The Link card has 2 CXP connectors which can support up to 12 10-Gbit channels.

The figure below illustrates the Link card's rear panel connectors:

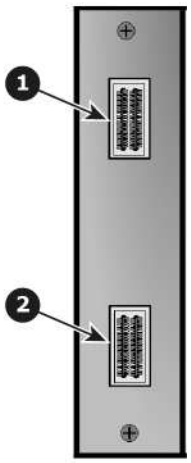

Image 4-19

1	CXP connector — CXP 1
2	CXP connector — CXP 2

Features

- Provide up to 12 10-Gbit channels
- Depending on the Event Master processor model, two, one, or no slots are reserved at left side of the rear panel for Expansion Link cards.

E2	E2 Jr.	S3–4K	S3–4K Jr.	EX
1, 2	NA[1]	1	NA[1]	NA[2]

[1] E2 Jr. and S3–4K Jr. do not have Link cards, but these models can be upgraded with Link cards, which would go into the same slots as the Link cards on the E2 and the S3–4K.
[2] The EX has two (2) Expansion Links, but they are not on a swappable card.

Specifications

- CXP Specification

4.15 CXP Input/Output Card

About the CXP I/O card

The CXP I/O card adds more flexibility for distributing video signals. The CXP I/O card can be used in an input or output slot of an E2/S3. The E2/S3 can then be connected by a CXP link cable to the CXP link connector of an EX expansion box.

CXP
CXP is a copper connector system specified by the InfiniBand Trade Association. It provides twelve 10 Gbit/s links suitable for single 100 Gigabit Ethernet, three 40 Gigabit Ethernet channels, or twelve 10 Gigabit Ethernet channels or a single Infiniband 12× QDR link. The connector has 4 rows, each of 21 pin, total 84 pins.

[Note 1]: The C is the Roman numeral for 100.

The CXP I/O card is supported only with firmware version 7.0 or higher.

General

The CXP I/O card has a single CXP connector, which can support up to 12 10-Gbit channels.

The figure below illustrates the CXP I/O card's rear panel connector:

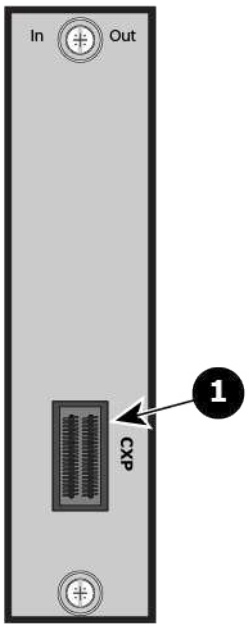

Image 4-20

1 CXP connector

Features

- Adds the ability of linked Event Master systems to extend up to eight links of input or output (slot dependent) to an EX chassis
- Uses CXP cables for connectors
- Can be converted to MTP fiber optic cable up to 300m
- 1x CXP (120G) connector

Specifications

- CXP specification

CXP link-cable communication support

- Communication can enabled or disabled per CXP link connector.
- The maximum number communication links via CXP link cable in a system is six (6).
- The unit ID of the EX must be unique.
- The static IP address—if used—of the EX must be unique.

CXP link-cable communication limitations

- An EX expansion box connected to an E2/S3 by a CXP link card must be connected as a slave only.
- Users will not be able to update the Unit ID of the EX via CXP communication.
  The unit ID must be updated via Ethernet communication.
- Users will not be able to daisy chain EXs when the EX connected to E2 or S3 has CXP communication enabled.
- Users will not be able to use the CXP I/O card with CXP communication enabled on the S3 when the system is an E2-to-S3 configuration.
  The CXP I/O card on any slave units must use Ethernet communication.
- EX web app will not be accessible.

4.16 VPU Card

General

VPU (Video Processing Unit) cards perform the various scaling, layer effects, and image compositing operations within the Event Master series of products. The internal cross point routes all video signals to and from the VPU cards. The VPU cards have no external connections.

Features

- Support for 2K, Dual Link, and 4K video processing
- Layer compositing over unscaled Backgrounds
- Layer effects, including Borders and Shadows
- Keying effects
- Keyframe effects

Specifications

Each VPU card is a 4K scalar capable of acting as a 4K scalar, or as two (2) Dual Link scalars, or as four (4) 2K HD scalars

Mixing Layer Type	Maximum number of Single Layers/Mixing Layers				
	E2	E2 Jr.	S3–4K	S3–4K Jr.	EX
2K HD	32/16	16/8	8/4	4/2	Up to 16/8
Dual Link	16/8	8/4	4/2	2/1	Up to 8/4
4K	8/4	4/2	2/1	NA	Up to 4/2

The VPU cards are not accessible from the rear panel on E2 and E2 Jr. units. Even though they have no external connections, slots 2 and 3 are reserved for VPU cards on S3–4K and S3–4K Jr. units. The EX expansion box can have a combination of Input and Output cards, or it can have two VPU cards.

Front Panel Menu orientation

5

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5.5 About Setup menu 88
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5.7 System menu > Black Invalid 89
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5.11 System menu > Diagnostics 94
5.12 System menu > Lock front panel 97
5.13 System menu > Admin Lock 98
5.14 System Menu > WebApp Lock 98
5.15 Using the Tech Support menu 99
5.16 Restoring Factory Default Settings 99
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About this chapter

This chapter describes the front panel menus of the Event Master units (E2 and S3 series), including how they are accessed and the functions or parameters that are available. The menu trees are presented in block diagram format throughout the chapter.

5.1 Power-up initialization

Initialization

Ensure that your system is properly installed and cabled. Make sure the two AC Connectors are properly connected to your facility's AC power source through the two supplied power cords. Locate the power button on the front panel and turn power On. While the system is initializing, the front-panel buttons light up one at a time, and the following message is displayed.

Image 5-1: System Initialization Message

After system initialization is complete, the **Status** menu appears.

If under some rare circumstance the system does not fully boot correctly, press and hold the **SEL** and **ESC** keys while applying power to the unit. Release these keys when a menu appears asking to Factory Reset the unit. Perform the Factory Reset and the unit will boot normally.

5.2 Front Panel menu tree

About this section

The diagram below illustrates the Front Panel menu tree of the Event master devices. Please use this diagram for reference as you learn how to operate the system.

Menu tree

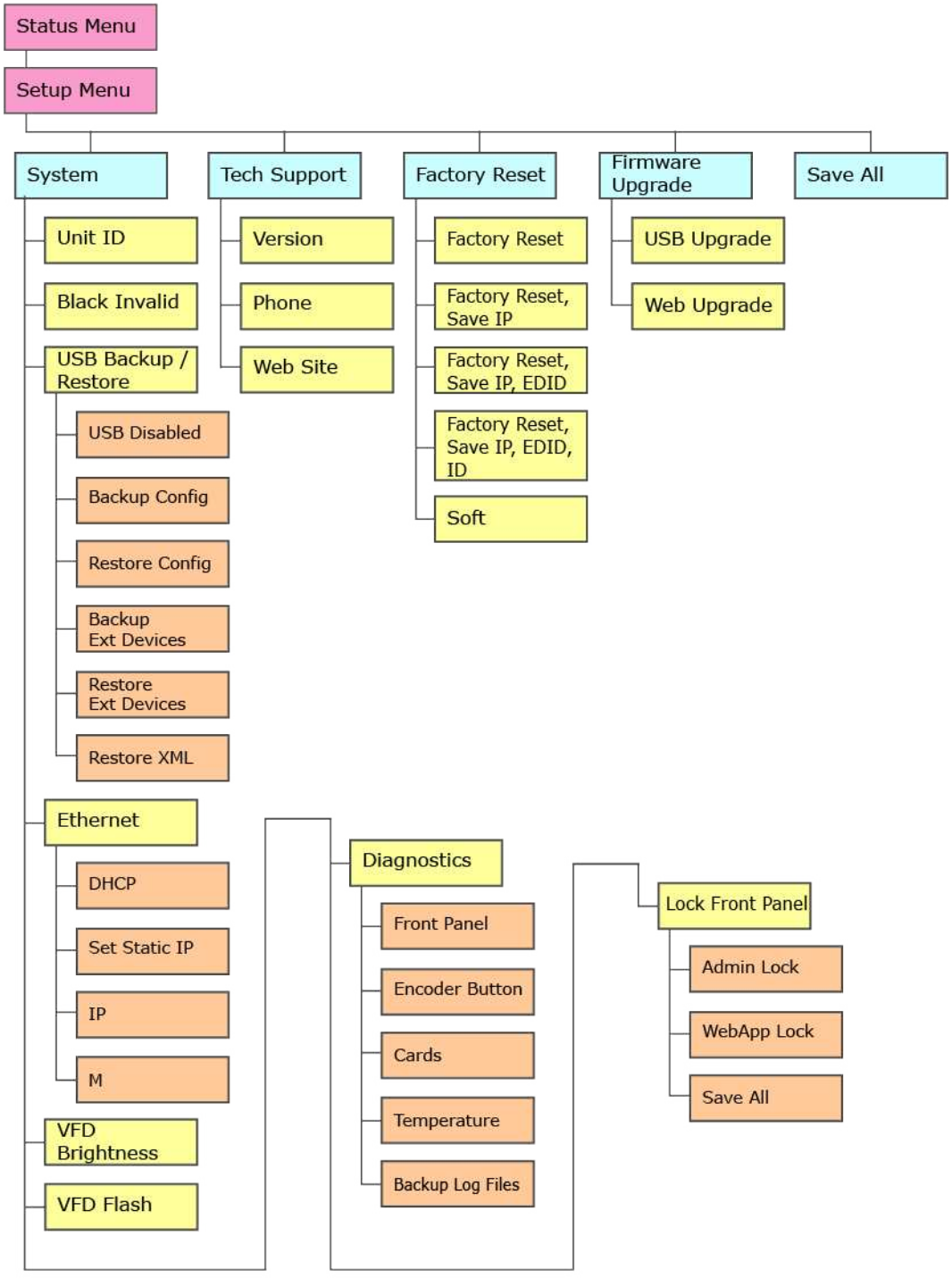

Image 5-2: Front-panel menu tree

5.3 Using menu system

General

This section describes the conventions for using the menu system of the Event Master devices. For reference, the following illustration shows the **System** Menu.

Image 5-3: System menu

The unit's display screen is four lines high. Throughout this chapter, entire menus are shown for ease of reference, unless otherwise noted.

Please note the following important menu rules and conventions:

- The top line names the current menu, in upper-case letters.
- Subsequent lines typically display two fields:
  - For a **function**, the left-hand field names the function. The right-hand field shows the function's current parameter (or value). In the preceding illustration, **Black Invalid** is a function and **On** is its current value.
  - For a **submenu**, the left-hand field names the submenu that you can access. The right-hand field displays a double arrow (>>), indicating that a submenu is available. In the preceding illustration, **USB Backup/Restore** and **Ethernet** are two of the available submenus. To use a submenu, scroll to it and press **SEL**. Then scroll through the list that appears.
  - The **navigation cursor** (>) in the left-hand column indicates the current line on which you can take action. This arrow moves as you rotate the **ADJUST** knob on the front panel. When you reach an editable field and press **SEL**, the navigation cursor changes to an **edit cursor** (#).

Making a menu selection

To select a menu item, use the **ADJUST** knob to scroll to the item, then press the **SEL** button on the front panel.

- To scroll through a menu:
  - Turn the **ADJUST** knob counter-clockwise to scroll down.
  - Turn the **ADJUST** knob clockwise to scroll up.
- To open a submenu, scroll to the submenu line and press **SEL**.
- To change a parameter, scroll to the desired line and press **SEL**. The navigation cursor changes to the edit cursor. Use the **ADJUST** knob to modify the value:
  - Turn the **ADJUST** knob clockwise to increase a value.
  - Turn the **ADJUST** knob counter-clockwise to decrease a value.
  - Press **SEL** to accept a parameter or value. The edit cursor changes back to the navigation cursor.

You must press **SEL** to accept the value.

Throughout this user's guide, the term "**select**" is used as an abbreviation for "scroll to a menu line and press **SEL**."
Example: Select the **Ethernet** menu to begin configuring network settings.

Exiting a menu

- In the edit mode (i.e., the edit cursor is visible), press **ESC** to exit a menu without changing the original parameter.
- To navigate back up the menu structure, press **ESC** again. Each press takes you back up the menu tree by one level.

Answering a menu query

The **SEL** button is used to answer **Yes** to certain menu queries. The **ESC** button is used to answer **No** to menu queries. Sometimes either button is appropriate to answer a menu query. The following illustration shows an example of a menu query.

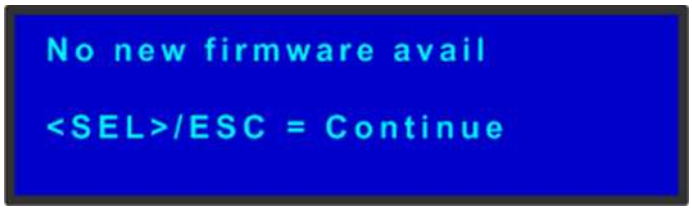

Image 5-4: Validation error message

Edit name

Sometimes, it is necessary to edit name, like the name of a configuration file, for example. To modify name use the following procedure:

1. Navigate to submenu (For example, the following illustration shows the **USB Backup Config** submenu).

Image 5-5: USB Backup Config submenu

The navigator cursor (>) is at the field targeted.

2. Press **SEL**
   The navigation cursor changes to the edit cursor. A blank field for the first character becomes available and this field is marked by an underscore.
3. Use the **ADJUST** knob to scroll to the first character you want to use for the format name.

   Turning the **ADJUST** knob clockwise once moves to the next letter of the alphabet. If you start with an upper-case letter, as shown in the preceding illustration, then the next letter is also a capital letter. If you start with a lower-case letter, the next letter is a lower-case letter:
   - F –> G
   - f –> g

   If you start with a number, the next character is a number.

   Continuing to turn the **ADJUST** knob clockwise at the end of the upper-case alphabet displays a series of punctuation marks you can use in the format name.

   Continuing to turn the knob clockwise at the end of the punctuation marks displays the lower-case alphabet in order.

   When you reach the end of the lower-case alphabet, turn the **ADJUST** knob counter-clockwise to scroll back through the options in order.

4. Press **SEL**. The cursor moves to the next character field, which is now blank with an underscore.
5. Repeat the previous steps as many times as needed, pressing **SEL** for each character selection.
6. When you have selected all the characters, press **SEL** again to save the name.

A file name can consist of up to 19 alpha-numeric characters.

5.4 About Status menu

General

The **Status** Menu is the Event Master series processor's top-level menu, which appears by default at system startup. This menu provides system name, Unit ID, Genlock status and unit IP address. The following figure illustrates a sample **Status** Menu. Press the **ESC** button when the **Setup** menu is displayed allows to return in the **Status** menu.

Image 5-6: e.g. E2 Status menu

System name

Human readable name of the current system. Particularly useful in the user interface when multiple Event Master system are connected in the same network.

System1 is the default value. This name can be changed in the configuration page of the GUI. For more details please refer to the section dedicated to the system configuration in the chapter "Configuration Menu", page 109.

Unit ID

ID required to identify different units are acting as a single system in order to expand for Inputs, Outputs or Layers.

This ID can be changed in the configuration page of the GUI. For more details please refer to the section dedicated to the System configuration in the chapter "Configuration Menu", page 109.

Genlock

This line gives information about the Genlock connection situated at the back of the Event Master unit. For more detail on this connection please refer to the section dedicated to the Genlock Input BNC in the chapter "Rear panel", page 55.

The user could turn Genlock OFF or ON in the configuration page of the GUI. The Event Master unit will determine what kind of Genlock is connected and will update the Status field. The status field can say "Locked", "Lost Lock" or "Free Run". For more details please refer to the section dedicated to the Event Master unit configuration in the chapter "System Setup", page 273.

IP address

IP address of the Event Master unit in the local network.

If there is no internet connection, or if a DHCP server has not been found, the IP address is 000.000.000.000. The IP address is needed for running the Web Interface and for connection to an external device. For more details please refer to the section dedicated to the setting of Ethernet options in the chapter "About the System menu", page 89

5.5 About Setup menu

General

The **Setup** menu, shown in the following illustration, is the menu from which you access all operational menus. To display the **Setup** menu, press the **SEL** button on the front panel when the Status menu is displayed, or press the **ESC** button to go back from a submenu (one level for each time you press the button).

Image 5-7: Setup menu

From the **Setup** menu, you can configure certain system settings for the Event Master unit, display Technical Support contact information, restore factory default settings, and install firmware updates. And finally, you can save all the recent changes to the system.

The following sections describe each Setup Menu option in detail, except for the Code Upgrade feature. For details about that option, refer to the chapter “Updating firmware”, page 301:

- “About the System menu”, page 89
- “Using the Tech Support menu”, page 99
- “Restoring Factory Default Settings”, page 99
- “Updating firmware”, page 301
- “Save All”, page 100

5.6 About the System menu

General

The **System** Menu, shown in the following illustration, allows you to view and change settings such as DHCP status and Ethernet options. In this menu you can also backup or restore Event Master unit configuration, obtain diagnostic information, adjust the intensity or lock the display screen.

Image 5-8: System menu

The following sections describe each Setup Menu option in detail:

- “System menu > Black Invalid”, page 89
- “System menu > USB device (Backup/Restore)”, page 90
- “System menu > Ethernet”, page 93
- “System menu > VFD brightness (display brightness)”, page 94
- “System menu > Diagnostics”, page 94
- “System menu > Lock front panel”, page 97

5.7 System menu > Black Invalid

General

The **Black Invalid** system setting determines whether the output is black when connected to a signal it cannot process. **Black Invalid** is either **On** or **Off**. The default setting is **On**. This is a global setting, applicable to all outputs.

5.8 System menu > USB device (Backup/Restore)

WARNING: Backups from E2 work on E2 and E2 Gen2. Backups from E2 Gen2 are not backward compatible with E2.

General

The unit's front panel contains a USB port that you can use to connect a flash drive to the Event Master unit.

The flash drive must be formatted to use the FAT32 file system. For formatting instructions, refer to section **Formatting the flash drive** in the chapter “Upgrading firmware using the USB port”, page 302.

The following illustration shows the **USB Backup/Restore** submenu, which you access from the **System** menu.

Image 5-9: USB submenu

Using this menu, you can:

- Detect the presence of a USB device.
- Backup and restore the Event Master unit configuration files. When you connect a flash drive to the unit, the system creates a directory titled **E2Backup** on the drive. All configuration files are saved to this directory.
- Import an configuration created offline, via an XML file on the USB device.

How to back up a configuration file to a flash drive

1. Insert a formatted flash drive in the unit’s front-panel USB port.
2. From the **System** menu, scroll to the **USB Backup/Restore** submenu. Select **Backup Config**.

   The **USB Backup Config** submenu appears, as shown in the following illustration. The navigation cursor appears at the default name for the first backup file.

Image 5-10: USB Backup Config submenu

3. If you wish to change the default name of the backup configuration, press **SEL**. Use the **ADJUST** knob to change the name, as described in section “Using menu system”, page 85. Press **SEL** again when you complete the name change.
4. Scroll to **Backup Config** and press **SEL**.

   A confirmation message appears when the backup is complete.

   If the backup operation fails, the message shown in the following illustration appears. Check that the flash drive is properly formatted and installed, and try again.

Image 5-11

How to restore a system configuration file that is stored on a flash drive

1. Insert a formatted flash drive in the unit's front-panel USB port.
2. From the **System** menu, scroll to the **USB Backup/Restore** submenu. Select **Restore Config**.

   The **USB Restore Config** submenu appears, as shown in the following illustration.

Image 5-12

3. Press **SEL** and scroll through the list of configuration files. When you locate the file you want, press **SEL** again.
4. Scroll to **Restore Config** and press **SEL**.

   A message confirms the restore operation and instructs you to reboot the Event Master unit.

> You must reboot the Event Master unit to use the restored configuration file.

How to create a configuration offline and transfer it to a live unit

When working in the Event Master Toolset Software with a simulator, it is possible to create a configuration offline and then transfer it to a live unit.

1. System creation:
   1. Create your system offline using the simulator. This includes system configuration, presets, etc ...
   2. Save the simulated configuration.
      Press the **Save** icon (the floppy disk icon in the lower left-hand corner of the screen).
2. Copy the XML file to the USB device:
   1. Open **Windows File Explorer**.
   2. Locate and select the **Barco** folder on your **C: drive**.

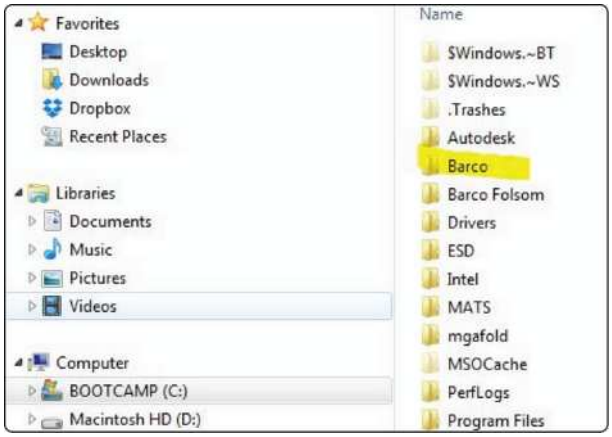

Image 5-13

3. Locate in the Barco folder and select the Event Master Toolset folder that corresponds to the current version you are using.

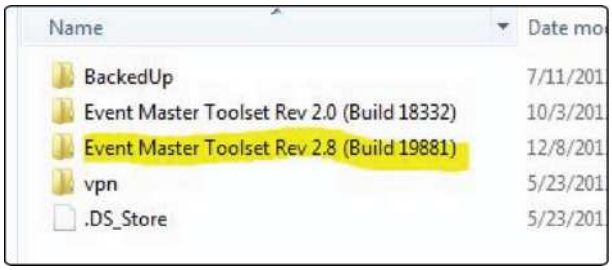

Image 5-14

4. Select the **wvp_9876** subfolder.

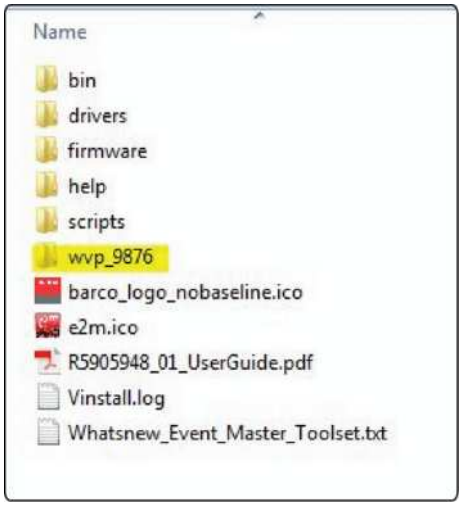

Image 5-15

5. Open the **xml** folder.

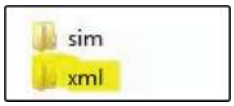

Image 5-16

The xml folder contains subfolders for presets, stills, and userkeys, and it contains the configuration settings file for your simulated system.

6. Create a folder on your desktop called **EM**, and create a subfolder inside it called **Backup**.
7. Copy and paste the **xml** folder from the wvp_9876 folder into the EM\Backup folder.
8. Open the **xml** folder in the EM\Backup folder.
9. Rename the **settings.xml** file to **settings_backup.xml**.
   Make sure that you do not change the file extension.
10. Copy and paste the entire **EM** folder from your desktop to the root directory of a FAT32-formatted USB drive.

3. Import the simulated configuration created offline to the live system:
   1. Insert the USB drive into the USB port on the front of a live Event Master processor.
      The live processor must be the same type as the simulated processor. If your simulated processor was an E2, the live processor must be an E2; if your simulated processor was an S3–4K, your live processor must be an S3–4K. The card setup on the simulated system must match the card setup on the live system, otherwise Inputs might not match, or Destinations might be created on nonexistent Outputs. Those Destinations will be grayed out, and you'll have to recreate them.
   2. Navigate on the front-panel display screen to the **System** menu, then to **USB Backup/Restore**, and then to **Restore XML**, and then hit **Select**.
      The system uploads the backup xml folder. When finished, the display screen reads "Restore successful."
   3. Select **Yes** (**<SEL>**), when the system asks "Reset unit now?"

The unit begins to reset. This takes about two minutes.

4. Remove the USB drive.

Once the system resets, all the Inputs, Outputs, Destinations Presets, etc. from the simulated unit will have been transferred to the live unit.

The icons from the simulated unit do not transfer to the live unit and must be recreated.

If the Multiviewer configurations are not transferred, they must be recreated.

5.9 System menu > Ethernet

General

The **Ethernet** submenu allows the user to view and change certain Ethernet settings.

Image 5-17

Using this menu, you can:

- Query the DHCP server for a valid IP address, or turn off this feature.
- Set a static IP address for the Event Master unit, along with a subnet mask and gateway. This feature is available only if **DHCP** is turned **Off**.
- View the unit's IP address.
  If there is no internet connection, or if a DHCP server has not been found, the IP address is 000.000.000.000. In this case, the system ignores the Ethernet port.
- View the Media Access Control (MAC) address of the unit's Ethernet port.

Query the DHCP server

In the **Ethernet** submenu, the default setting for **DHCP** is **On**. When **DHCP** is turned on, the system automatically queries the DHCP server for a valid IP address. If the unit receives an IP address, that address is displayed in the **Ethernet** submenu.

It can take several seconds to obtain an address from the server. During this time, the **SEL** button remains lit.

When **DHCP** is off, you can manually enter a static IP address, along with a subnet mask and gateway, in the **Set Static IP** submenu. Consult your network administrator for a valid IP address, subnet mask and gateway.

Setting a static IP Address

When a DHCP server is not available, you can set the Event Master unit's IP address, using the **Set IP** submenu shown in the following illustration.

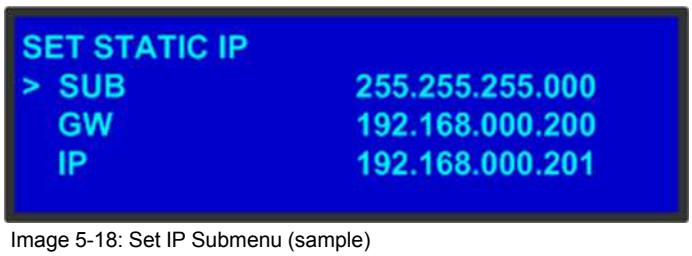

Image 5-18: Set IP Submenu (sample)

How to set a static IP address?

1. Ensure that the **DHCP** setting is **Off**.
2. From your network administrator, obtain a valid IP address, including subnet and gateway.
3. On the **Ethernet** submenu, select **Set Static IP**.
4. On the **Set IP** submenu, select **SUB**(net). The last character in the first field becomes available, as indicated by the empty field and an underscore.

   Note: You must change the **SUB** parameter before editing either of the other parameters.

5. Turn the **ADJUST** knob to change the first value. As you continue turning the knob, you can change all three values in this field. Values range from **000** to **255** in all four fields.
6. Press **SEL** to accept your change in the first field. The last character in the next field becomes available.
7. Continue until you have created the subnet value you want. Press **SEL**.
8. Make similar changes in the **GW** and **IP** fields.
9. Press **SEL** to accept your final change.

If you press **ESC** at any time before accepting your final change, all your edits will be removed, and the original values restored.

5.10 System menu > VFD brightness (display brightness)

General

The **VFD Brightness** submenu adjust the intensity of the front panel vacuum fluorescent display (VFD) screen. The adjustment range is **+0** to **+6**, with **+6** being the brightest. The default setting is **+3**.

5.11 System menu > Diagnostics

General

The following illustration shows the **Diagnostics** submenu, which you access from the **System** menu.

Image 5-19

The Diagnostics options allow a user to check if the Event Master unit is functioning normally. Front panel and card operations can be checked. Various system temperatures can be monitored and backup log files can be saved for customer service troubleshooting.

Front Panel

When **Front Panel** is selected to be tested, the VFD display will initially be blanked. Then the 24 x 4 character grid will start to show from the dimmest setting to the brightest setting. At this point a user can determine if any of the pixels or if a character segment is bad in the display.

After several seconds of showing all pixels on at the brightest setting, the system will automatically advance to the **ENCODER/BUTTON TEST** menu (the next menu).

Directly select “Encoder/Button” from the Diagnostic menu will allow the user to test the keys and knob without the need to see the VFD being tested.

Encoder/Button

Image 5-20

The **ENCODER/BUTTON TEST** menu allow the user to test the keys and knob.

When the knob on the front panel is rotated, a number will be displayed on the encoder line. The larger the number, the faster the knob was rotated. The number will show as positive or negative depending on the direction the knob was turned.

Pressing any key on the front panel will show the Button Code for the key.

Button	Code
ESC	0
PWR	7
SEL	14

Hold **ESC** to exit and return to the DIAGNOSTIC menu.

Cards

Image 5-21

The Card Slot test will perform a variety of diagnostics for an individual card or for all cards. This is a quick way to determine if a given card is having a problem. After selecting a Slot number or choosing All cards to be tested, the following message will be displayed.

Image 5-22

Pressing **SEL** to continue will start the diagnostic testing. The following message will be displayed.

Image 5-23

If only one slot was selected for testing, a simply PASS/FAIL result will be shown for that slot.

Image 5-24

If all slots were selected for testing, the PASS/FAIL result will be shown for all slots.

Image 5-25

If a slot is not populated with a card, the result will show EMPTY.

To see more detailed results of diagnostic testing, run diagnostics from the Event Master Toolset Software. For details on this function, please refer to chapter “Settings Menu > Web App area > Dashboard”, page 259

Temperature

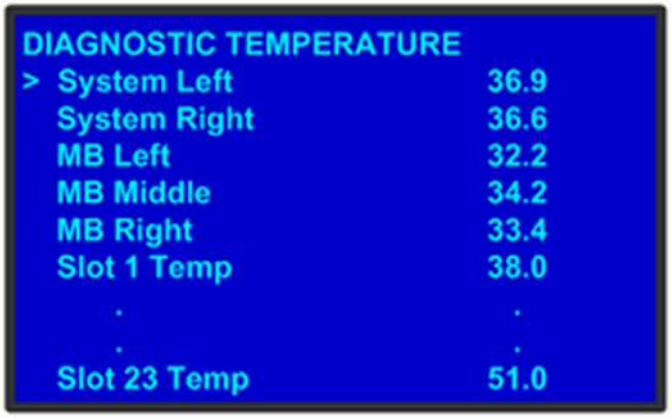

Image 5-26

The **DIAGNOSTIC TEMPERATURE** menu will show real time measurements for the System, Motherboard and all card slots. All temperatures are shown in degrees Celsius.

FPGA temperatures may reach as high as 85°C under normal operating conditions. Temperatures above 85°C may affect processing performance.

Backup Log Files

Backup log files can be saved for customer service troubleshooting.

In the event the log files of the Event Master unit need to be backed up, first install a USB stick in the unit's front panel.

When **Backup Log Files** is selected, the system will immediately write its log files to the USB stick. The following menus will be shown during this process and the Event Master unit will automatically return to the DIAGNOSTIC menu once this process is complete.

Image 5-27

Image 5-28

The file name will be “E2LogFiles.tar.gz”, and it can be found on the USB stick under the “E2 \backup” directory.

WARNING: Backups from E2 work on E2 and E2 Gen2. Backups from E2 Gen2 are not backward compatible with E2.

5.12 System menu > Lock front panel

General

When the Event Master unit’s front panel is locked, button presses have no effect. In the locked mode:

- All button presses (including **Power ON/OFF** button) and all turns of the **ADJUST** knob are ignored.
- All Ethernet communications commands function normally.

How to enable and disable the front-panel lock

1. On the **System** menu, scroll to **Lock Front Panel** and press **SEL**. The front panel is locked, and the following message appears:

Image 5-29: Front Panel Locked Message

2. To disable the front panel lock, press and hold the **SEL** and **ESC** buttons simultaneously for 3 seconds. When the panel is unlocked, the display screen displays the **Status** menu.

5.13 System menu > Admin Lock

General

When the Admin Lock is enabled, all Event Master toolset GUI connections to the processor are not allowed to delete Inputs, Outputs, Destinations, Presets, User Keys, Cues, or External Devices. Users are allowed operator-level functionality to recall Presets and Cues and to transition.

How to enable and disable the Admin Lock

1. On the System menu, scroll to Admin Lock and press SEL.

Image 5-30: Admin Lock

2. Turn the ADJUST knob to toggle between Off (disabled) and On (enabled).

5.14 System Menu > WebApp Lock

General

When the WebApp Lock is off (disabled), the settings page hosted in the EMP is accessible through a web browser, as well as through the Settings menu in the EMTS GUI. When the WebApp Lock is enabled, the WebApp is in read-only mode, and no settings can be changed.

How to enable and disable the WebApp Lock

1. On the System menu, scroll to WebApp Lock and press SEL.

Image 5-31: WebApp Lock

2. Turn the ADJUST knob to toggle between Off (disabled) and On (enabled).

5.15 Using the Tech Support menu

General

The **Tech Support** Menu, shown in the following illustration, provides quick access to Customer Support contact information, and also shows you the software version for your Event Master unit.

Image 5-32: Tech Support Menu

This menu displays:

- The software version of your Event Master unit . For more details on software upgrade instructions please refer to section “Updating firmware”, page 301.
- The US Customer Support telephone number. This number is accessible from 6 a.m. to 10 p.m. (PST), 7 days per week. The European customer support number is: 0800-90-0410. In China call: 40088-22726. All other regions, call your local Barco support.
- The Customer Support web site address for all regions.

5.16 Restoring Factory Default Settings

General

As shown in the following illustration, two options in the **Setup** Menu allow you to restore the Event Master unit to its factory default condition.

Image 5-33

The following attributes constitute a factory default condition:

- The **Status** Menu is shown in the display screen.
- All custom configurations are deleted.

The **Factory Reset** Menu provides two options for restoring factory default settings:

- **Factory Reset** — If you use this option, all of your system configuration are deleted. Settings will be restored to the original factory defaults.
- **Factory Reset, Save IP** — This option performs a factory reset, but retains the IP address of the unit.
- **Factory Reset, Save IP, EDID** — This option performs a factory reset, but retains the IP address and EDID settings of the unit.
- **Factory Reset, Save IP, EDID, ID** — This option performs a factory reset, but retains the IP address, EDID settings, and the unit ID of the unit.
- **Soft** — This option performs a reset, but retains the IP address, EDID settings, the unit ID, and all user settings of the unit.

It is advisable to clear all saved configurations when you use the Event Master unit for the first time, or when returning an unit from an event.

Restoring all factory default settings

To restore all default settings to the Event Master unit, use the following procedure:

1. Select **Factory Reset** from the **Setup** Menu.

   The **Factory Reset** Menu appears.

2. Select **Factory Reset**.

   A prompt appears, asking if you want to clear all configurations.

3. Press **SEL**.

   The system turns off, then reboots.

   If you press **ESC** to cancel the operation instead, your custom settings remain in place and you are returned to the **Factory Reset** Menu.

Restoring factory default settings with other options

To restore default settings to the Event Master unit while retaining settings such as the IP address, EDID, unit ID, or other user settings, use the following procedure:

1. Select **Factory Reset** from the **Setup** Menu.

   The **Factory Reset** Menu appears.

2. Select the desired reset—**Factory Reset, Save IP**; **Factory, Save IP, EDID**; Factory, Save IP, EDID, ID; or **Soft**.

   A prompt appears, asking if you want to clear all configurations.

3. Press **SEL** to reset the system but save the IP address.

   The system turns off, then reboots.

   If you press **ESC** to cancel the operation instead, your custom settings remain in place and you are returned to the **Factory Reset** Menu.

5.17 Firmware Upgrade

General

The Event Master unit provides two options for upgrading firmware:

- Using the USB port on the front panel.
- Using the Web Interface.

Please refer to the chapter “Settings Menu”, page 253 for the instructions on how to perform firmware upgrades through the USB memory or the web interface.

5.18 Save All

General

Save All on the **Setup** menu saves your custom configuration parameters in non-volatile memory.

If you save the system state, these parameters are restored the next time you power up the Event Master unit. If you do not use this function, your custom settings are not restored during the next system power up sequence.

Saving all modified settings

1. Select **Save All** from the **Setup** menu.

   The following message appears:

Image 5-34: “Saving all” message

2. Wait few seconds ...

   Parameters are saved in non-volatile memory and you are returned to the **Setup** menu.

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About this chapter

This chapter provides a detailed description of each section of EM GUI.

About EM GUI

The Event Master (EM) GUI is a UI program that enables users to interface with an Event Master device from a PC or Mac via an Ethernet connection. The program provides a step-by-step approach to configure, program, setup the dedicated Multiviewer and manage system functions.

Some screenshots and descriptions provided in this chapter may not accurately reflect the released software. Barco will update the documentation in a timely manner to mirror the released software

6.1 General requirements

System requirements for Microsoft Windows

Minimum hardware specifications :

- Intel I5, 2 core
- 4 GB of RAM
- Free hard disk space: 600 MB
- WSXGA resolution (1280 x 1024)
- Fixed Ethernet connection

Software

- Windows 7, Windows 10

Recommended hardware specifications :

- Intel I7, 4 Core or more
- 8GB of RAM
- Free hard disk space: 600 MB
- AMD or Nvidia GPU
- Full HD Resolution
- Touchscreen
- Fixed Ethernet connection 1Gb

System requirements for Apple Mac

Minimum hardware specifications :

- 2.6GHz
  2.6GHz dual-core Intel Core i5 (Turbo Boost up to 3.1GHz) with 3MB on-chip shared L3 cache
- 4GB RAM
- Free hard disk space: 600 MB
- WSXGA resolution (1280 x 1024)
- Fixed Ethernet connection

Software

- OSX 10.10 and above

Recommended hardware specifications :

- Intel I7, 4core or more
- 8 GB of RAM
- Free hard disk space: 600 MB
- Full HD Resolution
- Touchscreen
- Fixed Ethernet connection 1Gb

6.2 Download of Event Master Toolset Software

Overview

The Event Master Toolset Software can be downloaded for free from Barco's website, (URL: http://www. barco. com). The software is also available on *myBarco* and login to get access to secured information. Registration is necessary.

If you are not yet registered, click on *New to myBarco* and follow the instructions.

It is not necessary to install any other software.

6.3 Software installation

Currently the EM GUI is available for PCs with Microsoft Win7 or Microsoft Win10, and Apple MACs with OS X. The software will run on other Microsoft and Mac operating systems, but currently Barco only supports software installations with Win7 (or Win10) and OS X computers. Linux version of the software is also available and installs on Debian OS.

To install on Microsoft Windows

The process of installing your software involves the following steps

1. Browse to the directory where the install program is downloaded.
2. Run the install program and follow the instructions.

Software updates

For a new version of the software, download the zip file and follow the instructions as in the first installation. The new version will be installed into the same directory, but into a new sub-directory to avoid overwriting any previous version of the software.

6.4 Starting up

How to start up

1. Double click on the Event Master Toolset Software icon on your desktop

   or

   click Start → All programs → Barco Folsom → Event Master Toolset Rev x.x (Build xxxxx)

   The software starts up with the same look and feel as when it was closed before.

The connection is automatically restored with the Event Master unit if it is still available.

6.5 Screen layout presentation

General

The user interface is organized around a **Menu Navigation bar** at the left of the screen and a **Working area** in the rest of the screen. The layout of the screens is similar throughout the GUI.

In order to explain the layout, we will examine the start-up screen of the **Configuration Menu** and describe the different components. The screens for the other menus follow the same structure and flow.

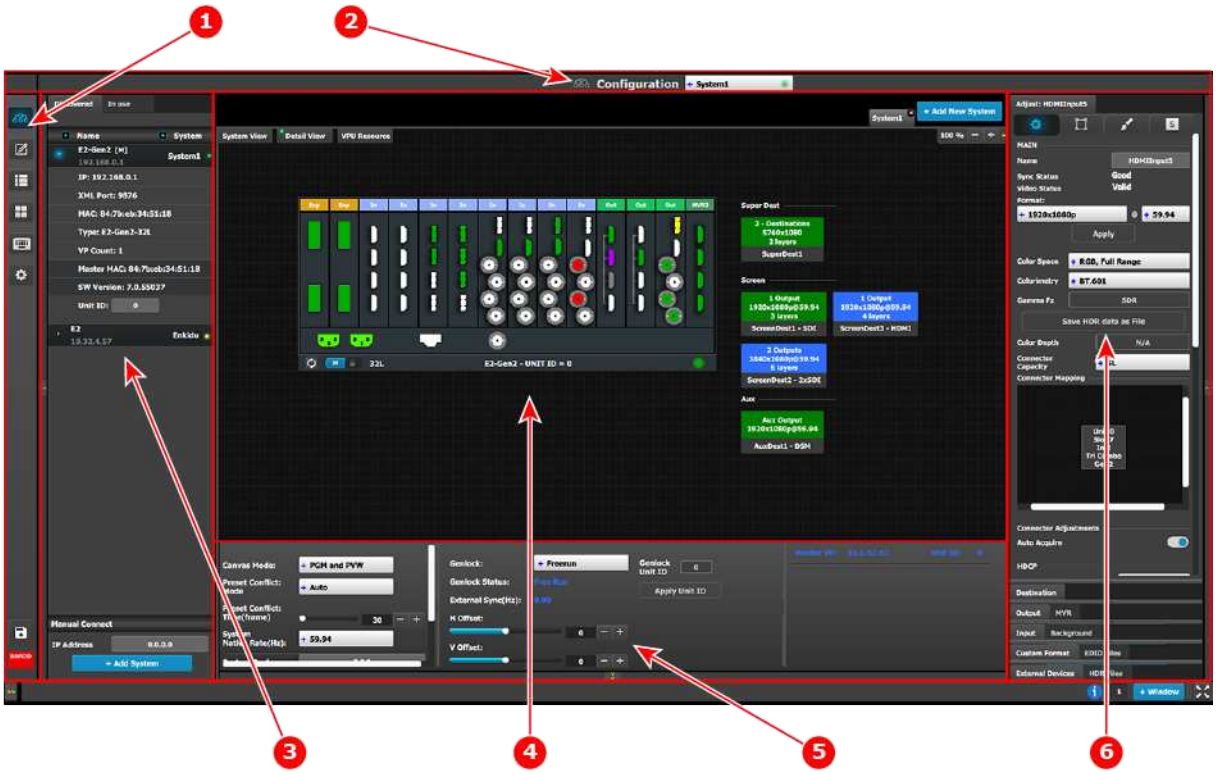


Image 6-1: EM GUI: Configuration Menu

1	Menu navigation bar
2	Title bar
3	Selection area
4	Diagram area
5	Modifier area
6	Configuration area

Menu navigation bar

On the far left hand side of the screen is the **Menu Navigation bar** that allows users to navigate between the different screens and save or restore system configurations. This area of the screen is always visible and remains unchanged. The available buttons on the **Menu Navigation bar** are:

- **System Configuration**: allows access to the **System Configuration Menu**.
- **Programming**: allows access to the **Programming Menu**.
- **Cue**: allows access to the **Cue Menu**.
- **Multiviewer**: allows access to the **Multiviewer Menu**.
- **Controller**: allows access to the **Event Controllers Menu**.
- Settings: allows access to the **Settings Menu**, which contains the EMP's web page, as well as other settings.
- **System Save**.

Title bar

On the top of the working area a title bar indicates the name of the selected page (e.g. configuration).

Selection area

The selection area allows the users to select the System or Device that will be used.

Diagram area

In the middle, is the Diagram area where the system, Screens and Multiviewer are represented graphically.

Configuration area

On the right hand side, is the configuration area where users perform all needed adjustments.

6.6 Controls

General

Edit box

Edit box is used to edit the values or names.

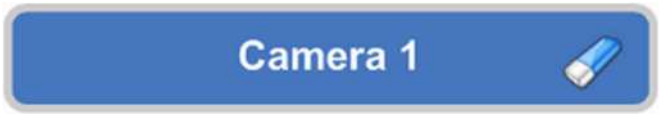


Image 6-2

Properties:

- By double clicking, the background changes to a dark blue color indicating that modifications can be made.
- The cursor is placed on the last character.
- The eraser button allows deletion of all the characters in the edit box.

Slider box

The slider allows modification of the value with slider.

Image 6-3

Properties:

- Slide the cursor to modify the value.
- The value can also modified by clicking the + or – symbols.

Drop-down menu

A drop-down menu allows the user to choose one value from a list.

Image 6-4: Inactive drop-down

The active drop-down menu, shown in Image 6-5, shows the available choices.

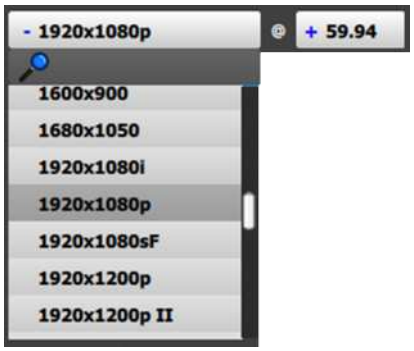


Image 6-5: Active drop-down

Properties:

- When clicking on the + symbol, a drop-down menu appears with the available choices.
- By typing in the space next to the magnifying glass all of the available numbers that match the typed text appear, simplifying the search effort.

6.7 Configuration Menu

General

The **Configuration menu** is the module used to edit the Presentation Systems (creation, modification, deletion). This page is the first page that appears when you launch the EM GUI software.

The user will use this page to add or remove devices to the selected system. The user also could modify the parameters of these devices like inputs, backgrounds, outputs and destinations.

Description

The System configuration Menu is divided in 5 parts:

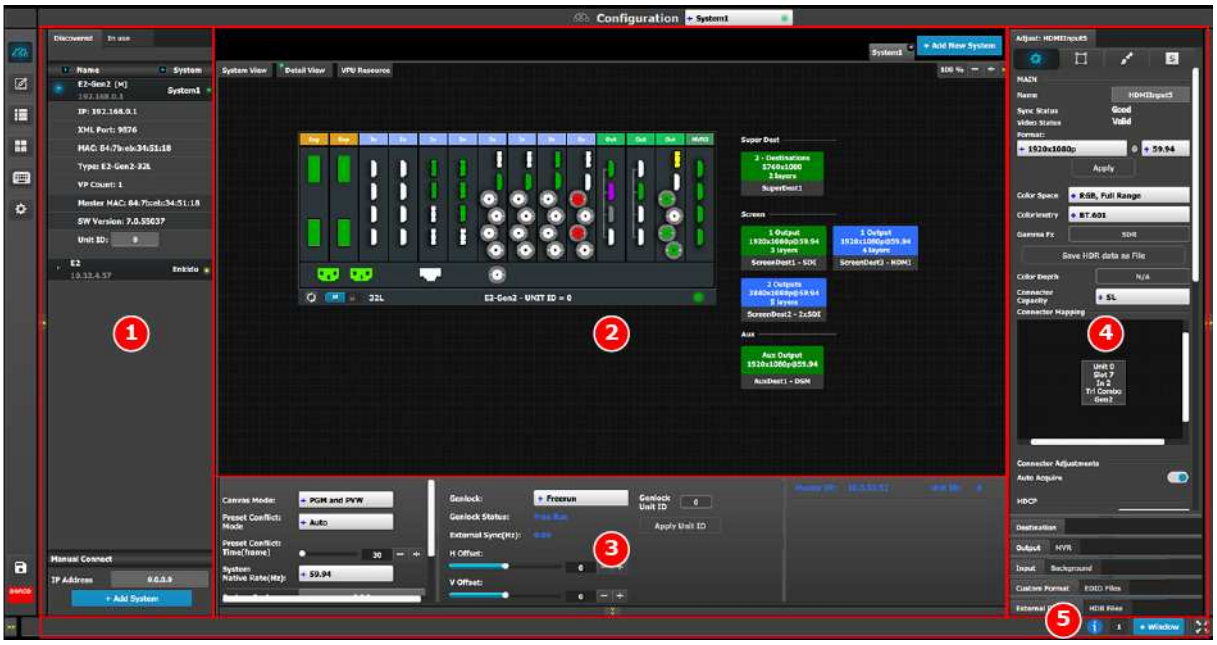


Image 6-6: System Configuration Menu

1	Network resource area	Available resources on the network are listed in this area. There are 2 tabs in this section: • Devices in use in the selected system. • Discovered devices on the local network.
2	System diagram area	The workspace has three different views: System, Detail, and VPU Resource.

		The selected systems details are graphically represented in this area. To view a different system you select the corresponding tab from the top. When the System is selected an overview of all devices connected to one system is shown. When the VPU Resource is selected an overview of VPU resource usage is shown.
3	System modifier area	System information is displayed in this area. To view a different system you select the corresponding tab from the top. This area also includes Workspace related tools.
4	Adjustment area	There are several panels in this area: Destination, Output, MVR, Input, Background, Custom Format, EDID Files, External Devices, and HDR Files. Each panel displays the list of items currently defined in the system. The user can also add or delete and define more items. The adjust tab allows the user to adjust variables in each panel. Panels can be dragged up or down to allow faster manipulation.
5	Bottom bar	The right side of the bottom bar has control for windows and maximizing the screen. The number indicates if this is window 1 or 2, two is the maximum. Click on the information icon to show a list of the last 100 status-bar messages. Add a window by clicking the **+ Window button**. The second window can be used on a separate screen. The out and in arrow button maximizes the interface to the screen, allowing an “OS free” look.

The following sections describe each part of the System Configuration Menu in detail:

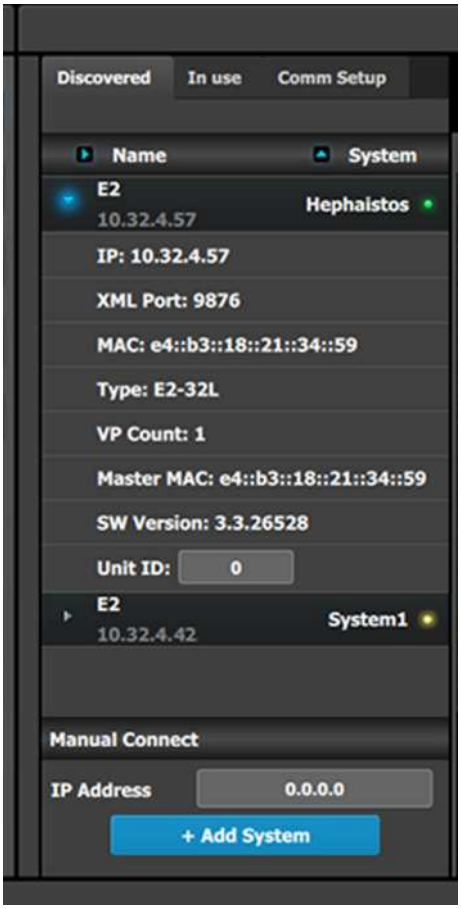
- “Configuration Menu > Network resource area”, page 111
- “Configuration Menu > System diagram area”, page 112
- “Configuration Menu > System modifier area”, page 115
- “Configuration Menu > Adjustment area”, page 117

6.8 Configuration Menu > Network resource area

General

This part of the System configuration page allows listing devices available on the local network and identifying them.

Description



The panel in this area has three tabs:

- Discovered: Lists all of the devices discovered on the local network, regardless of the selected System.
- In use: Lists the devices in the selected System.
- Comm Setup: If the EM GUI is running on an EC-200 controller, this tab detects and shows if an EC-50 is connected to the larger controller.

Note: When the Discovered tab is selected, the Event Master ToolSet Software will continuously send a UDP broadcast over the network to locate devices (every 5 seconds).
Next to the device name an LED indicates the status of the unit:

- Yellow : Found in network but not assigned
- Green: Assigned and currently has an open or active communication port
- Red: Assigned but currently has errors trying to communicate (heart beat communication failure, TCP connection dropped, etc.)
- Orange: There is a configuration error with the unit:
  - Input / Output cards not right justified. Refer to the corresponding section below of the card placement rules and error color code.
  - Input / Output configuration mismatch with the actual unit. Refer to the corresponding configuration section of the card placement rules and error color code.

The small arrow in each device opens a detail menu for the device, stating most notably the ID of the unit that is used when units are linked.

In most of the cases devices are automatically detected, and the user needs only to add the new device via drag and drop into the system diagram (see **How to add a device into the selected system** below). But, under certain circumstances in Network communication the normal UDP based auto detection of Event Master Compatible Devices might not work. A firewall or a tightly configured switch are examples. In that case a Manual direct TCP/IP request can be sent to a specific IP Address (see **How to manually add a device into the selected system** below).

How to add a device into the selected system

1. Left click on the device to be assigned to the selected system.
2. Drag it to the System diagram area.

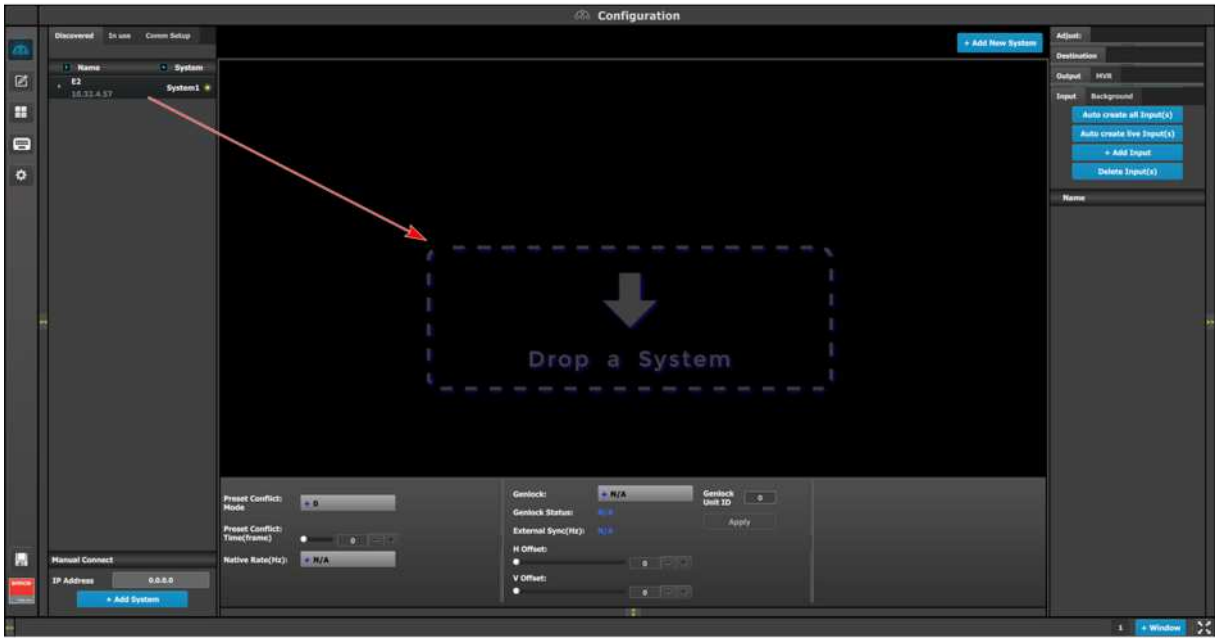


Image 6-7

How to manually add a device into the selected system

To manually add a device, use the “Manual Add” section.

1. Enter the IP address.
2. Press the “Add” button.

Image 6-8

Unit is added and retrieves the available configuration in the Device.

6.9 Configuration Menu > System diagram area

General

The system is represented graphically in this part of the System configuration page. It is here that the user can select a system (or create a new one), or select a system element (inputs, outputs, destinations …)

Description

The diagram area graphically represents the devices and destinations that compose the system.

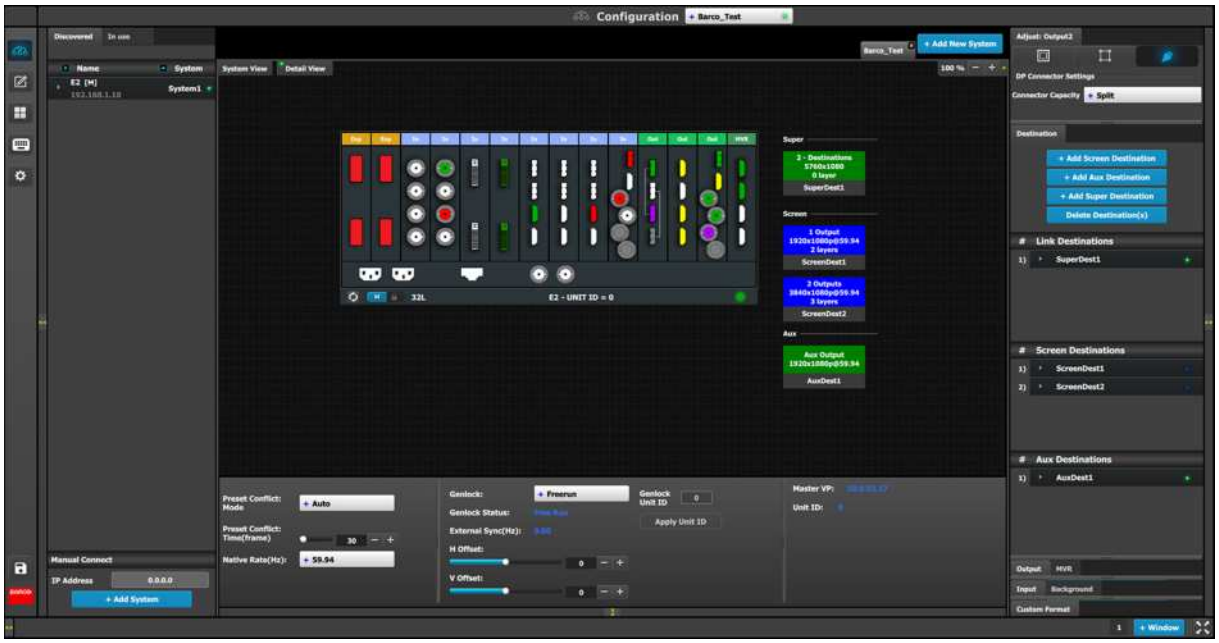


Image 6-9: Diagram area

In this area, the rear panel of the selected system is represented graphically with the cards, and the connectors are color coded to indicate their status.

The color code is:

- White = Connector available to add and configure.
- Gray = Connector capacity set to NONE and is unavailable to add and configure.
- Purple = Connector capacity set to SPLIT; and connector is unavailable to add and configure.
  Note: Any connector on a Gen 2 output card (HDMI 2.0 Quad Output, DP 1.2 Quad Output, or 4K Tri-Combo Output card) may split to any other connector on the same Gen 2 output card. See Image 6-10.
- Red = Signal unavailable and connector configured into system.
- Yellow = Signal available.
- Green = Signal available and connector configured into system.

On the right hand side of the devices is a list of the created destinations (Screen and Auxiliary).

The tabs on the top allow access to the different systems connected to the EM GUI. The last tab allows the users to add a new system.

A set of zoom buttons allows the user to reduce or enlarge the view size. This functionality is very useful when the system is composed of more than one device.

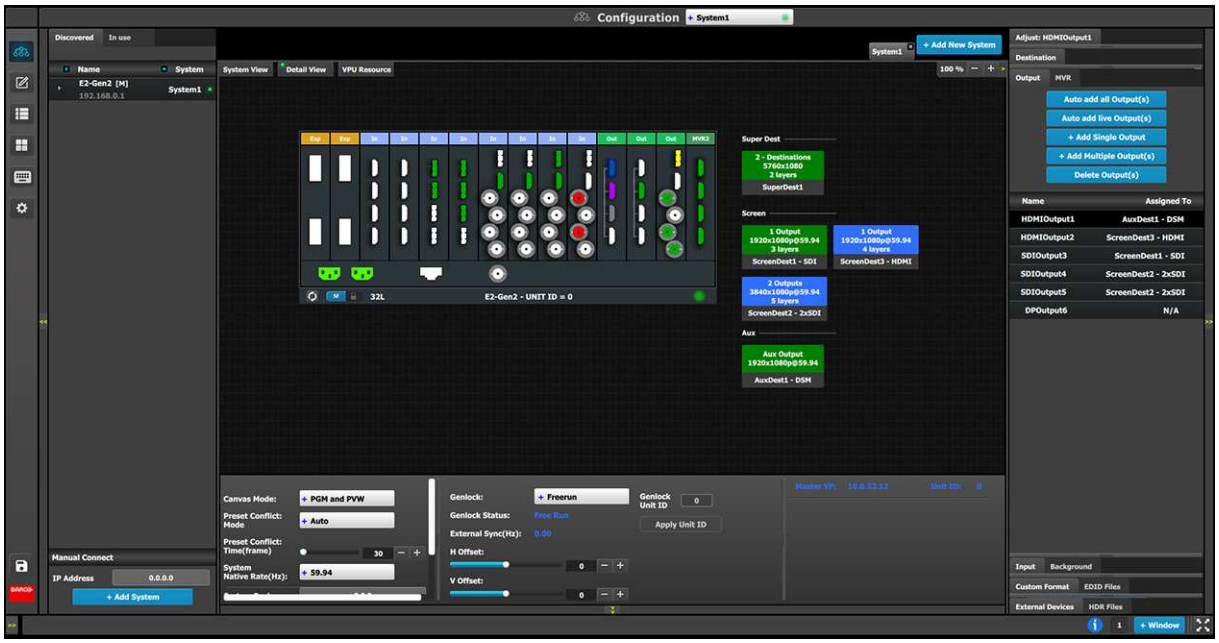


Image 6-10: Diagram area – E2 Gen2

How to create a new system

1. Click on the **Add New System tab** on the top.

   A new empty tab is created.

2. Drop a device on this system. Refer to the procedure to add a device in the section “Configuration Menu > Network resource area”, page 111.

3. Change the system name to avoid confusion when you control more than one system on the same Event Master Toolset Software.

   Double click on the tab, the tab background changes to a dark blue color indicating that modifications to the name can be made.

How to remove a system

1. Click on the “X” button on the system tab.

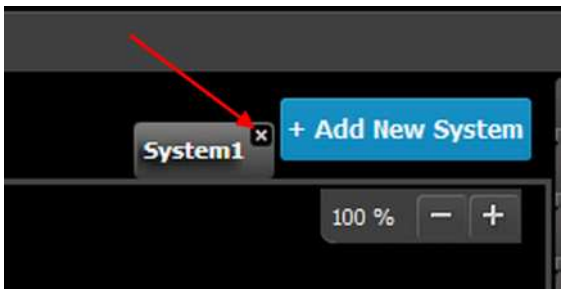


Image 6-11

   A confirmation window appears.

2. Click on OK.

   The tab is removed.

How to select a device in the system

1. Click on the area situated below the Event Master series processor graphic representation.

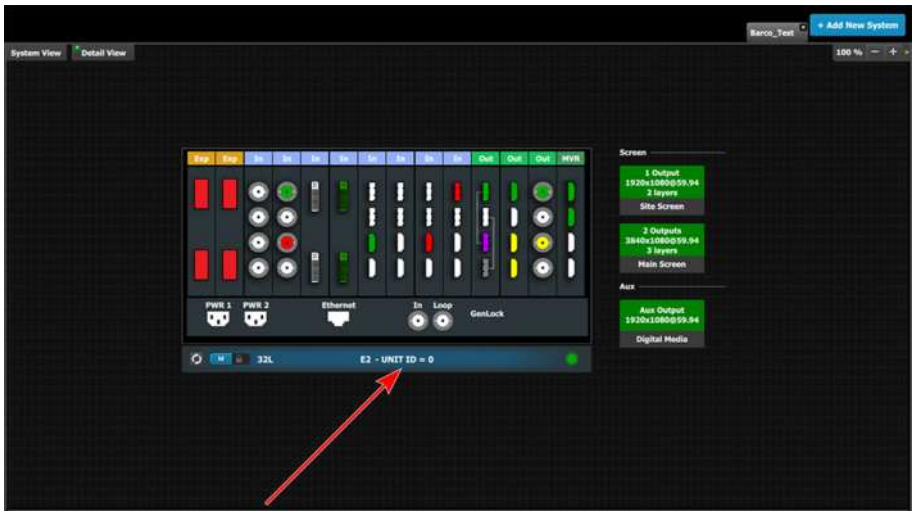


Image 6-12: Device selected

The device is selected. The device is highlighted in blue.

How to select destination (Screen, Aux)

1. Click on a destination (e.g. Aux).

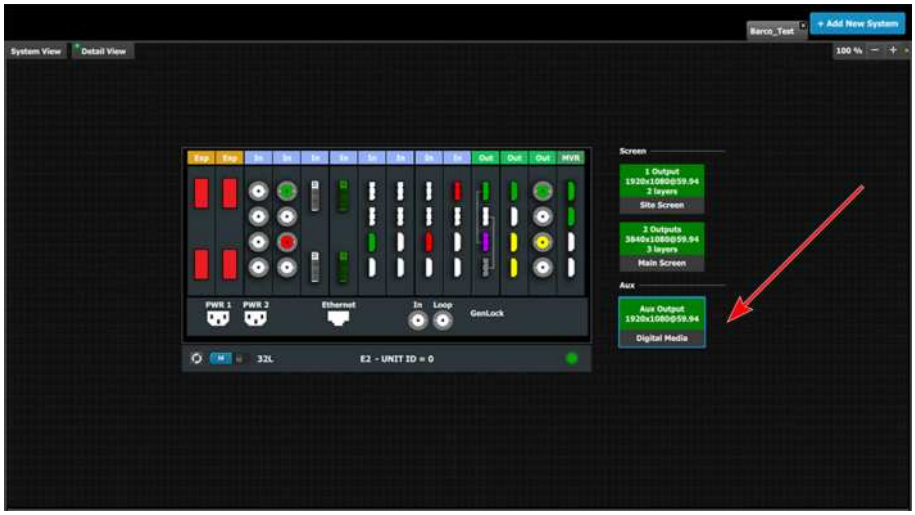


Image 6-13: Destination selected

The destination is selected. The destination is highlighted in blue.

Selecting a device or a destination in the Diagram allows the Adjustment area to display to display the parameters corresponding to the device or destination. See Adjust Tab in the section “Configuration Menu > Adjustment area”, page 117.

6.10 Configuration Menu > System modifier area

General

General parameters concerning the selected system are accessible in this area. The user can select the system’s preset conflict resolution mode, the native rate, and genlock mode.

Description

Image 6-14: Configuration Menu: System modifier area

- **Canvas Mode**: Canvas mode allows the user to choose between “PGM and PVW” canvas mode (the default setting) and “PGM only” canvas mode.
  - PGM and PVW—(Default) The unit reserves up to 20 megapixels of canvas for Preview (PVW) and for Program (PGM) whenever a Screen Destination is created.

    The preview canvas allows the user to preview changes before those changes are output to a Screen Destination.
  - PGM only—”PGM only” mode doubles the amount of PGM canvas to 40 megapixels, because the unit no longer reserves canvas for PVW.
    - Because the system no longer maintains a preview canvas, Backgrounds will cut to the program canvas (PGM). Mixing layers, however, will still mix between sources.
    - The Chroma key feature is not available in “PGM only” mode. (The Luma key feature is available in “PGM only” mode.)

    After updating the canvas mode, save the configuration by pressing the "Save All" button at the bottom of the Menu navigation bar (on the left-hand edge of the screen), and then soft reset / power cycle the unit for the system to reconfigure the VPU cards.

    Note: The maximum number of canvas links available for the Multiviewer is eight for the E2, and four for the S3.
- **Preset Conflict: Mode**—When using single layers conflicts can arise when a Preset Recall modifies a source layer that is currently on Program. You may choose from three Preset Conflict Modes to resolve these conflicts.
  - **Auto**—The system performs the necessary actions to gracefully recall the Preset to Preview and to wait for the user to transition to Program.
  - **Force Recall**—The system recalls the Preset directly to Program. Program is not protected.
  - **User Confirm**—The system presents the user with a pop-up asking what to do when a conflict is detected.

    User Confirm options:
    - **Resolve** – **All Trans or Cut:** Perform the necessary actions to resolve the conflict and perform an All Trans or Cut to bring the Preset to Program.
    - **Resolve** – **Wait:** Perform the necessary actions to resolve the conflict and wait for the user to press the All Trans or Cut manually.
    - **Cancel:** Cancels the entire Preset recall operation.
  - **Off**—The system alerts the user with an error message about any Preset recall conflict, but it does not present a pop-up menu for resolving the issue.
- **Preset Conflict: Time(frame)** is the amount of time the system uses when automatically performing an All Trans.
- **System Native Rate (Hz)**: System native rate in Hz (Cycles in second). Available selections:

23.98	30	59.94	120
24	47.95	60	
25	48	100	
29.97	50	119.88	

  The native system rate needs to match the general frame rate in the event where the unit is used.
- **System Backup**: IP address of the backup system.

  Enter the IP address of the backup unit, and press the "Sync" button to push the settings from the active system to the backup system.
- **Genlock**: Selects the system genlock mode from the options **Freerun**, **Lock to External**, or **Lock to Unit ID**.
- **Genlock Status**: Reports the system’s genlock mode status: Locked or not Locked.

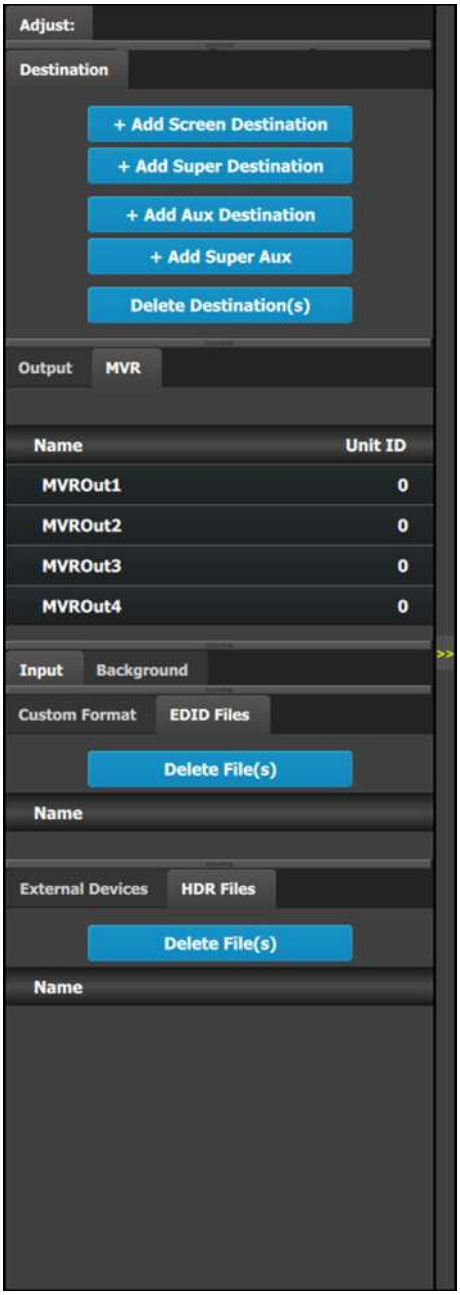
- **H Offset**: The H sync can be offset to match a Genlock situation. Adjustment in ms.
- **V Offset**: The V sync can be offset to match a Genlock situation. Adjustment in ms.
- **Master VP**: Reports the units IP address in the local network.
- **Unit ID**: Reports the units ID number. ID required to identify different units are acting as a single or linked system in order to expand for Inputs, Outputs or Layers.

6.11 Configuration Menu > Adjustment area

General

Situated on the right hand side of the screen is the Adjustment area. In this area the user can define and adjust unit specific parameters, inputs, backgrounds, outputs, multiviewer outputs and destination affected to the selected system.

Description



There are nine (9) tabs in this area:

- **Destination**: a destination is a location where the user can route the output of Event Master series processor (screens, widescreens, monitors etc.). The user could assign the outputs that are created in the previous tab to destinations, and delete unused or obsolete destinations
- **Output**: the user can add or remove screen and auxiliary outputs in this list.
- **MVR**: the user can configure the output format and select test patterns for each multiviewer output connector.
- **Input**: this tab provides a list of all the created inputs. Here the user can create new entries by associating them with input connectors. It is also in this tab that the user can delete unused or obsolete inputs.
- **Background**: provides a list of backgrounds of the selected system. Similarly to inputs, the user can add and remove Backgrounds from the system.
- **Custom Format**: the user can add or remove custom formats. Once a custom format is added, the Adjust tab allows the user to adjust the timing, connector capacity, viewable horizontal pixels and vertical lines, and the vertical-scan frame-rate.
- **EDID Files**: the user can delete EDID files.
- **External Devices**: the user can add or remove external devices, for example, a Barco projector.
- **HDR Files**: the user can delete HDR files.

Always on top:

- **Adjustment**: in this tab the user performs adjustments available for the selected item (device, input, background, output, destination). The content of this tab varies depending on the selected item. Access to this area is achieved from the **System diagram area** (click on device or on a destination) or in one of the tabs of the **Adjustment area** (input, background, output, destination) .

The following sections describe how to perform the configuration of each part of the system in detail:

- “Configuration Menu > Adjustment > Unit Configuration”, page 118
- “Configuration Menu > Adjustment > Input Configuration”, page 122
- “Configuration Menu > Adjustment > Background Configuration”, page 133
- “Configuration Menu > Adjustment > Output Configuration”, page 136
- “Configuration Menu > Adjustment > Destination Configuration”, page 145
- “Configuration Menu > Adjustment > Custom Formats Configuration”, page 172
- “Configuration Menu > Adjustment > External Devices Configuration”, page 175

6.12 Configuration Menu > Adjustment > Unit Configuration

General

In the unit configuration adjustments panel, the user can define and adjust unit (device) specific parameters.

How to access the unit configuration adjustments panel

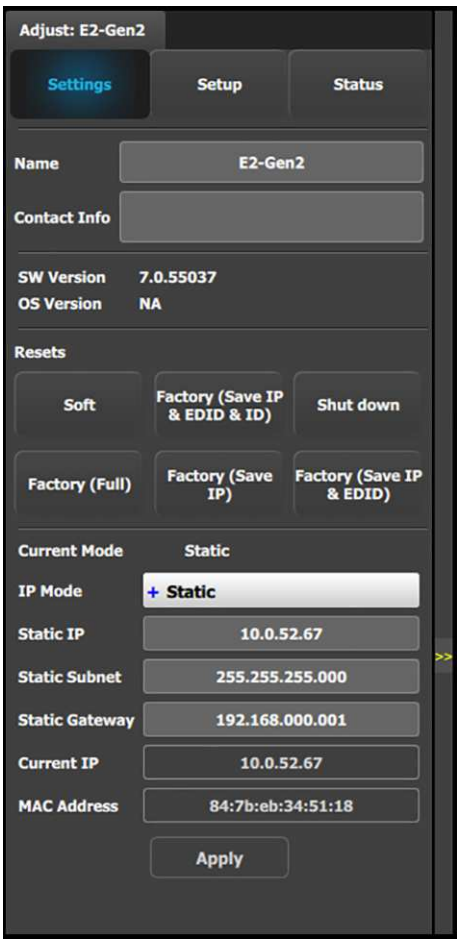
1. Select the device (unit) that you want to configure. Refer to “Configuration Menu > System diagram area”, page 112 and see the subsection “How to select device.”

   The device is selected. The device is highlighted in blue in the **System diagram area** and the name of device is indicated in the **Adjustment** tab in the **Adjustment area**.

2. Click on the **Adjustment** tab in the **Adjustment area**.

   The adjustment panel dedicated to the unit is displayed.

Description



Settings tab:

- **Name:** The name of the unit can be edited here.
- **Contact info:** User information for contact person responsible for the unit may be entered here.
- **SW Version:** Unit's Firmware version.
- **OS Version:** Unit's OS version.
  Note: When using the simulator, the EM GUI has its Software version shown in the Settings Page.
- **Resets:** (If the user selects one of the reset options, a confirmation pop up appears.)
  - **Soft:** Resets the unit without erasing any stored settings, similar to a Power Off / On.
  - **Factory (Save IP & EDID & ID):** Full factory reset with the exception of keeping the Ethernet setup (IP), the Input EDID settings, and the Unit ID settings.
  - **Shut down:** Powers down the unit.
  - **Factory (Full):** Full factory reset erases all stored settings.
  - **Factory (Save IP):** Full factory reset with the exception of keeping the Ethernet setup.
  - **Factory (Save IP & EDID):** Factory reset, but keep IP and Input EDID settings.
- Ethernet communication setup area.

IP Mode:

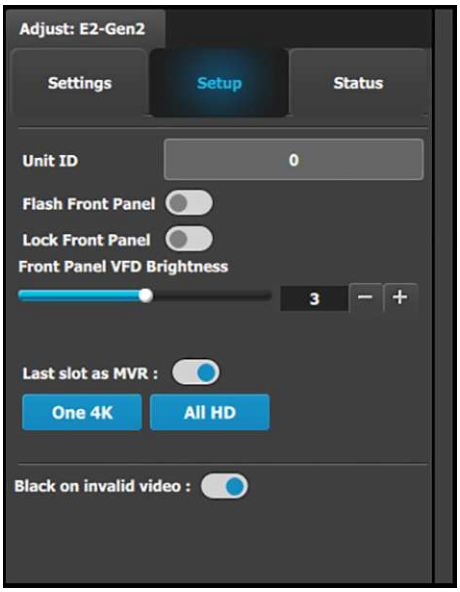
Each EMP model has a standard static IP Address.

- E2 (and E2 Jr.) = 192.168.0.175
- S3–4K (and S3–4K Jr.) = 192.168.0.176
- EX = 192.168.0.185
- IP–4K = 192.168.0.190
- EC-200/EC-210 = 192.168.0.180

If a DHCP IP address is required, the unit can be set to accommodate that too.

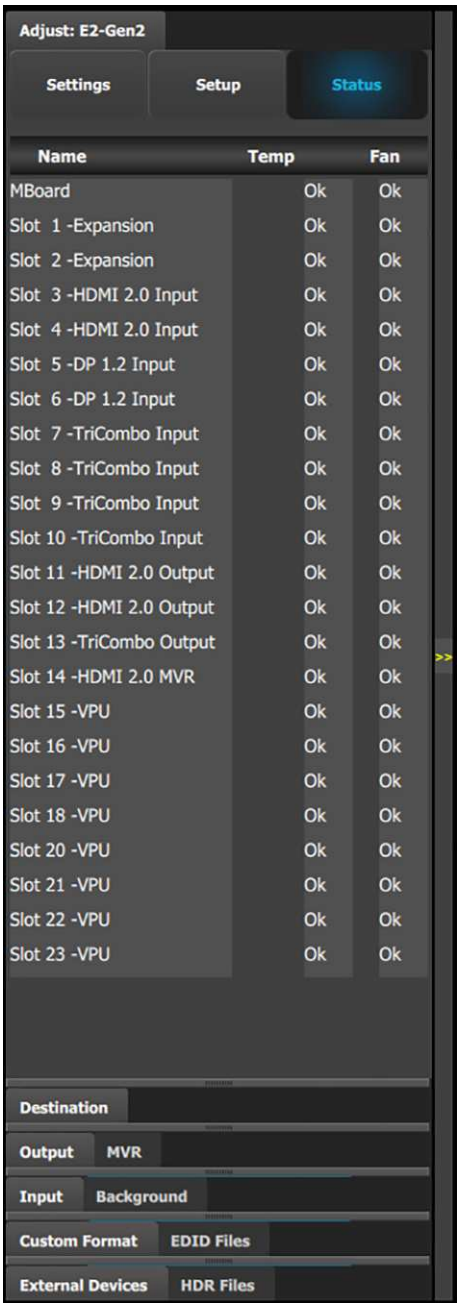
The unit can also have a specific IP Address assigned by the user to match a specific network environment.

The IP Address is changed by double-clicking on the STATIC setting and assigning an allowed configuration. For details on Network configurations we refer to industry standard.



Setup tab:

- **Unit ID:** Unique unit identification number.
- **Flash Front Panel:** Flashes the front panel.
- **Lock Front Panel:** Locks or unlocks the front panel.
- **Front Panel VFD Brightness:** Updates the brightness of the front panel VFD.
- **Last slot as MVR:** Allows the operator to use the last slot as an Output or as a Multiviewer (MVR).
  a) Check or uncheck the 'Last Slot as MVR' checkbox.
  Note: 'Last slot as MVR' is the default setting.
  b) Save the configuration.
  c) Power cycle or soft reset the unit for the change to 'Last Slot as MVR' to take effect.
    - To soft reset the unit, go to the Reset section of the Adjust > Settings panel and select 'Soft.'
  d) If a Gen 2 HDMI 2.0 output card is in installed in the last slot, the operator may select one 4K MVR output or four (all) HD outputs.
- **Black on invalid video:** If selected, when the input timing on the video does not match what was previously acquired on the input connector the video will be set to black.



The Status tab shows the temperature and fan status of the motherboard and the cards in the expansion slots and the input and output slots.

Last slot as MVR or Output in the simulator

To toggle between using the last slot on the simulator as an Output or as an MVR...

1. Check the "Last slot as MVR" checkbox in the Setup panel, and press “Save All” to save the settings.
2. Shut down the simulator.
3. Edit the simhw.xml file.
   (You may use any XML editor. You may also us Notepad.)
4. Change the card type of the MVR slot to be either a normal HDMI output card (card type = 22) or an MVR card ((card type = 40).
   Last slot as MVR: `<card id="CardID15" type="40" slot="13">CardType_Output_Multiviewer</card>`
   Last slot as Output: `<card id="CardID15" type="21" slot="12">CardType_Output_4_SDI</card>`

6.13 Configuration Menu > Adjustment > Input Configuration

General

In the Input configuration menu users can assign input connectors to inputs and adjust parameters to match the incoming signal format and timing parameters.

Input Card arrangement

On the E2 model, the input cards occupy slots 3 through 10 and are right justified to slot 10.

On the S3–4K model, the input cards occupy slots 4 through 6 and are right justified to slot 6.

If there is an empty input slot between two input slots, all input cards to the left of the empty slot are marked with red. Red indicates that although the cards will operate properly, inputs from these cards will not be available at the Multiviewer.

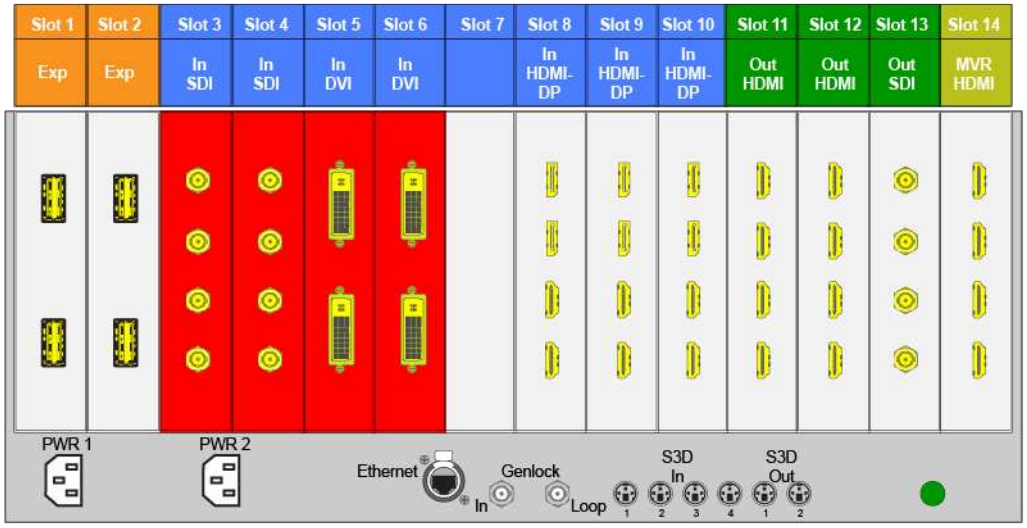


Image 6-15: E.g. E2 with an empty input-card slot

If the card in the slot is wrong type (e.g. output card in input slot, or vice versa) then the slot in the diagram will be greyed out.

Input Connector Grouping

The reason for connector grouping is that in order to accommodate higher resolutions with no loss of quality bandwidth has to be added to the signalpath. By combining connectors a higher resolution all the way up to 4K@60Hz with progressive scan can be added with its full color space 4:4:4.

Several rules apply when defining an input configuration:

1. An Input connector can only be assigned to one input configuration.
2. Multiple input connectors in the same configuration must be of the same type and in the same slot or in adjacent slots. For example, cannot have a HDMI connector and an SDI connector in the same input configuration.
3. An input can be configured from one, two, or four connectors.
4. A multi—connector input is still ONE input.
5. Maximum of 4 single link connectors can be assigned to an Input.
6. Maximum of 8 single link connectors can be assigned to a background, Background.
7. Maximum of 128 input configurations can be assigned.

Examples of 4K Valid Inputs:

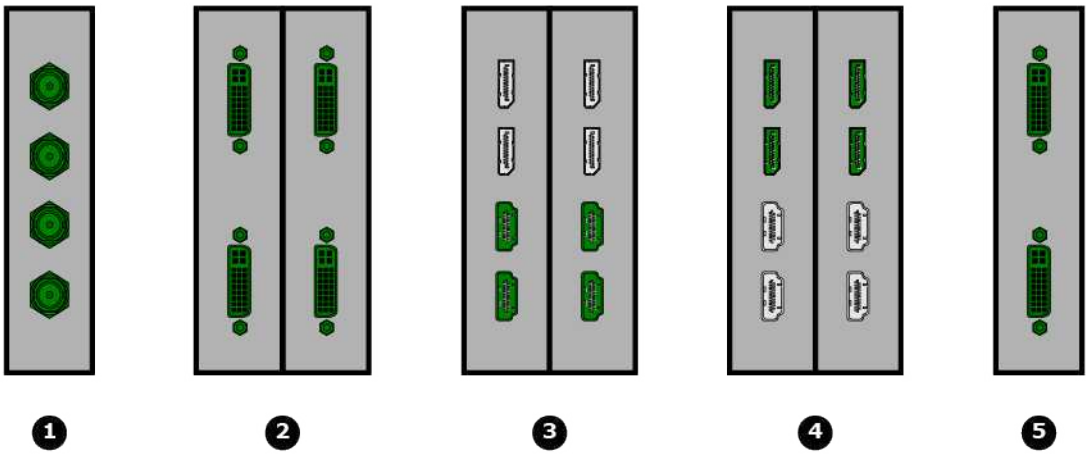
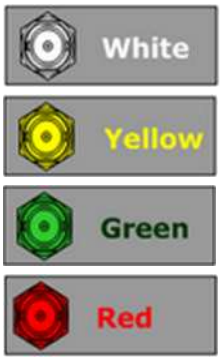


Image 6-16: Valid 4K inputs

1 4x SDI-3G
2 4x DVI-SL
3 4x HDMI 1.4
4 4x DP 1.1
5 2x DVI-DL

Input connector colors



Not assigned and no input signal is detected

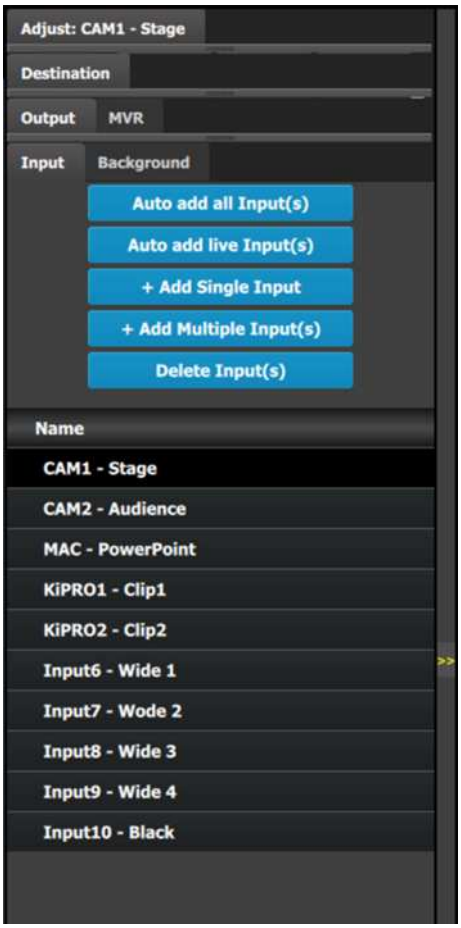
Not assigned to any input, but a signal has been detected

Assigned to an input, and an input signal is detected

Assigned to an input, but an input signal is not detected

Input configuration menu description

Input configuration menu is accessed by clicking on the Input tab.

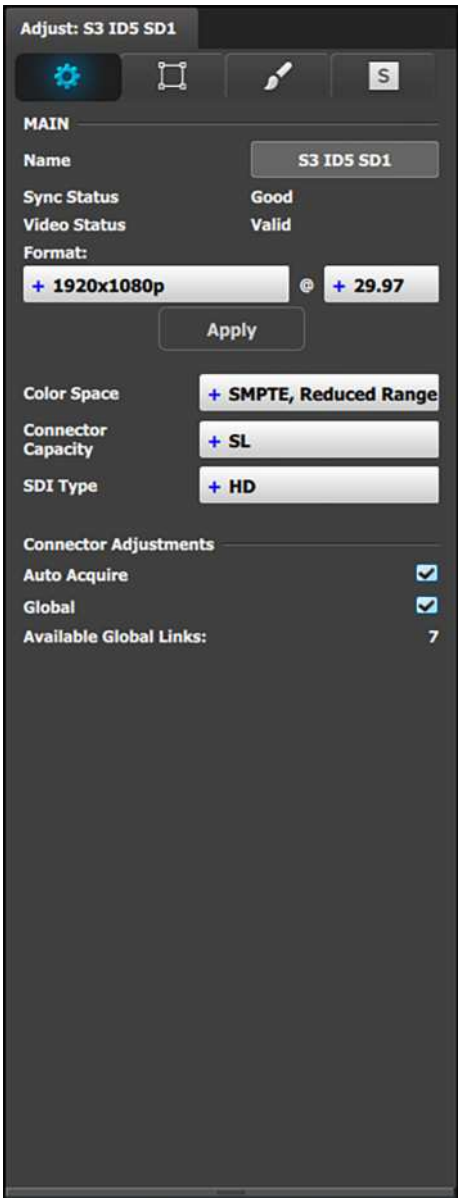


This menu provides:

- **Auto Add all Input(s):** A button to automatically allocate all unassigned input connectors to an input.
- **Auto add live Input(s):** A button to automatically allocate all LIVE input connectors (YELLOW) as configured inputs.
- **+ Add Single Input:** A button to manually allocate connectors to an Input configuration.
- **+ Add Multiple Input(s):** A button to manually allocate more than one connector to separate Input configurations.
- **Delete Inputs:** A button to delete unused or obsolete inputs.
- A list of all the Inputs already created on the system (e.g. Cam 1, Input2).

Note: Users can now link more than two E2s, or more than two S3–4Ks in a single system. In this configuration, only input expansion is supported. Users can select up to 48 SL inputs for linked E2 systems and 24 SL inputs for linked S3–4K systems to be marked it as a "Global Input."

Global Input checkboxes are available in the Configuration page, under the Input and Background tabs for inputs.



How to Auto add all Inputs

The “Auto add all Inputs” button automatically allocates all unassigned input connectors as individual, single link input configurations. At this moment the incoming signal is acquired and a source file is saved. Input connectors that are already assigned to an input will not be affected. If the button is pressed, all previously unassigned input connectors will be automatically assigned. The software by default names inputs as [ConnectorType] “Input 1, 2, 3….”. Input configuration names can be renamed by double-clicking on the name and turning the box blue.

How to Auto add live Inputs

The “Auto add live Inputs” button automatically allocates all live input connectors as individual inputs. Input connectors that are already assigned to an input will not be affected. If the button is pressed in the beginning, before any sources have been connected, no inputs will be automatically assigned. The software by default names inputs as [ConnectorType] “Input 1, 2, 3….”. Input configuration names can be renamed by double-clicking on the name and turning the box blue.

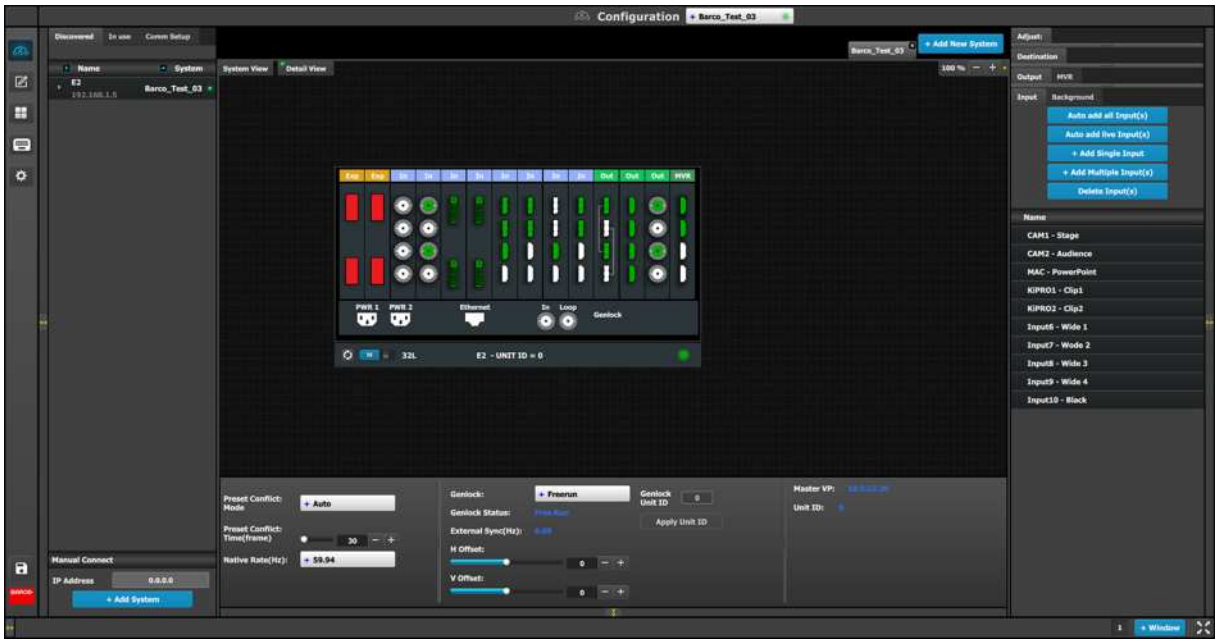


Image 6-17: Configuration menu, Adjustment area, Input

The “Auto Add Live” feature adds only single-connector inputs. Any special input, such as a multi–connector 4K Input, needs to be assigned manually. See **How to add Input** section below.

How to add an Input

Inputs configurations can be added manually to un-assigned connectors.

1. Select the **Detail View** tab in the system diagram area.
2. Select an unassigned (white or yellow) input connector from the detail view.

   More than one input connector may be selected. The connector(s) will be highlighted blue.

   Note: If the input signal is 4K provided by the 4 SDI connectors, 4 SDI connectors need to be selected.

3. Click on the **Add Single Input** button.

How to delete Input

1. Click on the **Delete Input(s)** button

   The **Delete Input(s)** button is replaced by the **Delete Selected** button (highlighted in red).
2. Click on the corresponding connector in the graphical area.

   or

   click in the “x” on the right hand side in the input configuration list.

   Connector(s) is immediately highlighted in blue.
3. The deletion is completed by clicking the **Delete Selected** button.

Multiple connector configurations can be selected to be deleted together.

How to access to the Input configuration adjustments

Adjustments to inputs are performed in the “Adjust” panel:

1. Select the input from the configuration list

   or

   clicking on the connector graphic.

   An input is selected.

2. Click on the **Adjust** tab that is on the top of the Adjustment area.

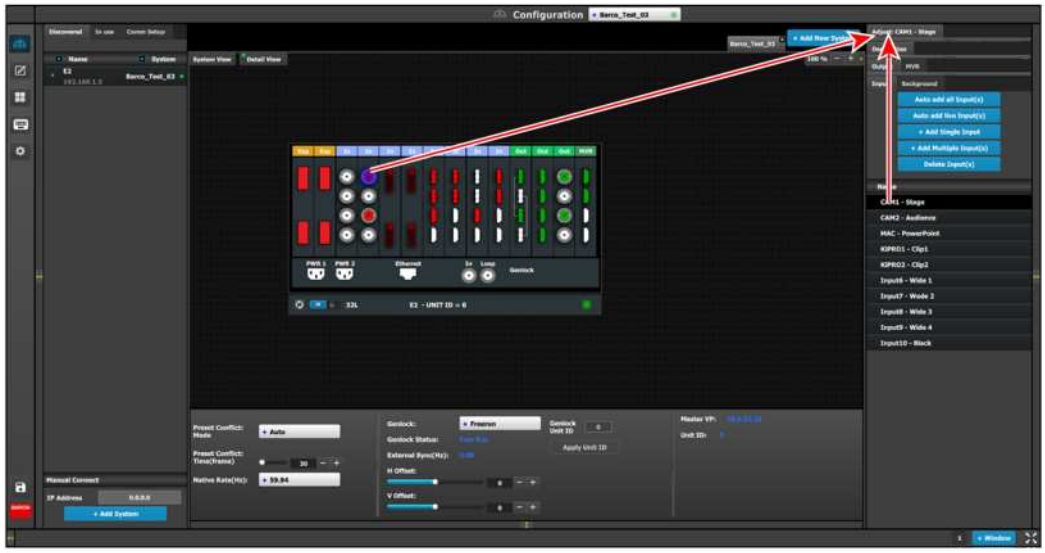


Image 6-18: Accessing the Input Adjust panel

The input adjustment panel is displayed.

Input adjustment panel description

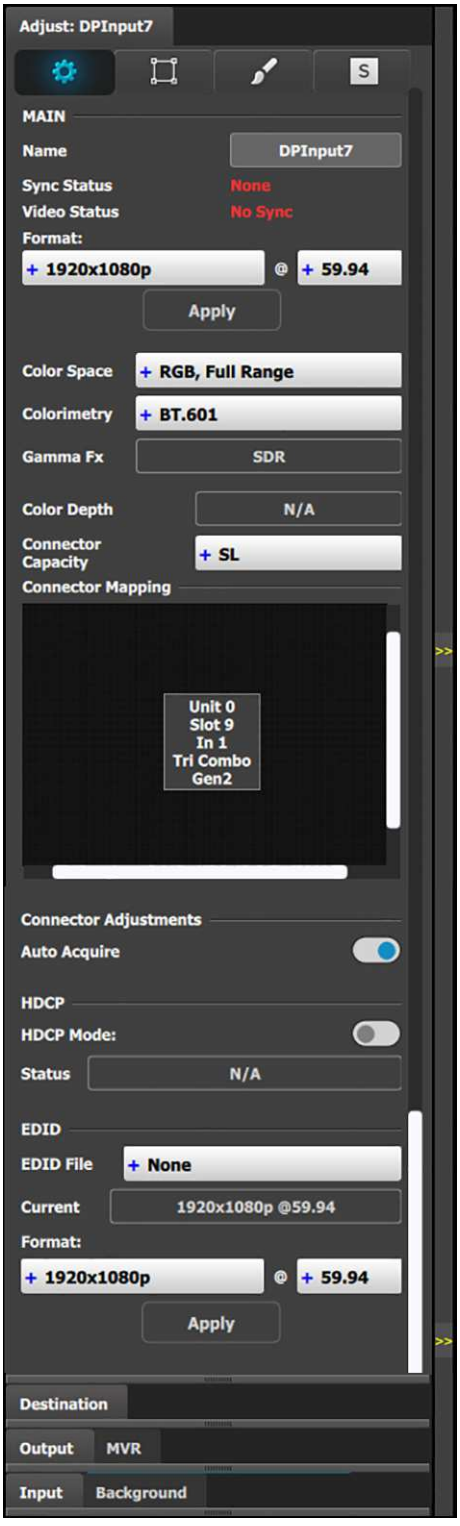
The input adjustment panel is divided in four sections.

- Main page
- Format & Timing
- Color Adjustment
- Contact Information

Input adjustment panel > Main page

This menu is available in two versions according to the input type:

- **DVI, HDMI and DisplayPort** input types – top half



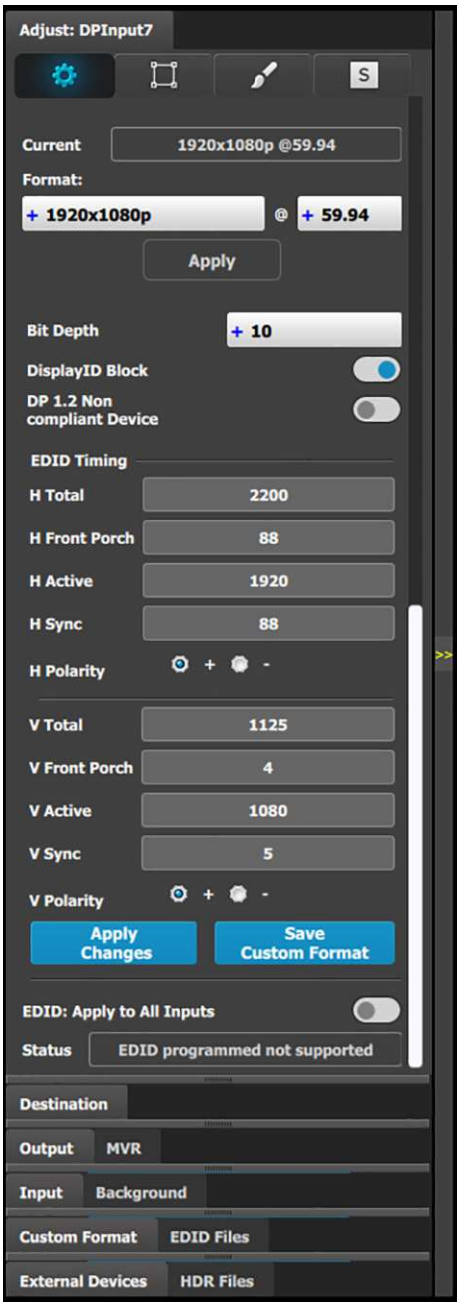
- Name: Edits the name of the input configuration.
- Sync Status: Detects a good video sync.
- Video Status: Indicates if the connector capacity is in par with the input resolution.
- Format: The detected video format is shown here. If Auto Acquire is unchecked below, the desired input video format is selected here from the drop-down menu.
- Color Space: The detected color space is shown here. In the event of a non-VESA standard source the color space can be unmatched to the processing. In this case a different color space can be selected to accommodate the signal. Available are:
  - RGB, Full Range
  - RGB, Reduced Range
  - SMPTE, Full Range
  - SMPTE, Reduced Range
- Colorimetry: Choose the colorimetry ITU-R recommendation for the output.
  Available recommendations are:
  - BT.601 (SDTV)
  - BT.709 (HDTV)
  - BT.2020 (UHD)
  - DCI-P3 (digital movie projection)
- Gamma Fx: Choose the Gamma format for the output.
  Gamma Fx values are:
  - SDR
  - HLG
  - PQ/HDR10
- Color Depth: This field displays the color bit depth of the input signal in number of bits per pixel.
- Connector Capacity: Each connector has the option to accommodate different bandwidth standards over its interface. This is referred to as:
  - **NONE** The connector is turned off and cannot accept any video, bandwidth of this connector is freed up to be used by another connector. Connector is grayed out in the graphic representation. Connectors may need to be selected to NONE before DL or 4K can be selected on others.
  - **SL S**ingle **L**ink The connector can accommodate a resolution up to 2048 x 1200@60Hz.

- **Connector Capacity (continued):**
  - **DL D**ual **L**ink The connector can accommodate a resolution up to 2560 x 1600@60Hz.
    Note: A dual link connector can also accommodate a 3840 x 1080 or 2048 x 2160 signal, that is also available in the EDID list once DL is selected for that input.
  - **4K** The connector can accommodate a resolution up to 4K@60P.

Note: On a Gen 1 input card, in order to accommodate a 4K@60 signal, 2 or 4 connectors need to be used.

- **Connector Mapping:** Shows the Unit ID, slot number, the connector number in the slot, and type of input card.
- **Auto Acquire:** Enables the auto acquire mode. During acquisition, the system detects and acquires the input type and resolution. Refer below for details regarding this feature. Default is **On**
  Inputs auto acquire incoming video as standard. If the setting is unchecked, only the set or previously acquired signal will be valid video.
- **HDCP Mode**
  Enables the HDCP setting for the selected input.
  The default for DisplayPort, DVI, and HDMI inputs is Off. To turn On the HDCP Mode, click on the empty checkbox. When the checkbox displays a check mark, HDCP Mode is On. HDCP Mode is not applicable to SDI inputs.
- **EDID**
  All inputs (except SDI) can have an EDID (Extended Display Identification Data) set according to its connector capacity. The currently set EDID is visible in the Current box.
- **Format:** The drop-down menu with its search function provide a way to select any of the available VESA or SMPTE standard EDIDs as well as a frame rate. Once selected the Apply Button needs to be pressed in order to program the inputs.

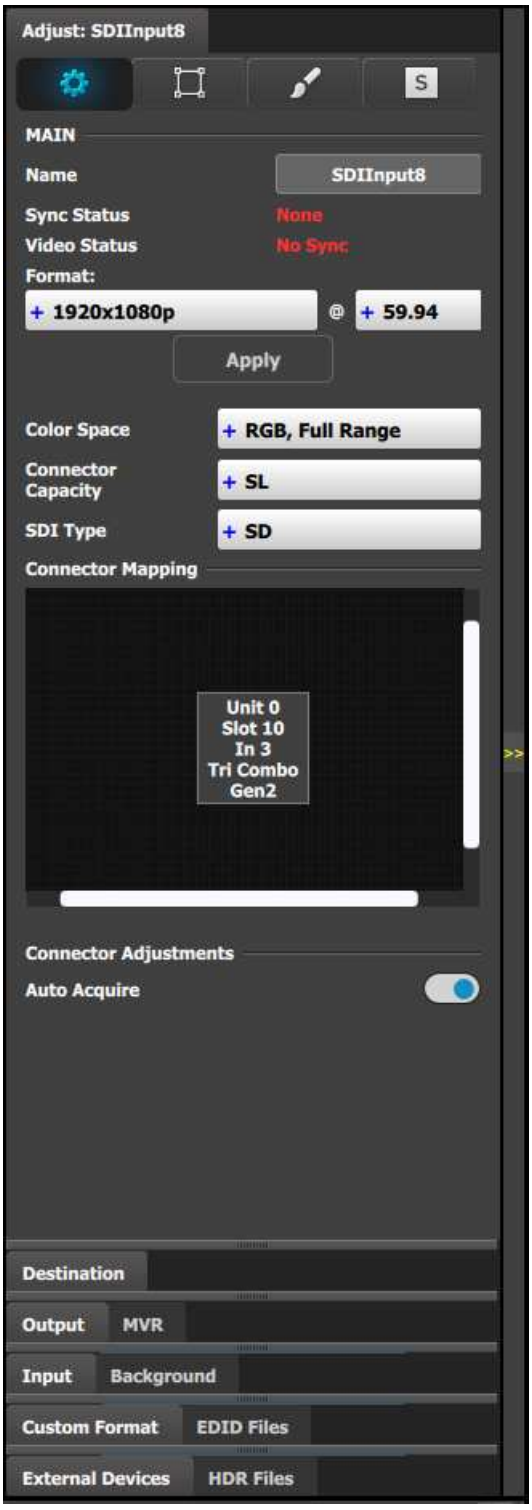
- **DVI, HDMI and DisplayPort** input types – bottom half



- Bit Depth: User-selectable bit depth for use with custom EDID.
- DisplayID Block (for DP 1.2 inputs only): When this checkbox is checked, the EDID is programmed with a "Tiled display topology" data block. This is useful for multi connector input configurations. Do not enable this feature if the input is a single input configuration.
- DP 1.2 Non-compliant Device: Select to indicate that the device is not compliant with the DisplayPort 1.2 specification.
- EDID Timing: The EDID timing can be edited into a non standard, or Custom EDID by double clicking on each timing box and inserting a value. A EDID timing needs to follow the VESA rules, and typically a VESA calculator needs to be used.
  Once a value is inserted ENTER needs to be pressed.
  Selected EDID or Custom EDID can be applied to all inputs of the same type at once by selecting the checkbox towards the end of the panel.
- Apply Changes button: Applies changes to the current input format.
- Save Custom Format: Saves changes to a custom format.
- EDID: Apply to All Inputs: Applies the current format to all inputs.

- **SDI** input type

The SDI input configuration menu is similar to the DVI/HMDI/DP menu but without the EDID and HDCP sections. In addition the SDI menu includes an addition selection regarding the SDI type.



- Name: Edits the name of the input configuration.
- Sync Status: Detects a good video sync.
- Video Status: Indicates if the connector capacity is in par with the input resolution.
- Format: The detected video format is shown here. If Auto Acquire is unchecked below, the desired input video format is selected here from the drop-down menu.
- Color Space: The detected color space is shown here. In the event of a non-VESA standard source the color space can be unmatched to the processing. In this case a different color space can be selected to accommodate the signal. Available are:
  - RGB, Full Range
  - RGB, Reduced Range
  - SMPTE, Full Range
  - SMPTE, Reduced Range
- Connector Capacity: Each connector has the option to accommodate different bandwidth standards over its interface. This is referred to as:
  - **NONE** The connector is turned off and cannot accept any video, bandwidth of this connector is freed up to be used by another connector. Connector is grayed out in the graphic representation. Connectors need to be selected to NONE before DL or 4K can be selected on others.
  - **SL S**ingle **L**ink The connector can accommodate a resolution up to 2048 x 1080@60Hz.
  - **4K** The connector can accommodate a resolution up to 4K@60P.

    Note: On Gen 1 input cards, in order to accommodate a 4K@60 signal, 2 or 4 connectors need to be used.

- **SDI type (available with SDI connector type) :** allows a choice between SD (297 Mb); HD (1.5Gb); 3G (3Gb) Level A, Level B, Level A 2SI, or Level B 2SI; 6G (6 Gb); or 12G (12 Gb). The 6G and 12G settings are available only for the SDI inputs on the Tri-Combo Input card.

  The SDI Type options vary, depending on the format of the input signal. For example, for:
  - NTSC/PAL—the SDI Type can be only SD.
  - 1080i or 1080p, with a refresh rate less than or equal to 30 Hz—the SDI Type can be only HD.

- 1080p, with a refresh rate greater than 30 Hz—the SDI Type can be:
  - Level A (default)
  - Level B
  - Level A 2SI
  - Level B 2SI

  The 2SI options are available only if the Input/Output configuration has 4 SDI connectors from the same card, and the Output format is either 1920 x 1080 or 2048 x 1080.

Auto Acquire Feature discussion:

When the Auto Acquire is **On**, the system performs a full sync acquisition on the input signal whenever:

- You select an input
- The input type changes
- The sync rate of the input signal changes

During acquisition, the system detects and acquires the input type and resolution When Auto Acquire is off, the system uses the last known configuration, when possible. If the input signal is incompatible with the saved configuration, a good input lock may not be possible. In this case, the format name field in the Status Menu displays the Invalid Signal message.

Please note the following important points regarding Auto Acquire:

- It is recommended that you turn Off Auto Acquire in applications where you have already configured and saved the system's input setup.
- If Auto Acquire is On and a valid input is selected that does not have a saved input associated with it, the system attempts to detect and acquire the source. This process may take a few moments.
- If Auto Acquire is Off, the system uses the last-known configuration for each input, to the extent possible, comparing the input's timing to the configurations in the system's library. These configurations can be custom files or system default configurations.
- Most users can leave Auto Acquire on. Advanced users who know the input video timing parameters may choose to turn Auto Acquire off and select the parameters manually.

Input adjustment panel > Format & Timing

This is a status and informational menus. No adjustments can be done on this Format and Timing panel.

- Format: Video format of the input
- H Total: Total pixel count per line
- H Front Porch: The offset between the end of the active area and the beginning of H sync
- H Active: The horizontal size in pixels of the active area
- H Sync: H sync width in pixels
- H Polarity: Polarity (active High or Low) of the horizontal sync pulse (N/A in SDI)
- V Total: Total line count per frame
- V Front Porch: The offset in lines between the end of the output active area and the beginning of V sync
- V Active: The vertical size of the output active area
- V Sync: V sync width in lines
- V Polarity: Polarity (active High or Low) of the vertical sync pulse (N/A in SDI)

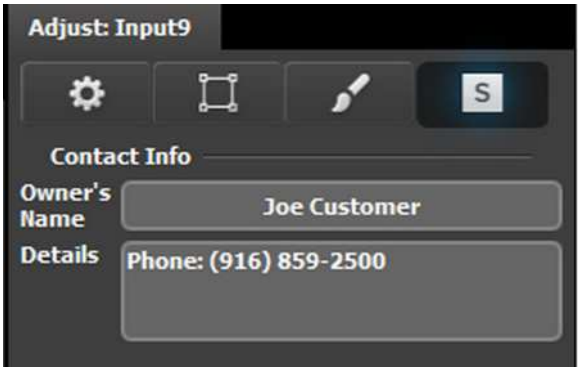
Input adjustment panel > Color Adjustment

This menu allows for color adjustments for each input.

- The RGB Contrast and Brightness settings are adjustable.
  - The Overall adjustment has a range of 50 to 150.
  - The individual Red/Green/Blue adjustments have a range of 25 to 150.
  - The default setting for all of these properties is 100.
- Gamma is adjustable within a range of 0.31 to 3.29. The default setting is 1.0.
- Hue is adjustable within a range of –90 to +90 degrees. The default setting is 0 degrees.
- Saturation is adjustable within a range of 0 to 150. The default setting is 100.
- Reset All changes all values to their default settings.

Input adjustment panel > Contact Information

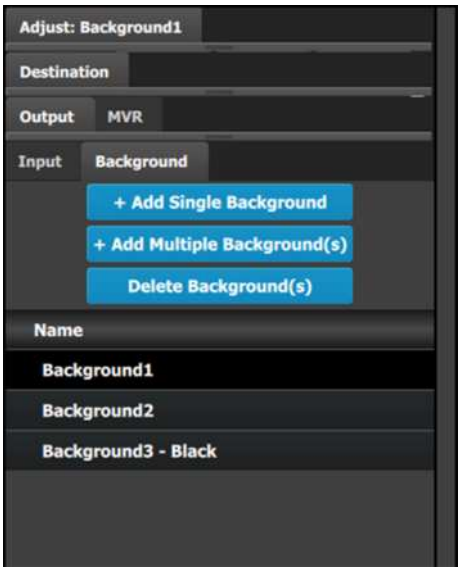
This menu allows for the user to enter contact information for easy identification.



6.14 Configuration Menu > Adjustment > Background Configuration

General

Assigning input connectors to backgrounds is very similar to creating Inputs as it was discussed in the previous section. Therefore, the menus are also very similar and for the sake of simplicity the same menus are not going to be presented in this section.

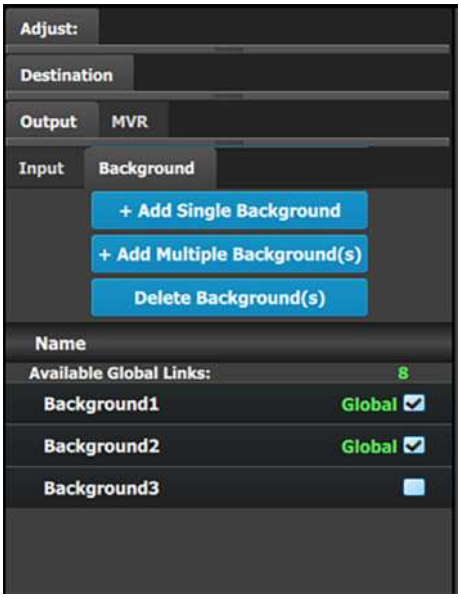


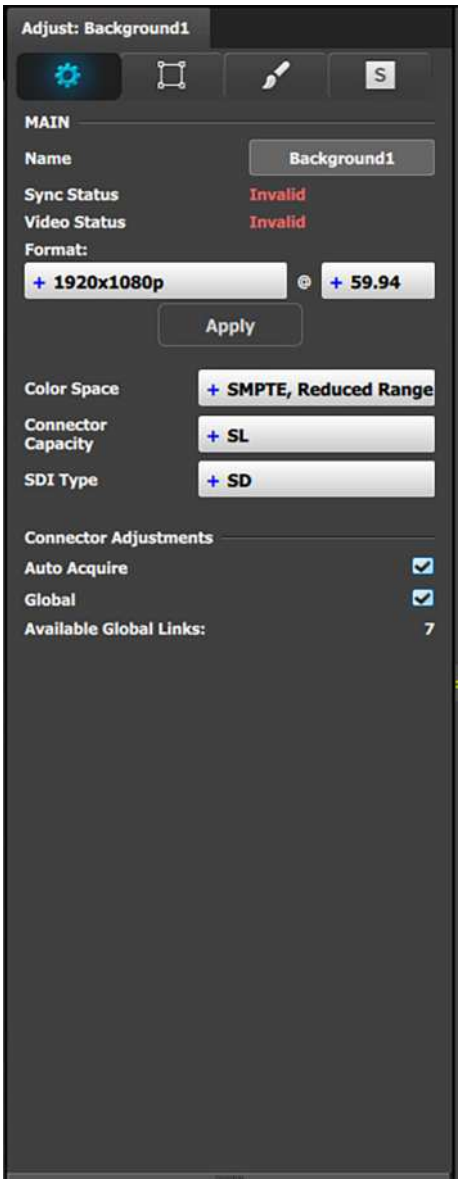
This menu provides:

- **+ Add Single Background:** A button to manually allocate selected Input connectors to a Background configuration.
- **+ Add Multiple Background(s):** A button to manually allocate more than one Input connector to multiple Background configurations. Each single connector is configured as an individual Background.
- **Delete Backgrounds:** A button to delete unused or obsolete Backgrounds.
- A list of all the Backgrounds already created on the system (e.g. Background1 and Background2).

Note: Users can now link more than two E2s, or more than two S3–4Ks in a single system. In this configuration, only input expansion is supported. Users can select up to 48 SL inputs for linked E2 systems and 24 SL inputs for linked S3–4K systems to be marked it as a "Global Input." Global Input checkboxes are available in the Configuration page, under the Input and Background tabs for inputs.

Backgrounds can also be designated as “Global Inputs” by checking the "Global" checkbox on the Adjust panel for the Background.





One of the differences between Inputs and backgrounds is in the number of connectors that can be assigned to each one. As it was presented in the previous section, an input can be defined from 1, 2 or 4 connectors. A background channel, however, can be defined by any number of connectors between 1 and 8. The same rules

apply as in the Input definition: The connectors need be on the same card (or adjacent cards) and be of the same format.

Backgrounds can be created from all input connector types, and as many as you have available connectors.

Backgrounds can also be configured from Dual Link and 4K capacity input connectors, forming a background of one or several 3840x1080 or higher resolutions.

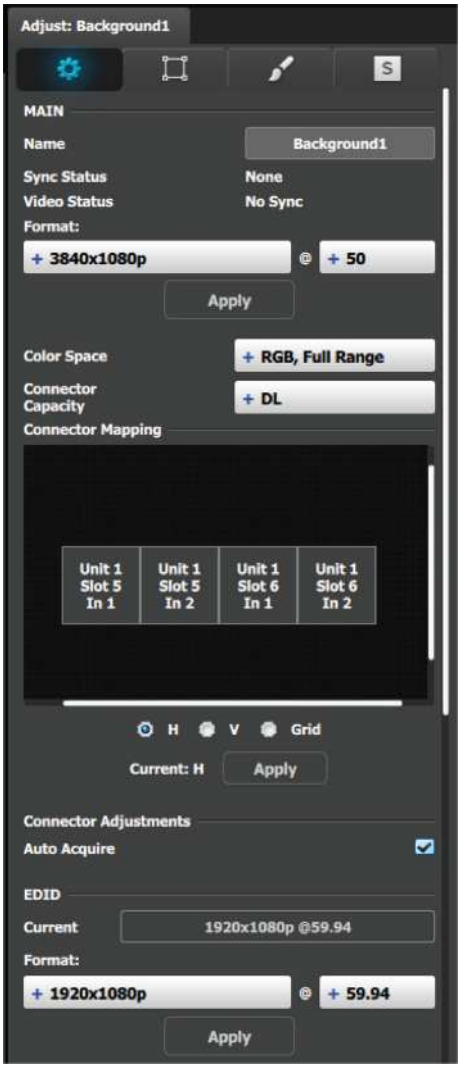
Background Adjustment panel description

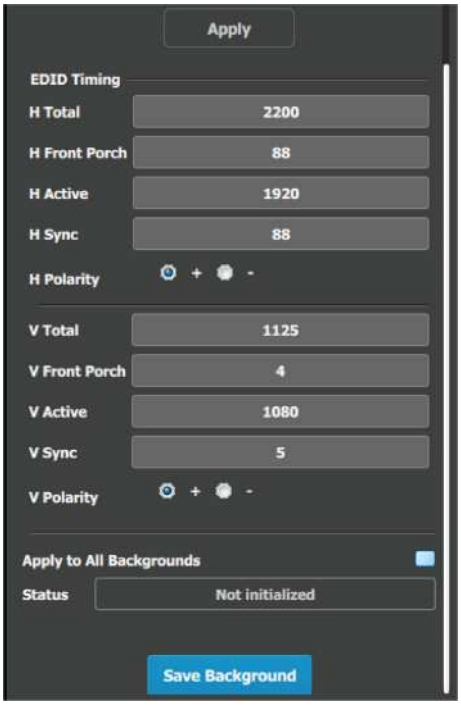
If the selected background is composed by more than one input connector, the adjustment menu will include a diagram of the configuration.

The diagram defaults to a horizontal configuration. If a vertical configuration is desired, the user clicks in the circle next to the “V” and then the Apply button.

The Grid (early) or the H by V (later) dialog is used for a background conflating two or more inputs.

Background resolutions must match the overall output resolution of the Destination for which they are created.





Please note that connector assignments for the backgrounds cannot change from what is shown in the diagram. The system wiring needs to reflect the same order

6.15 Configuration Menu > Adjustment > Output Configuration

General

In the Output menu users can assign output connectors to configurations and adjust signal parameters to match the display devices connected to the unit.

Output Card arrangement

On the E2 model, the output cards occupy slots 11 through 13 and right justified to slot 13.

On the S3–4K model, the output cards occupy slots 7 through 8 and right justified to slot 8.

If there is an empty output slot, all output cards to the left of that empty slot will show as RED in the GUI. Red indicates that although the cards will operate properly, outputs from these cards will not be available at the Multiviewer.

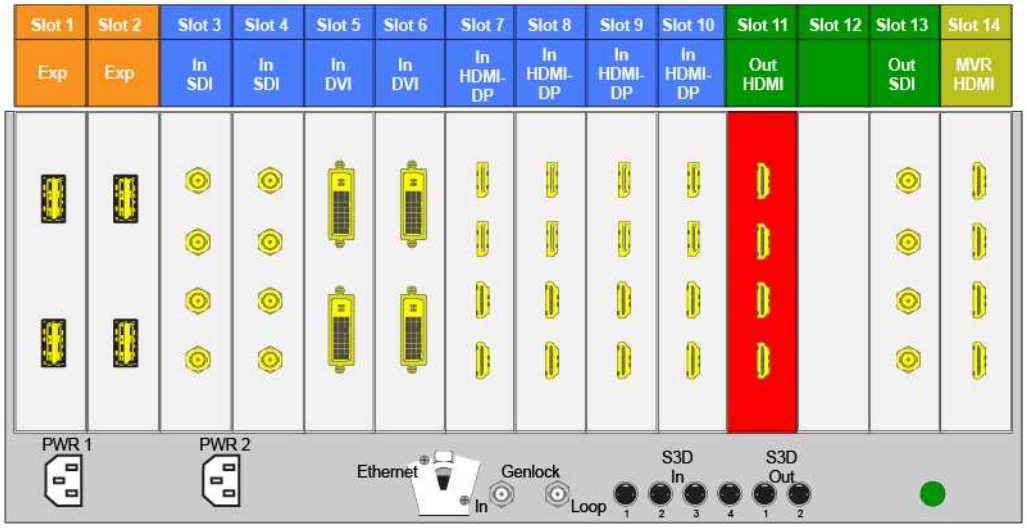


Image 6-19: E.g. E2 with an empty output-card slot

If the card with the connectors that are part of an output configuration is missing, the output configuration in the configuration list will be grayed out.

Also, if there is an existing output configuration but the card in the slot is of different type, then again the configuration will be greyed out.

Output Connector Grouping

The connectors can be grouped together to define a 3D* , 4K or Videowall configuration. For example, a projector that requires 2 DVI connectors to pass 3D Left and Right eye signals. Also 4 SDI connectors can be configured as a 4K output in order to connect to a 4K projector.

There are several rules that apply when defining an output configuration:

1. Each Output connector can only be assigned to one output configuration.
2. Outputs in an output configuration must be of the same type AND in the same slot or in adjacent slots. For example, there cannot be a HDMI connector and an SDI connector in the same output configuration.
3. Max connectors for an output configuration = 4.
4. Once output connectors are assigned to the same output configuration, all settings for the output connectors will be synchronized.
5. If an output connector is not assigned to an output configuration,
   - Output settings cannot be adjusted on that connector.
   - The connector cannot be assigned to a destination

Examples of 4K Valid Outputs:

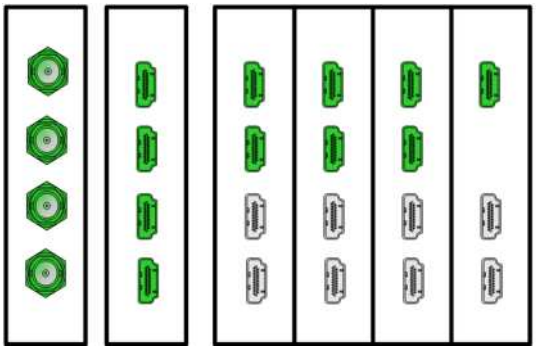


Image 6-20

- 4 x SDI 1920x1080
- 4 x HDMI 1920x1080 or 2048x1080 on 1 card
- 4 x HDMI 1920x1080 or 2048x1080 two cards
- The top 2 x HDMI at 1920 x 2160 or 2048 x 2160 at max 60P
- One of the top HDMI at 3840 x 2160 or 4096 x 2160 at max 30P

Examples of valid 3D Outputs *:

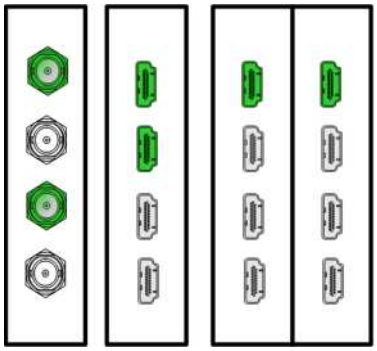


Image 6-21

(*) Future software release

Output connector colors

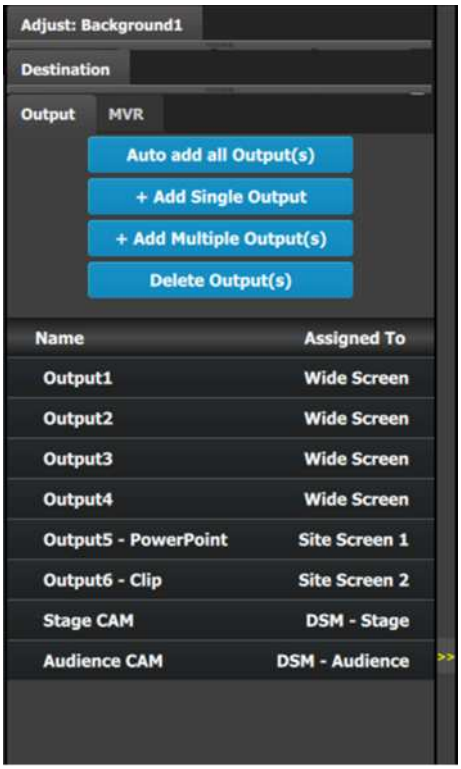
Not added to system as grouped connector or single connector

Assigned to any output configuration

Assigned to a screen or auxiliary destination

Output configuration menu description

Output configuration menu is accessed by clicking on the Output tab.



This menu provides:

- **Auto add all Output(s):** A button to automatically allocate all unassigned output connectors to Output configurations.
- **+ Add Single Output:** A button to manually allocate all selected output connector(s) to an Output configuration.
- **+ Add Multiple Output(s):**A button to manually allocate more than one connector to an individual Output configuration per connector.
- **Delete Outputs:** A button to delete unused or obsolete Output(s).
- A list of all the Outputs already created on the system (e.g. Output1 and Output2).

How to Auto add Outputs

The “Auto add all Output (s)” button allows all 2K outputs that are not already assigned to an output configuration to automatically assign to individual output configurations. Output connectors that are already assigned to output configurations will not be affected. The picture below shows what occurs when the button is pressed. Since there are 12 output connectors not assigned, all 12 Output configurations are automatically assigned.

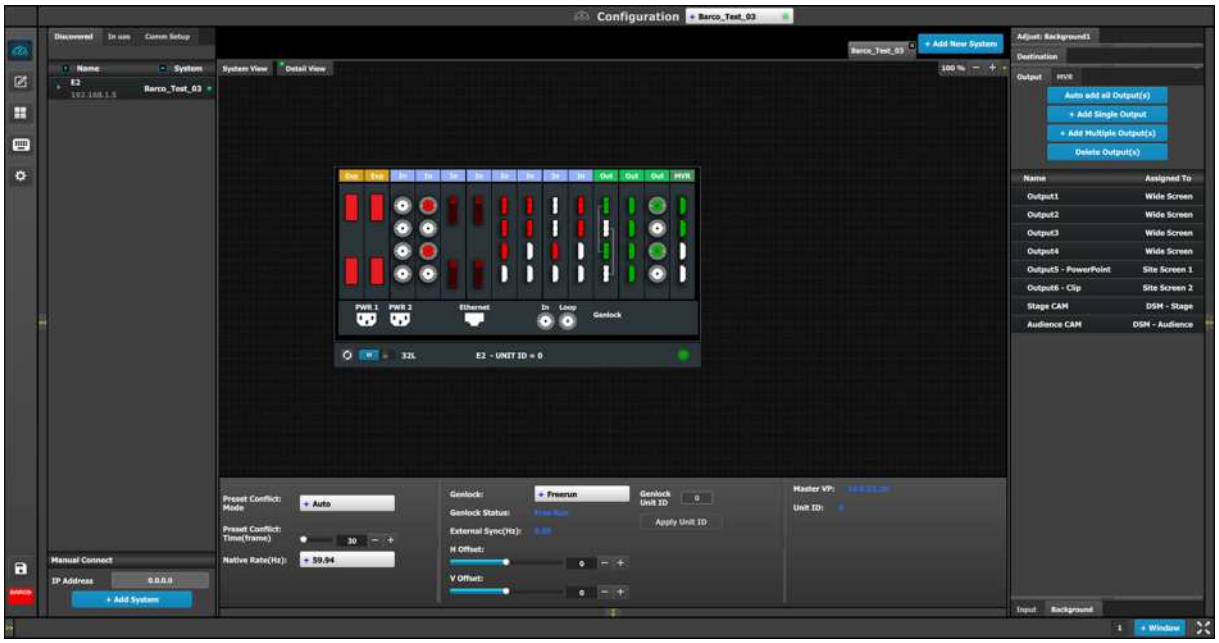


Image 6-22: Configuration menu, Adjustment area, Output

Since the software assigns automatically only 2K outputs, Dual link or 4K outputs need to be configured manually. See **How to add output** section below.

The unit will query the connected device on its output for a preferred EDID and try to assign that as the output resolution and frame rate. If no devices are connected, a standard HD resolution with the native rate of the EMP is assigned as frame rate.

Next to the configuration name is the name of the Destination where the output is assigned. If the Output is not assigned to any Destination, then the name will be “N/A”.

The software by default names outputs as [ConnectorType] “Output 1, 2, 3...” The user can rename each output by double clicking on the name and type in the new name in the blue box.

How to add an Output

Output configurations can be added manually to unassigned connectors.

1. Select the **Detail View** tab in the system diagram area.
2. Select any unassigned connectors from the detail view.

   Selected connector(s) will be highlighted blue.

   Note: If the output is 4K provided by the quad SDI connectors, the 4 SDI connectors need to be selected.

   Connector(s) is immediately highlighted in blue.
3. Click on either the **Add Single Output** or **Add Multiple Outputs** button, depending on if single or multiple connectors need to be added as a single output, or if multiple connectors are to be created as multiple outputs.
4. The created outputs are now added to the output list and can be further configured by individually selecting them, then using the adjust tab to make any necessary changes.

How to delete Output

1. Click on the **Delete Output(s)** button

   The **Delete Output(s)** button is replaced by the **Delete Selected** button (highlighted in red).
2. Click on the corresponding connector in the graphical area.

   or

   click in the “x” on the right hand side in the output configuration list.

   Connector(s) will be immediately highlighted in blue.
3. The deletion is completed by clicking the **Delete Selected** button.

Multiple connector configurations can be selected to be deleted together.

You can only delete Output Configurations that are not assigned in Destinations.

How to adjust output configurations

Adjustments to outputs are performed in the “Adjust” panel:

1. Select the output from the configuration list

   or

   click on the connector graphic.

   An output is selected.
2. Click on the **Adjust** tab that is on the top of the Adjustment area.

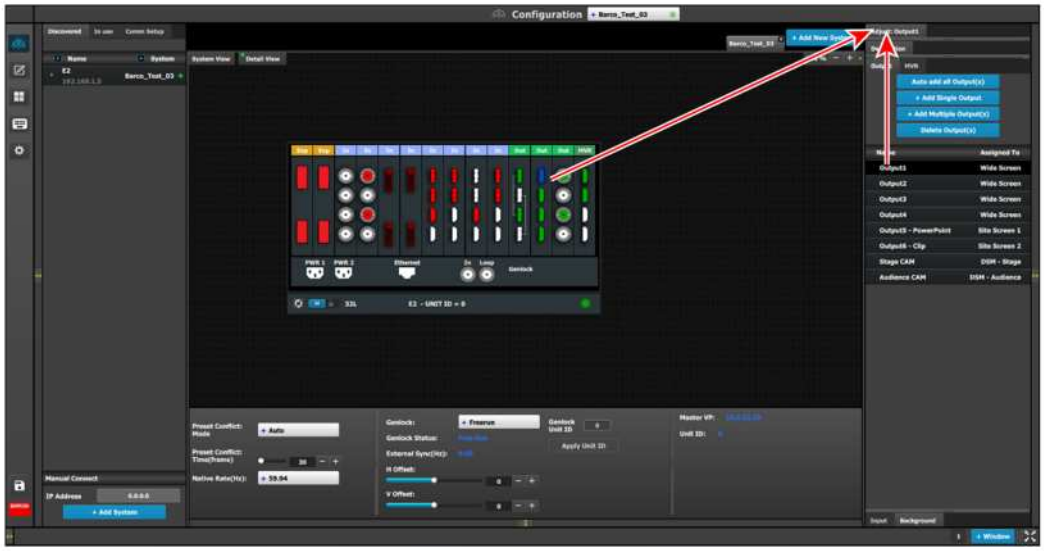


Image 6-23: Accessing the Output Adjust panel

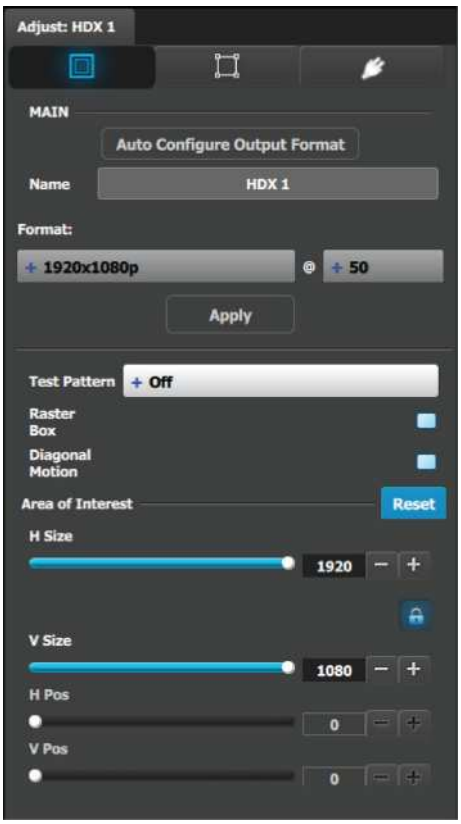
The output adjustment panel is displayed.

Output adjustment panel description

The output adjustment panel is divided in three sections

- Main page
- Format & Timing
- Connector

Output adjustment panel > Main page



- Auto Configure Output format: Sets the output format to match the format contained in the EDID of the display device connected to the corresponding output(s).
- Name: The name of the output configuration can be edited in this field.
- Format: Selects the video format of the output configuration from the drop-down menu. The available formats are in compliance with the output connector capacity. For example, if the connector capacity is set to SL (Single Link), only single link formats will be presented in the drop-down menu.
- Test pattern: Turns the Test Patterns ON and select the desired type. The default setting is OFF. Test pattern types :
  - Horizontal Ramp
  - Vertical Ramp
  - 100% Color Bars
  - 16x16 Grid
  - 32x32 Grid
  - Burst
  - 75% Colorbars
  - 50% Gray
  - Horizontal steps
  - Vertical steps
  - White
  - Black
  - SMPTE Bars
  - H Alignment
  - V Alignment
  - H V Alignment
  - Circle Alignment
  - Red
  - Green
  - Blue
- Raster box: Turns ON or OFF on a raster around the default active area. This raster box is a white, single-pixel-wide broken line.
- Diagonal Motion: Turns the Diagonal Motion ON or OFF for select patterns
  - The motion is a bottom-right to top-left diagonal for 16x16, 32x32 grid
  - The motion is right to left for 100% Color Bars.
  - There is no motion in Horizontal and vertical Ramps and other patterns
- Area of Interest (AOI): A raster box that can be positioned and sized within the outputs active area, it effectively makes the AOI the new active area.

  This raster box is a green, single-pixel-wide broken line that helps you adjust the AOI within the output's active area

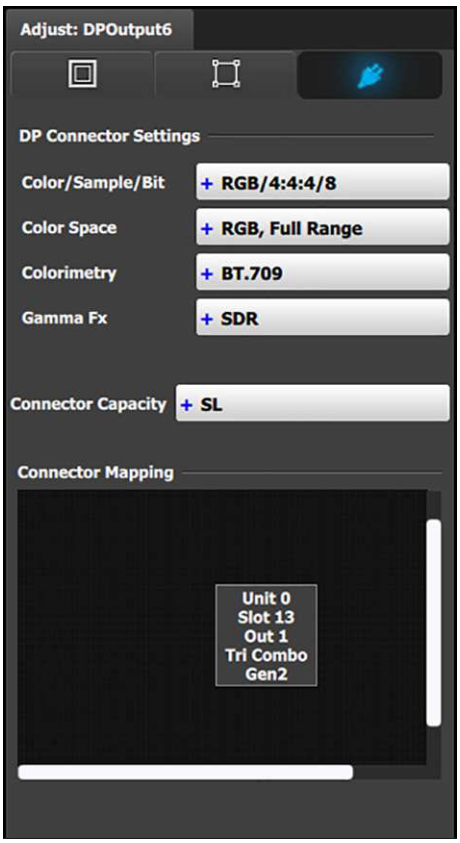
  The handles for the AOI menu are:
  - H Size and V size : Adjusts the horizontal and vertical positions respectively
  - H Pos and V pos: Adjusts the horizontal and vertical positions respectively
  - Note a lock button to allow user to lock the aspect ratio of the size.
- Reset button: resets the AOI to default which is the full output area.

Output adjustment panel > Timing Menu

- Format: Selects the video format of the output configuration from the drop-down menu. This is the same adjustment as in the previous menu.
- H Total: Adjusts (in pixels) the total pixel count per line for the selected output.
- H Front Porch: Adjusts (in pixels) the offset between the end of the output active area and the beginning of H sync.
- H Active: Adjusts (in pixels) the horizontal size of the output active area.
- H Sync: Adjusts (in pixels) the H sync width.
- H Polarity: Adjusts the polarity (active High or Low) of the horizontal sync pulse (N/A in SDI).
- V Total: Adjusts (in lines) the total line count per frame.
- V Front Porch: Adjusts (in lines) the offset between the end of the output active area and the beginning of V sync.
- V Active: Adjusts (in lines) the vertical size of the output active area.
- V Sync: Adjusts (in lines) the V sync width.
- V Polarity: Adjusts the polarity (active High or Low) of the vertical sync pulse (N/A in SDI).
- V Rate: Adjusts the frame rate in seconds polarity (active High or Low) of the vertical sync pulse (N/A in SDI).

Note: Changing these values can make the video signal undetectable for other devices. Always use a VESA timing calculator for best results.

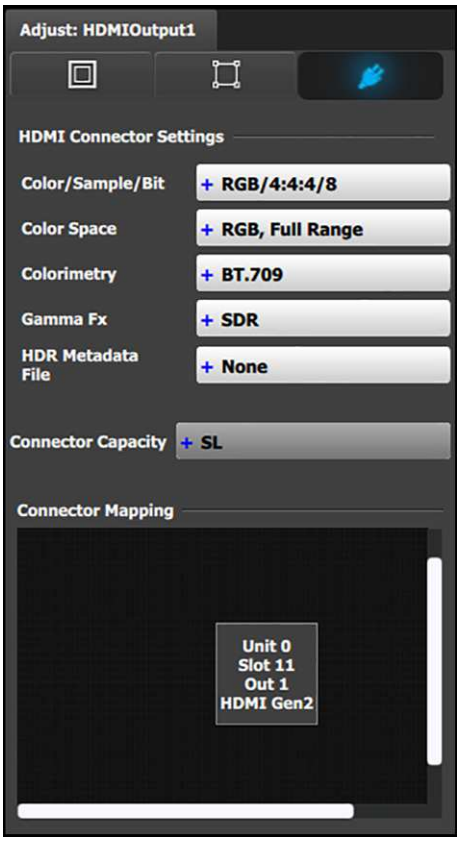
Output adjustment panel > Connector Menu



Connector Menu: Output Adjustment—DP

For DP 1.2 outputs:

- Color/Sample/Bit: Adjusts the color space (RGB or YCbCr), sampling rate (4:4:4) and bit depth (8, 10, or 12) of the output signal.
- Color Space: Adjusts the color range (RGB or SMPTE, Full or Reduced).
- Colorimetry: Choose the colorimetry ITU-R recommendation for the output.
  Available recommendations are:
  - BT.601 (SDTV)
  - BT.709 (HDTV)
  - DCI-P3 (digital movie projection)
- Gamma Fx: Choose the Gamma format for the output.
  The Gamma Fx value for DP connectors is SDR.
- Connector Capacity: If the connector is not assigned to a Destination as above, the capacity can be changed. Once included in a Destination configuration this needs to be managed thru the Adjust pane of the Destination.

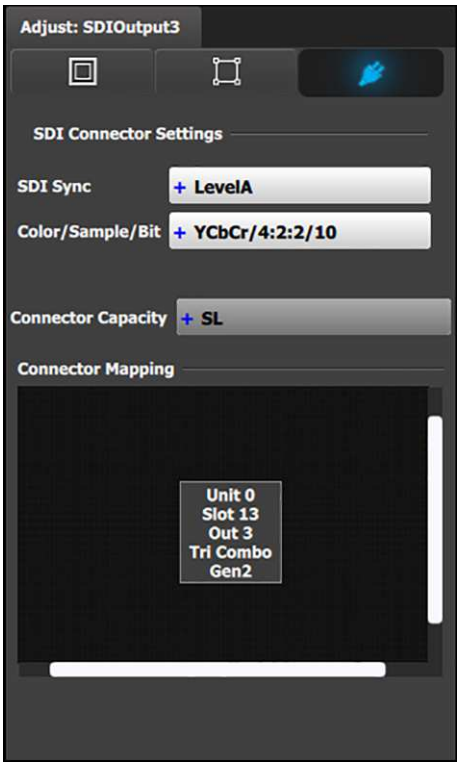


Connector Menu: Output Adjustment—HDMI

For HDMI outputs:

- Color/Sample/Bit: Adjusts the color space (RGB or YCbCr), sampling rate (4:4:4 or 4:2:2) and bit depth (8, 10, or 12) of the output signal. Depending on the EDID of the connected device the drop-down list would populate with compatible settings.
- Color Space: Adjusts the color range (RGB or SMPTE, Full or Reduced).
- Colorimetry: Choose the colorimetry ITU-R recommendation for the output.
  Available recommendations are:
  - BT.601 (SDTV)
  - BT.709 (HDTV)
  - BT.2020 (UHD) – (N/A for HDMI 1.4.)
  - DCI-P3 (digital movie projection) – (N/A for HDMI 1.4.)
- Gamma Fx: Choose the Gamma format for the output.
  Gamma Fx values are:
  - SDR
  - HLG
  - PQ/HDR10

  Note: The only choice for HDMI 1.4 is SDR.
- HDR Metadata File (HDMI 2.0 only): Choose the HDR metadata file for use with the PQ/HDR10 format.
- Connector Capacity: If the connector is not assigned to a Destination as above, the capacity can be changed. Once included in a Destination configuration this needs to be managed through the Adjust pane of the Destination.



Connector Menu: Output Adjustment—SDI

For SDI outputs:

- SDI Sync (available with SDI connector type) : allows a choice between HD (1.5Gb), 3G (3Gb) Level A, Level B, Level A 2SI, or Level B 2SI.
- The SDI Sync options vary, depending on the format of the Outputs. For example, for:
  - NTSC/PAL—the SDI Type can be only SD.
  - 1080i or 1080p, with a refresh rate less than or equal to 30 Hz—the SDI Type can be only HD.
  - 1080p, with a refresh rate greater than 30 Hz—the SDI Type can be:
    - Level A (default)
    - Level B
    - Level A 2SI
    - Level B 2SI

    The 2SI options are available only if the Input/Output configuration has 4 SDI connectors from the same card, and the Output format is either 1920 x 1080 or 2048 x 1080.
- Color/Sample/Bit: Adjusts the color space (YCbCr), sampling rate (4:2:2) and bit depth (10) of the output signal.
- Connector Capacity: If the connector is not assigned to a destination the capacity can be changed. Once included in a Destination configuration this needs to be managed thru the Adjust pane of the Destination.

The selection of HD (1080i) or 3G SDI (1080P) actually happens when the format type is selected in the main tab.

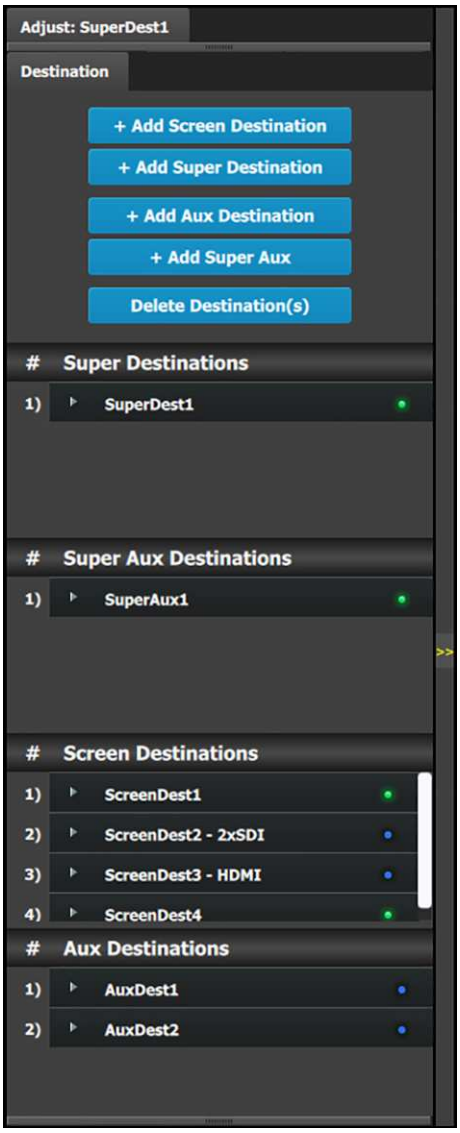
6.16 Configuration Menu > Adjustment > Destination Configuration

General

Output configurations that are created in the previous menus are assigned to destination in the Destination Panel.

Description

Destination configuration menu is accessed by clicking on the Destination tab.

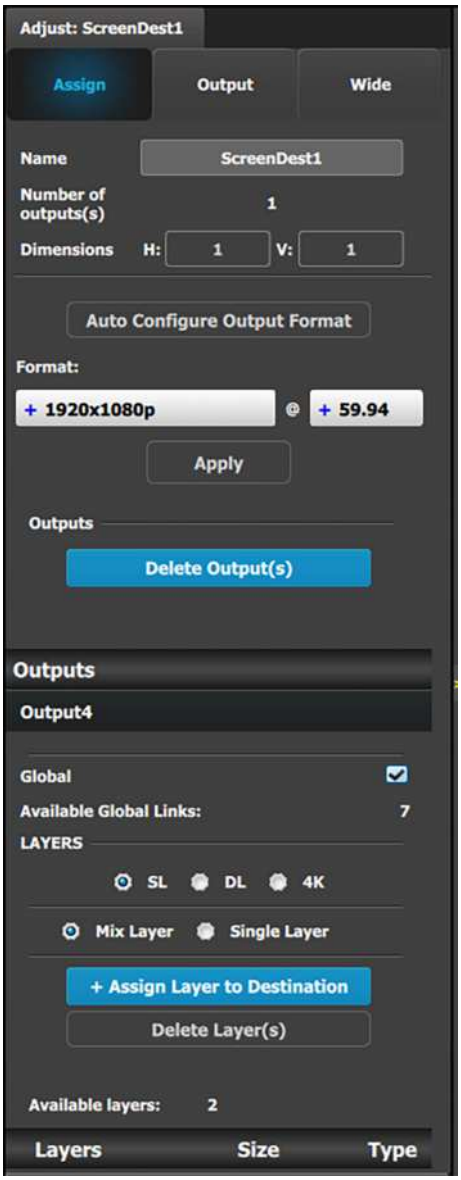


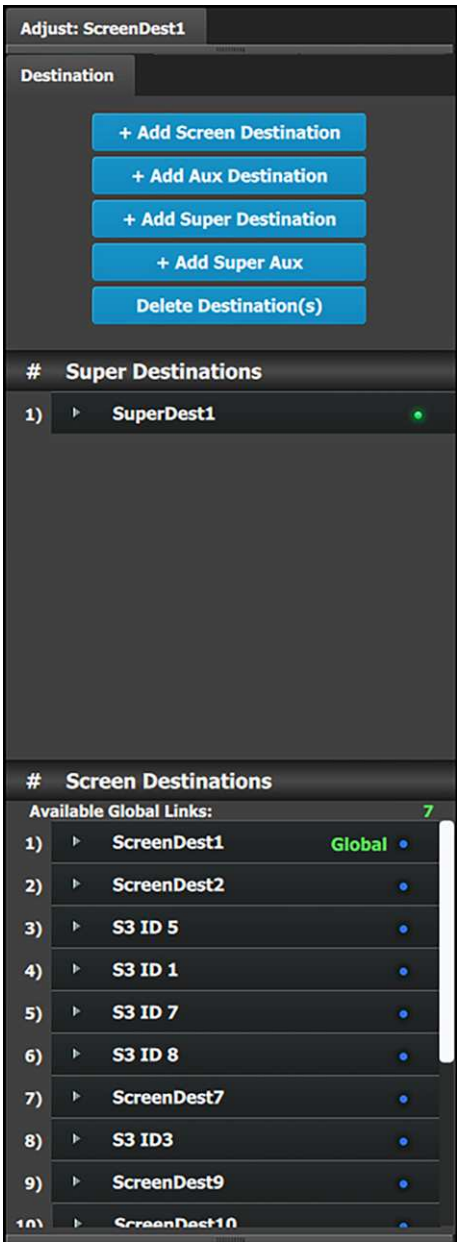
This menu provides:

- A list of all the destinations (Screen, Aux) already created on the system (e.g. ScreenDest1)
- A button to add Screen Destinations.
- A button to add Super Destinations.
- A button to add AUX Destinations.
- A button to add Super AUX Destinations.
- A button to delete unused or obsolete Destination(s).

Note: Users can now link more than two E2s, or more than two S3–4Ks in a single system. In this configuration, only input expansion is supported. Users can select up to 48 SL inputs for linked E2 systems and 24 SL inputs for linked S3–4K systems to be marked it as a "Global Input." Global Input checkboxes are available in the Configuration page, under the Input and Background tabs for inputs.

Because Screen Destinations can be inputs to Layers and AUX Destinations, Screen Destinations can also be designated as "Global Inputs." The Destination tab in the Configuration page tracks the number of available global links. To designate a Screen Destination as a global input, check the "Global" checkbox on the Adjust panel for the Screen Destination.





Destination formats

A few words about destination formats:

- **For Screen Destinations:** The format of any Output configuration added to a Screen Destination is updated to match the format of the Screen Destination. If the first Output configuration in a Screen Destination is deleted and a new Output configuration is added, then the format of the new Output configuration becomes the format of the Screen Destination.
- **For AUX Destinations:** An AUX destination always assumes the format of the Output configuration that is assigned to it.
- **For Super Destinations:** Super Destinations do not have an output format. As Screen Destinations are added to a Super Destination, the pixels from the Screen Destinations are added together to create the canvas size of the Super Destination.

  Screen Destinations of different resolutions can be combined into a Super destination.

  The placement of the individual Screen Destinations need not be edge-to-edge. Screen Destinations can be placed in arbitrary positions, creating a new pixel coordination system and allowing manipulation of Super Layers within that new system.
- **For Super AUX Destinations:** Super AUX Destinations work with AUX Destinations as AUX Destinations work with Output configurations. Create a Super AUX, and drag and drop the desired AUX Destinations into it. Use the H/V Offset edit boxes to adjust the layout relationship of the AUX destinations that are assigned to the Super AUX.
  - Super AUX Destinations work only with AUX Destinations.
  - Super AUX is not available as a destination in the MVR, although the user can still add the individual AUX Destinations to the MVR.
  - Arming any AUX Destination that is a member of a Super Aux arms the Super AUX Destination, which arms all the other AUX destinations that are grouped in the Super AUX.

Rules

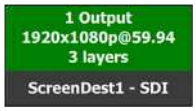
The following rules apply when defining a **Screen / AUX Destination** configuration:

1. Destinations accept only the same Output connector types.
   Different connector formats cannot be mixed in the same destination.
2. Destinations accept Output configurations only with the same number of Output connectors.
   Output configurations with a different number of connectors cannot be combined. For example if the first Output configuration added is an HDMI output configuration with two (2) connectors (grouped connector), an HDMI output configuration with one (1) connector cannot be added to the same destination.
3. Each card can support up to four (4) screen destinations (program outputs), or up to four (4) AUX Outputs, or two (2) AUX and two (2) Screen Outputs.
4. ALL outputs can be AUX Destinations, and all Outputs can be assigned to Screen Destinations.
5. Screen Destination sizes are determined by the available amount of pixel canvas, not by the number of Outputs assigned to a Screen Destination.

Color codes

Super Destinations, Screen Destinations, and AUX Destinations are represented graphically in the **Diagram** area.

Blue: The destination has been assigned to a super destination.



Green: Output(s) have been assigned to the destination

Yellow: Output(s) have been removed from the destination.

It is possible that after the unit is turned on, the hardware configuration can be altered making certain Destinations to have invalid Output configurations.

In this case the Destination in the System Diagram becomes grey and adjustment is disabled. In this case the destination needs to be deleted and new one created to reflect the existing output configuration.

More about Super Destinations

As Screen Destinations can be understood as groups of outputs, Super Destinations can be understood as groups of Screen Destinations. Once a Super Destination and more than one Screen Destinations have been created, the Screen Destinations can be assigned to a Super Destination by dragging and dropping them on the Super Destination in the Diagram area of the Configuration menu. Local Layers added to a Screen Destination are added only to that Screen Destination, while Super Layers added to a Super Destination are also added to each Screen Destination in the Super Destination.

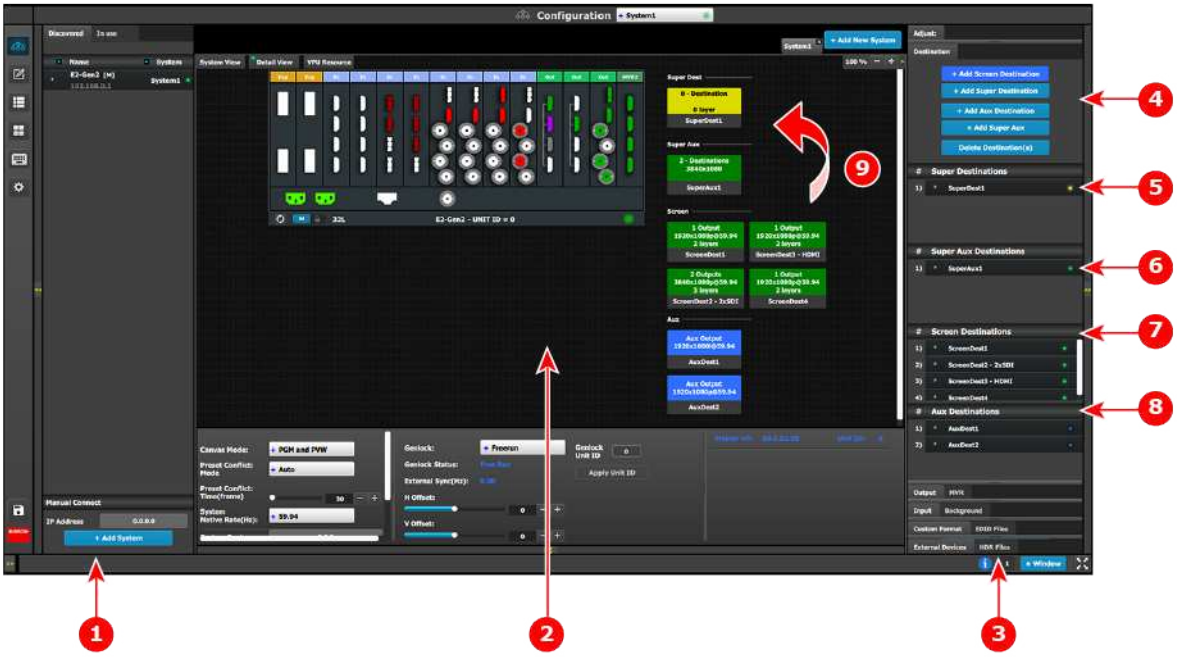


Image 6-24: Super Destinations on the Configuration Menu

1 Network resource area
2 System diagram area
3 Adjustment area
4 Add and delete Destination buttons
- Add Screen Destination
- Add Super Destination
- Add Aux Destination
- Add Super Aux
- Delete Destination(s)

5 SuperDest1
6 SuperAux1
7 Screen Destinations
- ScreenDest1
- ScreenDest2
- ScreenDest3
- ScreenDest4

8 Aux Destinations
- AuxDest1
- AuxDest2

9 Drag and drop ScreenDest1 and ScreenDest3 into SuperDest1.

Creating a Super Destination and assigning Screen Destinations

1. Add Screen Destinations, Super Destination, and AUX Destination, using the add Destination buttons.

2. Assign Outputs to the Destinations.
3. (Optional) Add Super Layers to Super Destinations and Local Layers to Screen Destinations.
   Layers may be added to the Destinations after the Screen Destinations are assigned to the Super Destination.
4. Drag and drop the Screen Destinations into the Super Destination.

In Image 6-25 Screen Destinations 1 and 3 have been assigned to Super Destination 1. (Layers have also been assigned to the Destinations.) Note that the colors of the Destinations in the System diagram area and the colors of the LEDs in the Adjustment area have changed to indicate that the Screen Destinations have been assigned to the Super Destination and that Layers have been assigned to the Destinations.

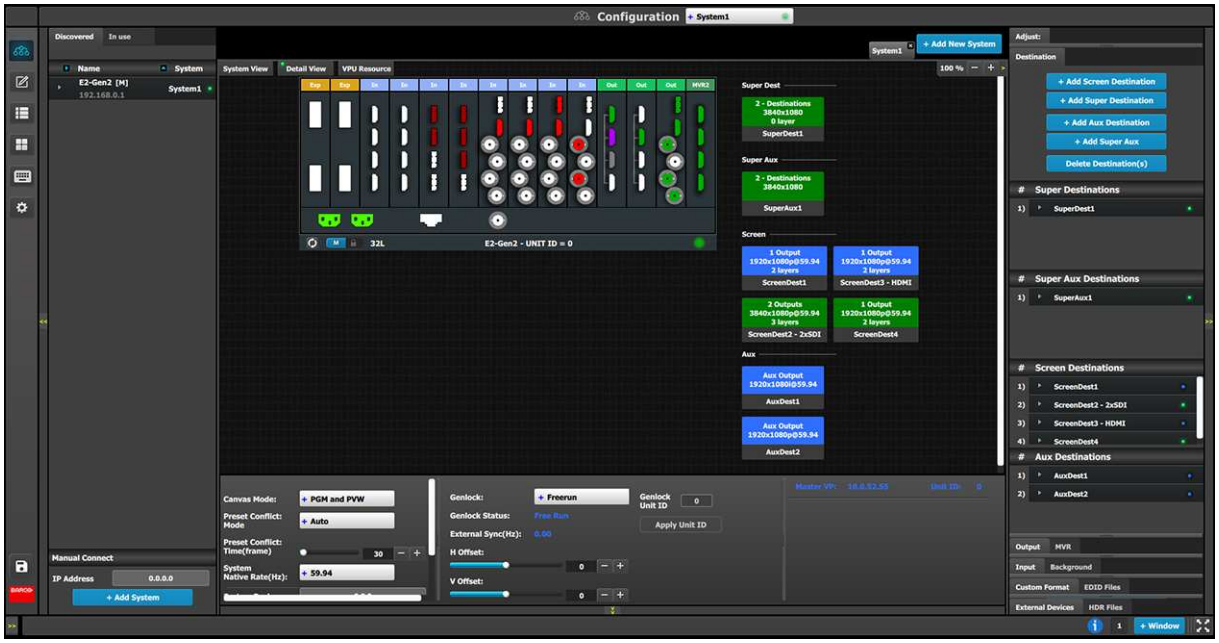


Image 6-25: Super Destination with Screen Destinations Assigned

Manipulating Super and Screen Destinations in the Programming Menu

Use the Programming menu to manipulate Super and Screen Destinations.

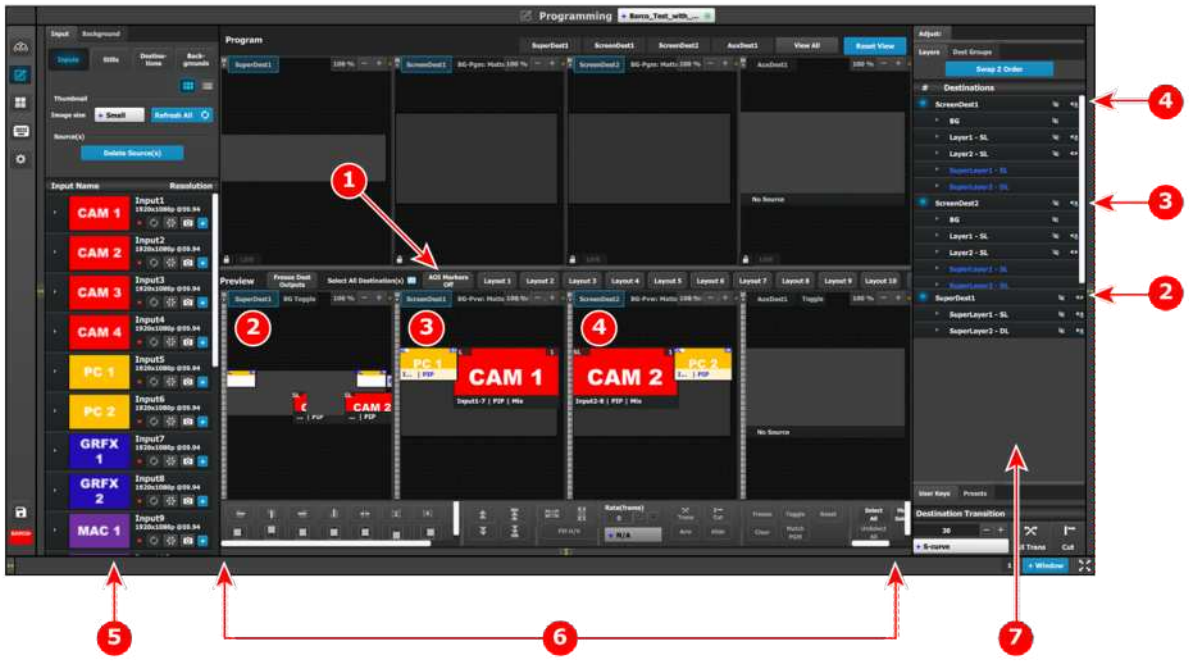


Image 6-26: Super Destinations on the Programming Menu

1	AOI Markers “Off”
2	SuperDest1
3	ScreenDest1
4	ScreenDest2
5	Resources area
6	Layer modification area
7	Adjustment area

1. Set the AOI Markers to “Off.”
   Turning on the AOI Markers "On" or "Off" affects how the Layer—modification functions (the Layer alignment buttons, including Fill H, Fill V and Fill H/V) work. With the AOI Markers set to "On," the Layer alignment buttons align the Layer into the Screen Destination in which the center of the Layer is located. With the AOI Markers set to "Off," the Layer alignment buttons align the Layer in the entire Super Destination.
2. Drag and drop Inputs from the Resources area to desired Destinations.
   - Adding an Input as a Super Layer to a Super Destination adds that Input to one or all of the Screen Destinations assigned to the Super Destination, depending on the placement of the Super Layer in the Super Destination.
     Note: Source can be updated in a Destination by dragging and dropping a new source into the Destination or into the Super Destination of which the Destination is a part. This may also be done with Auxes and Super Auxes.
   - Adding an Input as a Local Layer to a Screen Destination adds that Input only to the Screen Destination. Super Layers are marked with blue text to differentiate them from Local Layers.
3. Apply Layer-modification shortcuts, User Keys, or Presets to Layers in the Super Destination or in the Screen Destinations.
   - Super Layers must be selected and effects applied in the Super Destination. The EMTS displays the result of the applied effects in the Super Destination and the in the Screen Destinations, but the Super Layers must be selected and effects applied in the Super Destination.
   - Local Layers must be selected and effects applied in the appropriate Screen Destination. The EMTS displays the result of the applied effects in the Screen Destination and the in the Super Destination, but the Local Layers must be selected and effects applied in the appropriate Screen Destination.

The Adjustment area lists Super Layers added to a Super Destination and Screen Layers added to a Screen Destination in white, and it lists Super Layers added to a Screen Destination through a Super Destination in blue.

More about AUX Destinations

Based on the Aux Capacity, the user can create AUX Destination on an output card. The AUX capacity defines the Input capacity and scaler size of the AUX.

All output cards can be used for Aux destinations

Card Type	Aux Capacity Setting	№ of Auxes per Card	Max Output Resolution
HDMI 1.4	2K (SL)	4	2048x1200p60
	DL	4	2048x1200p60
	DL	2	2560x1600p60
	4K	2	3840x2160p30
	8L	1	3840x2160p30
3G-SDI	2K (SL	4	2048x1080p60
	DL	4	2048x1080p60
	4K	2	2048x1080p60
	8L	1	4096x2160p60 (Quad Link 3G)
DP 1.2	2K (SL)	4	2560x1600p60
	DL	4	2560x1600p60
	4K	2	4096x2160p60
	8L	1	4096x2160p60
HDMI 2.0	2K (SL)	4	2560x1600p60
	DL	4	2560x1600p60
	4K	2	4096x2160p60
	8L	1	4096x2160p60
Tri-Combo	2K (SL)	6	SDI 2048x1080p60; DP/HDMI 2560x1600p60
	DL	4	SDI 2048x1080p60; DP/HDMI 2560x1600p60
	4K	2	SDI/DP/HDMI 4096x2160p60
			SDI/DP/HDMI 4096x2160p60

For DL output resolutions and above only the two top connectors of each HDMI 1.4 output card can be used.

Widescreen destinations can be downscaled by the Aux and based on the capacity it can accommodate up to eight (8) outputs worth of widescreen.

More about Super AUX Destinations

As Super Destinations can be understood as groups of Screen Destinations, Super AUX Destinations can be understood as groups of AUX Destinations. Once a Super AUX Destination and more than one AUX Destinations have been created, the AUX Destinations can be assigned to a Super AUX Destination by dragging and dropping them on the Super AUX Destination in the Diagram area of the Configuration menu. AUX and Super AUX Destinations do not have Layers.

Aux Scaling mode for Super AUX Destinations is fixed in **All** mode.

Super AUX Destinations on the Configuration Menu

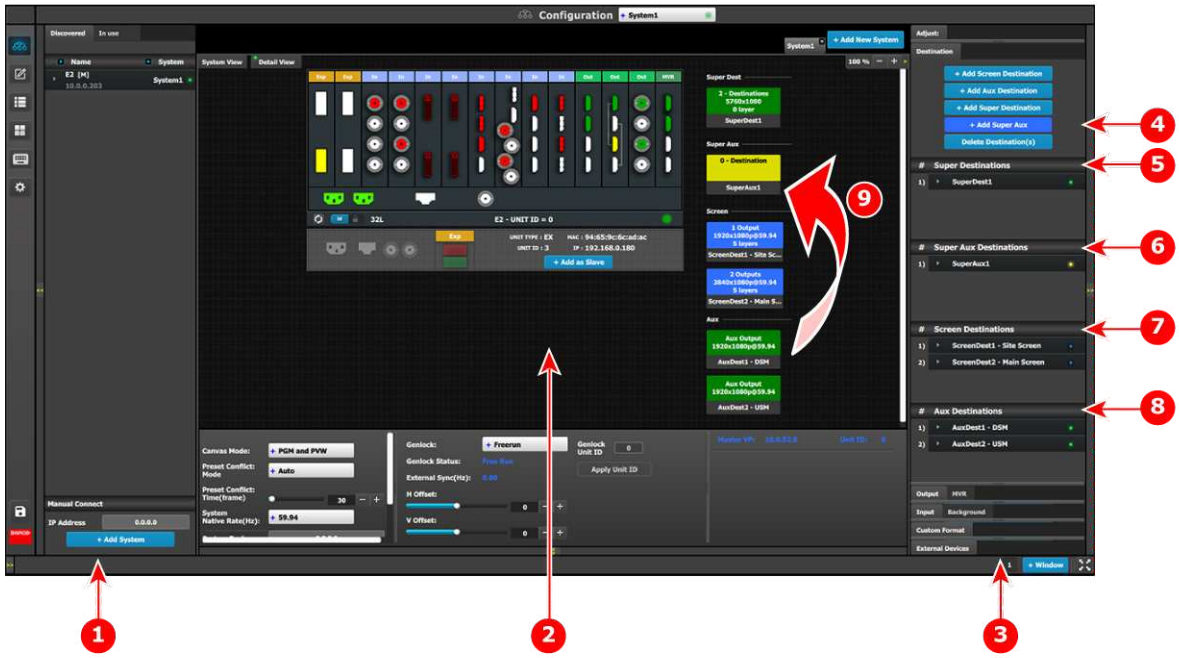


Image 6-27: Super AUX Destinations on the Configuration Menu

1 Network resource area
2 System diagram area
3 Adjustment area
4 Add and delete Destination buttons
   - Add Screen Destination
   - Add Aux Destination
   - Add Super Destination
   - Add Super AUX
   - Delete Destination(s)
5 Super Destinations
   - SuperDest1
6 Super AUX Destinations
   - SuperAux1
7 Screen Destinations
   - ScreenDest1
   - ScreenDest2
8 Aux Destinations
   - AuxDest1
   - AuxDest2
9 Drag and drop AuxDest1 and AuxDest2 into SuperAux1.

Creating a Super AUX Destination and assigning AUX Destinations

1. Add Super Destinations, Super AUX Destinations, Screen Destinations, and AUX Destinations, using the add Destination buttons.
2. Assign Outputs to the Destinations.
3. Drag and drop the AUX Destinations onto the Super AUX Destination(s).
   Note: Source can be updated in an Aux by dragging and dropping a new source into the Aux or into the Super Aux of which the Aux is a part.

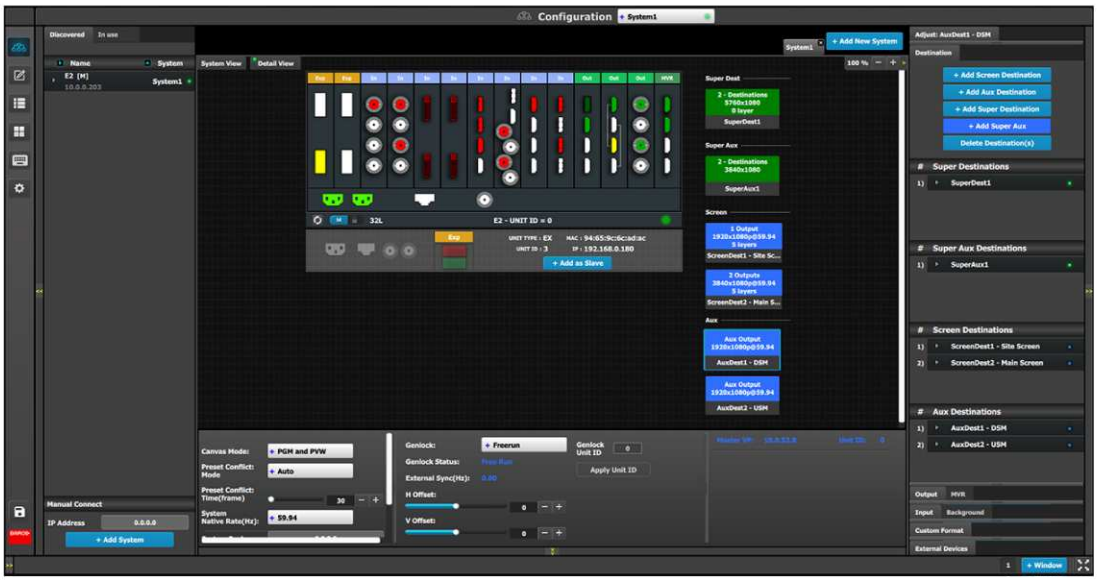


Image 6-28: AUX and Screen Destinations assigned to Super AUX and Super Screen Destinations

Manipulating Super AUX and AUX Destinations in the Programming Menu

Use the Programming menu to manipulate Super AUX and AUX Destinations.

The following examples use a Super AUX Destination that contains nine AUX Destinations, arranged in a 3 x 3 matrix.

To view the Super AUX…

1. Select the Programming menu.

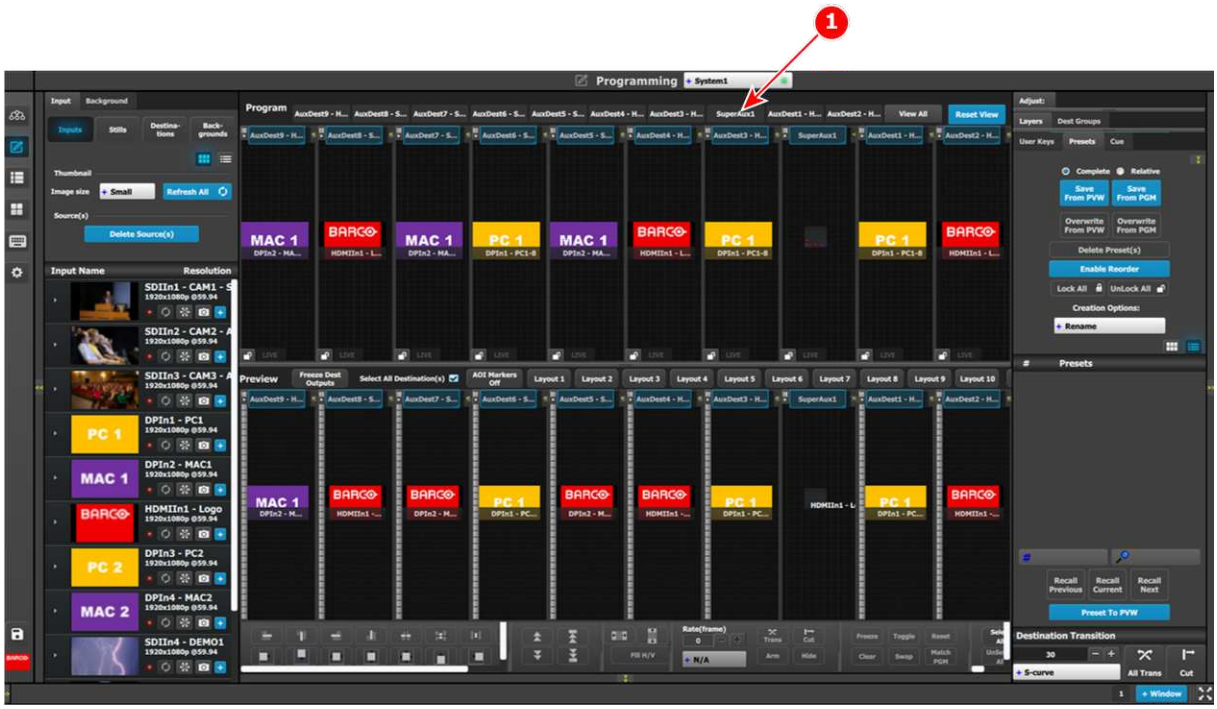


Image 6-29: Programming menu, showing AUXes and Super AUX

1 SuperAux1 tab

2. Select the **SuperAux1 tab** to view the Super AUX.

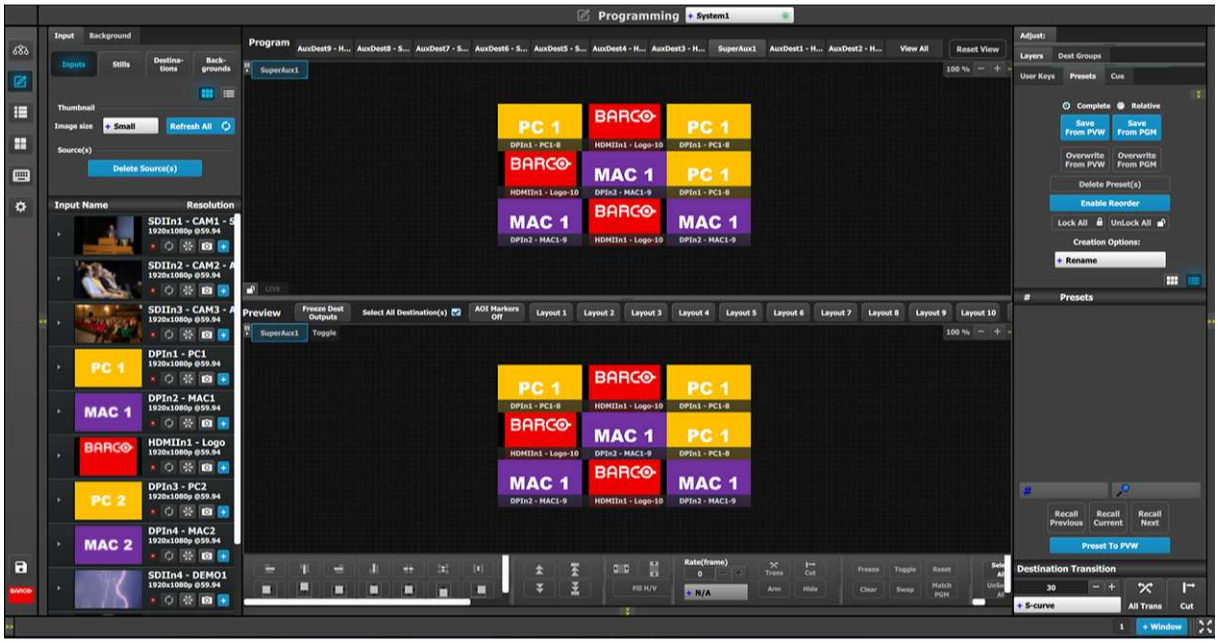


Image 6-30: Programming menu, showing Super AUX

To tile a source over the entire Super AUX…

1. Double-click a source within the Super AUX.

Image 6-31: Super AUX matrix

For example, double-clicking on the source that displays the Barco logo scales the Barco logo across the entire Super AUX.

Image 6-32: Super AUX tile

2. Double-click on the “super-scaled” source to return it to its original size and AUX destination.

To scale a source within the Super AUX…

1. Select a source within the Super AUX.

Image 6-33: AUX selected

2. Drag the inner box of the selection box over the AUXes to be covered.
   For example, drag the selection box over the other AUXes in the lower, left-hand quadrant.

Image 6-34: AUX selection box resized

3. Release the selection box.
   The selected source covers the four AUXes of the lower, left-hand quadrant.

Image 6-35: AUX tiled over quadrant

4. Double-click on the source to return it to its original size.

To scale a source to any group of AUXes within the Super AUX…

1. Select a source within the Super AUX.

Image 6-36: AUX selected

2. Drag the inner box of the selection box over the AUXes to be covered.
   For example, drag the selection box over the other AUXes in the same row or column.

Image 6-37: AUX horizontal selection

3. Release the selection box.
   The selected source covers the other AUXes in the same row or column.

Image 6-38: AUX horizontally scaled

4. Double-click on the scaled source to return it to its original size and starting AUX location in the Super AUX.

In the same manner an AUX can be vertically scaled in the Super AUX.

Image 6-39: AUX vertically scaled

6.17 Configuration Menu > Adjustment > Destination Configuration > Adjust Panel

General

Add, delete, and adjust Destinations with the Destination tab and Destination Adjust panels.

How to add Destination(s)

To assign an output configuration to a destination...

1. Select the output configuration (Output tab).

2. Click on the **Add Screen Destination**, or the **Add Aux Destination**, or the **Add Super Destination**, or the **Add Super AUX** button (Destination tab).
   These buttons have white text on a blue background.

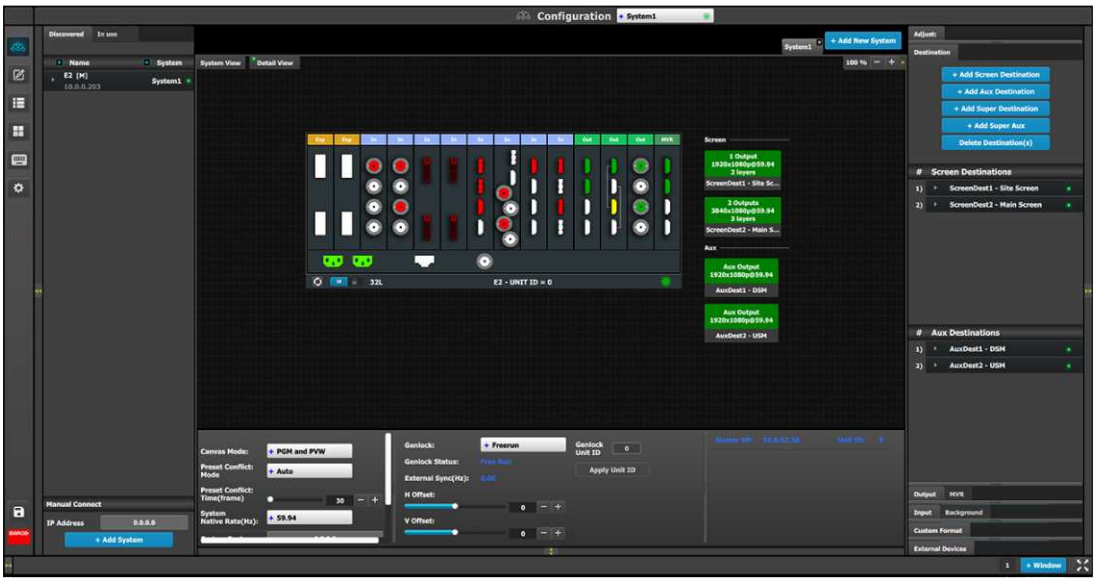


Image 6-40: Add destination buttons

If the **Add Screen Destination or Add Aux** button is pressed without selecting an output configuration, the software will automatically assign the first unassigned output configuration (from left most output card) to a destination. The output configuration format is copied to the destination output format.

New **Screen**, **Aux**, **Super**, or **Super Aux** destinations can be added as long as there are unassigned output configurations to destinations.

Alternatively, you assign outputs to destinations by dragging them into the Destination block. In the example below, the output 1 was assigned to ScreenDest1 and the destination format was set to 1920x1080 reflecting the format of output1.

When output 2 is dragged into the same destination, the format changes to 3840x1080 reflecting a 2x1 setup. When outputs are dragged into a destination in this manner, the software assumes it is a horizontal setup with 0 pixel overlap. The overlap can be modified in the Wide menu. If a vertical or grid setup is desired, then the output configuration needs to be setup as such in the output configuration menus.

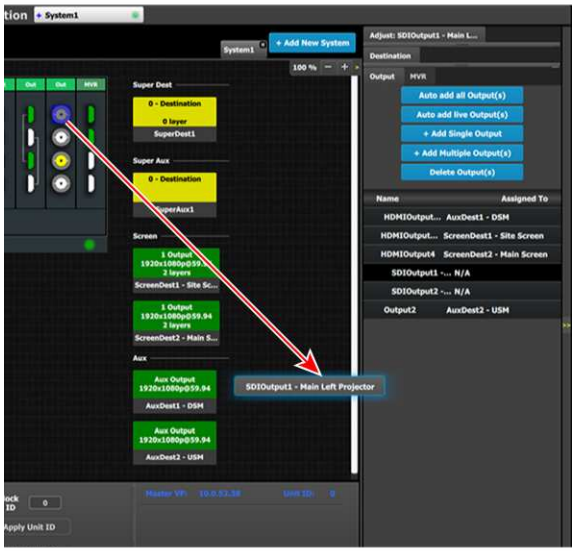


Image 6-41: Add Output to Destination

How to delete Destination

1. Click on the Delete Destination(s) button. The Delete Destination(s) button is replaced by the Delete Selected button (highlighted in red) and the unit diagram is greyed out, except the area dedicated to destinations (Screen and Aux).
2. Click on destination in the graphical area.

   or

   Click on the “x” on the right hand side in the destination configuration list.

   Destinations selected for deletion are outlined in red.

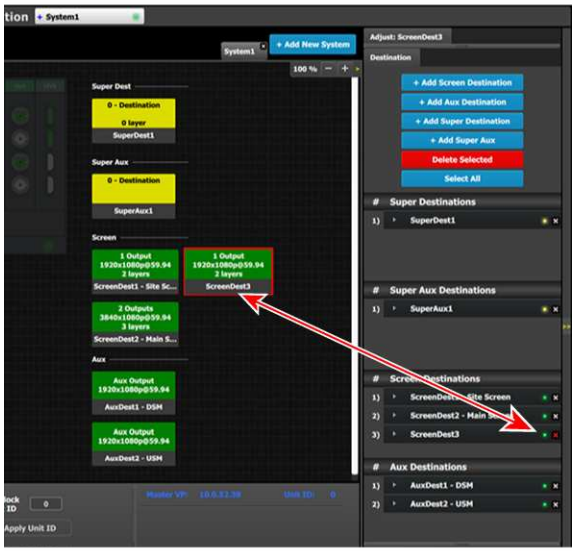


Image 6-42: Delete selected Destination(s)

3. The deletion is completed by clicking the Delete Selected button.

   Note: Any output can be deleted from a destination at any time. For example, if the output that is automatically assigned to a destination is not the desired one, then it can be deleted by using the Destination Adjust tab.

   Note: All destinations can be deleted at the same time by clicking the “Select All” button.

How to access to the Destination configuration adjustments

Adjustments to Destinations (Screen, Aux, Super, or Super Aux) are performed in the “Adjust” panel:

1. Select the destination from the configuration list.

   or

   Click on the graphic representation of the destination in the Diagram area.

   A Destination is selected.

2. Click on the **Adjust tab** that is on the top of the Adjustment area.

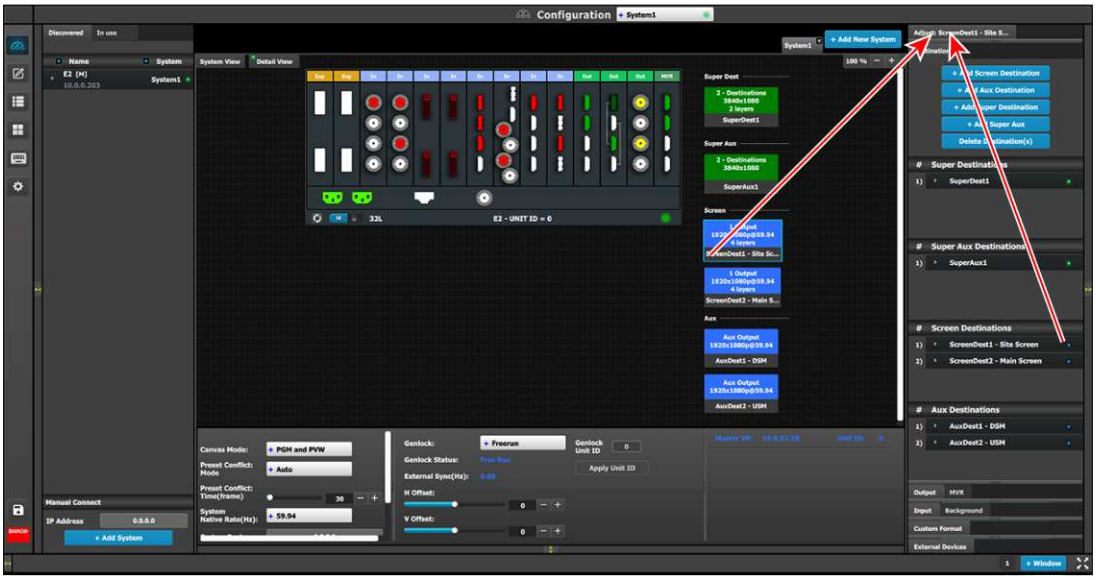


Image 6-43: Destination Adjust tab

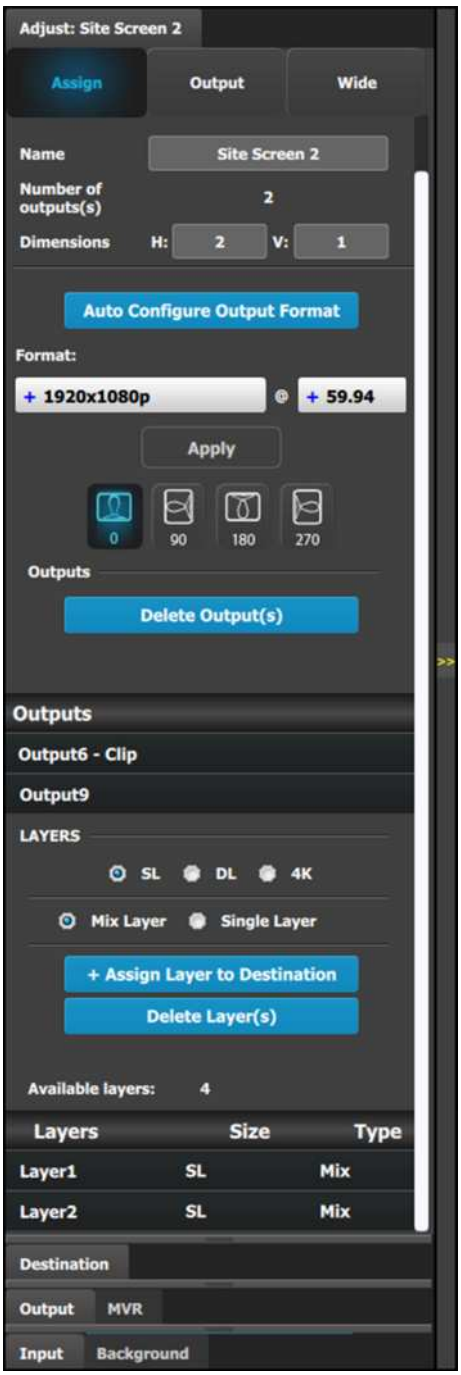
The **Destination adjustment** panel is displayed.

Destination adjustment panel description

The Destination adjustment panel is divided in three sections:

- Assign
- Output
- Wide

Assign Menu



- Name: Adjusts the name of the Destination.
- Number of output(s): Reports the number of output configurations in the destination.
- Dimension: Adjust the output configuration layout .
- Auto Configure Output Format: Reads the EDID information of the connected device to acquire its format. If the destination is composed of more than one output, **Auto Configure Output Format** reads the format of the first output. This feature is not available for SDI outputs.
- Format: Adjusts the output format of the destination. This is applied to all outputs that are added into this destination.

  If you cannot find the output format in the list, it is possible that the connector capacity for the connector output is set below the resolution requirements. Remove the outputs from the Destination; update the connector capacity; and check again. (Refer to “Configuration Menu > Adjustment > Output Configuration”, page 136, and see the subsections "How to delete Output" and "Output adjustment panel > Connector Menu.")
- Output rotation icons: Adjust the counterclockwise rotation of the Output of a Screen or an AUX Destination. The rotation can be 0°, 90°, 180°, or 270°. The default rotation is 0°.
  - When a Destination is rotated, the Output AOI setting is reset to full, and new min and max values are applied. For example, when an AOI with a rotation of 0° is 1920x1080, then that same AOI with 90° rotation is 1080x1920.
  - When a Destination is rotated, the Destination cannot be in minimum delay.

    Rotation adds an extra frame of delay;

    - Minimum delay capable Screen Destinations that are rotated have 1 frame of delay.
    - Non-minimum delay capable Screen Destinations that are rotated have 2 frames of delay.
    - AUX Destinations have 1 frame of delay.
    - Rotated AUX Destinations have 2 frames of delay.
  - When a Destination is rotated, the canvas is accordingly resized.
  - When a Destination is rotated, the Screen Destination as a source to a Layer is properly oriented.

  Note: The Output rotation icons are available only for Output from the Quad DisplayPort 1.2 Output card, the HDMI 2.0 Output card, and the Tri-Combo Output card.
- Outputs: Provides a list of the output configurations assigned to the Destination.

  For Aux destinations, only 1 Output configuration is shown or is allowed to be defined. From this menu outputs can be deleted or added as in the output configuration menu.
- Layer (only applicable when Destination is a Screen). You can assign a size to the Layer: SL (2K Single Link), DL (Dual Link), or 4K. You can also make the Layer either a Mixing Layer or a Single Layer.

  The list shows the Layers assigned to this Destination.

A word about layers

Adding to the general description above about layers, mores specifically a EMP´s Screen Destination has one fixed mixing layer, its BG. Then there are a number of scaling layers available in the system.

The E2 has 2 banks of 8 mixing layers for a total of 16 mixing layers or 32 single layers (32L). These 16 mixing layers can be assigned to Destinations, using up to 4 Outputs (1 bank). If a Destination uses Outputs from both banks, the mixing-layer count is reduced to 8. An E2 Jr. has a single bank of 8 mixing layers for a total of 8 mixing layers or 16 single layers (16L).

An S3–4k has two banks of 2 mixing layers each for a total of 4 mixing layers or 8 single layers (8L). These 2 mixing layers can be assigned to Destinations, using up to 4 Outputs (1 bank). If a Destination uses Outputs from both banks, the mixing-layer count is reduced to 2.

Processor	Banks	Mixing Layers	Single Layers
E2	2	16	32
E2 Jr.	1	8	16
S3–4K	2	4	8
S3–4K Jr.	1	2	4
EX	NA	NA	NA

The layer system has been optimized in E2 to allow the maximum available layer count at all times and can therefore be a bit confusing.

Based on the layer mode (set in the Assign panel of the Screen Destination), the number of available layers varies. The table below shows the maximum number of single layers for each layer mode.

Single Layer Size	Maximum number of Single Layers				
	E2	E2 Jr.	S3–4K	S3–4K Jr.	EX
SL (2K/HD)	32	16	8	4	NA
DL	16	8	4	2	NA
4K	8	4	2	1	NA

Layers need to be assigned to destinations before sources can be added to the destination.

Output menu

The Output Menu contains four sub-menus: **Main**, **Color**, **Timing** and **Connector** properties. Adjustments to the **Main**, **Timing**, and **Connector** properties are identical with the adjustments to the **Main**, **Timing**, and **Connector** properties in the output configuration menu. In this destination configuration menu, however, adjustments can be performed on all or on selected outputs that make up the destination. Individual outputs can be selected by clicking on the corresponding screen. When a screen is selected its outline turns bright green. All outputs can also be selected by clicking on the **Select All** button.

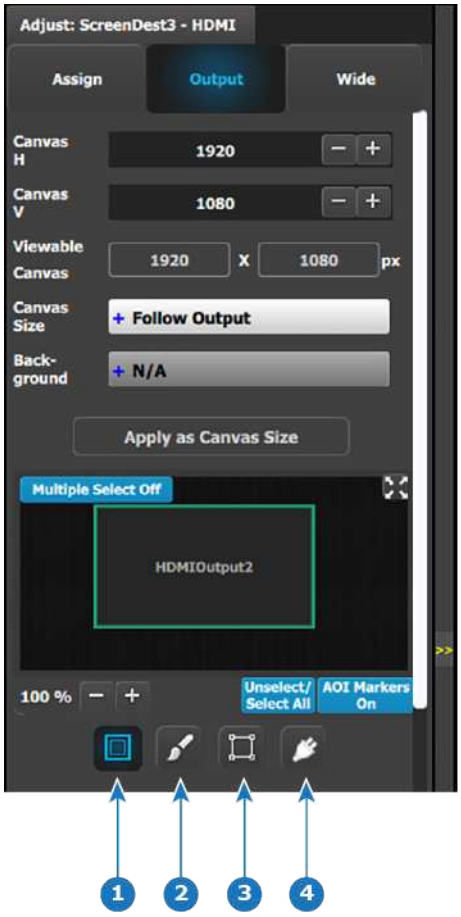
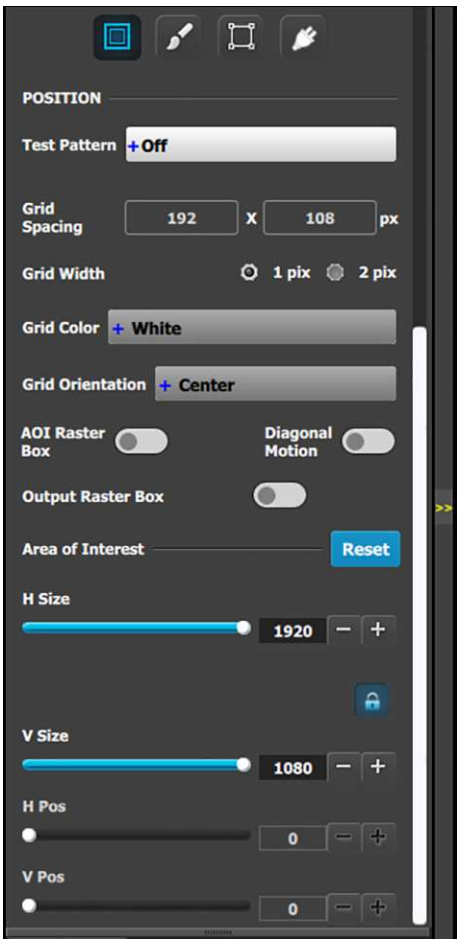


Image 6-44: Configuration Menu: Destination Adjust—Output (Top of panel)

1 Main
2 Color
3 Timing
4 Connector properties

Output menu – Main submenu



Operate similarly to the Output adjustment panel > Main menu.

- **Test pattern:** Turns the Test Patterns ON and select the desired type. The default setting is OFF. Test pattern types:

  – Horizontal Ramp
  – Vertical Ramp
  – 100% Color Bars
  – 16x16 Grid
  – 32x32 Grid
  – Burst
  - –75% Color Bars
  – 50% Gray
  – Horizontal steps
  – Vertical steps
  – White
  – Black
  – SMPTE Bars
  – H Alignment
  – V Alignment
  – H V Alignment
  – Circle Alignment
  – Red
  – Green
  – Blue

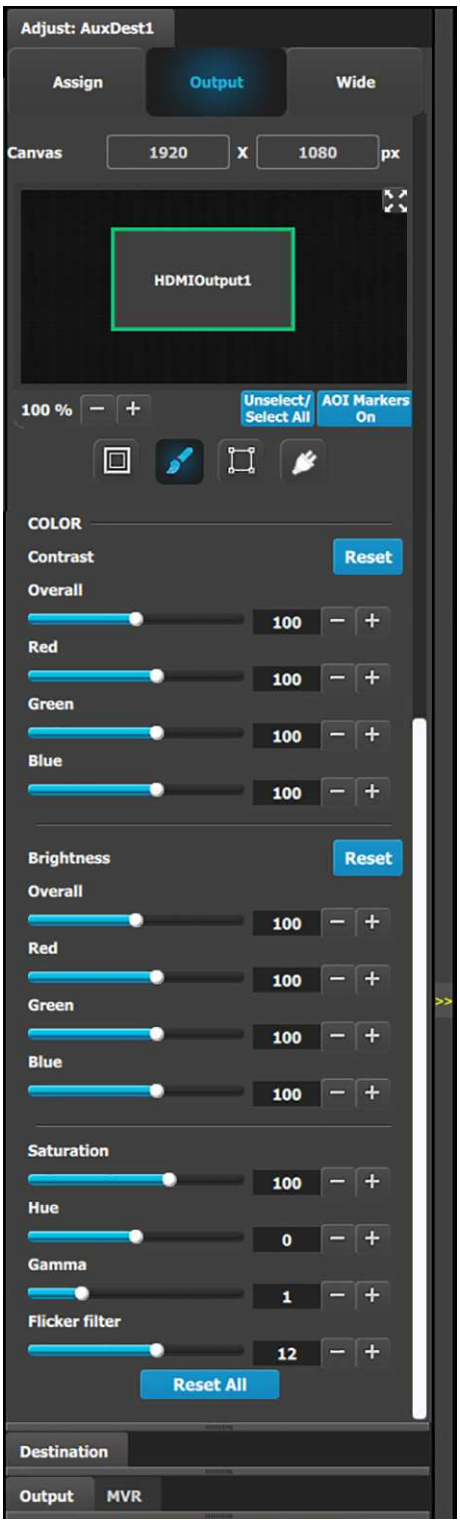
- **Raster box:** Turns ON or OFF on a raster around the default active area. This raster box is a white, single-pixel-wide broken line.
- **Diagonal Motion:** Turns the Diagonal Motion ON or OFF for select patterns:
  - The motion is a bottom-right to top-left diagonal for 16x16, 32x32 grid.
  - The motion is right to left for 100% Color Bars.
  - There is no motion in Horizontal and vertical Ramps and other patterns.
- **Area of Interest (AOI):** A raster box that can be positioned and sized within the output's active area, it effectively makes the AOI the new active area.

  This raster box is a green, single-pixel-wide broken line that helps you adjust the AOI within the output's active area The handles for the AOI menu are:
  - H Size and V size: Adjusts the horizontal and vertical positions respectively.
  - H Pos and V pos: Adjusts the horizontal and vertical positions respectively.
  - Note a lock button allows user to lock the aspect ratio of the size.
- **Reset button:** resets the AOI to default which is the full output area.

Operate similar as the Output adjustment panel > Main page. See above.

Output menu – Color submenu

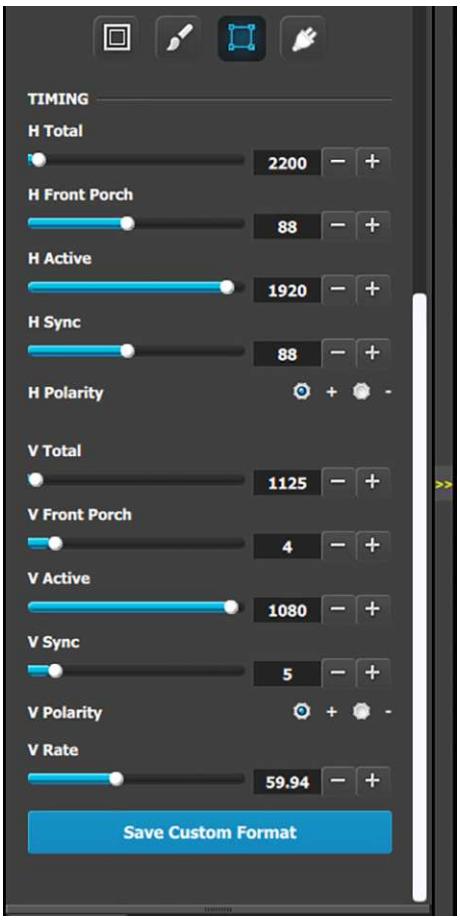
The Output Effects Submenu adjusts color variable of the output image, such as contrast and brightness, saturation, hue and gamma corrections.



- The RGB Contrast and Brightness settings are adjustable.
  - The Overall adjustment has a range of 50 to 150.
  - The individual Red/Green/Blue adjustments have a range of 25 to 150.
  - The default setting for all of these properties is 100.
- Saturation is adjustable within a range of 0 to 150. The default setting is 100.
- Hue is adjustable within a range of –90 to +90 degrees. The default setting is 0 degrees.
- Gamma is adjustable within a range of 0.31 to 3.29. The default setting is 1.0.
- Flicker Filter is adjustable within a range of 0 to 20. The default setting is 12.

  Note: The control shows up only if the output is set to an interlaced format on the SDI output of a Tri-Combo Output card. An example of an Interlaced format is 1920x1080i or NTSC.
- Reset All changes all values to their default settings.

Output menu – Timing submenu



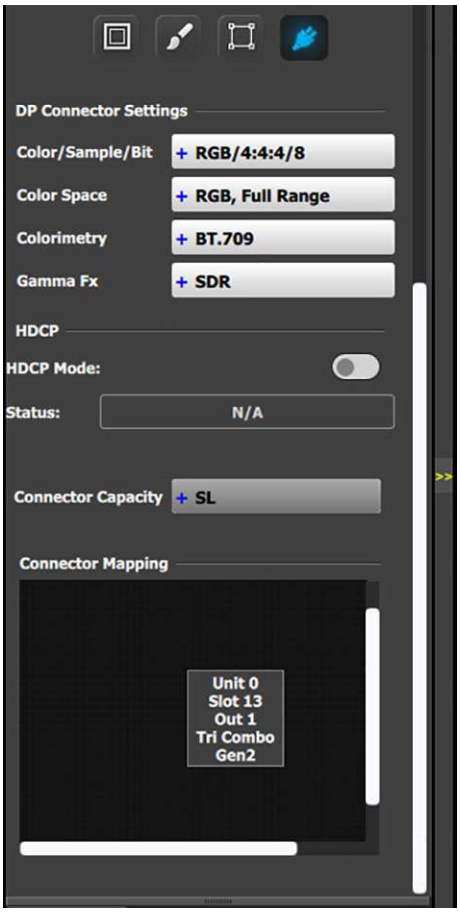
Operate similarly to the Output adjustment panel > Timing menu.

- **H Total:** Adjusts (in pixels) the total pixel count per line for the selected output.
- **H Front Porch:** Adjusts (in pixels) the offset between the end of the output active area and the beginning of H sync.
- **H Active:** Adjusts (in pixels) the horizontal size of the output active area.
- **H Sync:** Adjusts (in pixels) the H sync width.
- **H Polarity:** Adjusts the polarity (active High or Low) of the horizontal sync pulse (N/A in SDI).
- **V Total:** Adjusts (in lines) the total line count per frame.
- **V Front Porch:** Adjusts (in lines) the offset between the end of the output active area and the beginning of V sync.
- **V Active:** Adjusts (in lines) the vertical size of the output active area.
- **V Sync:** Adjusts (in lines) the V sync width.
- **V Polarity:** Adjusts the polarity (active High or Low) of the vertical sync pulse (N/A in SDI).
- **V Rate:** Adjusts the frame rate in seconds polarity (active High or Low) of the vertical sync pulse (N/A in SDI).
- **Save Custom Format:** Saves the updated parameters to a custom format.

Note: Changing these values can make the video signal undetectable for other devices. Always use a VESA timing calculator for best results.

Output menu – Connector submenu

Operate similarly to the Output adjustment panel > Connector menus.



DisplayPort Connector submenu

DisplayPort Connector submenu

- **Color/Sample/Bit:** Adjusts the color space (RGB or YCbCr), sampling rate (4:4:4) and bit depth (8, 10, or 12) of the output signal.
- **Color Range:** Adjusts the color range (RGB or SMPTE, Full or Reduced).
- **Connector Capacity:** If the connector is not assigned to a destination, the capacity can be changed. Once included in a Destination configuration this needs to be managed thru the Adjust pane of the Destination.
- Connector Mapping: Shows the Unit ID, Slot number, and type of output card.

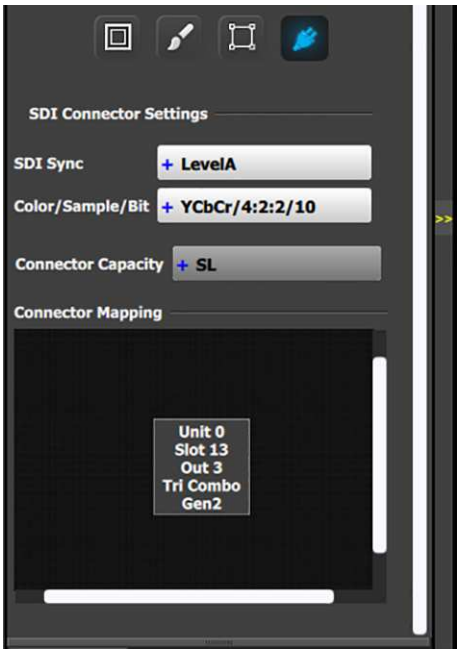
HDMI Connector submenu

HDMI Connector submenu

- **Color/Sample/Bit:** Choices are shown according to the output format in currently use:

  – RGB/4:4:4/8
  – RGB/4:4:4/10
  – RGB/4:4:4/12
  – YCbCr/4:4:4/8
  – YCbCr/4:4:4/10
  – YCbCr/4:4:4/12
  – YCbCr/4:2:2/12

- **Color Range:** Choices are:
  - RGB, Reduced Range (Values 16–235, television and movies)
  - RGB, Full Range (Values 0–255, computer monitors)
  - SMPTE, Full Range
  - SMPTE, Reduced Range
- **HDCP Mode:** HDCP Mode enables the HDCP setting for the selected output. The default for HDMI outputs is Off. To turn On the HDCP Mode, click on the empty checkbox. When the checkbox displays a check mark, HDCP Mode is On. HDCP Mode is not applicable to SDI outputs.
- **Connector Capacity:** If the connector is not assigned to a destination, the capacity can be changed. Once included in a Destination configuration this needs to be managed thru the Adjust pane of the Destination.
- Connector Mapping: Shows the Unit ID, Slot number, and type of output card.



SDI Connector submenu

SDI Connector submenu

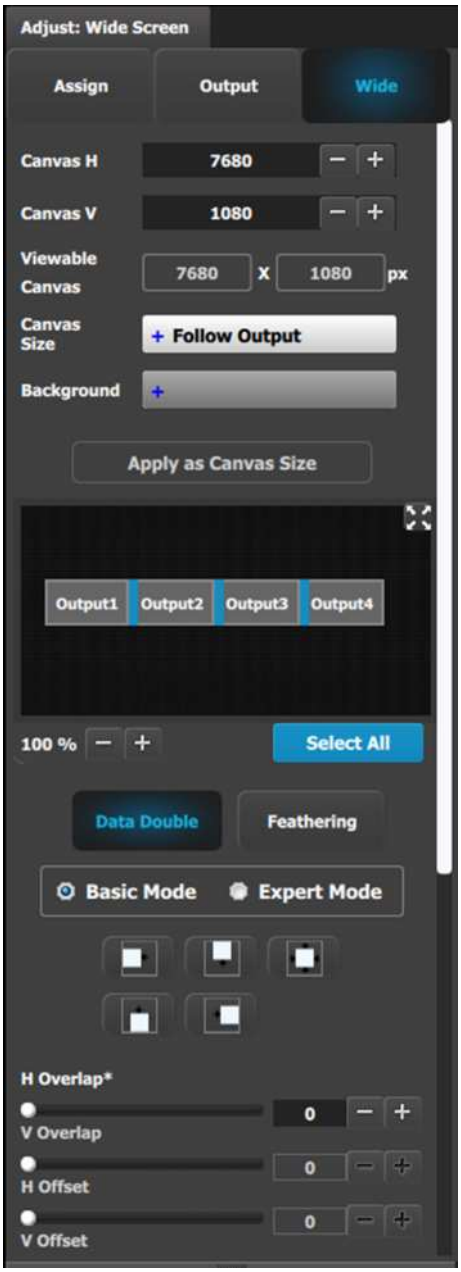
- **SDI Sync** (available with SDI connector type)**:** allows a choice between HD (1.5Gb), 3G (3Gb), Level A, Level B, Level A 2SI, or Level B 2SI.
  The SDI Type options vary, depending on the format of the Outputs. For example, for:
  - NTSC/PAL—the SDI Type can be only SD.
  - 1080i or 1080p, with a refresh rate less than or equal to 30 Hz—the SDI Type can be only HD.
  - 1080p, with a refresh rate greater than 30 Hz—the SDI Type can be:
    - Level A (default)
    - Level B
    - Level A 2SI
    - Level B 2SI

    The 2SI options are available only if the Input/Output configuration has 4 SDI connectors from the same card, and the Output format is either 1920 x 1080 or 2048 x 1080.
- **Color/Sample/Bit:** Adjusts the color space (YCbCr), sampling rate (4:2:2) and bit depth (10) of the output signal.
- **Connector Capacity:** If the connector is not assigned to a destination as above the capacity can be changed. Once included in a Destination configuration this needs to be managed thru the Adjust pane of the Destination.
- Connector Mapping: Shows the Unit ID, Slot number, and type of output card.

Wide (screen) menu

In this menu, the user can adjust the data-doubling and feathering parameters necessary to setup a wide blended screen. These actions can be performed simultaneously on all screens by clicking the “Select All” button. The data-doubling parameters can be adjusted in either Basic Mode or Expert Mode.

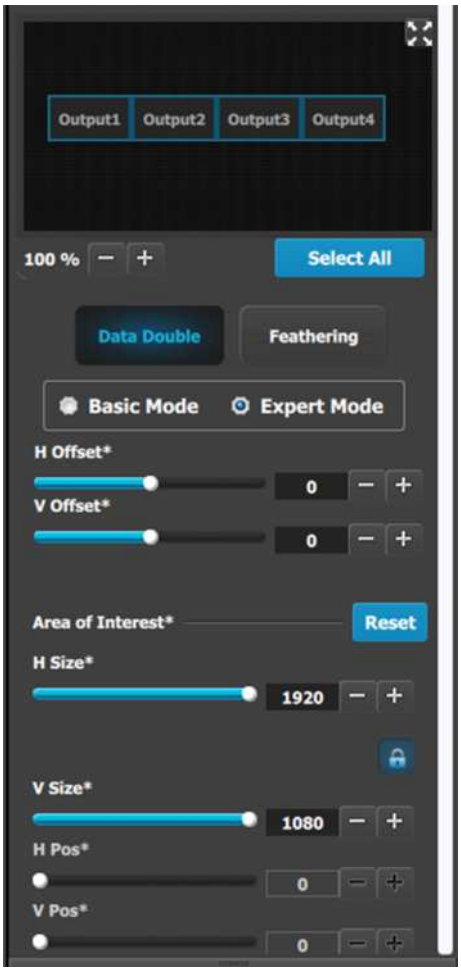
Data-doubling submenu—Basic Mode



- **Canvas H:** This is the horizontal size of the canvas, measured in pixels. The edit box allows the user to adjust this size.
- **Canvas V:** This is the vertical size of the canvas, measured in pixels. The edit box allows the user to adjust this size.
- **Viewable Canvas:** Viewable Canvas displays the horizontal and vertical size of the viewable canvas in pixels. This is the area that the Outputs cover in the canvas.
- **Canvas Size:** The options are “Follow Output” and “Use Background.”
  - “Follow Output” matches the canvas size to H/V Dimension edit boxes in the Assign tab and the Output Config format.
  - “Use Background,” matches the canvas size to that of a selected Background.
- **Background:** If the Canvas Size is set to “Use Background,” this drop-down box lets the user select from the available backgrounds.
- **Apply as Canvas Size:** When switching between “Follow Output” and “Use Background,” the user must click on this button to choose the new canvas size.
- **Data Doubling H or V Overlap width:** The adjustment can be made by moving the slider, entering the value manually in the box, or clicking on the plus and minus.

  Note: The Overlap sliders are disabled, until at least one overlapping area is selected. Gray overlaps are unselected; blue overlaps are selected. Individual overlaps can be selected by clicking on the desired overlap in the output image. All overlaps can be selected by clicking on the **Select All** button.
- Once an overlap is created, H and V offset can be adjusted for Left, Right, Top, Bottom, or Center justification over the Background.
- The icons above the sliders are shortcuts for the offset.

Data-doubling submenu—Expert Mode

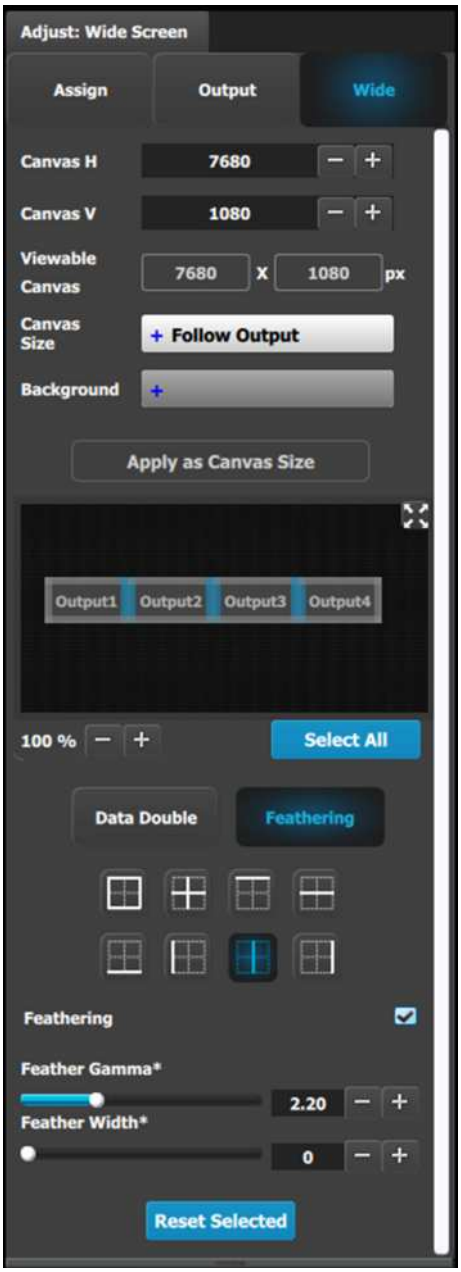


The top part of the panel is the same in Expert Mode as it is in Basic Mode. Expert Mode, however, offers greater control over horizontal and vertical Offset and Size. Expert Mode also allows the user to add Outputs without increasing the canvas size and to place those Outputs anywhere within the canvas.

- **H Offset or V Offset:** The adjustment can be made by moving the slider, entering the value manually in the box, or clicking on the plus and minus.

  Note: The Offset sliders are disabled, until at least one output rectangle is selected. Dark green rectangles are unselected; bright green rectangles are selected. Individual outputs can be selected by clicking on the desired output in the output image. All outputs can be selected by clicking on the **Select All** button.
- The Area of Interest (including H Size and V Size) is duplicated here from the Output tab, so that the user can adjust the AOI and the X/Y Offset together.

Feathering submenu



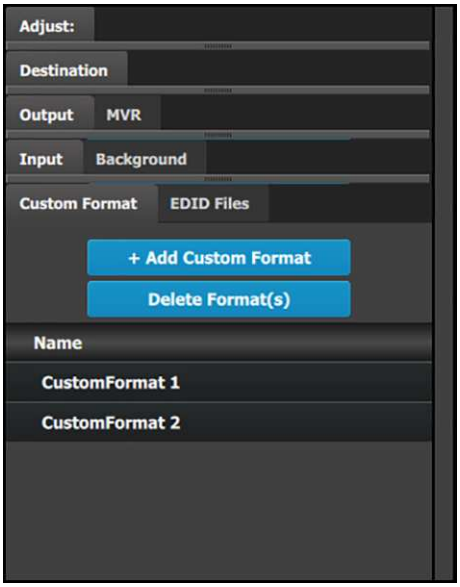
- Canvas shows the actual pixel ratio for the full blend.
- Select the region where feathering will be performed. All edges can be separately selected and have a different value of Feather and Gamma. The adjustment can be made by moving the slider, entering the value manually in the box or click on the plus and minus.
  Note: The Feathering and Gamma sliders are disabled, until at least one edge that can be feathered is selected. Gray edges are unselected; blue edges are selected.
- Activate or deactivate the feather for the selected edge by checking the Feathering checkbox.
- Adjust the Feathering Gamma (shape of the curve) and the width of the feathering region.
- The icons above are shortcuts for edge selection.
- The Arrow icon allows the small windows representation of the output map to be copied to the workspace for ease of edge selection.

6.18 Configuration Menu > Adjustment > Custom Formats Configuration

General

In the Custom Format configuration menu users can add and modify custom resolution configurations.

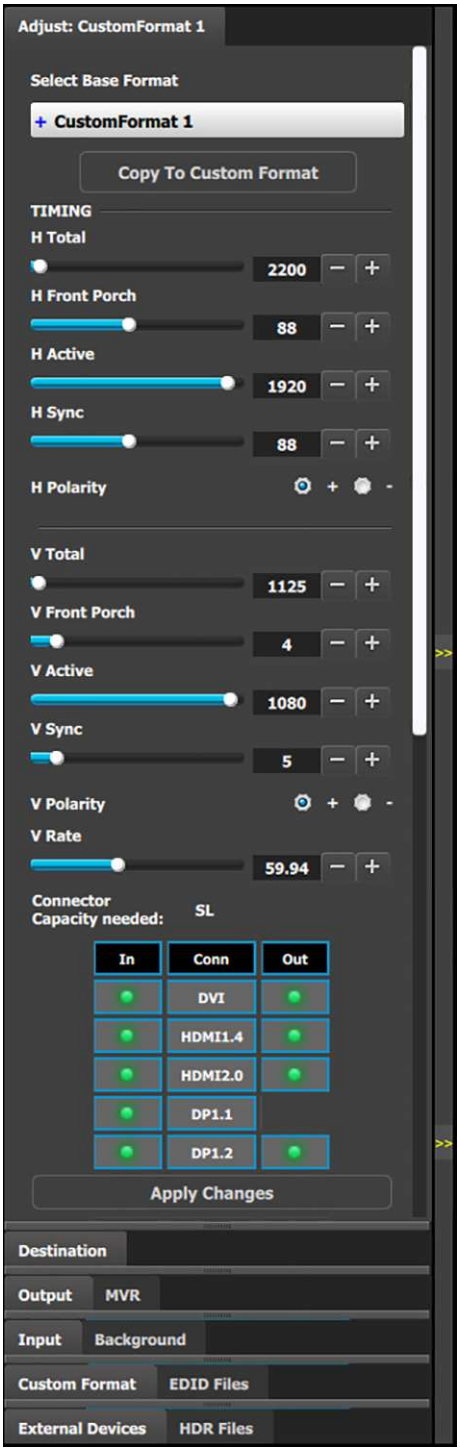
Custom format tab



This menu provides:

- An **+ Add Custom Format** button to manually add custom formats.
- A **Delete Format(s)** button to delete selected custom formats.
- A list of all of the custom formats that have been added to the configuration.
  The system provides a syntax number to the left of each added custom format. The names of the custom formats can be changed, as the names of inputs, outputs, destinations, etc. can be changed.

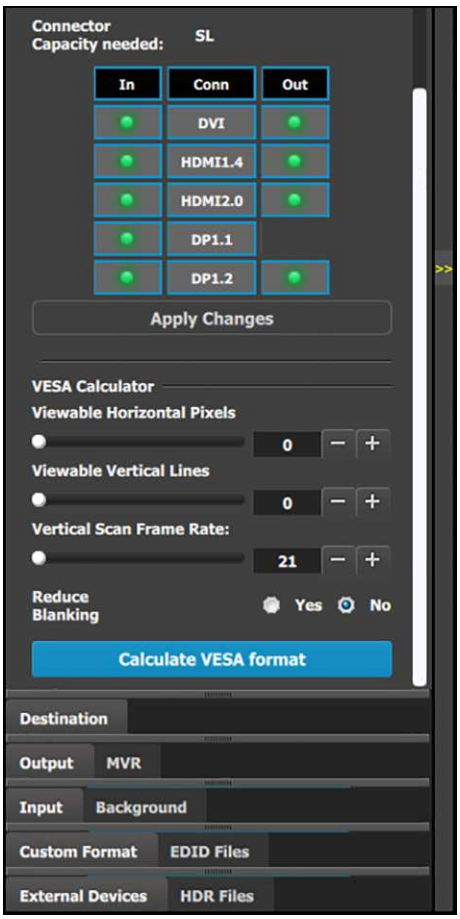
Custom Format Adjust tab – top half



This menu provides:

- **H Total:** The total pixel count per line.
- **H Front Porch:** The offset between the end of the active area and the beginning of H sync.
- **H Active:** The horizontal size in pixels of the active area.
  The IP address may be entered manually.
- **H Sync:** The H sync width in pixels.
- **H Polarity:** The polarity (active High or Low) of the horizontal sync pulse (N/A in SDI).
- **V Total:** The total line count per frame.
- **V Front Porch:** The offset in lines between the end of the output active area and the beginning of V sync.
- **V Active:** The vertical size of the output active area.
- **V Sync:** The V sync width in lines.
- **V Polarity:** The polarity (active High or Low) of the vertical sync pulse (N/A in SDI).
- **V Rate:** Adjusts the frame rate in seconds polarity (active High or Low) of the vertical sync pulse (N/A in SDI).
- **Connector Capacity needed:** Lists the connector capacity (SL, DL, 4K, etc.) that is required.
  The connector graphic shows whether the connectors can support the custom format (green LED) or not (red LED).
- The Apply Changes button applies the changes to the custom format.

Custom Format Adjust tab – bottom half



This bottom half of this panel provides the VESA calculator.

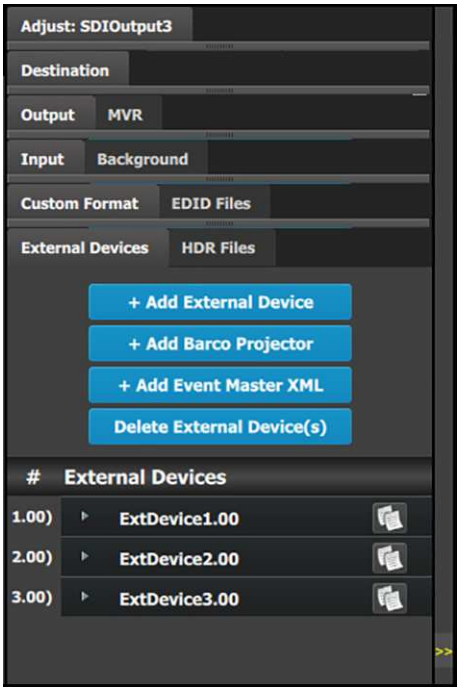
- **Viewable Horizontal Pixels:** The slider ranges from 0 to 4096.
- **Viewable Vertical Lines:** The slider ranges from 0 to 4096.
- **Vertical Scan Frame Rate:** The slider ranges from 21 Hz to 120 Hz.
- **Reduce Blanking:** The choices are “Yes” or “No.” If “Yes” is chosen, a further dialog box allows a choice of **Reduced Blank Timing Versions**.
- The Apply Changes button applies the changes to the custom format.

6.19 Configuration Menu > Adjustment > External Devices Configuration

General

In the External Devices configuration menu users can add external devices to a configuration and assign commands to those external devices.

External Devices tab



This menu provides:

- An **+ Add External Device** button to manually add, one at a time, up to 12 external devices.
- An **+Add Barco Projector** button to add a Pulse projector with four default commands (shutter open/close and Light source On/Off).
- An **+Add Event Master XML** button.
- A **Delete External Device(s)** button to delete selected external devices.
- A list of all of the external devices that have been added to the configuration.

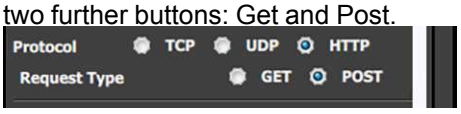
  The system provides a syntax number to the left of each added external device. The names of the external devices can be changed, as the names of inputs, outputs, destinations, etc. can be changed.

To adjust the attributes of an external device, select the device from the list and click on the adjustment tab. For example, select **ExtDevice1.00** and click on the **Adjust: ExtDevice1.00** tab.

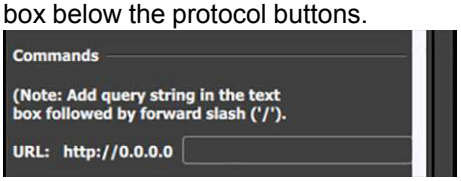
External Devices Adjust tab

This menu provides:

- **Number:** A number assigned to the external device.
- **Name:** The name of the external device.
- **IP Address:** The IP address of the external device.
  The IP address must be entered manually.
- **Port:** The port assigned to the external device.
- **Number of command(s):** The number of commands assigned to the external device.
- **Protocol:** The Internet protocol: TCP (Transmission Control Protocol), UDP (User Datagram Protocol), or HTTP (HyperText Transfer Protocol). If HTTP is selected, the system displays two further buttons: Get and Post.

  Provide the URL for HTTP Get or Post in the edit box below the protocol buttons.

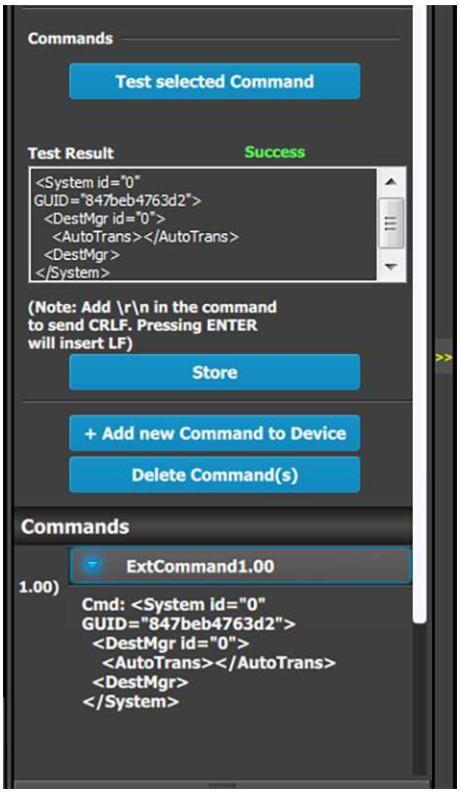
- **Test Selected Command:** A button that tests network communications between the EMP and the external device.
  Until a Command is selected, the system displays the message,"Invalid IP address or Command not selected."
- **Test Result:** The Test Result reads:
  - Failure: before the command is tested and if the command fails the test.
  - In Progress: while the command is being tested.
  - Success: if the network communication is successful. If successful, the command will have triggered the external device to perform the requested action.
- **Store:** Stores the tested command to the selected external device.
- **+ Add new Command to Device:** A button that adds commands to the external device.
- **Delete Command(s):** A button that deletes selected commands from the external device.
- **Commands:** A list of commands assigned to an external device.

Add, Test, and Store commands

On the External Devices Adjust tab the user may add, test, and store commands for external devices.

1. Click on the **+Add new Command to Device** button to add a command to the selected external device.
2. Enter the command in the command window.
   The user may type or paste a copied command into the empty window.
3. Click on the **Test Selected Command** button.
   The **Test Result** reads:
   - Failure: before the command is tested and if the command fails the test.
   - In Progress: while the command is being tested.
   - Success: if the network communication passes the test.
4. Correct the command if it fails the test.
5. Click on the **Store** button, once the command has passed the test, to store the command to the selected external device.

Once a command has been added, tested, and stored, the text of the command appears under the command in the Commands list.



6.20 Configuration Menu > Linking

General

This part of the System configuration page lists devices available on the local network and allows adding them to a Linked System Set up.

The Link cards allow for linking multiple Event Master units. Depending on the linking configuration, linked units share inputs, and they expand the number of layers and outputs. For example, beginning with code release 6.0, eight (8) E2 units can be linked as a system.

Just as in section “Configuration Menu > Network resource area”, page 111, the unit that is supposed to be added is available in the network resource tab. Any second unit can be added, it only needs to have a separate Unit ID. Change the Unit ID of each system to be different. The default Unit ID is 0 on all E2 chassis models, 1 on all S3 chassis models, and 2 on the EX chassis. On one of the E2s change the Unit ID to 1 from the front panel, or by temporarily adding them as separate systems.

A second E2 or S3–4K unit adds fully double capacity from one unit. There are very few limitations to the capacity and operation is all in all the same as it is for one unit.

After linking chassis, a few menus provide the option of changing between which unit controls you are viewing.
From the Menu bar at the top of all pages, you can select which processor’s details you are viewing, by selecting that processor from the pull down menu.

There is no relationship between Unit ID and Master or Slave selection. Either unit can be Master or Slave in a linked configuration. The only real significance—but totally transparent to users—is the Event Master Toolset communicates only with the Master unit. The Master unit establishes its own connection and handles all communications with the Slave unit(s).

Certain configuration setups are not allowed. These include spanning input or output configurations between an E2 and an S3–4K. If your setup requires this kind of configuration, then you must link together two E2 units or two S3–4K units.

How to Link Two E2 Units

Each E2 comes equipped with two Link cards, always located in slots 1 and 2. Link cards are identified by a yellow stripe at the top. Make sure to use the locking mechanism and then push each cable until it locks in place.

Connect the Link cables provided with each E2 between the Link connectors as follows:

- VP ID 0, Link Card slot 1, Link 1 >> VP ID 1, Link Card slot 1, Link 2 [1]
- VP ID 0, Link Card slot 1, Link 2 >> VP ID 1, Link Card slot 1, Link 1 [2]
- VP ID 0, Link Card slot 2, Link 1 >> VP ID 1, Link Card slot 2, Link 2 [3]
- VP ID 0, Link Card slot 2, Link 2 >> VP ID 1, Link Card slot 2, Link 1 [4]

See Image 6-45 for an example of the cabling between two E2 units.

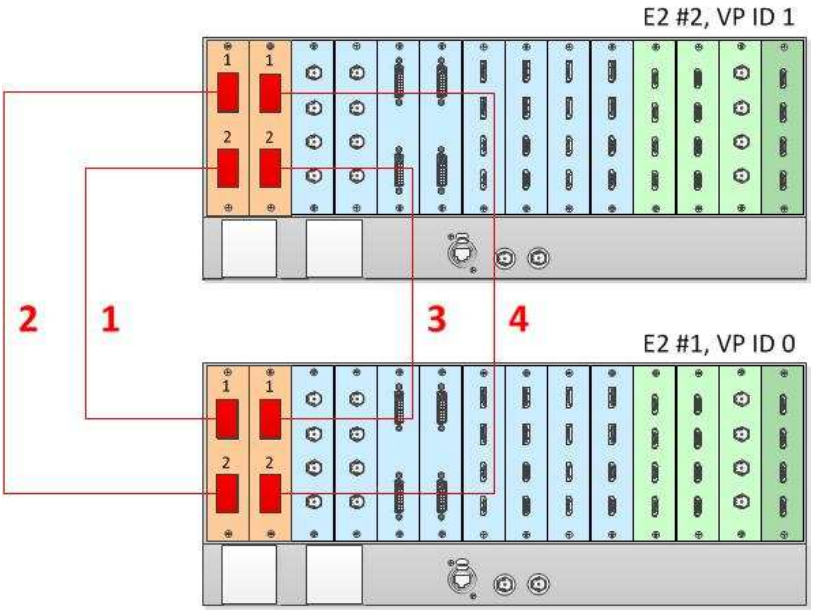


Image 6-45: Cabling between two E2 units

Event Master Configuration for Two E2s

1. Start the Event Master Toolset software.
2. Make sure that the two E2s are discovered on the network and that they have different Unit IDs.
3. Drag and drop either of the two E2s in the GUI.

   Both E2s will be graphically represented in the Detail View area. The unit which was dropped will show on top of the other unit, which appears grayed out.

   You are presented the option to add the bottom, grayed-out unit as a master or as a slave.
4. Select either add as a master or add as a slave.
5. (Optional) At this point it is suggested that you select and appropriately name each E2 so that you can identify it in your setup.

How to Link Three E2 Units

Each E2 comes equipped with two Link cards, always located in slots 1 and 2. Link cards are identified by a yellow stripe at the top. Make sure to use the locking mechanism and then push each cable until it locks in place.

Connect the Link cables provided with each E2 between the Link connectors as follows:

- VP ID 0, Link Card slot 1, Link 1 >> VP ID 2, Link Card slot 1, Link 2 [1]
- VP ID 0, Link Card slot 2, Link 1 >> VP ID 2, Link Card slot 2, Link 2 [2]
- VP ID 0, Link Card slot 1, Link 2 >> VP ID 1, Link Card slot 1, Link 1 [3]
- VP ID 0, Link Card slot 2, Link 2 >> VP ID 1, Link Card slot 2, Link 1 [4]
- VP ID 1, Link Card slot 1, Link 2 >> VP ID 2, Link Card slot 1, Link 1 [5]
- VP ID 1, Link Card slot 2, Link 2 >> VP ID 2, Link Card slot 2, Link 1 [6]

See Image 6-46 for an example of the cabling between three E2 units.

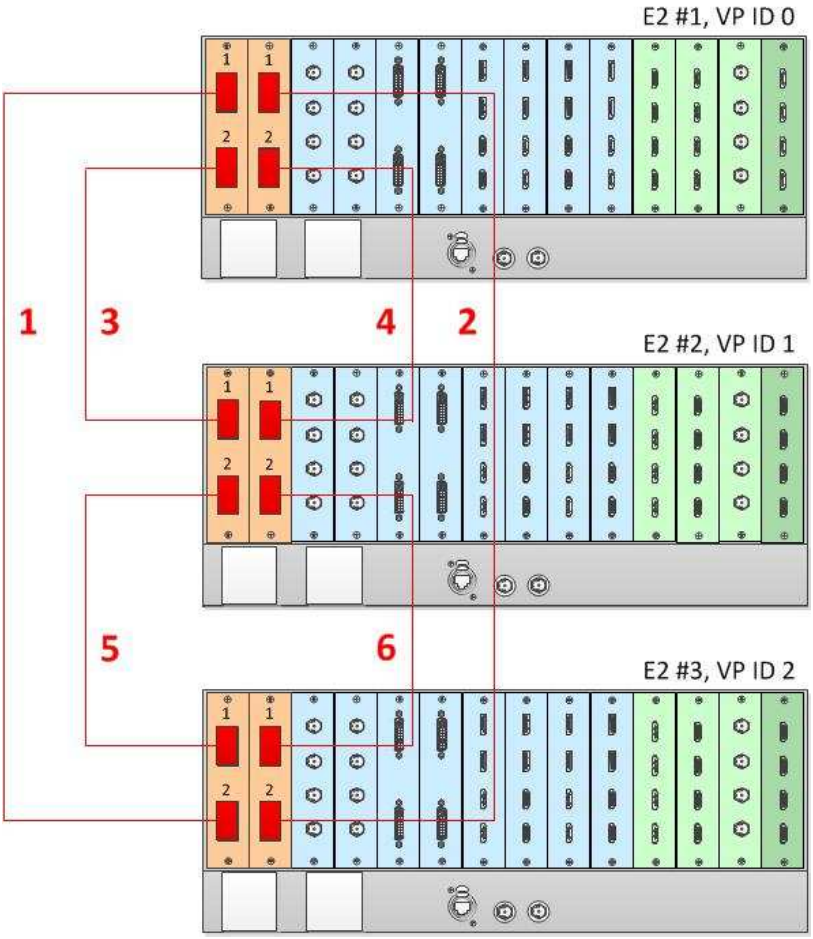


Image 6-46: Cabling between three E2 units

Event Master Configuration for Three E2s

1. Start the Event Master Toolset version 5.1 or higher.
2. Make sure that the three E2s are discovered on the network and that they have different Unit IDs.
3. Drag and drop any one of the three E2s in the GUI.

   The three linked E2s will be graphically represented in the Detail View area. The unit which was dropped will show on top of the other two units, which appear grayed out.

   You will be presented the option to add either of the grayed-out units as a master or as a slave.
4. Select either add as a master or add as a slave.

   Once the system synchronizes the two units that are added to the system, you will be presented the option to add the third unit, at the bottom of the stack in the GUI's Detail View, as the Master or as a Slave.
5. Select either add as a master or add as a slave.
6. (Optional) At this point it is suggested that you select and name appropriately each E2 so that you can identify it in your setup.

How to Link an E2 Unit to an EX Unit or to Two Daisy-Chained EX Units

Each E2 comes equipped with two Link cards, always located in slots 1 and 2. Link cards are identified by a yellow stripe at the top. Each EX has two Link sockets. Make sure to use the locking mechanism and then push each cable until it locks in place.

To link an E2 to an EX, connect the Link cables provided with each unit between the Link connectors as follows:

- E2 VP ID 0, Link Card slot 1, Link 1 >> EX VP ID 1, Link 2

- EX VP ID 1, Link 1 >> EX VP ID 2, Link 2

See Image 6-47 for an example of the cabling between an E2 unit and two EX units.

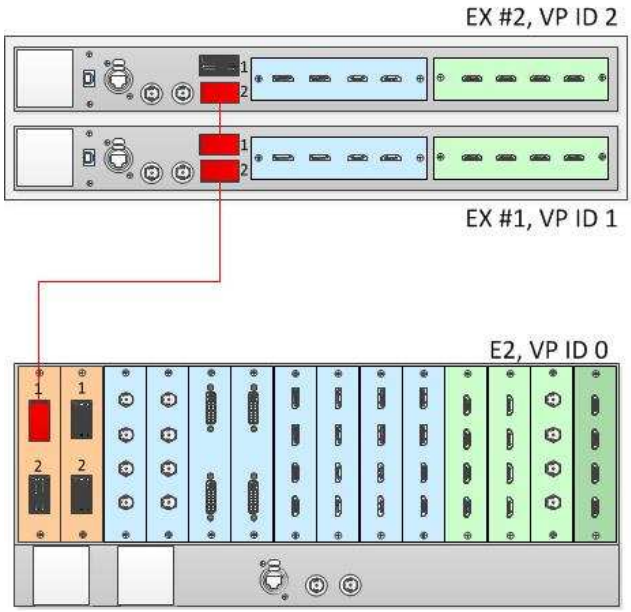


Image 6-47: Cabling between an E2 unit and two daisy-chained EX units

Event Master Configuration for an E2 and an EX

1. Start the Event Master Toolset software.
2. Make sure that both the E2 and the EX are discovered on the network and that they have different Unit IDs.
3. Drop the E2 in the GUI.

   If the E2 unit is cabled to an EX unit or a pair of daisy-chained EX units, the EX unit appears as a grayed-out box below the E2 unit in the Diagram area. In the grayed-out EX box a blue button allows you to add the EX to the system as a slave.
4. Click the blue add button to add the EX unit.

   If you are adding two daisy-chained EX units, you must add the first EX in the chain before the second EX in the chain is displayed, then repeat this step to add the second EX in the chain.
5. (Optional) At this point it is suggested that you select and name appropriately each unit so that you can identify it in your setup.

Each of the four Links on an E2 can be connected to two daisy-chained EX units.

Each of the two link ports on an S3-4K can be linked to two daisy-chained EX units. The procedure is the same as the procedure for linking an E2 to two daisy-chained EX units.

A daisy chain of two EX units cannot have more than two input cards or more than two output cards. Each EX in the chain can have both input cards, both output cards, or an input card and an output card.

How to Link an E2 Unit to an EX Unit with Two VPU Cards

To add up to eight Single or four Mixing Layers to a system, an E2 unit can be linked to an EX unit with two VPU cards. This adds two more VPUs to the system. Each E2 comes equipped with two Link cards, always located in slots 1 and 2. Link cards are identified by a yellow stripe at the top. Each EX has two Link sockets. Make sure to use the locking mechanism and then push each cable until it locks in place.

To link an E2 to an EX, connect the Link cables provided with each unit between the Link connectors as follows:

- E2 VP ID 0, Link Card slot 1, Link 1 >> EX VP ID 1, Link 2 [1]
- E2 VP ID 0, Link Card slot 1, Link 2 >> EX VP ID 1, Link 1 [2]

See Image 6-48 for an example of the cabling between an E2 unit and an EX unit with two VPU cards.

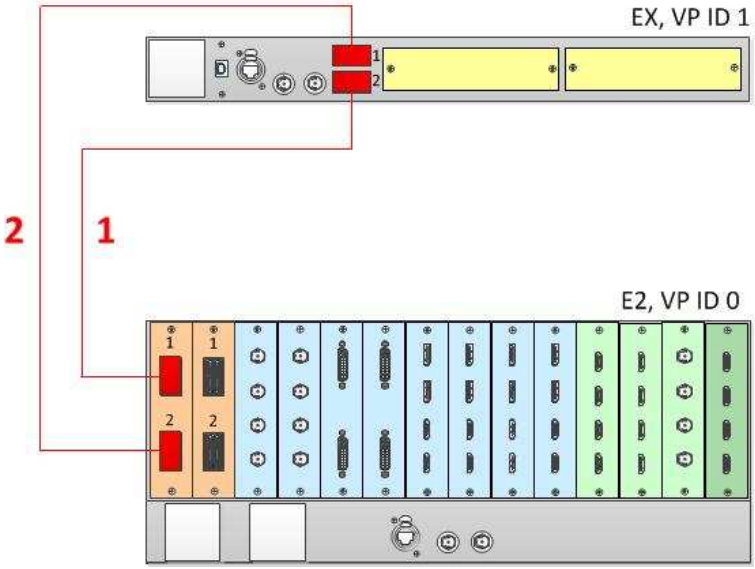


Image 6-48: Cabling between an E2 unit and an EX unit with two VPU cards

How to Link an E2 Unit to an EX Unit with a Mixed I/O/VPU Configuration

To add up to four Single Layers or two Mixing Layers to a system, an E2 unit can be linked to an EX unit with a single VPU card. This adds a another VPU to the system. The VPU can be in either slot 1 or slot 2 on the EX unit, and the other slot may be empty or contain either an Event Master Input card or an Event Master Output card. Each E2 comes equipped with two Link cards, always located in slots 1 and 2. Link cards are identified by a yellow stripe at the top. Each EX has two Link sockets. Make sure to use the locking mechanism and then push each cable until it locks in place.

To link an E2 to an EX, connect the Link cables provided with each unit between the Link connectors as follows:

- E2 VP ID 0, Link Card slot 1, Link 1 >> EX VP ID 1, Link 2 [1]
- E2 VP ID 0, Link Card slot 1, Link 2 >> EX VP ID 1, Link 1 [2]

See Image 6-49 for an example of the cabling between an E2 unit and an EX unit with a VPU card and either an Event Master Input card or an Event Master Output card.

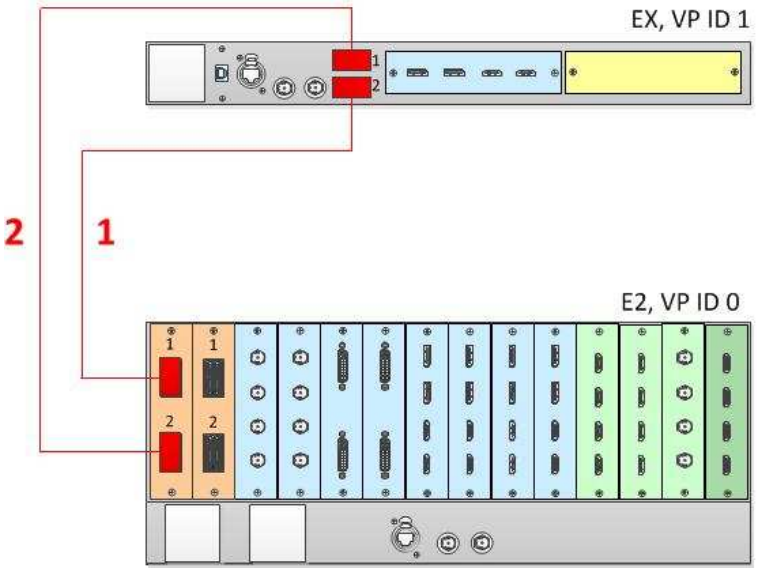


Image 6-49: Cabling between an E2 unit and an EX unit with a VPU card

When an EX unit has VPU cards rather than a combination of Input and Output cards, and it is connected to an E2 processor or to an S3–4K processor, the EX unit an no longer be daisy-chained to another EX unit; both Link connectors on the EX unit must be connected to the E2 or S3–4K Master unit.

Event Master Configuration for Linking an E2 Unit to an EX Unit with VPU Cards

1. Start the Event Master Toolset version 5.1 or higher.
2. Make sure that both the E2 and the EX are discovered on the network and that they have different Unit IDs.
3. Drop the E2 in the GUI.

   If the E2 unit is cabled to an EX unit, the EX unit appears as a grayed-out box below the E2 unit in the Diagram area. In the grayed-out EX box a blue button allows you to add the EX to the system as a slave.
4. Click the blue add button to add the EX unit.
5. (Optional) At this point it is suggested that you select and name appropriately each unit so that you can identify it in your setup.

How to Link an E2 Unit to Two EX Units, Each with Two VPU Cards

To add up to 16 Single or eight Mixing Layers to a system, an E2 unit can be linked to two EX units, each with two VPU cards. This adds a total of four more VPUs to the system. Each E2 comes equipped with two Link cards, always located in slots 1 and 2. Link cards are identified by a yellow stripe at the top. Each EX has two Link sockets. Make sure to use the locking mechanism and then push each cable until it locks in place.

To link an E2 to two EX units, connect the Link cables provided with each unit between the Link connectors as follows:

- E2 VP ID 0, Link Card slot 1, Link 1 >> EX VP ID 1, Link 2 [1]
- E2 VP ID 0, Link Card slot 1, Link 2 >> EX VP ID 1, Link 1 [2]
- E2 VP ID 0, Link Card slot 2, Link 1 >> EX VP ID 2, Link 2 [3]
- E2 VP ID 0, Link Card slot 2, Link 2 >> EX VP ID 2, Link 1 [4]

See Image 6-50 for an example of the cabling between an E2 unit and an EX unit with two VPU cards.

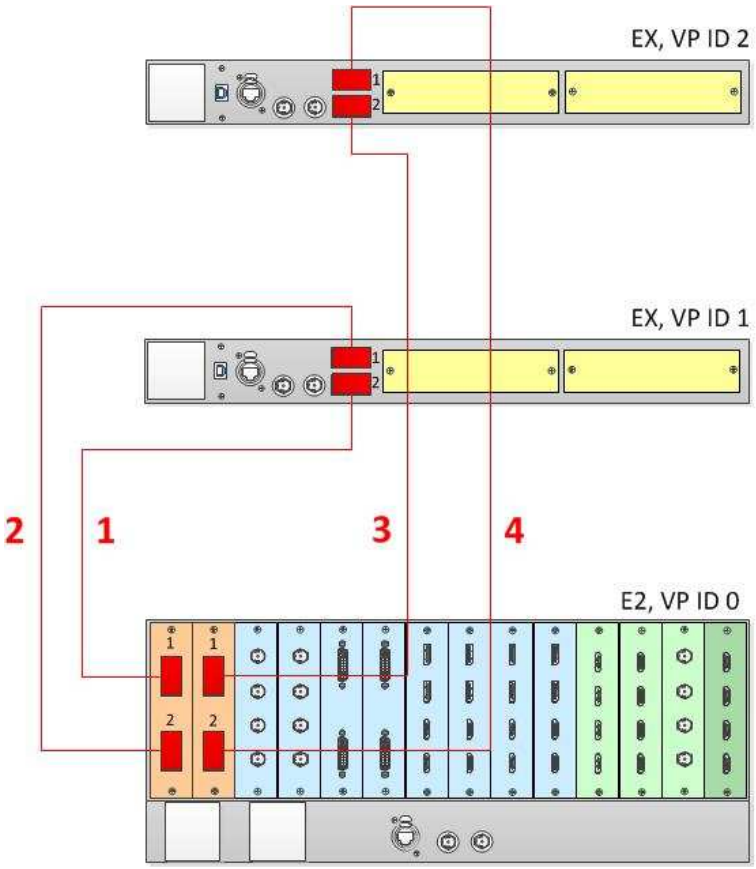


Image 6-50: Cabling between an E2 unit and two EX units

When an EX unit has VPU cards rather than a combination of Input and Output cards, and it is connected to an E2 processor or to an S3–4K processor, the EX unit an no longer be daisy-chained to another EX unit; both Link connectors on the EX unit must be connected to the E2 or S3–4K Master unit.

How to Link an E2 Unit to Two EX Units, Each with a Mixed I/O/VPU Configuration

To add up to eight Single Layers or four Mixing Layers to a system, an E2 unit can be linked to two EX units, each with a single VPU card. This adds two VPUs. The VPU can be in either slot 1 or slot 2 on the EX unit, and the other slot may contain either an Event Master Input card or an Event Master Output card. Each E2 comes equipped with two Link cards, always located in slots 1 and 2. Link cards are identified by a yellow stripe at the top. Each EX has two Link sockets. Make sure to use the locking mechanism and then push each cable until it locks in place.

To link an E2 to two EX units, connect the Link cables provided with each unit between the Link connectors as follows:

- E2 VP ID 0, Link Card slot 1, Link 1 >> EX VP ID 1, Link 2 [1]
- E2 VP ID 0, Link Card slot 1, Link 2 >> EX VP ID 1, Link 1 [2]
- E2 VP ID 0, Link Card slot 2, Link 1 >> EX VP ID 2, Link 2 [3]
- E2 VP ID 0, Link Card slot 2, Link 2 >> EX VP ID 2, Link 1 [4]

See Image 6-51 for an example of the cabling between an E2 unit and an EX unit with a VPU card and either an Event Master Input card or an Event Master Output card.

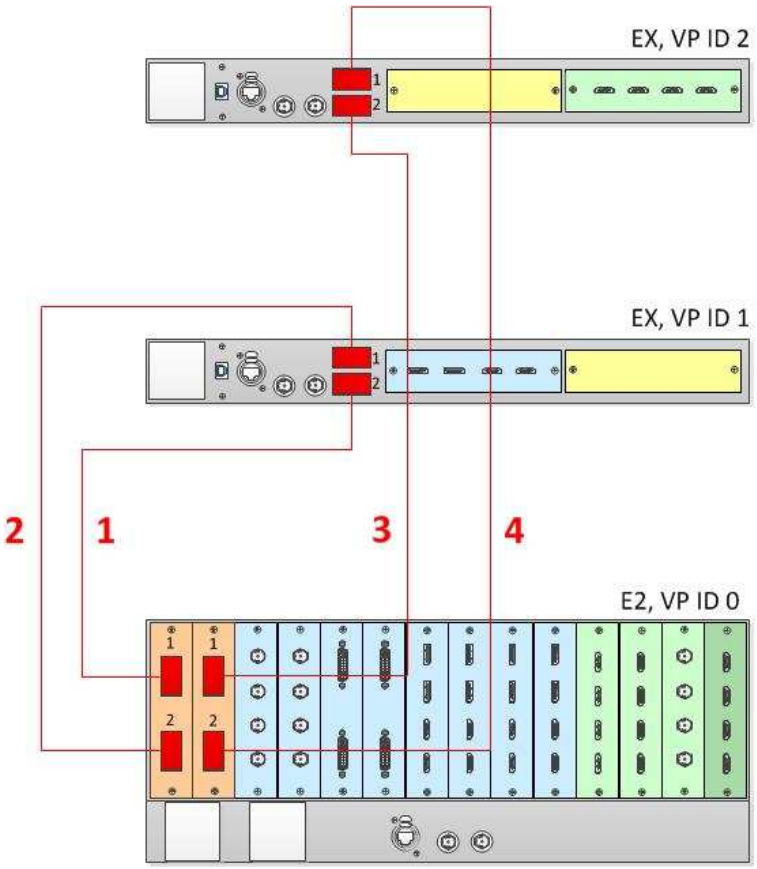


Image 6-51: Cabling between an E2 unit and two EX units, each with a VPU card

When an EX unit has VPU cards rather than a combination of Input and Output cards, and it is connected to an E2 processor or to an S3–4K processor, the EX unit an no longer be daisy-chained to another EX unit; both Link connectors on the EX unit must be connected to the E2 or S3–4K Master unit.

Event Master Configuration for Linking an E2 Unit to Two EX Units with VPU Cards

1. Start the Event Master Toolset version 5.1 or higher.
2. Make sure that both the E2 and the EX are discovered on the network and that they have different Unit IDs.
3. Drop the E2 in the GUI.

   If the E2 unit is cabled to an EX unit, the EX unit appears as a grayed-out box below the E2 unit in the Diagram area. In the grayed-out EX box a blue button allows you to add the EX to the system as a slave.
4. Click the blue add button to add the EX unit.
5. (Optional) At this point it is suggested that you select and name appropriately each unit so that you can identify it in your setup.

How to Link an E2 Unit and an S3–4K Unit

Each E2 comes equipped with two Link cards, always located in slots 1 and 2. Each S3–4K has a single Link card in slot 1. Link cards are identified by a yellow stripe at the top. Make sure to use the locking mechanism and then push each cable until it locks in place.

Connect the Link cables provided with each unit between the Link connectors as follows:

- E2 VP ID 0, Link Card slot 1, Link 1 >> S3–4K VP ID 1, Link Card slot 1, Link 2 [1]
- E2 VP ID 0, Link Card slot 1, Link 2 >> S3–4K VP ID 1, Link Card slot 1, Link 1 [2]

See Image 6-52 for an example of the cabling between an E2 unit and an S3–4K unit.

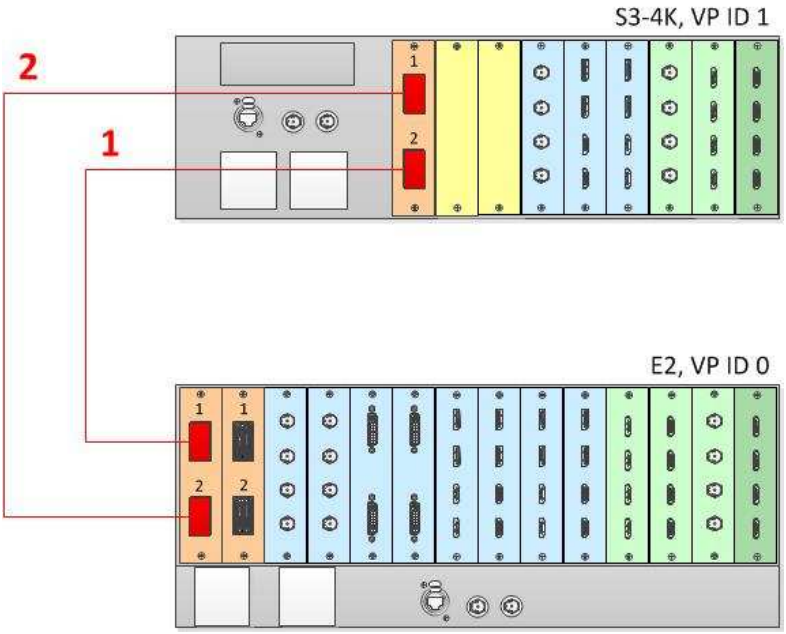


Image 6-52: Cabling between an E2 unit and an S3-4K unit

Event Master Configuration for Linking an E2 and an S3–4K

1. Start the Event Master Toolset version 3.2 or higher.
2. Make sure that both the E2 and the S3–4K are discovered on the network and that they have different Unit IDs.
3. Drop the E2 in the GUI.
4. Then drop the S3–4K in the GUI.

   The S3–4K will appear grayed-out below the E2.

   You will be presented the option to add the S3–4K as a slave. An S3–4K can be added to an E2 only as a Slave.
5. Select add as a slave.
6. (Optional) At this point it is suggested that you select and name appropriately each unit so that you can identify it in your setup.

How to Link an E2 Unit and two S3-4K Units

Each E2 comes equipped with two Link cards, always located in slots 1 and 2. Each S3–4K has a single Link card in slot 1. Link cards are identified by a yellow stripe at the top. Make sure to use the locking mechanism and then push each cable until it locks in place.

Connect the Link cables provided with each unit between the Link connectors as follows:

- E2 VP ID 0, Link Card slot 2, Link 1 >> S3 VP ID 1, Link Card slot 1, Link 2 [1]
- E2 VP ID 0, Link Card slot 2, Link 2 >> S3 VP ID 1, Link Card slot 1, Link 1 [2]
- E2 VP ID 0, Link Card slot 1, Link 1 >> S3 VP ID 2, Link Card slot 1, Link 2 [3]
- E2 VP ID 0, Link Card slot 1, Link 2 >> S3 VP ID 2, Link Card slot 1, Link 1 [4]

See Image 6-53 for an example of the cabling between an E2 unit and two S3-4K units.

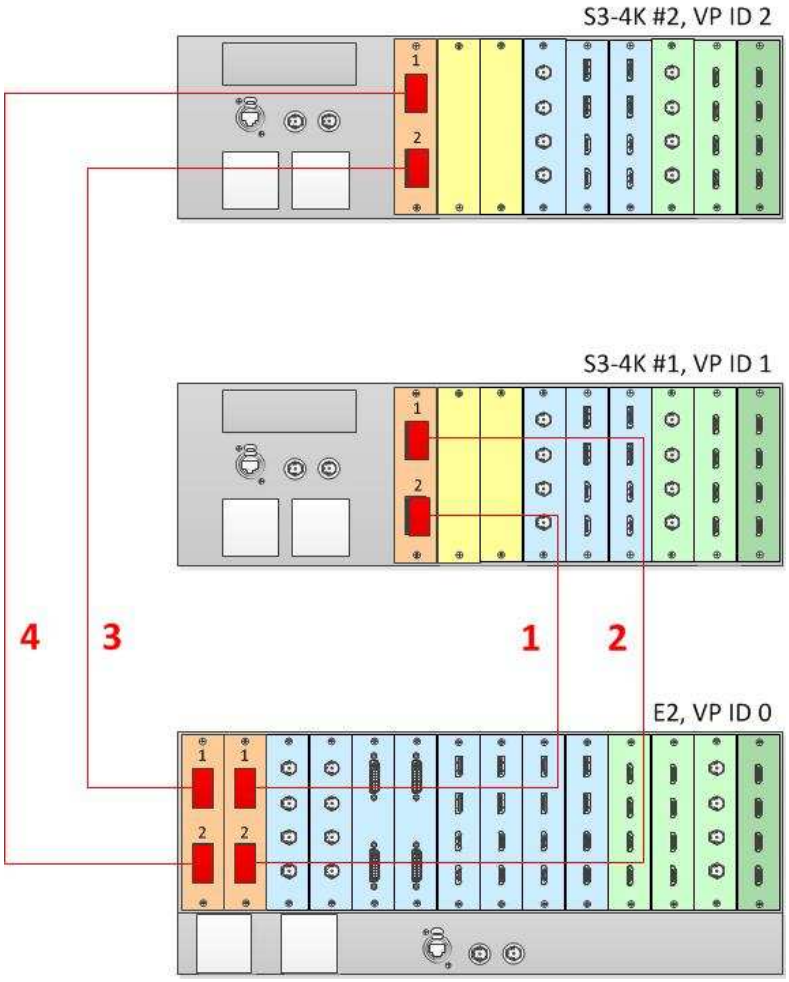


Image 6-53: Cabling between an E2 unit and two S3–4K units

Event Master Configuration for Linking an E2 Unit and Two S3-4Ks

1. Start the Event Master Toolset version 4.2 or higher.
2. Make sure that the E2 and the S3–4K units are discovered on the network and that they have different Unit IDs.
3. Drop the E2 in the GUI.

   The S3–4K units will appear grayed-out below the E2.

   You will be presented the option to add each of the S3–4Ks as a slave. An S3–4K can be added to an E2 only as a slave.
4. Select either S3–4K and click add as a slave.
5. Select either add as a master or add as a slave.

   When the first S3–4K is done synchronizing with the system, the second S3–4K can then be added to the system.
6. Select add as a slave.
7. (Optional) At this point it is suggested that you select and name appropriately each unit so that you can identify it in your setup.

How to Link an E2 Unit, an S3-4K Unit, and four EX Units

Each E2 comes equipped with two Link cards, always located in slots 1 and 2. Each S3–4K has a single Link card in slot 1. Link cards are identified by a yellow stripe at the top. Each EX has two Link sockets. Make sure to use the locking mechanism and then push each cable until it locks in place.

Connect the Link cables provided with each unit between the Link connectors as follows:

- E2 VP ID 0, Link Card slot 1, Link 1 >> S3 VP ID 1, Link Card slot 1, Link 2 [1]
- E2 VP ID 0, Link Card slot 1, Link 2 >> S3 VP ID 1, Link Card slot 1, Link 1 [2]
- E2 VP ID 0, Link Card slot 2, Link 1 >> EX VP ID 2, Link 2 [3A]
- EX VP ID 2, Link 1 >> EX VP ID 3, Link 2 [3B]
- E2 VP ID 0, Link Card slot 2, Link 2 >> EX VP ID 4, Link 2 [4A]
- EX VP ID 4, Link 1 >> EX VP ID 5, Link 2 [4B]

See Image 6-54 for an example of the cabling between an E2 unit, an S3-4K unit, and four EX units.

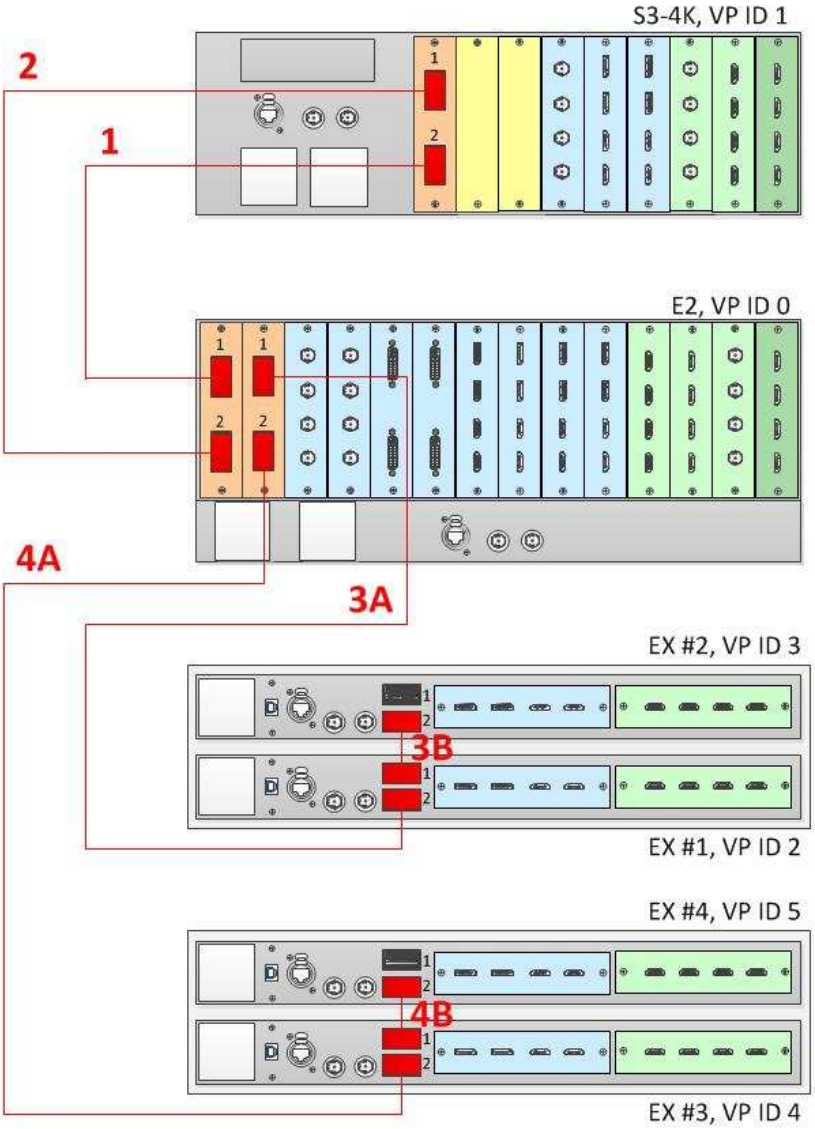


Image 6-54: Cabling between an E2 unit, an S3–4K unit, and four EX units

Event Master Configuration for Linking an E2, an S3-4K, and four EX Units

1. Start the Event Master Toolset version 4.1 or higher.
2. Make sure that the E2, the S3–4K, and the EX units are discovered on the network and that they have different Unit IDs.
3. Drop the E2 in the GUI.

   All linked frames will appear below the E2 as grayed-out representations of each linked frame.
4. Click the "+Add as Slave" button on the S3–4K.
5. Once the S3–4K is done synchronizing with the master, you may next add the EX frames as slaves.

6. Click the blue add button to add the first EX unit.

   If the EX is daisy-chained to another EX unit, you must add the first EX in the chain before the second EX in the chain is displayed, then repeat this step to add the second EX in the chain.

7. Click the blue add button to add the second EX unit.

8. (Optional) At this point it is suggested that you select and name appropriately each unit so that you can identify it in your setup.

How to Link Three S3–4K Units

Each S3–4K has a single Link card in slot 1, identified by a yellow stripe at the top. Make sure to use the locking mechanism and then push each cable until it locks in place.

Connect the Link cables provided with each S3–4k between the Link connectors as follows:

- VP ID 0, Link Card slot 1, Link 1 >> VP ID 2, Link Card slot 1, Link 2 [1]
- VP ID 0, Link Card slot 1, Link 2 >> VP ID 1, Link Card slot 1, Link 1 [2]
- VP ID 1, Link Card slot 1, Link 2 >> VP ID 2, Link Card slot 1, Link 1 [3]

See image 6-39 for an example of the cabling between three S3–4K units.

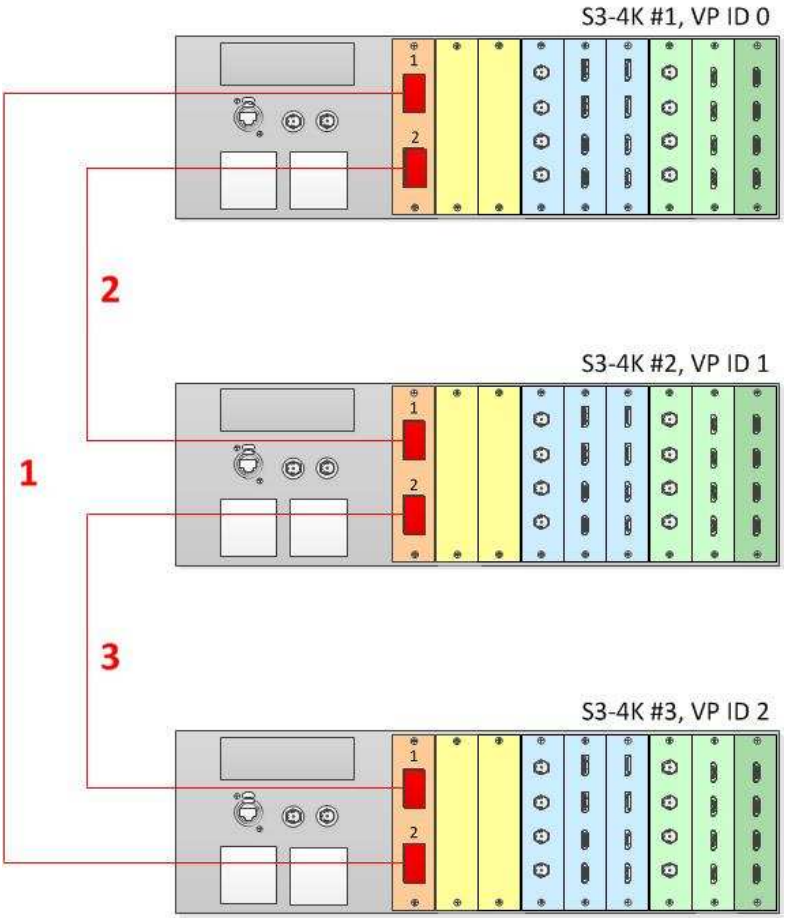


Image 6-55: Cabling between three S3–4K units

Event Master Configuration for Linking Three S3–4Ks

1. Start the Event Master Toolset version 5.1 or higher.

2. Make sure that the three S3–4Ks are discovered on the network and that they have different Unit IDs.

3. Drop one of the S3–4Ks in the GUI.

   The other two S3–4Ks will appear below the dropped S3–4K as grayed-out representations of S3–4Ks.

   You will be presented the option on each of the two grayed-out units to add as a master or as a slave.

4. Select either add as a master or add as a slave.

   Once the added S3–4K is done synchronizing with the system, the third (grayed-out) S3–4K will be available to add to the system.

   You will be presented the option to add the third S3–4K as a master or as a slave.

5. Select either add as a master or add as a slave.

6. (Optional) At this point it is suggested that you select and name appropriately each S3–4K so that you can identify it in your setup.

How to Link an S3-4K Unit and an EX Unit with Two VPU Cards

To add up to eight Single or four Mixing Layers to a system, an S3-4K Unit can be linked to an EX Unit with two VPU cards. This adds two additional VPUs to the system. Each S3– 4K has a single Link card in slot 1, identified by a yellow stripe at the top. Each EX has two Link sockets. Make sure to use the locking mechanism and then push each cable until it locks in place.

Connect the Link cables provided with each unit between the Link connectors as follows:

- S3 VP ID 0, Link Card slot 1, Link 1 >> EX VP ID 1, Link 2 [1]
- S3 VP ID 0, Link Card slot 1, Link 2 >> EX VP ID 1, Link 1 [2]

See Image 6-56 for an example of the cabling between an S3-4K unit and an EX unit with two VPU cards.

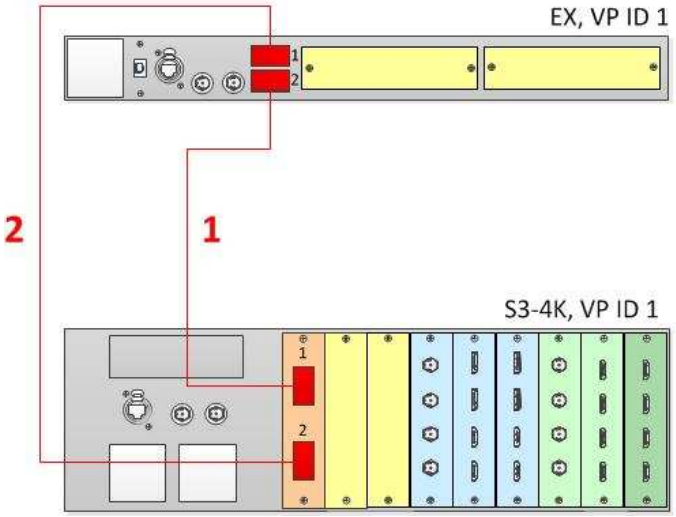


Image 6-56: Cabling between an S3–4K unit and an EX unit with two VPN cards

When an EX unit has VPU cards rather than a combination of Input and Output cards, and it is connected to an S3–4K processor, the EX unit an no longer be daisy-chained to another EX unit; both Link connectors on the EX unit must be connected to the S3–4K Master unit.

How to Link an S3-4K Unit and an EX Unit with a Mixed I/O/VPU Configuration

To add up to four Single or two Mixing Layers to a system, an S3-4K Unit can be linked to an EX Unit with a single VPU card. This adds another VPU to the system. The VPU can be in either slot 1 or slot 2 on the EX unit, and the other slot may be empty or contain either an Event Master Input card or an Event Master Output card. Each S3–4K has a single Link card in slot 1, identified by a yellow stripe at the top. Each EX has two Link sockets. Make sure to use the locking mechanism and then push each cable until it locks in place.

Connect the Link cables provided with each unit between the Link connectors as follows:

- S3 VP ID 0, Link Card slot 1, Link 1 >> EX VP ID 1, Link 2 [1]
- S3 VP ID 0, Link Card slot 1, Link 2 >> EX VP ID 1, Link 1 [2]

See Image 6-57 for an example of the cabling between an S3-4K unit and an EX unit with two VPU cards.

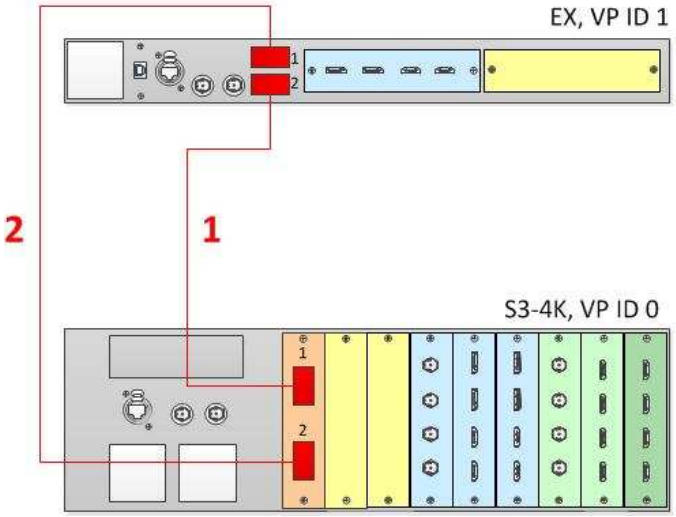


Image 6-57: Cabling between an S3–4K unit and an EX unit with a single VPN card

When an EX unit has VPU cards rather than a combination of Input and Output cards, and it is connected to an S3–4K processor, the EX unit an no longer be daisy-chained to another EX unit; both Link connectors on the EX unit must be connected to the S3–4K Master unit.

Event Master Configuration for Linking an S3-4K Unit and an EX Unit with VPU Cards

1. Start the Event Master Toolset version 5.1 or higher.
2. Make sure that both the S3–4K and the EX units are discovered on the network and that they have different Unit IDs.
3. Drop the S3–4K in the GUI.

   If the S3–4K unit is cabled to the EX unit, the EX unit appears as a grayed-out box below the S3–4K unit in the Diagram area. In the grayed-out EX box a blue button allows you to add the EX to the system as a slave.
4. Click the blue add button to add the EX unit.
5. (Optional) At this point it is suggested that you select and name appropriately each unit so that you can identify it in your setup.

How to Link Two EX Units with VPU Cards

To create a system comprising two VPU cards, an Input card, and an Output card, two EX units can be linked together. The system must have two VPU cards; both VPU cards can be on one EX unit, or each EX unit can have a single VPU card and either an Input card or an Output card. Such a system provides four Inputs, four Outputs, four Mixing Layers, and no MVR outputs. Each EX has two Link sockets. Make sure to use the locking mechanism and then push each cable until it locks in place.

Connect the Link cables provided with each unit between the Link connectors as follows:

- EX VP ID 0, Link 1 >> EX VP ID 1, Link 2 [1]
- EX VP ID 0, Link 2 >> EX VP ID 1, Link 1 [2]

See Image 6-58 and Image 6-59 for examples of the cabling between two EX units with VPU cards.

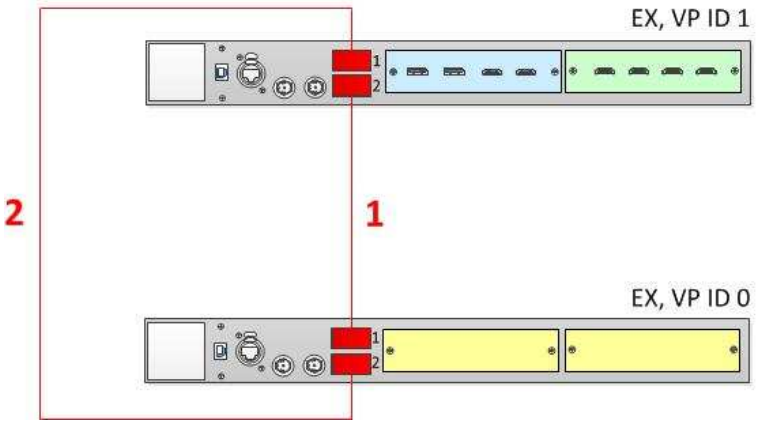


Image 6-58: Cabling between an EX unit with Input and Output cards and an EX unit with a two VPU cards

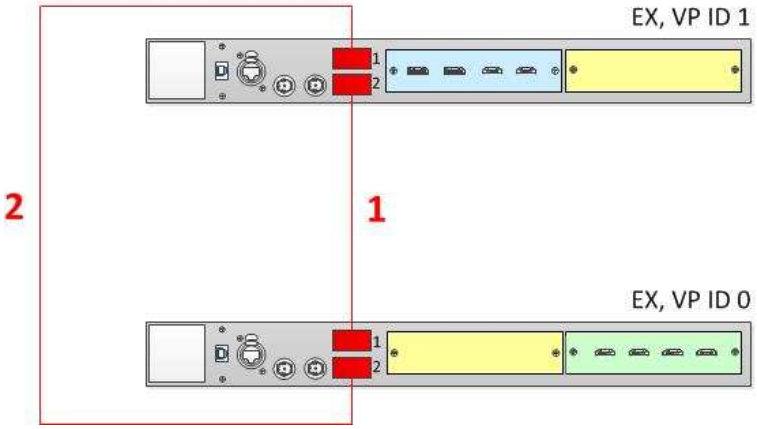


Image 6-59: Cabling between an EX unit with an Input and a VPU card and an EX unit with a VPU and an Output card

Event Master Configuration for Linking Two EX Units with VPU Cards

1. Start the Event Master Toolset version 5.1 or higher.
2. Make sure that both the EX units are discovered on the network and that they have different Unit IDs.
3. Drop the first EX in the GUI.

   If the EX unit is cabled to a second EX unit, the second EX unit appears as a grayed-out box below the first EX unit in the Diagram area. In the grayed-out EX box a blue button allows you to add the EX to the system as a slave.
4. Click the blue add button to add the second EX unit.
5. (Optional) At this point it is suggested that you select and name appropriately each unit so that you can identify it in your setup.

Other Linking Configurations: E2 Jr. and S3–4K Jr.

E2 Jr. and the S3–4K Jr. units do not ship with Link cards, but they support linking as an upgrade option. To support linking with an E2 Jr. or an S3– 4K Jr. unit, you may purchase an Event Master Link card (P/N R9004746) and install it in Slot #1 of the unit. You may also need to purchase additional Event Master Link cables (P/N R9004750).

When linking two E2 Jr. units, the user must buy two Link cards per unit and link the two E2 Jr. units as two E2 units would be linked. A single Link card per unit is required to link an E2 Jr. with an S3–4K Jr. or to link an S3–4K Jr. to another S3–4K Jr.

To link an E2 Jr. unit to another E2 Jr. unit, connect Link cables between the Link connectors as follows:

- VP ID 0, Link Card slot 1, Link 1 >> VP ID 1, Link Card slot 1, Link 2 [1]

- VP ID 0, Link Card slot 1, Link 2 >> VP ID 1, Link Card slot 1, Link 1 [2]
- VP ID 0, Link Card slot 2, Link 1 >> VP ID 1, Link Card slot 2, Link 2 [3]
- VP ID 0, Link Card slot 2, Link 2 >> VP ID 1, Link Card slot 2, Link 1 [4]

See Image 6-60 for an example of the cabling between two E2 Jr. units.

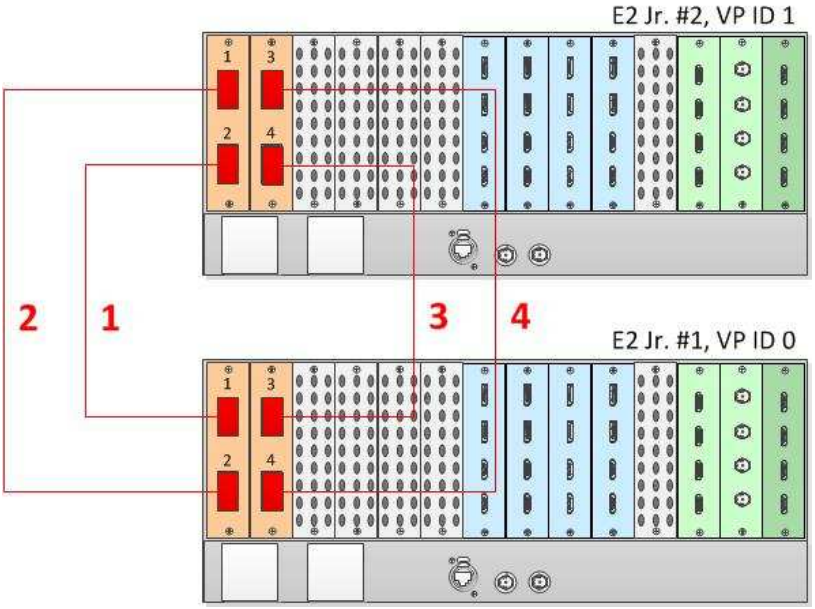


Image 6-60: Cabling between two E2 Jr. units

To link an S3–4K Jr. unit to another S3–4K Jr. unit, connect Link cables between the Link connectors as follows:

- VP ID 0, Link Card slot 1, Link 1 >> VP ID 1, Link Card slot 1, Link 2 [1]
- VP ID 0, Link Card slot 1, Link 2 >> VP ID 1, Link Card slot 1, Link 1 [2]

See Image 6-61 for an example of the cabling between two S3–4K Jr. units.

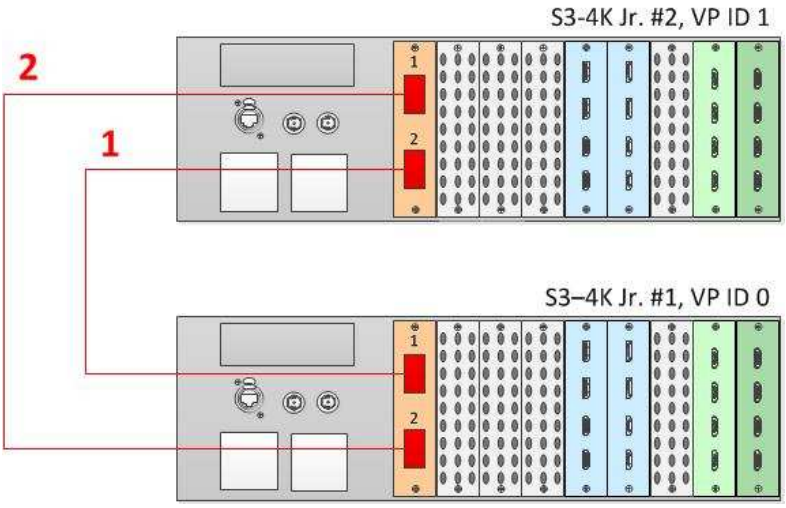


Image 6-61: Cabling between two S3–4K Jr. units

To link an E2 Jr. unit to an S3–4K Jr. unit, connect Link cables between the Link connectors as follows:

- VP ID 0, Link Card slot 1, Link 1 >> VP ID 1, Link Card slot 1, Link 2 [1]
- VP ID 0, Link Card slot 1, Link 2 >> VP ID 1, Link Card slot 1, Link 1 [2]

See Image 6-62 for an example of the cabling between an E2 Jr. unit and an S3–4K unit.

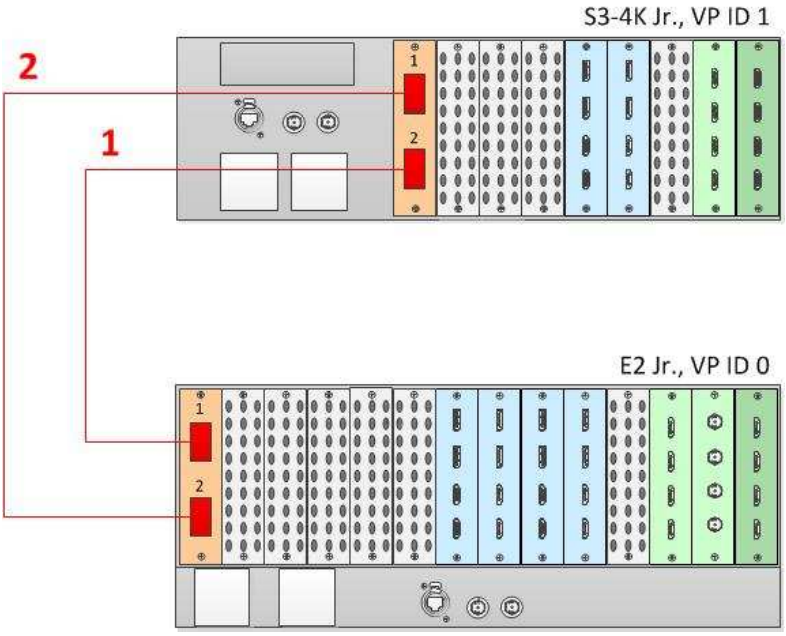


Image 6-62: Cabling between an E2 Jr. unit and an S3–4K Jr. unit

Event Master Configuration

1. Start the Event Master Toolset version 4.1 or higher.
2. Make sure that both units are discovered on the network and that they have different Unit IDs.
3. Drop the first in the GUI.
4. Drop the second unit in the GUI.

   You will be presented the option to add as a new system, add as a master, or add as a slave. An S3–4K can be added as a Master or Slave to an E2.
5. Add the second unit as a slave.
6. (Optional) At this point it is suggested that you select and name appropriately each unit so that you can identify it in your setup.

Connection Control

From the configuration page switch from the detail view to the System view and ensure that the status is good (green) for all link connections. If any connections is shown as red, please check that the cables were connected as described in step b and they were fully seated.

Programming

Referring to section “System Setup”, page 273, you may now proceed with the configuration and programming of the E2 linked system having full access to all resources in the system.

Auto Creation

If you choose to auto create your inputs, outputs and MVR outputs they will be created from Unit ID 0 first and then followed by the ones from Unit ID 1.

Configuration Order

You may proceed with defining your destinations, auxes and assign your layers. It is recommended that you setup all screen destinations and make layer assignment before you setup the Multiviewer(s).

The Multiviewer and Web App sections of the Event Master Toolset have an additional selection. You may select whether you are viewing the Master or Slave E2 Multiviewer windows or the Master or Slave E2 Web App. The selection names correspond to the way you named the units in steps above.

Backup and Restore

When backing up and restoring your system you only need to backup and restore from the Master Unit.

Genlock

When genlocking your system to an external sync you only need to bring the signal into the Master unit and select lock to External from the Event Master Toolset.

A note about Multiviewer and Linked Systems

In an E2 linked setup as you create destinations and assign layers the Event Master Toolset determines the best resource allocation for your configuration.

In order to make optimal use of expansion links, screens in linked E2 systems must be viewed on the Multiviewer in the E2 where the Event Master Toolset has allocated it.

Optimal allocation may cause a screen allocation to move from one E2 to another as screen resources are changed.

This may result in a screen already placed in a Multiviewer to not be operative. The Event Master Toolset will change the UMD text to “Screen not viewable on this MVR”.

All you need to do is delete the screen from the Multiviewer displaying this message and place it on the other Multiviewer.

A note about Backgrounds

Multi-connector Background sources with more input links than can be used by the VPUs of one unit, should still be configured on only one unit and not split up among the multiple chassis in a system.

More information

For more information on how to prevent cable and connector damage on the Link Cards for E2 and S3–4K, see “*InfoT-1294: Cable and Connector Damage on the Link Cards for E2 Series and S3– 4K Series Presentation Switchers*” on the Technical Downloads tab on the E2 Full-sized Event Master processor web page (URL: *https://www. barco. com/en/Products/Image-processing/Presentation-switchers/Full-sized-Event-Master-processor.aspx?#!downloads*).

For more information on Event Master Link-Cable solutions, see “*InfoT-1301: Event Master Link-Cable Solutions for E2, S3– 4K, and EX*” on the Technical Downloads tab on the E2 Full-sized Event Master processor web page (URL: *https://www. barco. com/en/Products/Image-processing/Presentation-switchers/Full-sized-Event-Master-processor.aspx?#!downloads*).

Always check for updated information that may have come out since this manual was published and for the latest version of all documents on *www.barco.com*.

6.21 Programming Menu

General

The programming page is where the event is set up and everything comes together. Users can define sources from inputs, place layers and backgrounds into screens, and create User keys, presets, and more. Once programmed and defined this is where the show is played back as well.

Description

Image 6-63: Programming Menu Overview

1	Resources area	This area contains the available resources for programming and playback, as inputs and sources. Still images, Screen Destinations (automatically re-inserted into the system), and Background sources (automatically re-inserted into the system) are also available as resources to be used in a PIP or Keying Layer.
2	Workspace / Programming Diagram area	For each destination, super destination, or destination group, the Program and Preview screens can be viewed individually by selecting the corresponding tab at the top of the Programming Diagram area. Program and Preview screens can be viewed individually or simultaneously by selecting the individual Destination tab or the “View All” tab. The space between Program and Preview has Layouts, a function where a certain group of destinations can be laid out in the workspace
3	Workspace / Layer modification area	Layer Alignment adjustments and controls to manage the Preview/Program screens.
4	Adjustment area	The menus in this area provide control of parameters for selected layer and source. These can be modified and managed. This is where creation of User Keys and presets is done

The following sections describe each part of the Programming page in detail:

- “Programming Menu > Resources area”, page 198
- “Programming Menu > Diagram area”, page 210
- “Programming Menu > Layer Modifier area”, page 213
- “Programming Menu > Adjustment area”, page 217

6.22 Programming Menu > Resources area

General

This part of the **Programming** page allows users to manage the available input resources. Sources are created and defined from the available Inputs that were defined on the **System Configuration** page.

Still Images, Inputs, and Native Backgrounds, as well as re-entered Screen Destinations and Background sources can be used as sources in layers and Aux Destinations.

About Sources and Inputs

Sources are defined from input signals. Multiple sources can be defined from the same input. After a source is defined, several attributes can be modified. These attributes may be, for example: color adjustments, crop, sharpness, and mask. By default, a source is automatically created for each Input. Up to 256 sources can be created form the same input. As with inputs, sources can be defined from multiple connectors, ex: 4K or DL DVI and as a single link or dual link.

The multiviewer displays input signals not sources.

A few words about Inputs, Sources and Layers

Input

- **Definition**: Any video signal connected to the Event Master series processor.
- **Features**:
  - An input signal can be 2K (Single Link), Dual-Link or 4K (Ultra-HD) format.
  - Depending on the resolution and type of the input signal, multiple connectors may be required to connect an input signal to the Event Master series processor. The number of connectors required is listed in the table below.

	2K Resolutions up to 2048x1200@60	Dual Link Resolutions up to 3840x1200@60	4K (Ultra HD) Resolutions up to 4096x2160@60
SDI	1	2	4
DVI	1	1	2
HDMI 1.4a	1	1	2
DisplayPort 1.1a	1	1	2
HDMI 2.0	1	1	1
DisplayPort 1.2	1	1	1

- **Adjustments**:
  - Name, Colorspace, Connector capacity, Auto Acquire, EDID, Contrast, Brightness, Gamma.
  - Adjustments to an input signal have an effect on all sources that are derived from the input signal

Source

- **Definition**: A video signal created when an input is manipulated to create a desired look.
- **Features**:
  - When an input is created, a source is automatically created with the same attributes as the input.
  - Multiple sources can be generated from the same input signal.
  - Any source can be dropped into any layer and any destination.
  - The same source can be used in multiple layers and multiple destinations.
  - It should be noted that if a source is used in multiple layers and a source is modified in one of the layers, it will not be automatically updated in the other layers. To update the source in the other layers, it needs to be deleted from these layers and re-inserted from the sources list.
- **Adjustments**:
  - Name, Bind to User Key, Layer Aspect Ratio, Size, Position, Contrast, Brightness and Hue.

Layer

- **Definition**: A layer is one image stacked on top of another or a background.

- **Features**:
  - Each mixer layer has two layers, Preview and Program. For complete flexibility, each layer can be assigned to either **PIP** or **Key** functionality.

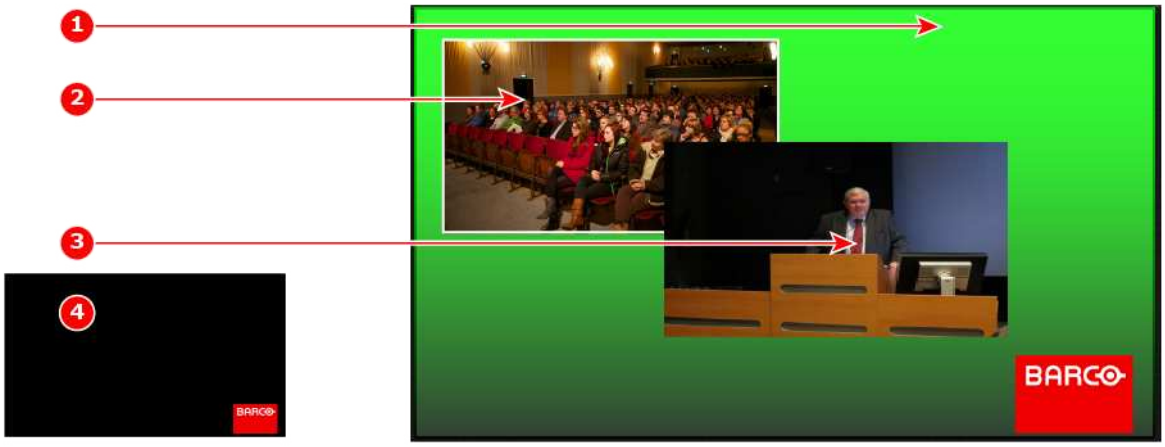


Image 6-64: Layers overview

1 Background
2 Mixer Layer 1: Z-Order 1 (with border)
3 Mixer Layer 2: Z-Order 2
4 Key Layer: Luma

  - The mixing **Background** layer (**BG**) has the lowest visual priority. Any input or inputs can be used as a background. This layer visually appears behind all other PIPs and keys. The system can transition between any defined background sources.
  - On any mixing layer, a **PIP** layer appears over backgrounds and under other layers of higher visual priority.
  - **PIP** effects include mixes, smooth moves, resizing, adjustable aspect ratio, borders, mask and drop shadows.
  - On any mixer, a **Key** layer also appears over backgrounds and under other layers of higher visual priority. Key effects include luminance keys, split keys (cut and fill), and chroma keys.
    The **Cut + Fill** Key can use PNGs with transparency. The system detects the transparency as the "Cut" signal and the non-transparent portion of the PNG as the "Fill" input. Any Still that has transparency is marked with a "T" indicator beside the name of the Still.
- **Adjustments**:
  - Border, Shadow, Layer Size & Position, Source Size & Position and Mask.
- **Layer Effects**
  - Strobe, Flip, Freeze, Layer Color Effects, Monochrome and Invert.

Input, Sources and layer example

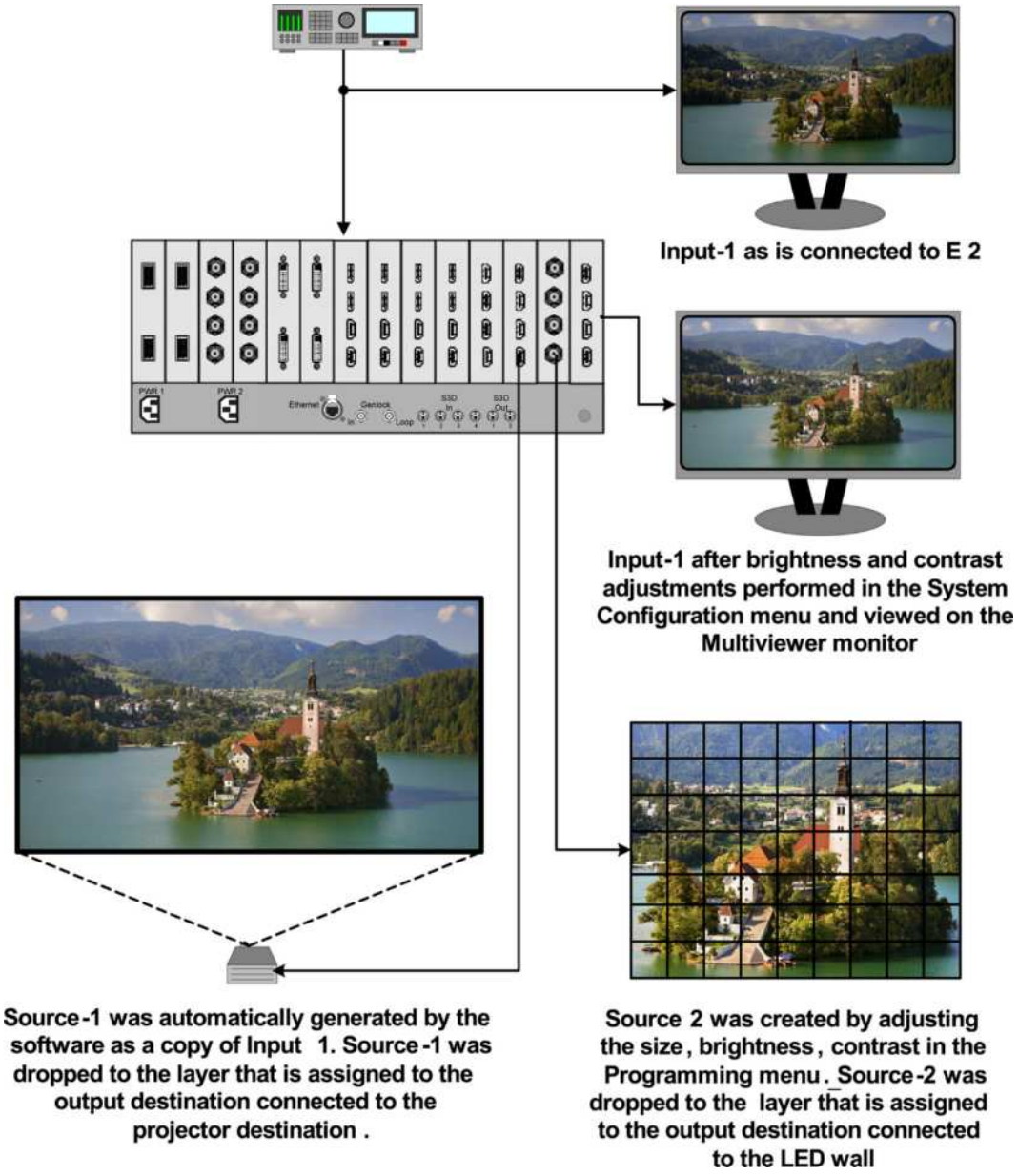


Image 6-65

Source Area description

In this menu, Sources defined in the Configuration menu are assigned to destinations via drag and drop procedure. Each input has minimum one Source file, several can be created via copy original (**Plus** Icon) or copy file (**Double Page** Icon).

There are 2 tabs in this section:

- Source: Lists Inputs and Sources available in the system. Sources are listed after the input and can be viewed by clicking on the arrow next to the Input name. Stills, Backgrounds, and Destinations can also be used as sources.
- Native Background: Lists backgrounds and background still stores available for destinations.

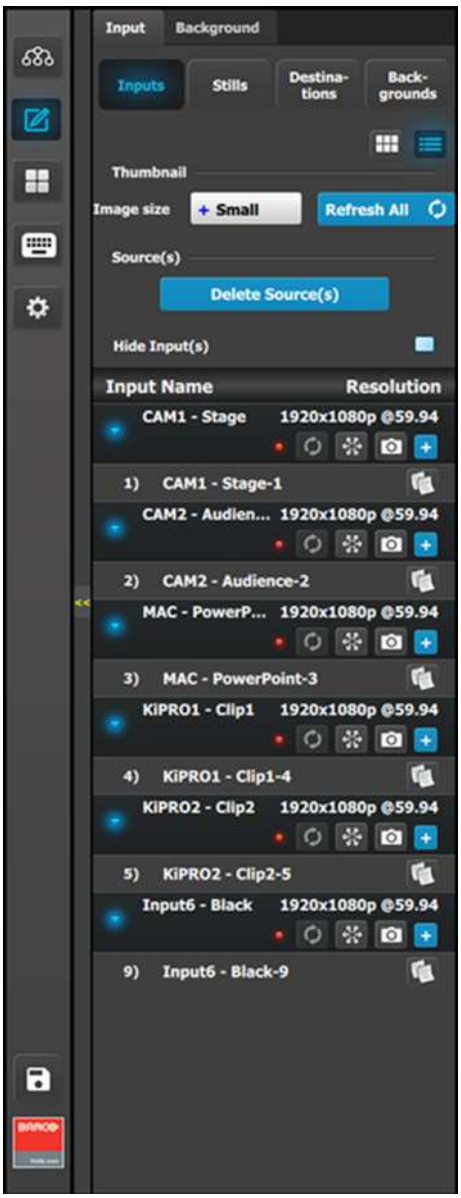
For each of these lists two display modes are available. Toggle the view by clicking on appropriate icon:

List View

Thumbnail View

Inputs (List view)

Inputs (List view)

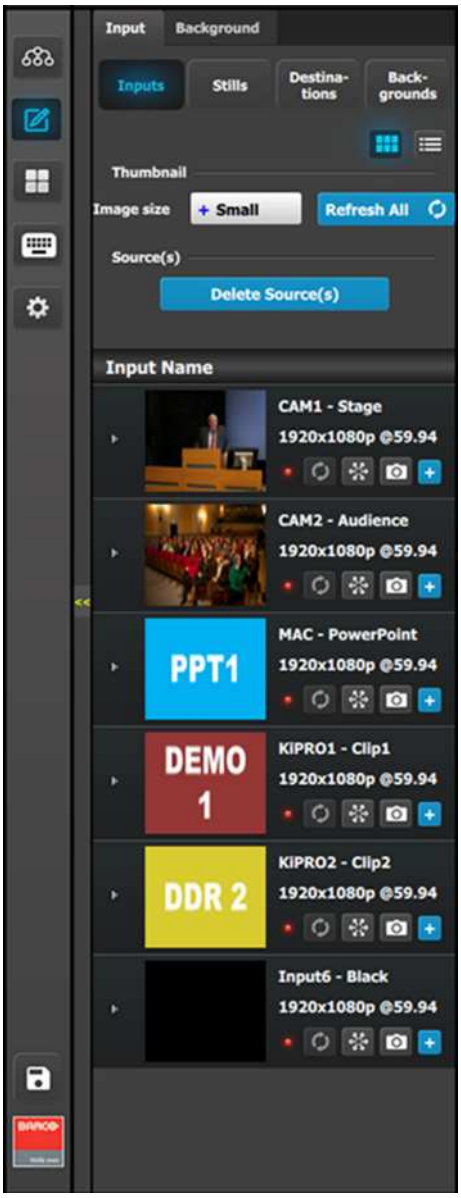


- Resolution: This is the resolution of the Input signal.
- The LED color indicates the status of the input:
  - Red: Sync is missing or invalid format.
  - Green: Sync is valid.
- Refreshes the Input thumbnail (in Thumbnail View) from the Input source.
- Freezes the Input.
- Allows a snapshot to be taken and stored as a Still.
- Adds Sources based on the inputs. A total of 256 are allowed per input.
- Copies the Source into a new Source and adds it in the list.

Inputs (Thumbnail view)

Thumbnails can be added by clicking the refresh icon on the required input, or the "Refresh All" button. Thumbnails may also be manually uploaded to the EMTS by clicking on the thumbnail area while the list is in thumbnail view.

Inputs (Thumbnail view)

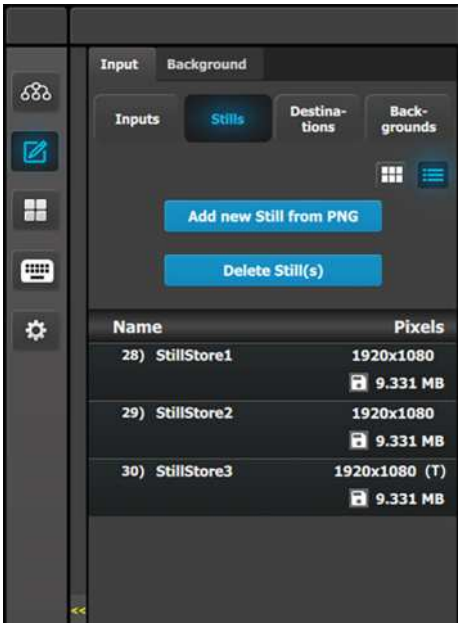


- Behavior is similar to the List View mode (see above).

By clicking in thumbnail area images can be imported using the file picker menu. The picker can select pictures with the BMP, JPG or PNG format.

Stills (List view)

Stills (List view)



- Stills can be captured from non-HDCP encrypted inputs, or they can be added from external source of the GUI computer in the PNG format.
  A PNG with a transparency is marked in the Stills list with a (T).
- Name that can be changed by double click action and then the resolution of the Stillstore.
- [Disk Icon] indicates the amount of storage space, in MegaBytes that the still image is using. Approximately 100 HD Stillstores are possible. Higher resolution images use more memory per image, resulting in fewer still images being available on the system.

Stills (Thumbnail view)

The system automatically adds thumbnails once the live capture or file import has been processed.

Stills (Thumbnail view)

- Behavior is similar to the List View mode (see above).

By clicking in thumbnail area images can be imported using the file picker menu. The picker can select pictures with the BMP, JPG or PNG format.

Destination

Destination (List view)

Destination (Thumbnail view)

The Destinations can be used as a source in Layers provided they have the capacity to fit. Up to 2K resolutions on SL, up to 4096 x 1200 / 2560 x 1600 for DL and 4K / 8192 x 1200 for 4K Scaler Mode.

How to delete sources

The delete process is similar for all lists with more than one entry. To delete Sources the user need:

1. Click on the **Delete Source(s)** button.

The **Delete Source(s)** button turns in red and the delete icon (“**x**”) appears next to the copy icon on each element of the source list.

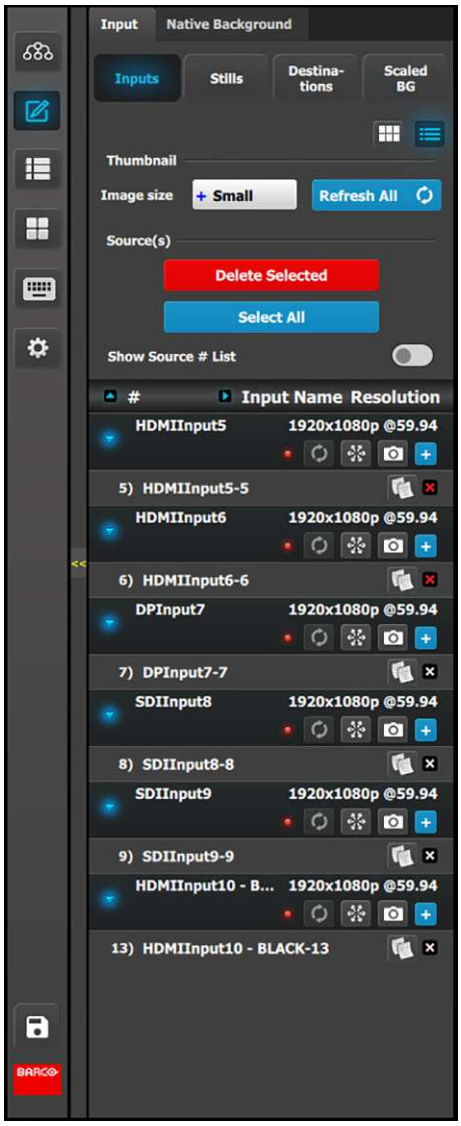


Image 6-66: **Delete Selected** Input sources

2. Select the sources that you desire to delete and click the **Delete Source(s)** button.

   The selected sources are removed.

How to hide Input names

Because the inputs are usually named after their physical connector names, while sources are usually named for their intended usage. For this reason, we have the "Show Source # List" option available just above the list.

1. Check the **Show Source # List** toggle.

   Sources are displayed without their associated Inputs.

Image 6-67: Source # List

Native Background

In this menu, Backgrounds defined in the Configuration menu are assigned to destinations via drag and drop procedure.

Backgrounds and Destinations need to have the same resolution without the Destination's eventual blend overlap(s). For example, if a background is defined as an input resolution of 3840 x 1080, the destination must also have the total resolution of 3840 x 1080.

Background (List view)

- Name: This is the Name of the Input as created in the Configuration of the system.
- Resolution: This is the resolution of the Input signal.
- The LED color indicates the status of the input:
  - Red: Sync is missing or invalid format.
  - Green: Sync is valid.
- [Snowflake Icon] Will freeze the input.
- [Camera Icon] Allows for a snapshot to be taken and store it as Still.

Thumbnails are added manually or may be refreshed from the Event Master series processor to the GUI.

Background (Thumbnail view)

- Behavior is similar to the List View mode (see above).

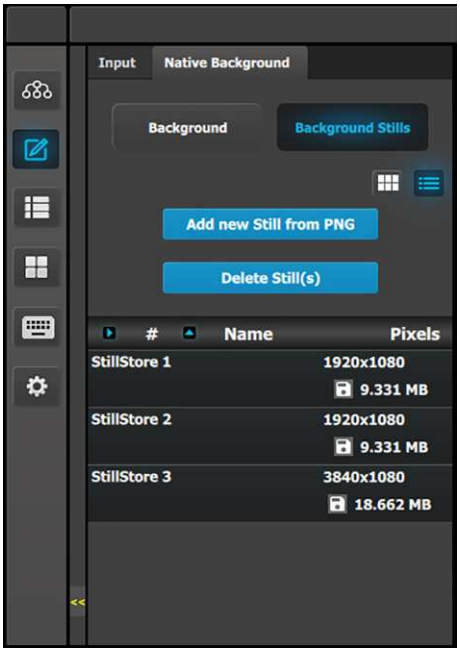
By clicking in thumbnail area images can be imported using the file picker menu. The picker can select pictures with the BMP, JPG or PNG format.

Background Stills

In this menu, Background Stills captured in the Background Source menu are assigned to destinations via drag and drop procedure.

Background Stills and Destinations need to have the same resolution including the Destinations eventual blend overlap. For example, if a background Stillstore is captured as 3500 x 1080, then the destination must also have the blend resolution of 3500 x 1080.

Background Stills (List view)



- Name: This is the Name of the Stillstore as created. Name can be changed by double click action.
- Resolution: This is the resolution of the Stillstore.
- [Disk Icon]: Indicates the amount of storage space, in MegaBytes, that the still image is using. Approximately 100 HD Stillstores are possible. For higher resolutions the corresponding increase of memory is used.

Thumbnails are added manually or may be refreshed from the Event Master series processor to the GUI.

Background Stills (Thumbnail view)

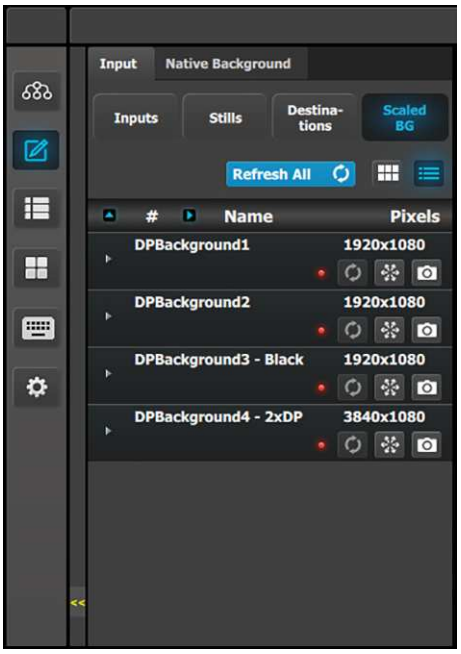
- Behavior is similar to the List View mode (see above).

By clicking in thumbnail area images can be imported using the file picker menu. The picker can select pictures with the BMP, JPG or PNG format.

Input > Scaled BG

The Input tab has a Scaled BG subtab. This Input > Scaled BG subtab is similar to the Native Background > Background subtab, and it has both a List view and a Thumbnail view.

Input > Scaled BG (List view)



- Name: This is the Name of the Input as created in the configuration of the system.
- Resolution: This is the resolution of the Input signal.
- The LED color indicates the status of the input:
  - Red: Sync is missing or invalid format.
  - Green: Sync is valid.
- [Snowflake Icon] Freezes the input.
- [Camera icon] Allows for a snapshot to be taken and stored as a Still.

Input > Scaled BG (Thumbnail view)

- Behavior is similar to the List view mode (see above).

Backgrounds as Inputs

The Input > Scaled BG subtab allows the Event Master series processor to use Backgrounds as Inputs. This subtab can be used on any E2 or S3 processor, but it is especially useful on a limited-resource processor, such as an S3–4K Jr. processor. An Input defined as a Background can now be used as a Background, or as a source on an AUX Destination or Screen Destination layer.

To use a Background as an Input, follow this procedure.

1. Go to the Programming menu.
2. Go to the Input tab of the Resources area, and then go to the Scaled BG subtab of the Input tab.
3. Drag a Background from the list on the Sacled BG subtab and drop it on any Screen or AUX Destination in the Programming Diagram area that has at least one layer assigned to it.
   If no layer is assigned to the Destination, you will have to go to the Native Background tab and drag and drop the Background from the Background subtab.

Using a Background as an Input incurs an extra frame of delay. Use normal Inputs if this delay is unacceptable.

Sources dropped into a Layer must be dropped from the Input tab, while sources dropped into a Native Background must be dropped from the Native Background tab.

6.23 Programming Menu > Diagram area

General

The middle of the Programming Page is the Programming diagram area where the **Program**, **Preview** and **AUX** screens are composed.

Description

Each Program/Preview screen can be viewed individually or all of the screens can be shown simultaneously by selecting the corresponding tab on the top of the Program window.

The top left corner of each destination view has a label that shows the name of the destination.

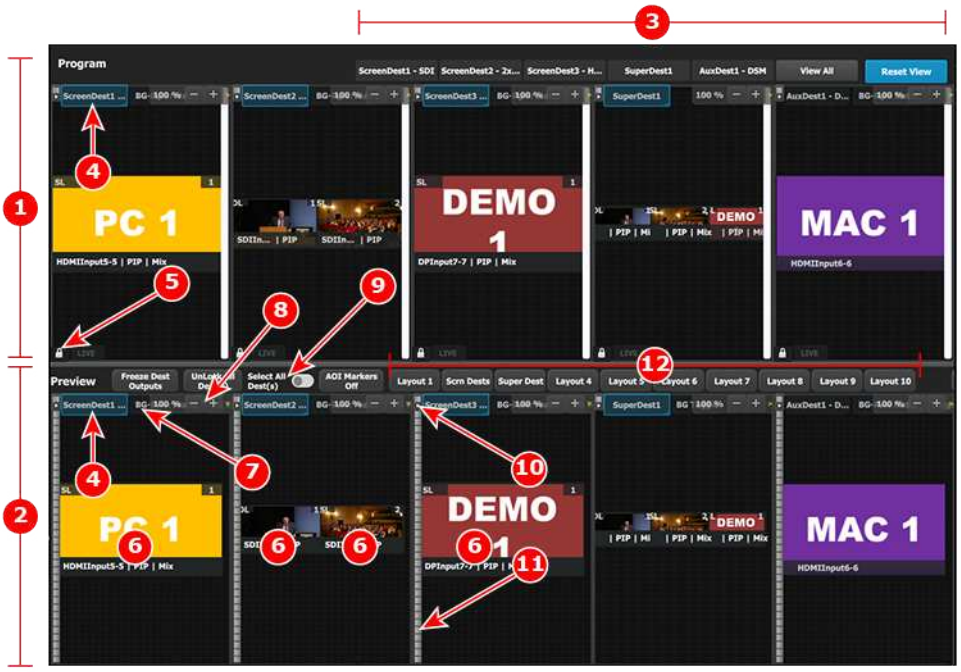


Image 6-68: Programming menu, diagram area

1	Program canvas.
2	Preview canvas, where the program is composed before it is transitioned to Program.
3	Click the Destination View tab to isolate that Destination for viewing it by itself inside the workspace. To view all of the Destinations again, select the "View All" Destination tab.
4	The Destination Selection tab can be clicked to arm a Destination to become part of the next transition.
5	The Lock icon indicates whether or not the Destination's Program (PGM) is locked. When locked, the Program screen can only change after a Mix or Cut transition. When the Program screen is unlocked, the user can click on a layer that is on Program and move or resize it. The user can also assign a different Source into that layer or adjust the background.
6	Selected sources are dropped in the layers defined in the Preview screen. A layer can be placed anywhere in the preview area.

7	The BG Input tab shows the current Background source assigned to the destination. Clicking this tab allows the user to adjust the settings for the destination's Background source.
8	Users can zoom in / out of the workspace area, from 25% to 150%, in 25% increments.
9	"Select All" Destinations allows the user to quickly select or unselect all Destinations for a Transition.
10	A small arrow on the left-hand side of Destination name expands or collapses the Destination View.
11	Users can manually control the transition by clicking on the bar or by clicking-and-dragging the mouse.
12	Layout tabs allow for user assignable layouts of Destinations in the Programming menu. Drag and drop one or more individual Destination View tabs onto a Layout tab; select the Layout tab; and the workspace area displays only the Destinations assigned to the layout. To view all of the Destinations again, select the "View All" Destination tab. You may rename a Layout tab by double-clicking it and typing the new name.

Layer and Source into the previous screen

Users can drag layers to the preview screen as long as the layer is not on program. In the example below, since no source has been assigned to the layer, the layer will be black and default to a square shape.

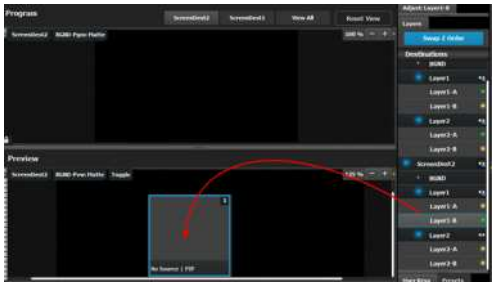


Image 6-69

Next a source from the Input panel on the left hand side can be dragged into the layer.

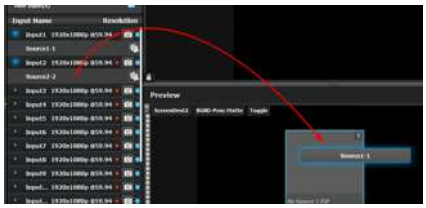


Image 6-70

Alternatively, an Input or a source can be dragged into the Preview screen directly as long as there are available layers.

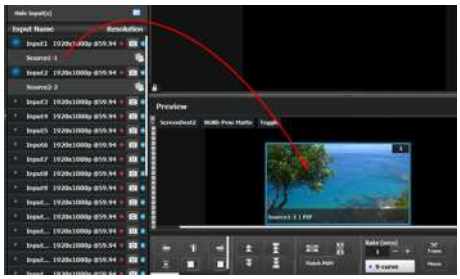


Image 6-71

If the available layer is already in Preview, then the source will immediately be assigned to that layer. The layer will be resized automatically to match the source aspect ratio.

If a layer is available but it hasn't been placed into the preview screen, then the software will automatically place the layer in the position where the Source was dropped and allocate the lowest unassigned layer to the source. The source and layer must also comply with the sizing rule that is explained next.

Rules for assigning Sources into layers

The size of the layer scaler mode has to be greater or equal to the size of the source. For example, if the source is a 2K input, the layer scaler mode needs to be Single Link (SL) or more. If the source is 4K and the layer is only a SL layer, then the source can't be placed into the Layer. If the Source is a 2K input and the layer is a 4K layer, the source can be placed into the Layer.

Scaler mode for layers are set in the Configuration Page, towards the bottom.

Z-Order

The layer priority (z-order) is based by the order they are added in destination menu. The layers that are added first have the lowest priority. For example; layer1 is lower priority than layer2. Layer2 is lower priority than layer3.

Freeze

A layer can be individually frozen by selecting it and clicking the freeze button in the bottom of the workspace menu.

Note: When a layer is frozen, the outline and the text become blue and an icon of a snow flake appears in the bottom right hand corner. Also note that a frozen source will not show the same indication.

Layer adjustments in the Preview Screen

Users can also click and drag on a layer to move it around inside the Preview screen. A layer can also be moved with the keyboard's arrow keys.

Size adjustments can be performed by clicking and dragging the vertical edges, horizontal edges, or any corner of the layer. Any size adjustment maintains the aspect ratio.

These operations can also be performed on multiple layers. Activate Multiple Select to "Multiple Select On" below the workspace to the right. Now each layer can be selected or unselected with a click or touch input.

Selected layers are highlighted with a blue border.

AUX Destination Canvas

Assigning inputs/sources to AUX destinations works the same way as in the screen destinations within the constraints of the AUX destinations. Only one input can be assigned to each AUX destination and it is always at full screen by default. Assigning a new input to the destination, overrides the previous input.

Scaler mode for Auxes are set in the Configuration Page, towards the bottom

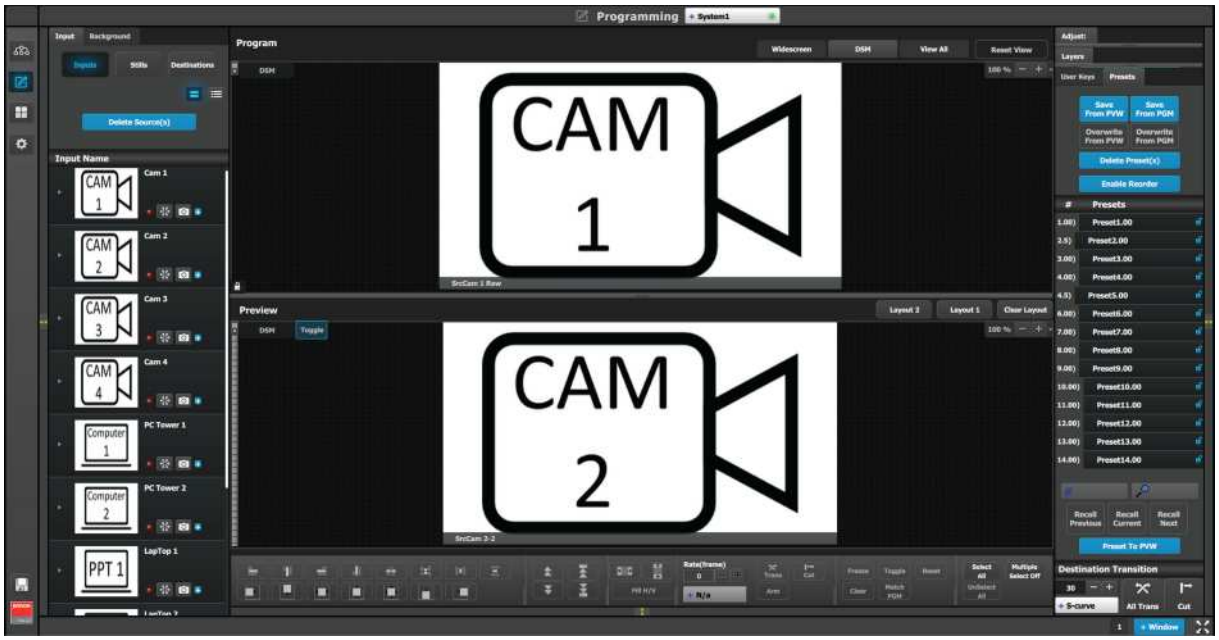


Image 6-72

6.24 Programming Menu > Layer Modifier area

General

This area is specifically for layer adjustments.

Description

The area is broken up into several sub areas. The left side is for alignment, priority, size and position of the layer. Middle is for layer transition. The right is for misc. operations.

Image 6-73

Buttons in this area operate on selected layers in the preview workspace. If no layers are selected, all buttons in this panel is disabled, except for the “Select All” button. “Select All” selects all the BG tabs and layers in preview for the selected Destinations regardless of the current view. The area is divided into several sections. Detail description of each section is provided below.

Alignment

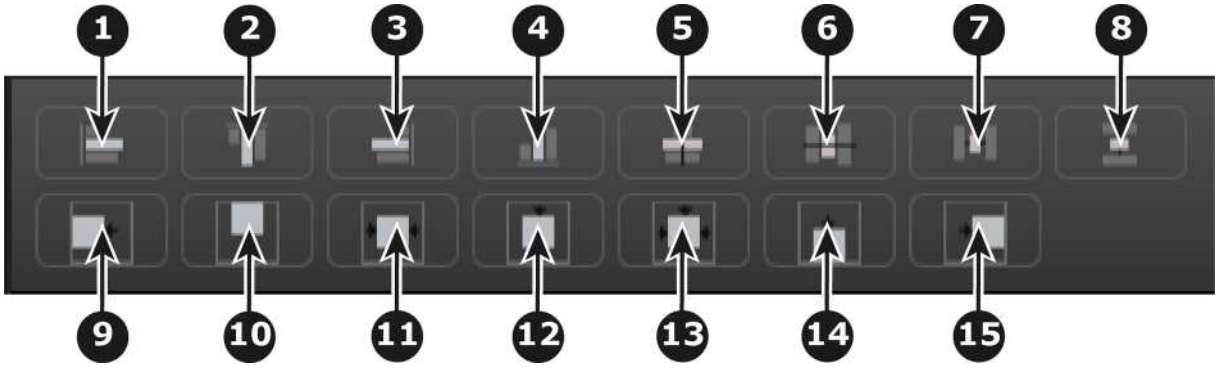


Image 6-74

1	Align Left to align the left edges of all selected PIPs to that of the leftmost PIP.
2	Align Top to align the top edges of all selected PIPs to that of the topmost PIP.
3	Align Right to align the right edges of all selected PIPs to that of the rightmost PIP.
4	Align Bottom to align the bottom edges of all selected PIPs to that of the bottommost PIP.
5	Align Relative HCenter to take into consideration the center of the horizontal offsets of all selected PIPs and aligns them on their vertical axes there.
6	Align Relative VCenter to take into consideration the center of the vertical offsets of all selected PIPs and aligns them on their Horizontal axes there.
7	Distribute Horizontally uniformly distributes the horizontal spacing between the leftmost and rightmost of all selected PIPs. Three or more layers in a Screen Destination must selected to use this tool.
8	Distribute Vertically uniformly distributes the vertical spacing between the topmost and bottommost of all selected PIPs. Three or more layers in a Screen Destination must selected to use this tool.
9	Align all selected PIPs along the destination's left edge.
10	Align all selected PIPs along the destination's top edge.
11	Center Horizontally to center all selected PIPs horizontally, along the destination's vertical axis. PIPs do not change vertical position.
12	Center Vertically to center all selected PIPs vertically, along the destination's horizontal axis. PIPs do not change horizontal position.
13	Center to center all selected PIPs vertically and horizontally, along the destination's horizontal and vertical axes.
14	Align all selected PIPs along the destination's bottom edge.
15	Align all selected PIPs along the destination's right edge.

Visual Priority (Z-order adjustment)

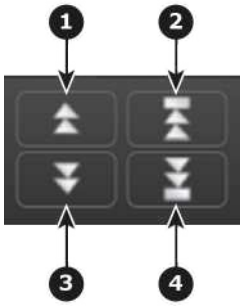


Image 6-75

1	Moves the selected layer up in priority and swaps with the layer previously above.
2	Moves the selected layer to the top of the priority and swaps it with the layer previously on top.
3	Moves down in priority and swaps the z-order of the selected layer with the layer previously below.
4	Moves the selected layer to the bottom of the priority and swaps it with the layer previously at the bottom.

Example:

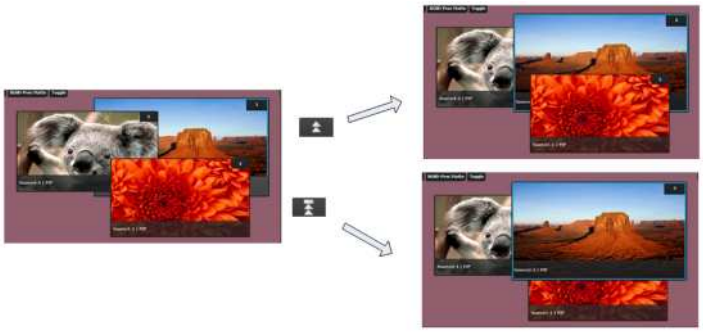


Image 6-76

Only the visual priority (on Preview) of the two layers changes. The layers remain at their current locations — only the priority changes.

Size and Position

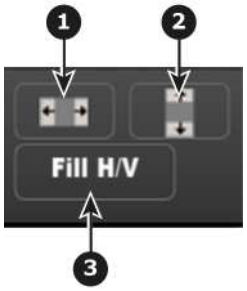


Image 6-77

1	**Full Screen Horizontal** takes the selected PIP(s) to full screen, using the destination's width as the guide. If borders are on, they will be taken into account.
2	**Full Screen Vertical** takes the selected PIP(s) to full screen, using the destination's height as the guide. If borders are on, they will be taken into account so that they are visible.
3	**Fill H/V** will stretch the selected layer to cover the whole destination from top to bottom. and from left to right, without respecting the aspect of the source.

Resize example:

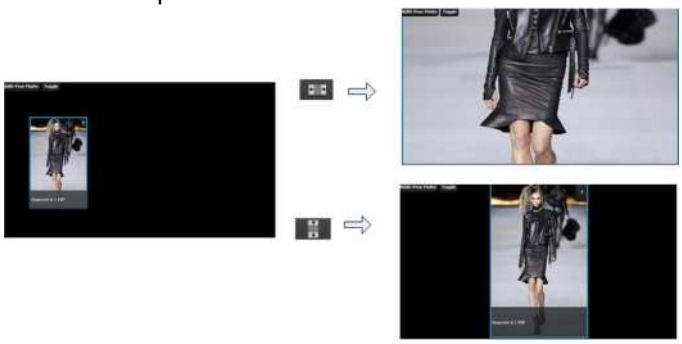


Image 6-78

Fill H/V example

Image 6-79

Layer Transition

Image 6-80

Trans

Selected layer(s) on Preview transitions to Program according at the rate indicated in the rate box following the transition pattern. The layer on Program does NOT fade in preview at the same time. The layer on Program appears in Preview when the transition is completed.

Cut

Instantly transitions the selected layer(s) on Preview to Program

Arm

Enables moves for selected layer that have beginning and ending keyframes. Move rate is determined in the layer's keyframe adjustment panel.

Hide

Selected BG Tab or layer(s) will not be visible during a Relative Preset save. See more about Relative Presets in the **Complete vs Relative** subsection of "Programming Menu > Adjustment area > Presets configuration", page 235.

Transition Type

Four transition types are available: Linear, S-Curve, Logarithmic and Exponential

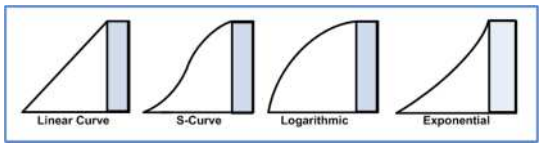


Image 6-81

Miscellaneous operations

Image 6-82

Freeze

Freezes the image that is displayed in the layer. The layer can no longer be positioned and sized within the destination. The text of a frozen layer turns blue and a "freeze" icon (snowflake) appears on the bottom right corner.

Reset

Positions the layer in the center of the destination. Vertical size is set to about 500 pixels and horizontal size is set to maintain the aspect ratio of the source.

Clear

Removes the selected layer from preview. If the selected layer is on program, this button is disabled unless the Program is unlocked.

Toggle

Enables the sources to toggle back and forth with each transition.

- **Toggle on**: After a transition is performed, a different source can be selected for preview. Once the first source transitions off Program, it “flip-flops” to Preview. Subsequent transitions alternate between sources. Another new source can also be selected in Preview, and as long as Toggle is on, the last two selected sources will alternate with each transition.
- **Toggle off**: If the selected mix layer is not on Program, the source selected in Preview stays in Preview, once the transition is complete. Here, sources must be changed manually. If the PIP in Preview has a different source than the PIP in Program, the moment Toggle is turned off, the PIP in Preview automatically changes its source to match Program.

Swap

Enables the size and position of the mixing layer(s) to swap back and forth from Preview to Program.

- **Swap on**: The mixing layer selected in Preview can be moved and resized prior to transition. After the transition the layer from Program down to Preview, retaining the size and position attributes it had while on Program.
- **Swap off**: The mixing layer can be transitioned to Program. After the transition, the layer on Preview will match the size and position with that same one on Program.

Match PGM

Match PGM button forces the selected layer on Preview to have the same source and layer attributes as the layer in Program.

Selection

Image 6-83

Select All / Unselect All

Freezes the image that is displayed in the layer. The layer can no longer be positioned and sized within the destination. The text of a frozen layer turns blue and a “freeze” icon (snowflake) appears on the bottom right corner.

- **Select All**: Selects all Layers in Preview on all selected screen destinations. It is equivalent to clicking on all unselected layers on Preview one at a time while Multiple Select is On.
- **Unselect All**: Unselects all Layers in Preview. It is equivalent clicking on all selected layers on Preview one at a time while Multiple Select is On.
- **Multiple Select On/Off**: Enables or disables the selection of more than one Layer.

Selection of anything allows the selected objects on Destinations to be armed.

6.25 Programming Menu > Adjustment area

General

Situated on the right hand side of the screen is the Adjustment area. In this area users can configure **Layer** and **Source** attributes, as well as create and apply **User Keys** and **Presets**.

Description

There are several tabs in this area:

- **Layers**: Provides a list of the Screen and Super destinations. Under each destination a list of assigned layers and the background is provided.

- **User Keys**: Provides a list of user keys. User keys contains all (or a portion) of the current layer's attributes (such as border color, size, effects, etc.). A limited set of User Keys are also available for AUX destinations, the scaling mode of which is set to "Custom."
- **Presets**: List of Presets. A Presets is a "snapshot" of all scene components, whether on or off the workspace, for all selected destinations.
  Note: Settings that make up a layer look may be a combination of Layer and Source settings. Be aware that for desired result a USER KEY might have to be bound to a preset.
- **Adjustment**: Based on what is selected in the Preview or Program canvas area, this is the panel where we are adjusting what is selected. For example if we select Layer1, we will be adjusting Layer1 settings.
- **Source Adjustment**: This panel is shown on the Adjust panel when a layer with a valid Source is selected.

At the bottom of the area, there is a set of buttons allowing execute transition actions on selected Destinations.

The following sections describe each panel of this area in detail:

- "Programming Menu > Adjustment area > Layer configuration", page 218
- "Programming Menu > Adjustment area > Background configuration", page 230
- "Programming Menu > Adjustment area > User Keys configuration", page 232
- "Programming Menu > Adjustment area > Presets configuration", page 235
- "Programming Menu > Adjustment area > Source adjustment", page 237
- "Programming Menu > Adjustment area > Global Transition Rate/Trans/Cut", page 239

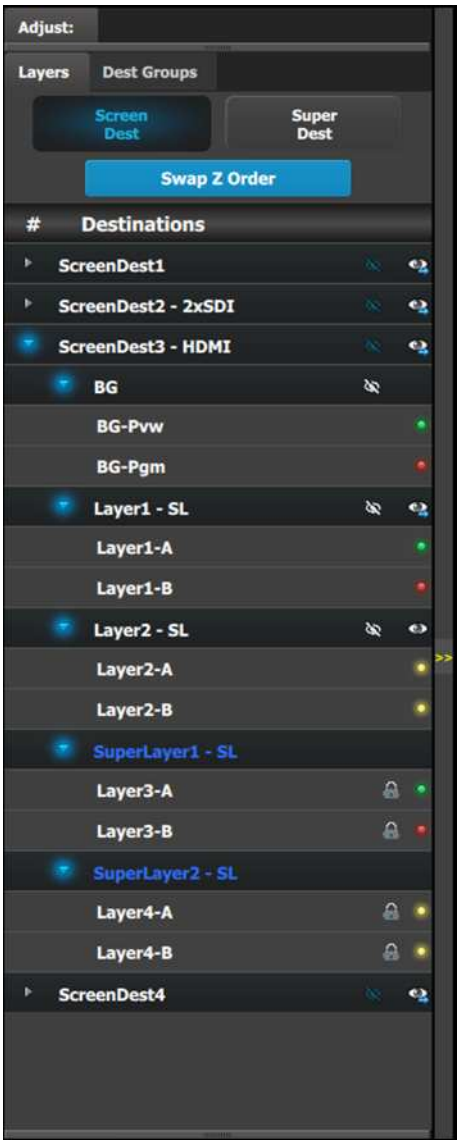
6.26 Programming Menu > Adjustment area > Layer configuration

General

In the Layer menu, users can manage the layer in the selected destination and update its attributes.

Layer configuration menu description

Layer configuration menu is accessed by clicking on the Layers tab.



This menu provides:

- A button to select Screen Destinations and a button to select Super Destinations.
- A **Swap Z order** button that allows for layers that are in the same Destination and of the same size and type to be swapped.
- A list of the available Screen Destinations (or Super Destinations) and the layers associated with each Screen or Super Destination.
  - **Destinations**: Provides list of all destinations that are available in the Programming page. Each destination can be expanded to reveal the Background and the layers assigned to them.
    - The outlined “eye” with a backslash through it acts as a toggle to hide or show the BG and Layers to the Relative Preset recorder. When the icon is white, the item is "shown"; when the icon is blue, the item is "hidden." When the BG or Layers are "Hidden" they may or may not be in use in the workspace, and they will not be part of the "snapshot" taken when a Relative Preset is saved and recalled.
    - The filled-in “eye” icon clears or replaces the layers from the Preview destination. This button works in a toggle mode. When a small blue arrow is indicated below the eye, the layer is on Preview. If no blue arrow is evident, the layer is cleared from Preview.
  - **BG and ScreenDest**: Backgrounds and Destinations layers can be further expanded to reveal the A and B sources that are used in the transitions.
  - **LEDs**: The LEDs provide an indication of the “A” and “B” backgrounds or layers. Note that there is no A or B side of the scaler, only A and B usage, all layers are independent of each other in respect to Z-order.

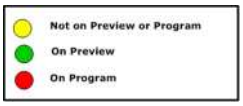


Image 6-84

Swap Z order rules

There are several rules that apply when changing Z order:

1. Can only swap Z order on layers in the same Destination.
2. Can only swap Z order on layers that are of the same size (SL, DL, or 4K) and type (Mix or Single).

How to swap Z order

1. Click on **Swap Z order** button to enter in the Swap Z order mode.
2. Click on 1 layer at a time and drag it to a different location in the list.

How to access the layer adjustments

Adjustments to layers are performed in the “Adjust” panel:

1. Select the layer from the list on the Layers tab.

or

Select the layer from the preview canvas.

The layer is selected.

Image 6-85

When the layer is selected and is visible on the canvas, it will have a blue highlight around the layer.

2. Click on the Adjust tab that is on the top of the adjustment area.

The layer adjustment panel is displayed.

It is possible to select multiple layers by clicking on the each targeted layer once Multiple Select is set to ON.

Layer adjustment panel description

The Layer adjustment panel allows access to general layer adjustments and affects only selected layers.

Layer adjustments are performed on individual layers. When multiple layers are selected, the adjustments are disabled.

The upper part of the panel includes Layer Type and Keyframes.

- **Layer type**: Layer can be a PIP or a Key. The available adjustments depend on the selected mode.
- **Keyframes**: There are 2 KeyFrames per layer.

The lower part of the panel provides menus for layer sizing and color adjustments

- Main adjustment : Border and Shadows
- Layer Window adjustment: Size, Position, Mask
- Layer Color Effects adjustment: Brightness, Contrast, Gamma, Hue, Saturation, Monochrome, Invert

PIP / KEY selection

The first selection is the choice for the layer type: PIP or a Key. Depending on the selection, the rest of the menu will adapt.

Keyframes

In a PIP “move,” Keyframe is a point where an action or a change occurs. For example, a PIP movement is described by two keyframes. The first keyframe is the state of the PIP at the initial point of the movement. The second keyframe is the point where the PIP moves to. The size and color attributes can also change during the move.

By default, the initial position and state of the layer is keyframe 1. The user can change the size, and change the border and shadow parameters before defining Keyframe2. After changes are done to Keyframe1, the second keyframe can be added by pressing the “Add KF” button. A new position and size can be defined and adjustments to the border and shadow parameters to define the second Keyframe.

Image 6-86

Once the two keyframes are defined, the PIP can move between the two positions by pressing the green arrow buttons. The rate for the movement is adjusted by changing the number in the corresponding box.

Any of the two keyframes can be deleted when the keyframe is highlighted and by pressing the “Delete KF” button.

The red LED in the keyframe button indicates the current position of the PIP.

Layer adjustment panel > Main adjustment

The Main adjustment panel is variable according the Layer type.

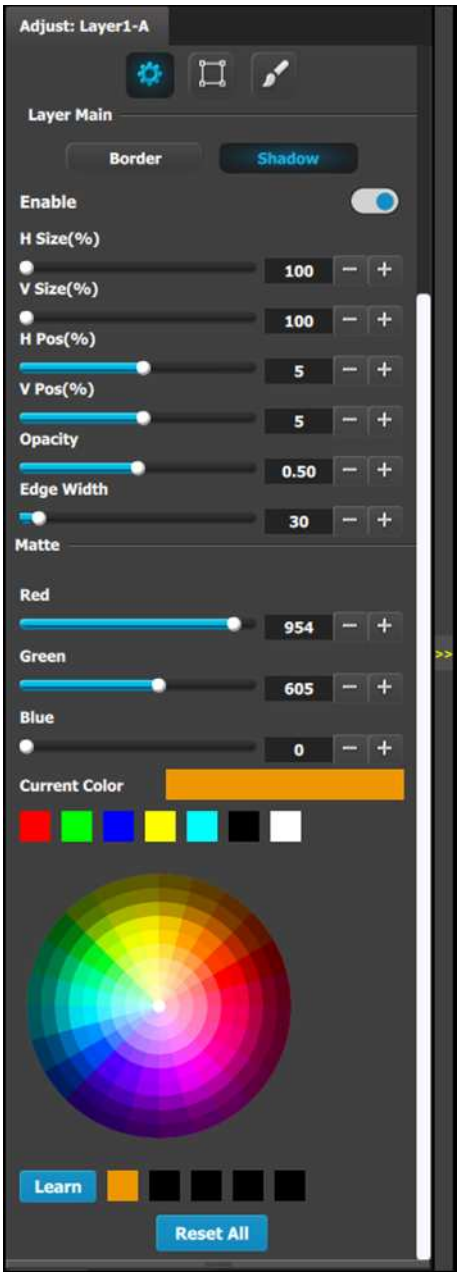
Layer type = PIP (Border Tab):

This menu allows users to adjust the PIP borders.

- Borders are enabled by selecting the type to apply. Six choices are available:
  - Off
  - Hard
  - Soft
  - Halo
  - Halo-in
  - Halo-out
- **Border width** and color are selected by adjusting the corresponding sliders or entering a figure in the adjacent edit boxes. The **border width** can be entered either in Percentage of the vertical size or in pixels.
- The selected color is shown in the **Current Color** bar. The color can also be stored by clicking in one of the square boxes at the bottom of the menu next to the Learn button. These boxes are quick shortcuts to select that color for the Border.
- Another way to specify a color is to click on the **Color wheel**. The slider values will change accordingly as the mouse moves around the color wheel.
- **Learn**: The “Learn” button in the bottom is a way to store custom colors to be used for later. The way to use this area is to:
  a) Pick a color to save, using color wheel or the R/G/B adjustments.
  b) Click Learn button.
  c) Click any one of the buttons on the right.
  d) The color that was picked is now stored in this button.

Layer type = PIP (Shadow Tab):

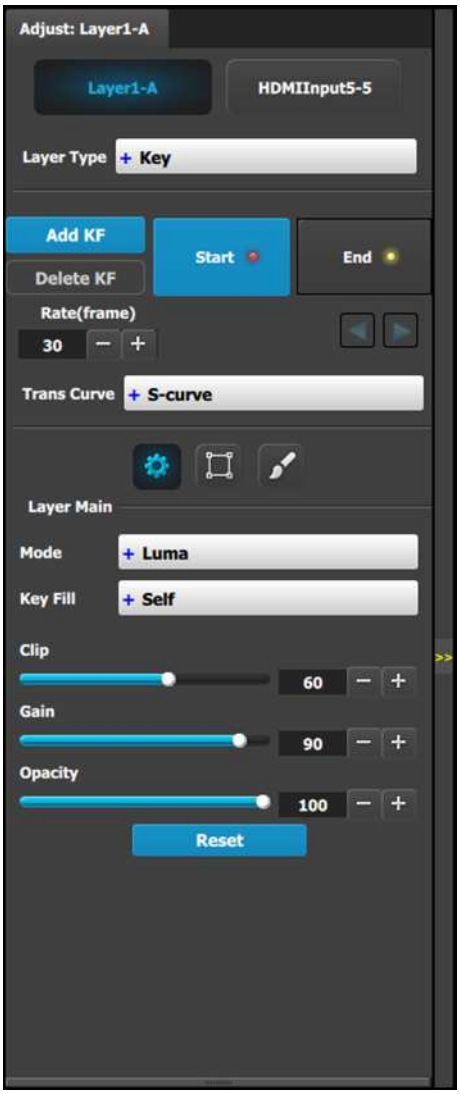
The Shadow Menu enables the user to place a shadow behind a PIP.



The following functions are provided:

- Enables or disables the PIP's shadow.
- H Size (%): Adjusts the shadow's horizontal size as a percentage of the PIP's size.
- V Size (%): Adjusts the shadow's vertical size as a percentage of the PIP's size.
- H Pos(pixel): Adjusts the shadow's horizontal position in pixels.
- V Pos(pixel): Adjusts the shadow's vertical position in pixels.
- Opacity: Adjusts transparency, from 0 (transparent) to 1024 (opaque).
- Edge Width: Adjusts the width of shadow creating a halo type of an effect.
- Color Selection: Adjusts the shadow's color with the help of the slider, or with the color wheel.

Layer type = Key; Mode = Luma



A Luma (Luminance) Key is one in which the hole-cutting information is derived from the luminance (brightness) level of the key source.

Source on the Key Bus can be selected as the “cut.” You can select Self or Matte, Preset Bus, or Cut + Fill for the “fill” source.

Clip: Adjust the threshold of the video that “cuts” into the background. A hole is cut into the background anywhere that foreground luminance is greater than the clip level.

- Range: 0 to 100, in .01 increments
- Default: 60

Gain: Adjust the sensitivity of the key, enabling you to change the sharpness of the keyed image. Gain only affects the edge of the key hole, as set by the clip.

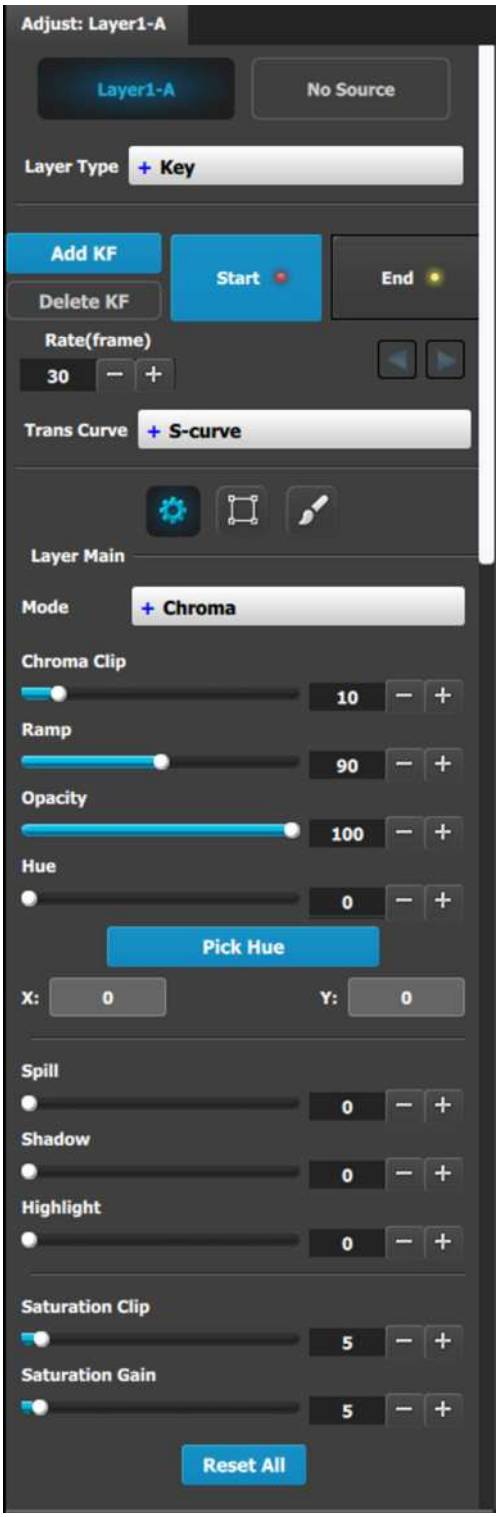
- Range: 0 to 100, in .01 increments
- Default: 90

Opacity: Adjusts the opacity of the keyed image, from fully opaque to fully transparent.

- Range: 0 to 100, in .01 increments
- Default: 100.00

Reset: Press to return all clip, gain and opacity settings to their default values.

Layer type = Key; Mode = Chroma



A Chroma (Chrominance) Key is one in which the hole-cutting information is derived from a color in the key source.

After selecting a Hue color to key out, it may be necessary to make additional adjustments to improve the look of the overall compositing effect.

Chroma Clip: This is an angle, centered around the Hue color. Any color inside this angle is fully keyed out.

- Range: 0 to 100
- Default: 10

Ramp: This is an angle, also centered around the Hue color. It must be equal to or larger than the Chroma Clip angle. Inside the Chroma Ramp angle, the colors keyed out ramp linearly the closer the foreground color approaches the Chroma Clip angle. Outside the Chroma Ramp angle, the foreground colors are not suppressed.

- Range:0 to 100
- Default: 90

Opacity: This allows the key source to become increasingly transparent with respect to the background source.

- Range: 0 to 100
- Default: 100

Hue: This field selects the color to be removed or keyed out of the source. While this can be manually adjusted, the "PICK HUE" feature also changes this number.

- Range: 0 to 100
- Default: 0

Spill: Spill removes unwanted “key” color, which is generally a result of reflection from the (green or blue screen) background, on the foreground object.

- Range: 0 to 100
- Default: 0

Shadow: This allows shadows to be preserved or removed in the foreground image (opposite of Highlight).

- Range: 0 to 100
- Default: 0

Highlight: This allows highlights to be preserved or removed in the foreground image (opposite of Shadow).

- Range: 0 to 100
- Default: 0

Saturation Clip: This defines the threshold along the Saturation axis where keying begins.

Below the clip threshold, the colors are not keyed out. Above the clip threshold, the colors follow the results of Chroma Clip and Gain, but they depend on the Saturation Gain setting as this creates a linear key color strength ramp in the key area.

- Range: 0 to 100
- Default: 5

Saturation Gain: This defines the transition along the saturation axis between keying off and keying on.

- Range: 0 to 100
- Default: 5

Reset: Press to return all hue, clip, gain, and opacity settings to their default values.

Pick Hue

The Pick Hue button allows the user to pick and apply a selected hue from any single Layer.

1. Click on the **Pick Hue** button.
   Clicking on the Pick Hue button for a Layer places a crosshair on the Layer in Preview in the Programming Diagram area.

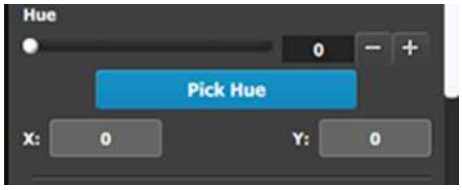


Image 6-87: The Pick Hue button

2. Click and drag the crosshair to the area above the desired hue.
   The user can move the crosshair using either the cursor or the X and Y edit boxes.

Image 6-88: Crosshairs

3. Complete the operation by clicking on the **Apply Hue X/Y** button, or cancel the operation by clicking on the Cancel Pick Hue button.

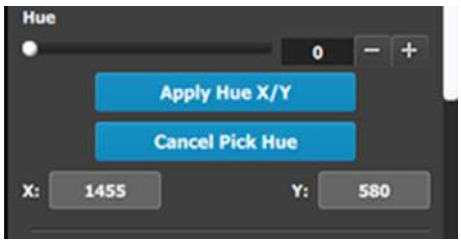


Image 6-89: Apply Hue or Cancel

Layer adjustment panel > Layer Window adjustment

The following PIP Adjustment Menu functions are provided: (All figures are in pixels)

- Window: Allows size and position adjustments of the window.
  - H Size — adjusts the PIP's horizontal size.
  - V Size — adjusts the PIP's vertical size.
  - H Position — indicates the PIP's position, relative to the horizontal center of the screen (00), as measured from the exact center of the PIP. Thus, the value -34 is 34 pixels to the left of center.
  - V Position — indicates the PIP's position, relative to the vertical center of the screen (00), as measured from the exact center of the PIP. Thus, the value 70 is 70 pixels above center.
- Source: Allows size and position adjustments of the source within a window.
  - H Size — adjusts the source's horizontal size.
  - V Size — adjusts the source's vertical size.
  - H Position — indicates the source's position, relative to the horizontal center of the screen (00), as measured from the exact center of the PIP. Thus, the value -34 is 34 pixels to the left of center.
  - V Position — indicates the source's position, relative to the vertical center of the screen (00), as measured from the exact center of the PIP. Thus, the value 70 is 70 pixels above center.
- Mask: The Mask Panel enables you to mask (crop) the top, bottom, left, and right edges of the PIP or key.
- Reset All : Press to return all numbers to their default values.

Layer adjustment panel > Layer Effects adjustment

- Layer Opacity adjusts the level of opaqueness of the layer. The range is from 0 (100% transparent) to 100 (100% opaque) in 0.01 increments. The default setting is 100.
- Strobe: Toggles the strobe function on and off. When On, adjust the strobe Rate interval (in frames) to set the duration that the source is frozen until the next grab.
- Flip: Flips the image within the PIP:
  - Off: The image is displayed in its original orientation.
  - H: to flip the image horizontally, along the Y axis.
  - V: Flips the image vertically, along the X axis.
  - H/V: Flip the image both horizontally and vertically, along the X and Y axes.
- Freeze: Enables or disables the freeze action.
- RGB Contrast and Brightness settings are adjustable within a range of 0% to 200%. The default setting for all of these properties is 100%.
- Gamma is adjustable within a range of 0.3 to 3.30. The default setting is 1.0.
- Hue is adjustable within a range of -180 to +180 degrees. The default setting is 0 degrees.
- Saturation is adjustable within a range of 0% to 200%. The default setting is 0%.
- Monochrome: Toggle this button to turn the source video's chroma component on and off. When off, the image is completely monochrome;
- Invert: Toggle this button to turn the color "invert" function on and off. When on, all image colors are inverted.
- Reset All: Returns all values to their default settings.

Note that almost all color correction effects (except "invert") work on a keyframe by keyframe basis. This enables you to morph effects from keyframe to Keyframe.

6.27 Programming Menu > Adjustment area > Dest Group configuration

General

In the Layer menu, users can manage the destination groups and update their attributes.

Dest Group configuration menu description

The destination group configuration menu is accessed by clicking on the Dest Groups tab.

This menu provides:

- A numbered list of the available Destination Groups.
- A **Save Group** button to save new Destination Groups.
  When a Super Destination is saved as a part of a Destination Group, all Screen Destinations that are assigned to that Super Destination become part of the Destination Group.
- An **Overwrite Group** button to overwrite the data in the selected Group.
- A **Delete Group(s)** button to delete one or more Groups.
- A **Delete Destination(s)** button to delete individual Destinations from within group(s).
- An **Enable Reorder** button to enable the reordering of Destination Groups in the list.
- A **Lock All** button to lock all the Destination Groups in the list.
- An **Unlock All** button to unlock all the Destination Groups in the list.
- **Creation Options** to use while creating Destination Groups.
  - **Off:** No creation options are chosen. (This is the default option.)
  - **AutoLock:** All Destination Groups created with the AutoLock option On are created in the locked state.
  - **Rename:** All Destination Groups created with the Rename option On are created with the group name highlighted, so that the Group may be immediately renamed.
  - **Rename-Lock:** This is a combination of the Rename and AutoLock options. All Destination Groups created with the Rename-Lock option On are created with the group name highlighted, so that the Group may be immediately renamed, then saved in a locked state.
- An **Apply Selected** button to recall the selected group.

Save Group

1. Go to the Programming Diagram area and select the Destinations that you want to put in a Destination Group.

2. Go to the Adjustment area and click the **Save Group** button.

   The Destinations in a Destination Group are shown in Image 6-90.

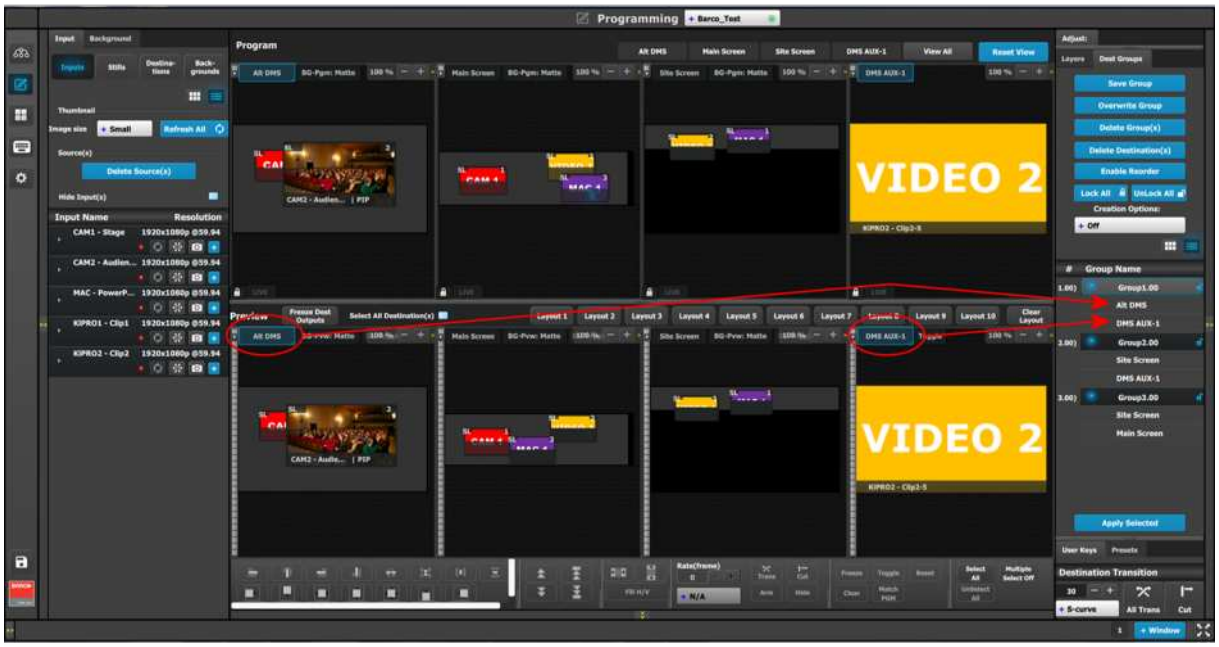


Image 6-90: Destinations in a Dest Group

Overwrite Group

This **Overwrite Group** button is enabled if a Destination Group is selected. Pressing this button overwrites the Group data in the selected Destination Group, but the name of the Group is not updated.

1. Select the Destination Group to be overwritten.
2. Go to the System Diagram area, and select the Destinations with which you want to overwrite the existing Group data.
3. Click on the **Overwrite Group** Overwrite Group button.

Delete Group(s)

Selecting the **Delete Group(s)** button places an x next to the name of each Group in the Group Name list.

1. Select the **Delete Group(s)** button.
2. Select the **x** next to the name of each Group in the Group Name list that you wish to delete.
3. Click on the red **Delete Selected** button.

Delete Destination(s)

Selecting the **Delete Destination(s)** button places an **x** next to the name of each Destination in the Group Name list.

1. Select the **Delete Destination(s)** button.
2. Select the **x** next to the name of each Destination in the Group Name list that you wish to delete.
3. Click on the red **Delete Selected** button.

Enable Reorder

This button enables the reordering of the Destination Groups in the list.

1. Select the **Enable Reorder** button.

   The text of the button changes to “Disable Reorder.”

2. Drag and drop any Destination Group to the place where you want to move it in the list.
3. Click on the **Disable Reorder** button after all the reordering is done.

Apply Selected

1. Select the Group to be recalled from the Group Name list.
2. Click the **Apply Selected** button to recall the group.

   The user can also recall a Dest Group by dragging and dropping it into the Workspace/Programming Diagram area.

   The Resources area of the Controller Menu has a Groups tab. Groups can be dragged and dropped from the Resources area to the System Diagram area and then be recalled from the controller.

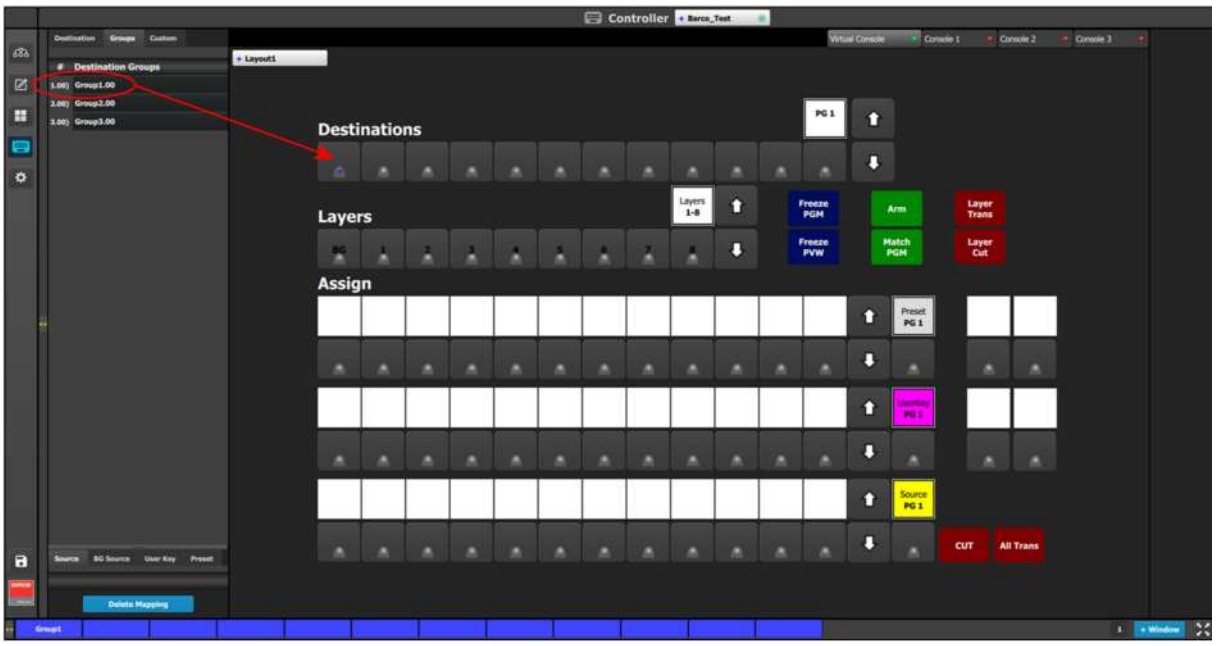


Image 6-91: Destination Groups on the Controller menu

Note: In the Programming menu, selecting a Destination Group deselects any previously selected destinations or groups. Holding the Ctrl key and selecting a Destination Group adds the new group to any previously selected destinations or groups. On the EC-200 Controller, pressing a Destination Group button deselects any previously selected destinations or groups. Holding the Barco Eye key and pressing a Destination Group button adds the new group to any previously selected destinations or groups.

6.28 Programming Menu > Adjustment area > Background configuration

General

In the Layer menu, users can also manage the backgrounds. Two background channels are provided per destination (BG A and BG B), each of which appears at the system's lowest priority — visually in back or underneath all other layers.

Layer/Background configuration menu description

Background selections are done in the Layer configuration menu. Layer configuration menu is accessed by clicking on the Layer tab.

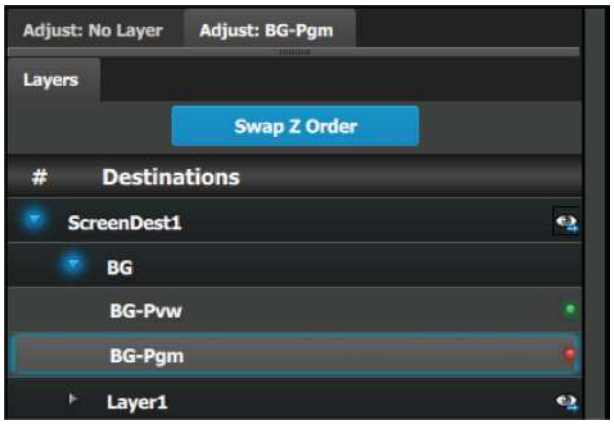


Image 6-92

How to access to the Background adjustments

Adjustments to Backgrounds are performed in the “Adjust” panel:

1. Select the background from the list in the layer panel

   or

   Select the background buttons from the preview windows.

   The layer is selected.

Image 6-93

   The background button will have a blue highlight when selected.

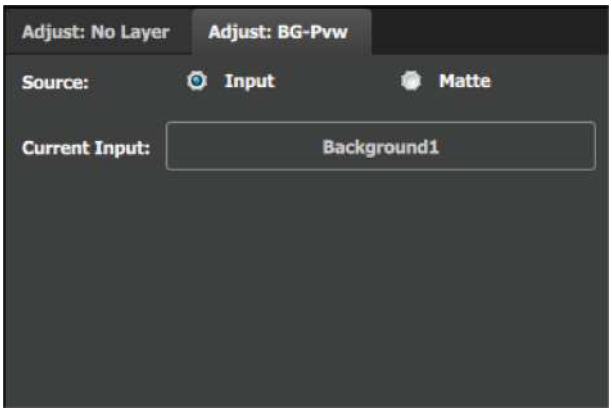
2. Click on the Adjust tab that is on the top of the adjustment area.

   The background adjustment panel is displayed.

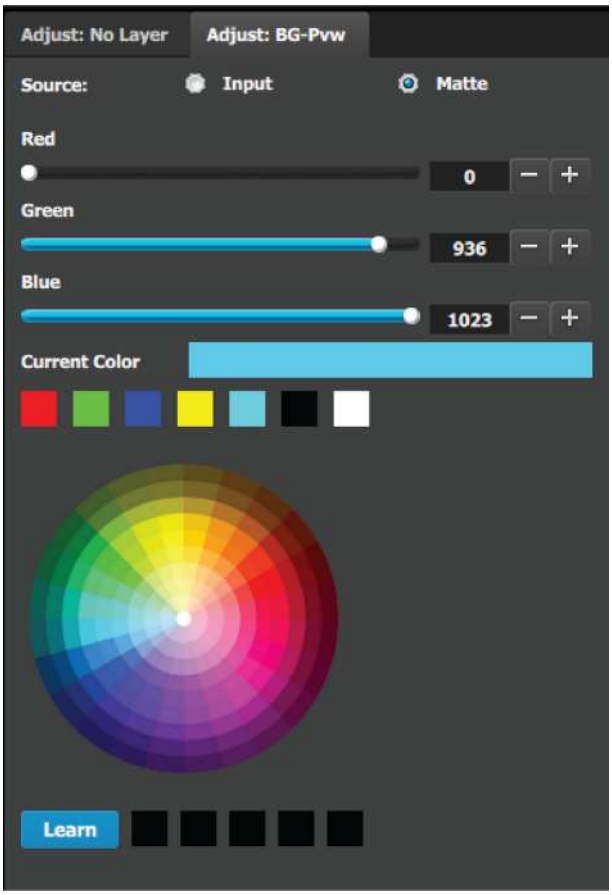
Background adjustment panel description

Background can either be an input, still or matte.

Background input adjustment:



Background matte adjustment:



The Standard color wheel selection is available for the Background Matte too

- Background color can be adjusted by updating the Red / Green / Blue slider or edit box. The selected color is shown in the Current Color row.
- The square buttons on the bottom of **Current Color** are quick shortcuts to commonly used colors. Click on any one of them to select that color for the Background.
- The Color wheel is another way to specify the color. The user can press and hold the mouse when the mouse is on the color wheel.
- **Learn**: The “Learn” button at the bottom is a way to store custom colors to be used for later. The way to use this area is to:
  a) Pick a color to save, using color wheel or the R/G/B adjustments.
  b) Click Learn button.
  c) Click any one of the buttons on the right.
  d) The color that was picked is now stored in this button.

6.29 Programming Menu > Adjustment area > User Keys configuration

General

The User Key feature enables you to select all (or a portion) of the current layer’s attributes (such as settings, window size, layer color effects, etc.), and store them in a User Key.

These attributes can then be applied to any active layer on Preview via the Apply Selected button or via Drag and Drop.

User Keys configuration menu description

This menu provides:

- A numbered list of the available User Keys.
- A button to **Save** the attributes of a Layer as a new User Key.
- A button to **Overwrite** the Layer data in the selected User Key.
- A button to **Delete** one or more User keys.
- A button to **Lock All** the User Keys in the list.
- A button to **Unlock All** the User Keys in the list.
- A button to select **Creation Options** to use while creating User Keys.
  - **Off:** No creation options are chosen. (This is the default option.)
  - **AutoLock:** All User Keys created with the AutoLock option On are created in the locked state.
  - **Rename:** All User Keys created with the Rename option On are created with the group name highlighted, so that the User Key may be immediately renamed.
  - **Rename-Lock:** This is a combination of the Rename and AutoLock options. All User Keys created with the Rename-Lock option On are created with the User Key name highlighted, so that the User Key may be renamed, and saved in a locked state.
- Several attributes that can be enabled for use during **Save** operation.
  - **Type:** type of Layer—PIP or Key
  - **Trans:** type and rate of layer transition
  - **Effects:** color and effects
  - **Border:** On / Off and its parameters
  - **Shadow:** On / Off and its parameters
  - **Key:** Key parameters separated from Layer type
  - **Pos:** Position of Layer
  - **Size:** Size of Layer
  - **Source:** actual size of the Source inside the PIP, as opposed to the Source file
  - **Mask:** Masking parameters
  - **Keyframe:** Stores only the ending Keyframe layer attributes. Does not store Keyframe rate or transition curve settings.
  - **Freeze:** Recalls the Frozen/Thawed state of a layer
- A search edit box for searching User Keys by number and a search edit box for searching User Keys by name.

Save to new User key

1. Select the layer whose parameters you want to store.
2. Using the menu, enable or disable the specific parameters that you wish to store (e.g., Type, Trans, Effects, Key etc.). You can also enable all parameters using the ALL button.
3. Select the “Save to new User Key” button.
4. The User Key appears in the list.
5. Repeat from step 1 to store additional User Keys.

Overwrite User key

This button is enabled if a layer and a user key are selected. Pressing this button overwrites the layer data in the selected user key, but the name of the user key is not updated unless the Creation Option is set to either “Rename” or “Rename-Lock.” The attributes saved are based on the selection of the Enables boxes. If no boxes are checked, no user key can be saved.

Delete User Key(s)

Allows for multiple deletes of User keys.

1. Click the **Delete UserKey(s)** button.
2. Select the User Key to be deleted by clicking the **X** next to the lock for that User Key.

Image 6-94: Select a User Key

Note: If a User Key is locked, it cannot be deleted.

3. Select **Delete Selected** to delete only the selected User Key(s), or select **Select All** then select **Delete Selected** to delete all User Keys.

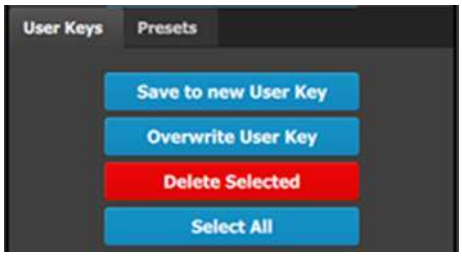


Image 6-95: Delete Selected User Keys

User key list

Lists all User Keys, sorted numerically by register number.

Search edit box

Search User keys by name. A list of User Keys including the selection appears instead of the full list.

Search Number (# icon)

Entering a number between 1 and 999 searches for, selects, and shows that number User Key.

Apply Selected

The selected User Key is applied to the selected layer(s) on Preview and on Program if layers are selected on unlocked destinations.

Renaming User Keys

Change the name of a User Key by double-clicking on the name itself. The list is not reordered based on the new name.

Renumbering User Keys

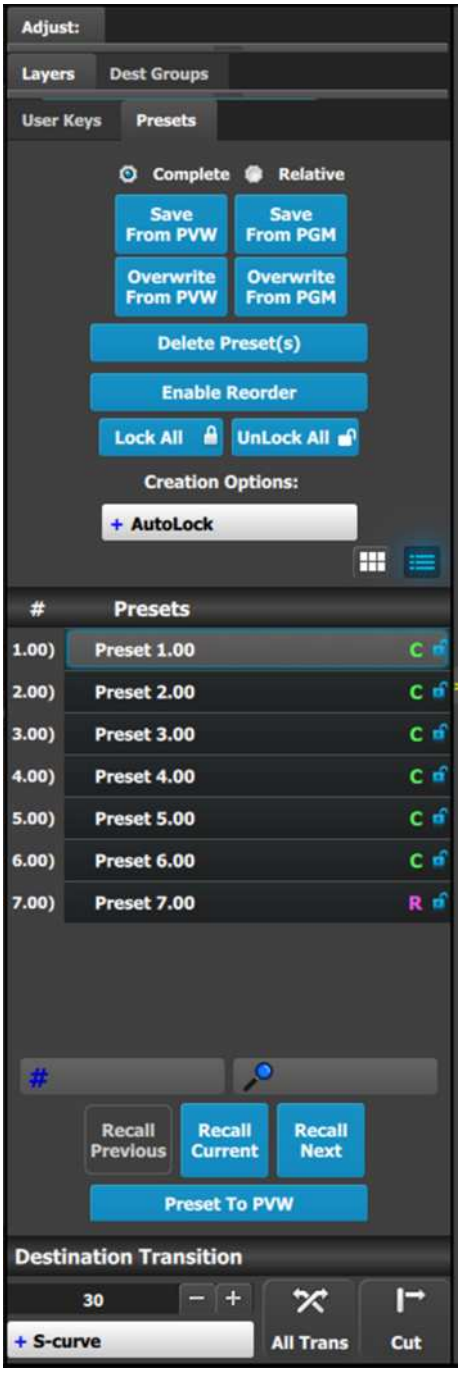
Edit the number of a User Key by double-clicking on the number. The list is reordered based on the new number.

6.30 Programming Menu > Adjustment area > Presets configuration

General

The Preset is a register that enables you to store destination setups, “looks,” to memory, and to recall them.

Presets configuration menu description



This menu provides:

- A numbered list of the available Presets.
- Buttons to select the complete or relative saving of Presets.
- A **Save from PVW** button to create a new Preset from selected Destination(s) in Preview.
- An **Overwrite from PVW** button to overwrite the preset data in the selected Preset from selected Destination(s) in Preview.
- A **Save from PGM** button to create new Preset from the selected Destination(s) in Program.
- An **Overwrite from PGM** button to overwrite the preset data in the selected Preset from selected Destination(s) in Program.
- A **Delete Preset(s)** button to enter a multiple delete of Presets.
- An **Enable Reorder** button to enable the reordering of Presets in the list.
- A **Lock All** button to lock all the Presets in the list.
- An **Unlock All** button to unlock all the Presets in the list.
- A button to select **Creation Options** to use while creating Presets.
  - **Off:** No creation options are chosen. (This is the default option.)
  - **AutoLock:** All Presets created with the AutoLock option On are created in the locked state.
  - **Rename:** All Presets created with the Rename option On are created with the group name highlighted, so that the Preset may be immediately renamed.
  - **Rename-Lock:** This is a combination of the Rename and AutoLock options. All Presets created with the Rename-Lock option On are created with the Preset name highlighted, so that the Preset may be renamed, and saved in a locked state.
- A couple of search edit boxes to search Presets.
- Three buttons to manage Preset recall actions.

Complete vs Relative

The “Complete” and “Relative” radio buttons do not affect the recall process; they are used only during the save process.

- To save a “Complete” preset, make sure the “Complete” radio button is selected, arm the Destinations to be part of the Preset and press the “Save from PVW” or “Save from PGM” button. A “Complete” Preset is marked with a “C” in the Presets list.
- To save a “Relative” preset, make sure the “Relative” radio button is selected, arm the Destinations to be part of the Preset, hide/show the Background/Layers in the destinations and then press the “Save from PVW” or “Save from PGM” button. A “Relative” Preset is marked with an “R” in the Presets list.

When a “Complete“ Preset is recalled, all Layers of the chosen Destinations are affected. When a “Relative” Preset is recalled, normal layers are affected, but hidden Layers are not affected.

To hide a Layer, select the Layer in the Programming Diagram area of the Workspace, then select Hide in the Layer Modification area of the workspace. See Image 6-96.

Image 6-96: Hiding a Layer

A Layer can also be hidden using the Hide icon in the Programming > Adjust > Layer configuration menu. See “Programming Menu > Adjustment area > Layer configuration”, page 218.

A hidden Layer shows a “hidden” symbol in the lower right-hand corner of the Layer. See Image 6-97.

Image 6-97: Hidden Layer with “hidden” symbol

Save From PVW

Saves the current look on Preview into a new Preset. Only Destinations that are active or selected will be saved. For example: There are 3 Destinations. User enables Dest1 and Dest 3 and presses “Save to new Preset.” Only Dest1 and Dest3 looks are stored. Dest 2 is not part of this Preset.

Save From PGM

Saves the current look on PROGRAM into a new Preset. Only Destinations that are active or selected will be saved. For example: There are 3 Destinations. User enables Dest1 and Dest 3 and presses “Save to new Preset.” Only Dest1 and Dest3 looks are stored. Dest 2is not part of this Preset.

Overwrite From PVW

This button allows the override of a selected, unlocked Preset from the Preview, if the destination is active. The name of the preset is not updated, unless the Creation Option is set to "Rename" or "Rename-Lock."

Overwrite From PGM

This button allows the override of a selected, unlocked Preset from the Program, if the destination is active. The name of the preset is not updated, unless the Creation Option is set to "Rename" or "Rename-Lock."

Delete Preset(s)

By pressing this button, the delete “x” marks will appear next to all presets. Select the presets you like to delete and then press the red “Delete Selected” button.

Search edit box

Search Presets by characters in names. A list of the presets will be filtered according to the search criteria. List is restored to normal once search box is cleared.

Search Number (# icon)

Search Preset by number, User types the number of the preset wanted and this preset will be instantly selected ready for recall.

Recall buttons

They are not enabled unless a Preset is selected from the list.

1. Recall Previous button: Recalls the Previous preset. This button is inactive if Preset1 is selected.
2. Recall Selected button: Recalls the currently selected Preset.
3. Recall Next button: Recalls the next preset. This button is inactive if the last preset in the list is selected.

Preset To PVW / Preset To PGM

Pressing this button toggles between recalling Presets to Preview (see Image 6-98) or directly to Program (see Image 6-99). The functions of recall buttons are the same in either case, but Presets recalled to Program automatically transition to Program as soon as they are ready to go. This also applies to presets that are drag-and-dropped onto the Programming workspace.

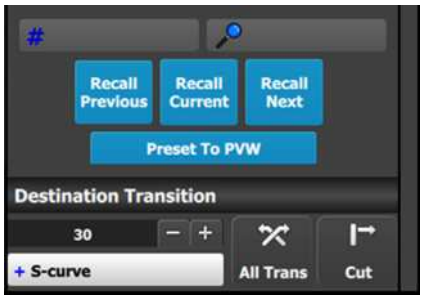


Image 6-98: Preset to PVW

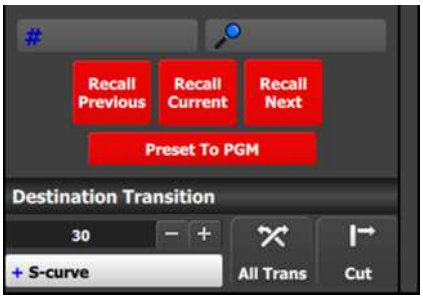


Image 6-99: Preset to PGM

6.31 Programming Menu > Adjustment area > Source adjustment

General

Selecting a source in the list does not allow for the contextual adjust controls to appear. In order to adjust any source it must be used in a Layer or an Aux and selected there. Also note that any adjustments to the source are only seen on the particular Layer or Aux where the adjustments are made, not the actual Source itself. The actual Source is updated only when “Save Source” is pressed.

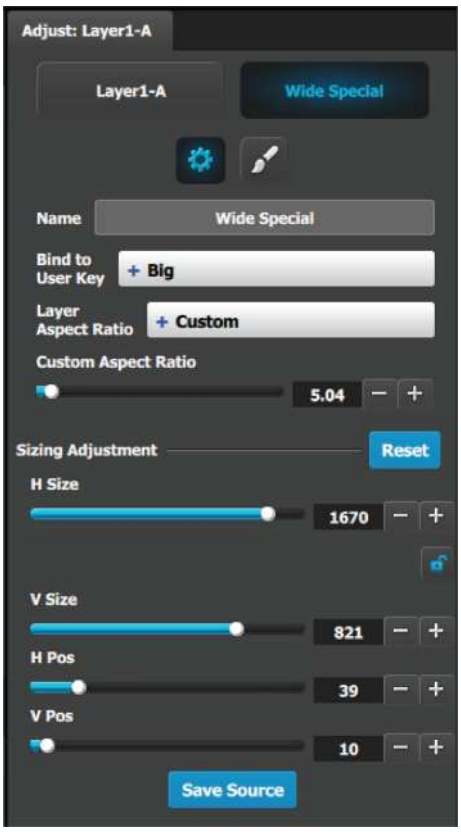
Description

When a layer with a valid Source is selected, 2 adjustment tabs are shown. It defaults to showing the layer adjustments. But the user can click on the Source adjustment tab to see the adjustments mentioned in this section.

Two Tabs for Source adjustment:

- Main adjustment : Size, position, Aspect ratio, and Bind to User Key.
- Color adjustment: Contrast, Brightness, Gamma, Hue and Saturation

Main adjustment



The following Source Adjustment Menu functions are provided: (All figures are in pixels)

- H Size: adjusts the source's horizontal size.
- V Size: adjusts the source's vertical size.
- H Position: adjusts the source's horizontal position.
- V Position adjusts the source's vertical position.
- Save Source would save the Source information from the selected layer to the actual Source

Note that the "Custom aspect ratio" is disabled unless the "Default Layer Aspect Ratio" is set to Custom.

Color adjustment

- RGB Contrast and Brightness settings are adjustable within a range of 0% to 200%. The default setting for all of these properties is 100%.
- Gamma is adjustable within a range of 0.3 to 3.30. The default setting is 1.0.
- Hue is adjustable within a range of -180 to +180 degrees. The default setting is 0 degrees.
- Saturation is adjustable within a range of 0% to 200%. The default setting is 0%.
- Reset All: Returns all values to their default settings.
- Save Source would save the Source information from the selected layer to the actual Source.

6.32 Programming Menu > Adjustment area > Global Transition Rate/Trans/Cut

General

At the bottom of the adjustment panel, is the transition rate and type buttons. These actions are executed for the selected Destinations.

Description

These controls are disabled if no Destination is selected.

Image 6-100

All Trans button

This button transitions selected Destinations from Preview to Program in the amount of time set in the transition rate. The transition rate is declared in frames as a compared to the System Native Rate defined on the Configuration menu. By default, the System Native Rate is set to 59.94 frames per second, so a transition rate of 30 would transition the look from Preview to Program in about ½ second.

Four transition types are available: Linear, S-Curve, Logarithmic and Exponential.

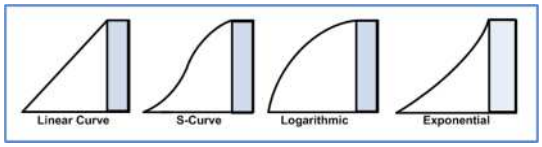


Image 6-101

CUT button

Pressing the CUT button immediately replicates the “look” on Preview to Program.

6.33 Cue Menu

General

The **Cue menu** is the module used to create Cues and to add Presets, External Device commands, and UI functions such as All Trans and Cut to those Cues. The Cue menu also allows the user to play, pause, or stop a Cue.

Description

The Cue menu has four main areas, each of which contains information or controls.

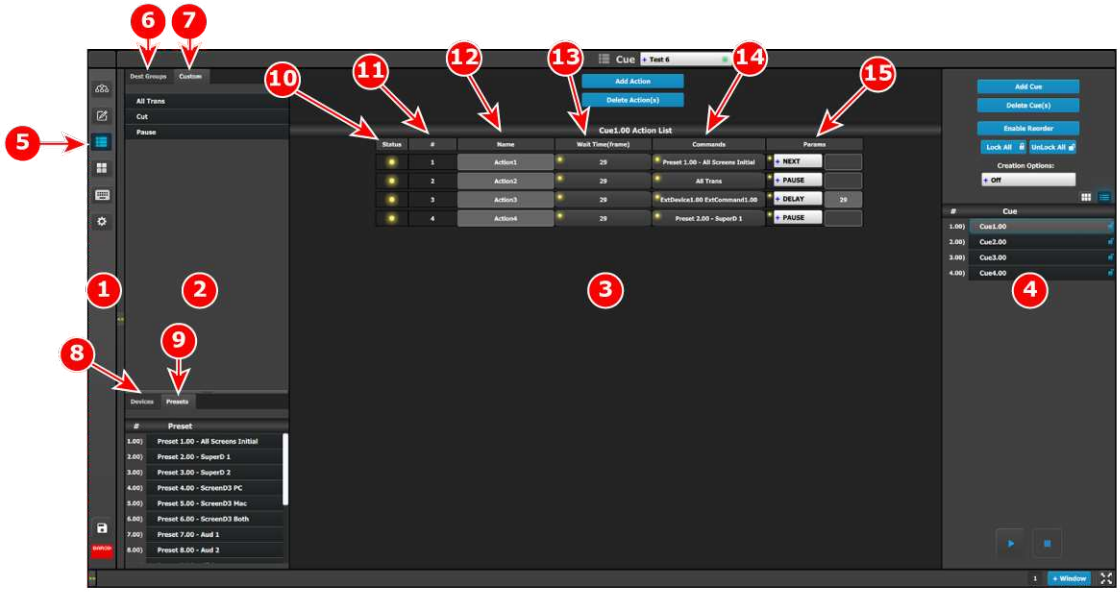


Image 6-102: Cue menu

1. **Menu navigation bar**—The menu navigation bar allows the user to choose from among the available menus: Configuration, Programming, Cue, Multiviewer, Controller, or Settings.
2. **Command resource area**—The command resource area contains tabs for the Dest Groups, Custom (UI functions), Devices, and Presets available for Cues.
3. **Cue Workspace area**—The Cue Workspace area allows the user to add a limited list of Actions and to assign names wait times commands, and parameters to the Actions in each Cue.
4. **Adjustment area**—The adjustment area allows the user to add, delete, lock, unlock, and rename Cues. The adjustment area also allows the user to play, pause, or stop a Cue.

   / (Play / Pause) and (Stop) buttons.

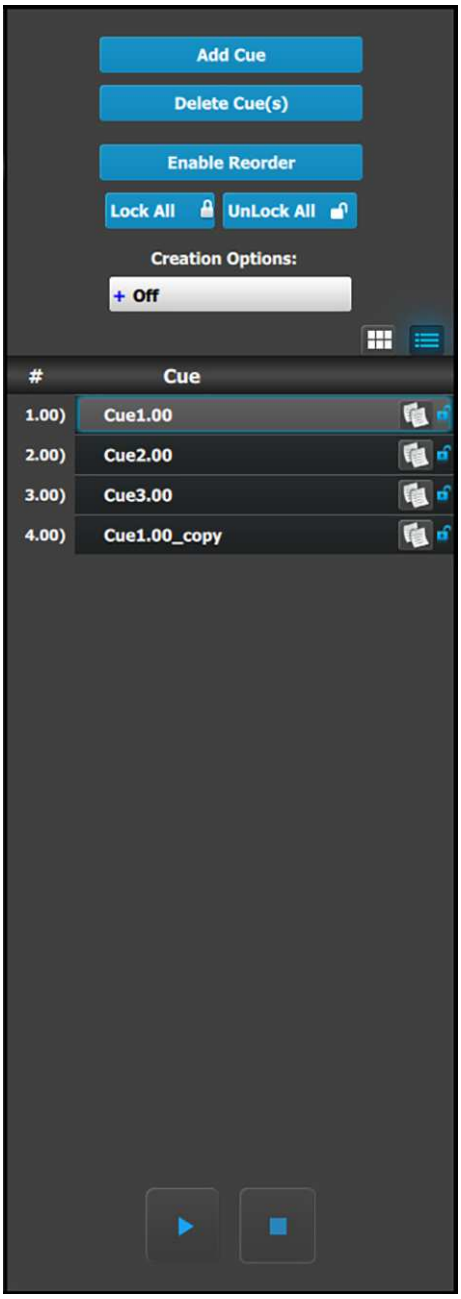
5. **Cue icon**—Selecting the Cue icon in the menu navigation bar selects the Cue Menu.
6. **Dest Groups tab**—The Dest Groups tab lists the Destination Groups available to the Cue Menu.
7. **Custom tab**—The Custom tab lists the UI functions (All Trans, Cut, and Pause) that are available to the Cue Menu.
8. **Devices tab**—The Devices tab lists the Devices and their commands that are available to the Cue Menu.
9. **Presets tab**—The Presets tab lists the Presets available to the Cue Menu.
10. **Status**—The Status LED indicates the status of the cues in a cue list.
    - Green means that the cue is active, that is the Cue is currently playing or paused.
    - Yellow means that the cue is ready to play.
    - Gray (off) means that the cue has finished.
11. **# (Syntax number)**—Actions can be added or deleted, but they cannot be re-ordered.
12. **Name**—Actions can be given meaningful names.
13. **Wait Time**—The wait time before an Action in a Cue takes place can be adjusted; the default wait time is half of the system's native rate (29 frames in this example).
14. **Commands**—Commands can be Presets or Custom (UI Functions).
15. **Params**—The parameters are Next, Pause, Delay, and Goto.

6.34 Cue Menu > Adjustment area

General

The **Adjustment area** is used to add and delete Cues.

Cue Menu > Adjustment area



This menu provides:

- An **Add Cue** button to save new Cues.
- A **Delete Cue(s)** button to delete one or more Cues.
- An **Enable Reorder** button to enable the reordering of Cues in the list.
- A **Lock All** button to lock all the Cues in the list.
- An **Unlock All** button to unlock all the Cues in the list.
- A button to select **Creation Options** to use while creating Cues.
  - **Off:** No creation options are chosen. (This is the default option.)
  - **AutoLock:** All Cues created with the AutoLock option On are created in the locked state.
  - **Rename:** All Cues created with the Rename option On are created with the group name highlighted, so that the Cue may be immediately renamed.
  - **Rename-Lock:** This is a combination of the Rename and AutoLock options. All Cues created with the Rename-Lock option On are created with the Cue name highlighted, so that the Cue may be immediately renamed, then saved in a locked state.
- A list of Cues.
  Each Cue in the list has a number, a name, and two icons. The first icon allows the user to copy a cue. (The copied cue is added to the bottom of the Cue list.) The second icon shows if the Cue is locked or unlocked.
- A **Play/Pause** button.

  The system displays the Play button ( ) before a selected Cue is played and when a selected Cue has been paused.

  The system displays the Pause button ( ) when a selected Cue is playing.
- A **Stop** button.

Once a Cue has been created in the adjustment area, it can be modified in the system modification area.

Cues can be selected and played, paused, or stopped from the adjustment area of the Cue menu.

Once a cue is active (playing or paused) selecting another cue from the Cue list in the Adjustment pane cancels the first cue and readies the second cue.

6.35 Cue Menu > Cue Workspace area

General

The **Cue Workspace area** is used to add actions to a Cue or to delete actions from a Cue.

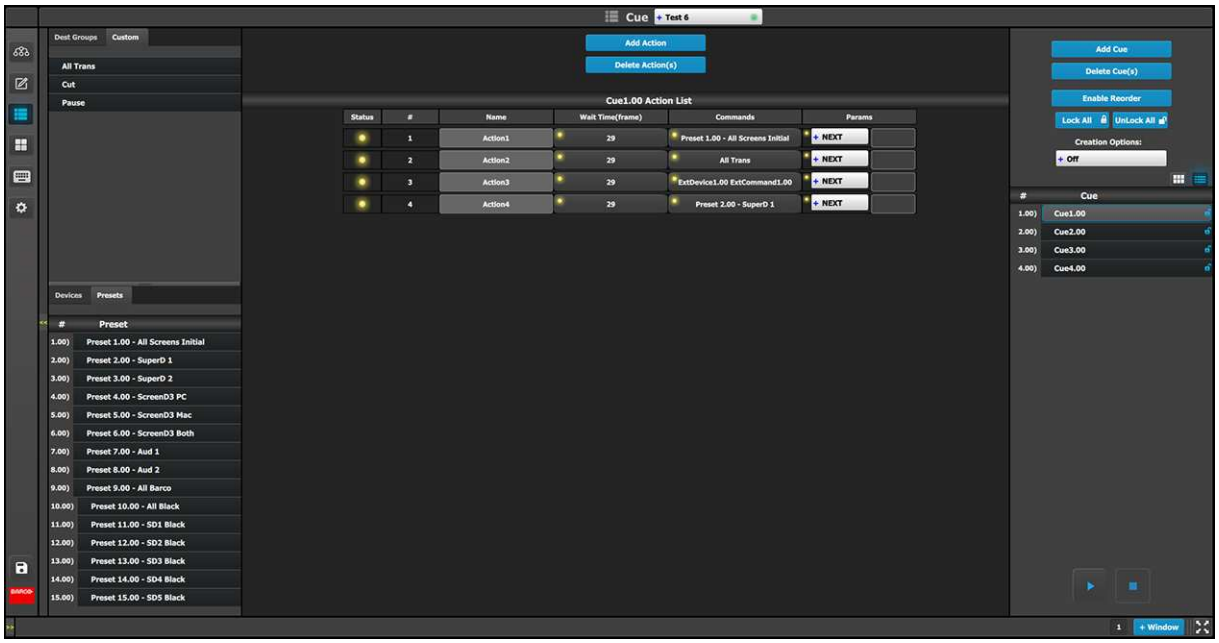


Image 6-103: Cue menu, Cue Workspace area

The Workspace area of the Cue menu provides:

- An **Add Action** button to add actions to a Cue.
- A **Delete Action(s)** button to delete one or more actions from a Cue.
- A list of actions.
  Each action in the action list has a column for Status, # (number), Name, Wait Time, Commands, and Params.
  - **Status**—The Status LED indicates the status of the status of the actions in a cue list.
    - Flashing Green means that the action is active, because the Cue is currently playing or paused.
    - Yellow means that the action is ready to play.
    - Gray (off) means that the action has finished.
  - **# (Syntax number)**—Actions can be added or deleted, but they cannot be re-ordered.
  - **Name**—Actions can be given meaningful names.
  - **Wait Time**—The wait time before an Action in a Cue takes place can be adjusted; the default wait time is half of the system's native rate (in frames).
  - **Commands**—Commands can be selected from the tabs in the command resource area at the left side of the Workspace.
  - **Params**—Next, Pause, Delay, and Goto.

How to modify a Cue

Once a Cue has been selected from the adjustment area, a user can modify it by adding actions (up to a maximum of 12 actions per Cue) and adding a command to each action.

A Cue cannot be modified while it is playing.

The number of Cues in the Cue list can be up to 120, but the number of actions in a Cue can be only up to 12.

1. Select a **Cue** from the adjustment area.
2. Click on the **Add Action** button to add up to 12 actions to the Cue.
3. Drag and drop Dest Groups, Custom items (UI functions), Devices, or Presets to the Commands column of the Action List.
   The wait time before an Action in a Cue starts a command defaults to half of the system's native rate (29 Hz). The wait time can be adjusted.

4. Select the **Param** (parameter) for each Command.
   - Next (default)
     When the action is finished, play the next action in the list.
   - Pause
     “Pause” pauses the Cue at the end of the current action, before the following Action starts. The Operator must press “Play” to proceed to the next Action.
   - Delay
     Enter the amount of time to delay (in frames) before the next Action is started. The time of the “Delay” parameter defaults to half of the system’s native rate (in frames). The Delay time can be adjusted.
   - Goto
     Once “Goto” is selected, the system prompts the user to select another Cue and Action within the “Params” field to reference another Action in a different or same cue in order to effectively have the system automatically run multiple Cues or create a looping Cue.

How to play a Cue from the Cue Menu

To play a Cue from the Cue Menu, go to the adjustment area, select a Cue in the list, and click on the **Play button**.

How to play a Cue from the Programming Menu

A Cue tab has been added to the Adjustment area of the Programming Menu. Once Cues have been created on the Cue Menu, you can Play, Pause, and Stop them from the adjustment area of the Programming Menu.

To play a Cue from the Programming Menu, go to the Cue tab in the adjustment area, select a Cue from the list, and click on the **Play button**.

Image 6-104: Cue tab on the Programming Menu

1 Programming Menu icon (in the Menu navigation bar and in the title bar)
2 Cue tab in the adjustment area
3 Active cue on the cue tab of the adjustment area
A green LED indicates that the cue is active. An orange LED indicates that the cue is paused.
4 “Play/Pause” and “Stop” buttons

6.36 Cue Menu > Command resource area

General

The **Command resource area** displays the Dest Groups, Custom items, Devices, and Presets that can be dragged and dropped into the Commands column of a Cue action.

Cue Menu > Command resource area

This menu provides:

- A list of all the **Dest Groups** available for Cue actions.
- A list of all the **Custom** items (UI functions) available for Cue actions.
- A list of all the **Devices** available for Cue actions.
- A list of all the **Presets** available for Cue actions.

6.37 Multiviewer (MVR) Menu

General

The last card slot on an Event Master processor—for example, Slot #14 on an E2, or Slot #9 on an S3–4K—may be either a normal Output slot or a dedicated Multiviewer if the output card is either the HDMI 1.4 or HDMI 2.0 (version 7.0 and above) type. See the description of the Setup tab in “Configuration Menu > Adjustment > Unit Configuration”, page 118 for instructions on how select this slot as either an Output slot or a Multiviewer slot.

A Multiviewer enables multiple resources (Inputs, Backgrounds, Destinations) to be displayed on one or two monitors. Each resource can be used up to two times in any Multiviewer layout. The position of the window for

each copy can be different, but the size of the window for each copy is always the same." **Multiviewer Menu** is the module used to setup the Multiviewer layouts.

Description

This menu is accessible by clicking the Multiviewer icon in the menu bar on the left side of the UI.

The three drop-down menus in the title bar select the system, unit or layout displayed in the multiviewer.

The Multiviewer page is divided in four parts.

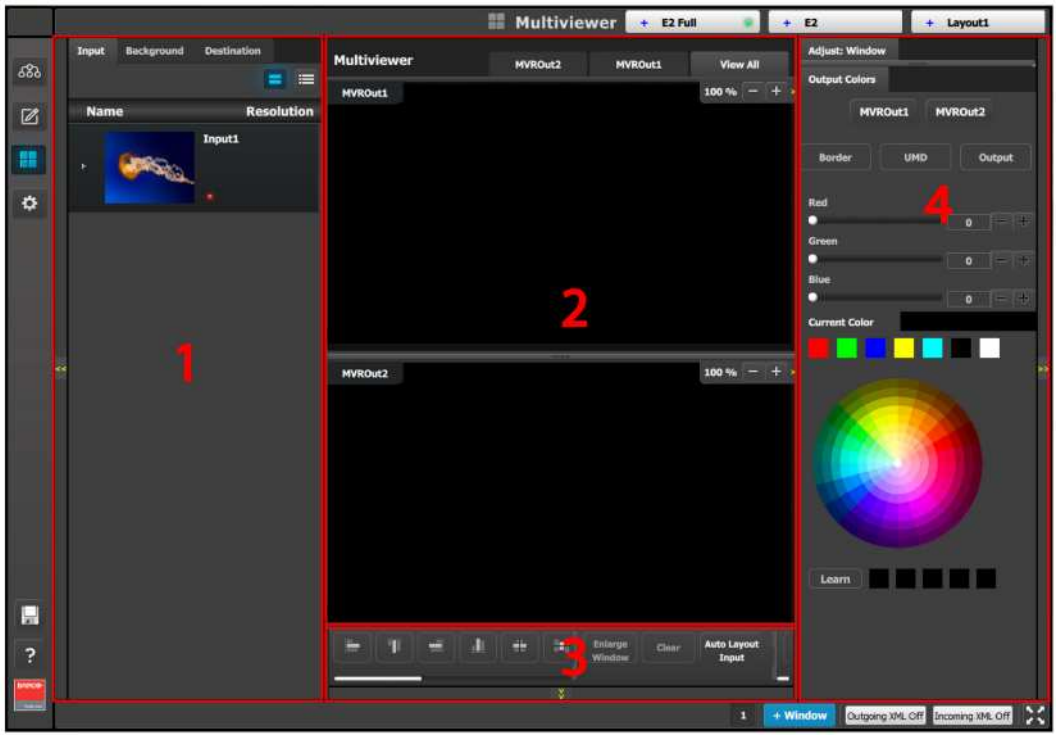


Image 6-105

1	Resources area	Lists the resources available to be displayed in the Multiviewer: Inputs, Backgrounds and Program/Preview Destination Outputs.
2	Multiviewer Layout area	The multiviewer outputs are composed, viewed and managed individually or as a group.
3	Modifier area	Alignment adjustments and controls to manage the multiviewer windows.
4	Adjustment area	Color and sizing adjustments for the windows in each PIP, as well as the background color for each MVR output.

The following sections describe each part of the Multiviewer page in detail:

- “Multiviewer Menu > Resource area”, page 247
- “Multiviewer Menu > Multiviewer Layout area”, page 248
- “Multiviewer Menu > Modifier area”, page 249
- “Multiviewer Menu > Adjustment area”, page 250

6.38 Multiviewer Menu > Resource area

General

This part of the **Multiviewer Menu** provides a list of all the resources that are available to be displayed in the Multiviewer.

Description

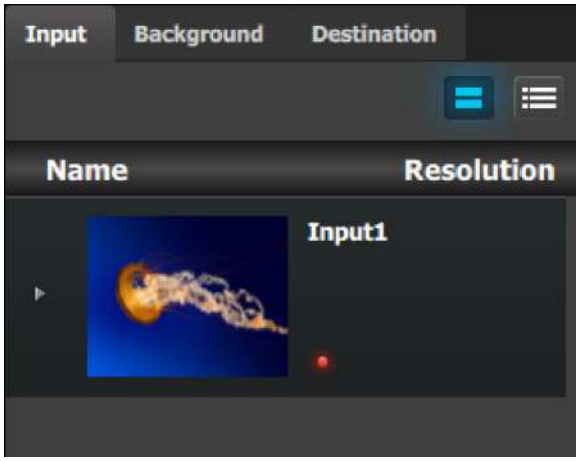


Image 6-106

There are 3 tabs in this section:

- Input: Lists the inputs as defined in the System Configuration menu.
- Background: Lists the backgrounds as defined in the System Configuration menu.
- Destination: Lists the destinations as defined in the System Configuration menu. AUX Preview is not available as a Multiviewer resource.

How to add a resource to the Multiviewer

Resources are placed in the Multiviewer layout area by dragging them as it is done with the sources in the programming menu. When a resource is dropped in the Multiviewer a window appears in that location. A window cannot overlap another window, so if the resource is dropped at a location of another window the new resource will be ignored.

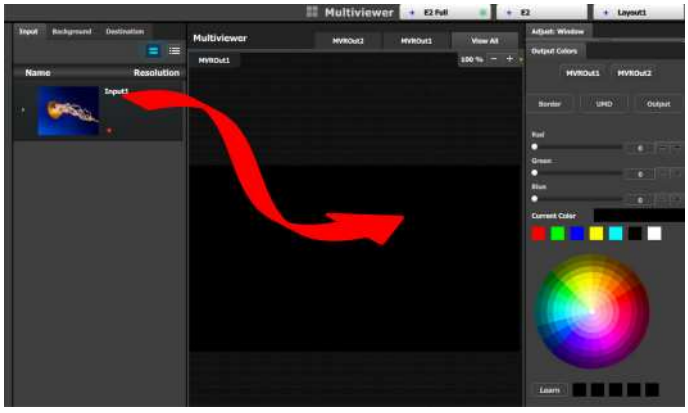


Image 6-107

Each Multiviewer resource can be used up to two times in any Multiviewer Layout. The position of the window for each copy can be different, but the size of the window for each copy is always be the same."

If Inputs, Backgrounds or Destinations are deleted from the system's configuration after they are placed in the MVR, they will also automatically be cleared from the MVR.

6.39 Multiviewer Menu > Multiviewer Layout area

General

This part of the **Multiviewer Menu** allows a user to add and position sources in Multiviewer outputs.

Description

The tabs on the top of the layout panel area allow the user to view the layouts together or individually.

Image 6-108

Users can zoom in / out each output individually, from 25% to 150%, in 25% increments.

Image 6-109

Multiviewer windows, also called Image windows, are composed from Inputs, Backgrounds, and Destination resources. There are 3 elements that make up a multiviewer image window: Content area, border and UMD (Under-Monitor-Display).

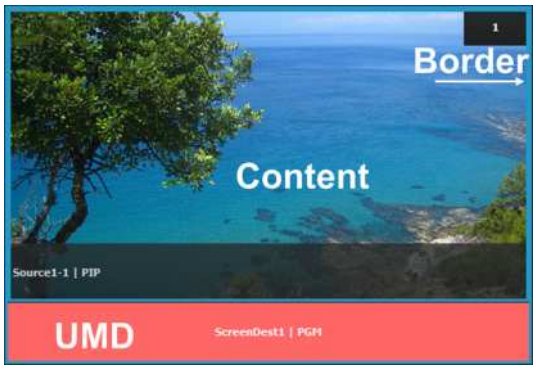


Image 6-110

Content area

The Image window's aspect ratio follows that of the first resource that occupies it. If a new resource is dropped onto the Image window, the resource's aspect ratio will constrain horizontally to fit into the Content area.

If the aspect ratio of a resource is changed after it is placed in the MVR, the change will not reshape the Image window in the MVR. To reshape the window to the new resource, click the "Refit" button in the Modifier area, then resize the window to the desired size.

UMD

The text tracks the name of the resource in the display area. If the resource is renamed, the UMD will also change to the new name. The UMD text can be edited to override the system's resource name in the adjustment panel.

One line of text is provided. The UMD area provides for only enough characters to fit within the width of the UMD area. If the text is too long it will be terminated with "…".

The UMD color is adjustable and adjusts all UMDs per Multiviewer output per layout. (The default color is dark charcoal gray.) The UMD is always red for Screen Destination Program Windows.

Border

The border width is fixed at 5 pixels. Border color is adjustable, with the default color white. The border will go red in case sync is lost.

6.40 Multiviewer Menu > Modifier area

General

This area is specifically for window adjustments on Multiviewer outputs.

Description

The area is broken up into several sub areas. The left side is for alignment and position of the window. The right is for misc. controls.

Window Alignment controls

The multiviewer alignment icons are similar to the icons in the Programming alignment panel. For more details, please refer to the chapter "Programming Menu > Layer Modifier area", page 213.

Image 6-111

Miscellaneous Control

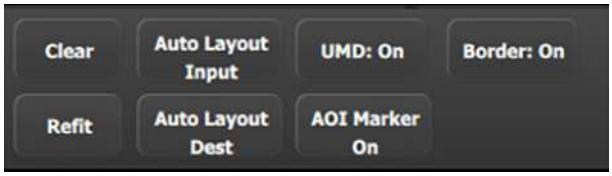


Image 6-112

Clear

Removes the selected window from the multiviewer window.

Refit

Returns the selected window to its original size.

Auto Layout Input

Clears the Multiviewer display and places all selected sources and the background from the list in the Multiviewer display in the following arrangement.

Image 6-113

Auto Layout Dest

Clears the Multiviewer display and places all selected Destinations from the list in the Multiviewer display.

UMD: On/Off

Toggles the UMD (under-monitor-display) of selected windows on and off on the MVR outputs. The UMD will always be represented on the GUI so the user is aware of which resource(s) is assigned to the window(s).

AOI Marker On/Off

Toggles the AOI marker of selected windows on and off on the MVR outputs. The GUI will always show the the AOI Markers as a visual reference to the user.

Border: On/Off

Toggles the window border of selected windows on and off on the MVR outputs. The GUI will always show the window borders so the user can be aware of the window alignments.

Selection Control

Image 6-114

Select All

Selects all the windows from a Multiviewer display. This button is available only when the MVROut button(s) on the layout workspace are selected (outlined in blue).

Unselect All

Deselects all the windows from a Multiviewer display. This button is available only when the MVROut button(s) on the layout workspace are selected (outlined in blue).

Multiple select

Button used to enable or disable multiple window selection.

Copy to

Allows you to select another layout to which you may copy the current layout. The choices from the drop-down field are "Layout 1," "Layout 2," "Layout 3," and "Layout 4."

Apply

Copies the current layout to the layout selected in the “Copy to” field.

6.41 Multiviewer Menu > Adjustment area

General

Situated on the right hand side of the screen is the Adjustment area. In this area the user can configure the color and sizing of each multiviewer windows.

Description

There are several tabs in this area:

- **Output colors**: Provides a button for each Multiviewer output, with which the user can modify the color attributes of each output's Border, UMD, and Background.
- **Window adjustment**: Provides sizing and positioning adjustments for the selected window.

The following sections describe each tab of this area in detail:

- “Multiviewer Menu > Adjustment area > Output Color”, page 251
- “Multiviewer Menu > Adjustment area > Window adjustment”, page 252

6.42 Multiviewer Menu > Adjustment area > Output Color

General

In this section, the user can modify the color attributes (window borders, window UMD, output background) of each multiviewer output.

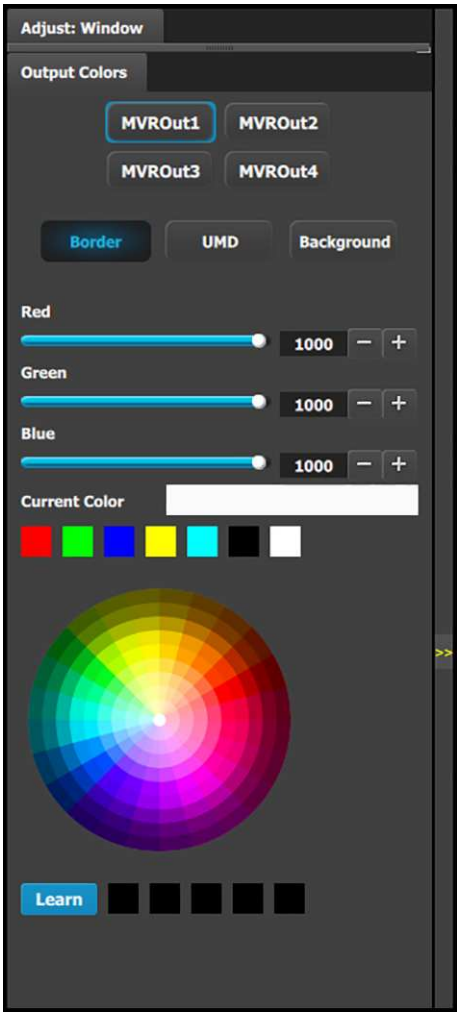
Description

Each output has its own color adjustments. For each Multiviewer output there is a button that selects the output window to which the color adjustments are applied.

There are three tabs inside the color panel:

- **Border**: Adjusts the Window border color.
- **UMD**: Adjust the image window's UMD background color.
- **Background**: Adjust the display background color.

The color controls under the three tabs are identical and operate similar as the color adjustments in other menus.



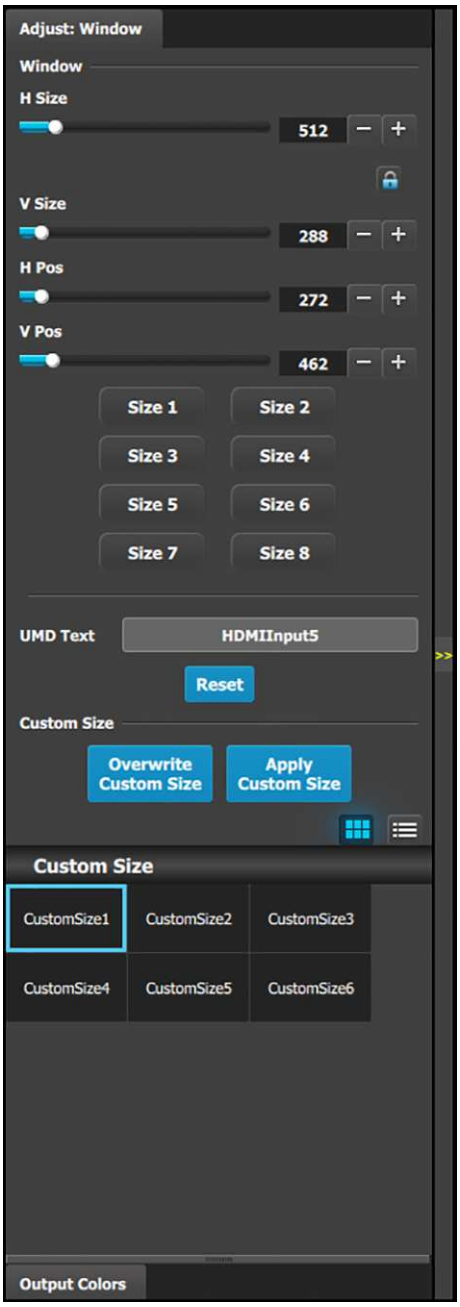
- The selected color is shown in the **Current Color** bar. The color can also be stored by clicking in one of the square boxes at the bottom of the menu next to the Learn button. These boxes are quick shortcuts to select that color.
- Another way to specify a color is to click on the **Color wheel**. The slider values will change accordingly as the mouse moves around the color wheel.
- **Learn**: Provides a method to store custom colors. To learn a new color:
  a) Pick a color to save by using color wheel or by adjusting the R/G/B.
  b) Click Learn button.
  c) Click any one of the five boxes on the right.
  d) The color that was picked is now stored in selected box.

6.43 Multiviewer Menu > Adjustment area > Window adjustment

General

In this section, the user can resize and position the selected window. A multiple window selection is available.

Description



The following functions are provided:

- H Size(pixel): Adjusts the window's horizontal size in pixels.
  Note: The Lock icon indicates that the H Size and the V Size values are locked together in an aspect ratio. Adjusting one value adjusts the other.
- V Size(pixel): Adjusts the window's vertical size in pixels.
- H Pos(pixel): Adjusts the window's horizontal position in pixels.
- V Pos(pixel): Adjusts the window's vertical position in pixels.
- Automatic preset: The eight size buttons are shortcuts to different sizes depending on how many of these windows can fit horizontally. Vertically the window is adjusted to match the aspect ratio.
  For example:
  - Size 1: The window is adjusted to fit the full horizontal space.
  - Size 2: The window is adjusted to half the horizontal space.
  - ...
  - Size 8: The window is adjusted to an eighth of the horizontal space.
- Reset button would reset the UMD text to the configured name of the resource.
- Custom Size: The operator can select one of six (6) custom sizes and either apply the chosen custom size to the current window, or overwrite the custom size with the currently selected parameters.

6.44 Controller Menu

General

Event Master processors and devices can be supported by Event Controllers, hardware consoles specifically designed to facilitate and accelerate the operations during the show. **Controller Menu** is the module used to setup the selected console.

This menu is accessible by clicking the **Controller** icon in the menu bar on the left side of the UI.

Description

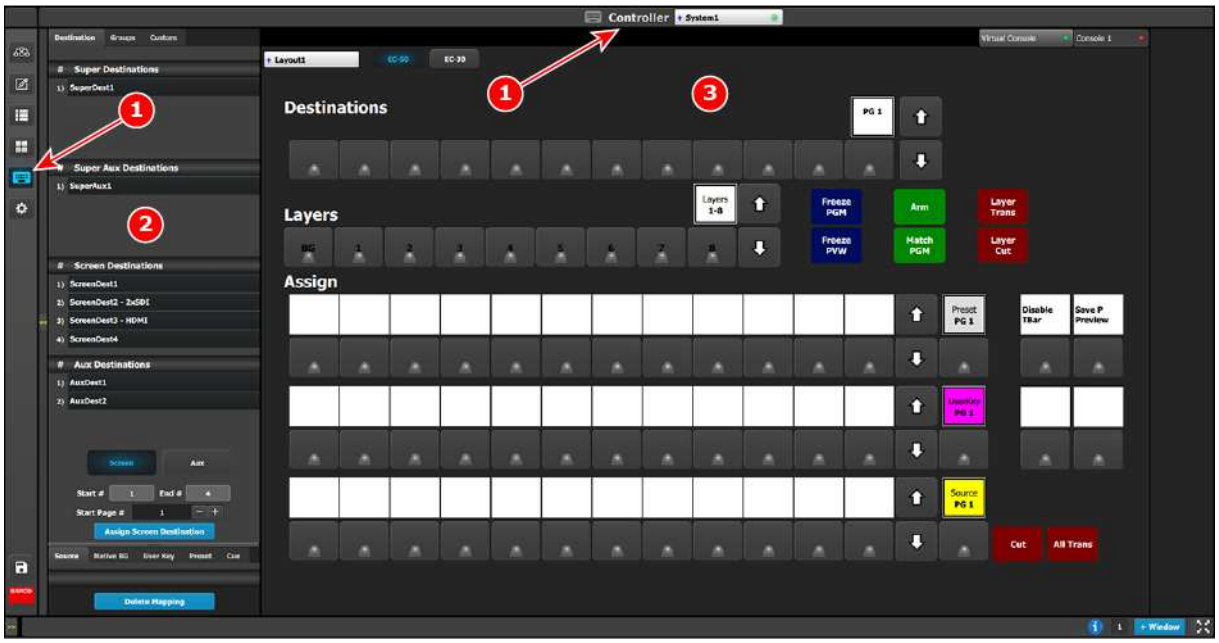


Image 6-115: Controller menu overview

1 Controller menu
2 Resources area
3 System diagram area

The Controller setup page is divided in two parts. One list of available resources (right side of the page) and one virtual representation of the selected controller.

The user can assign resources from the list onto controller buttons via drag and drop, or remove incorrect mapping.

Refer to the chapter “Assigning resources to the desk ”, page 357 for more information about the **Controller Menu** setup page.

6.45 Settings Menu

General

The Settings menu provides access to the Event Master series processor web app that is built into the unit. The app provides users with diagnostic reports, includes an FAQ section and contact information and supports system backup / restore and new firmware installation.

Description

This menu is accessible by clicking the System Settings icon on the menu bar on the left side of the UI.

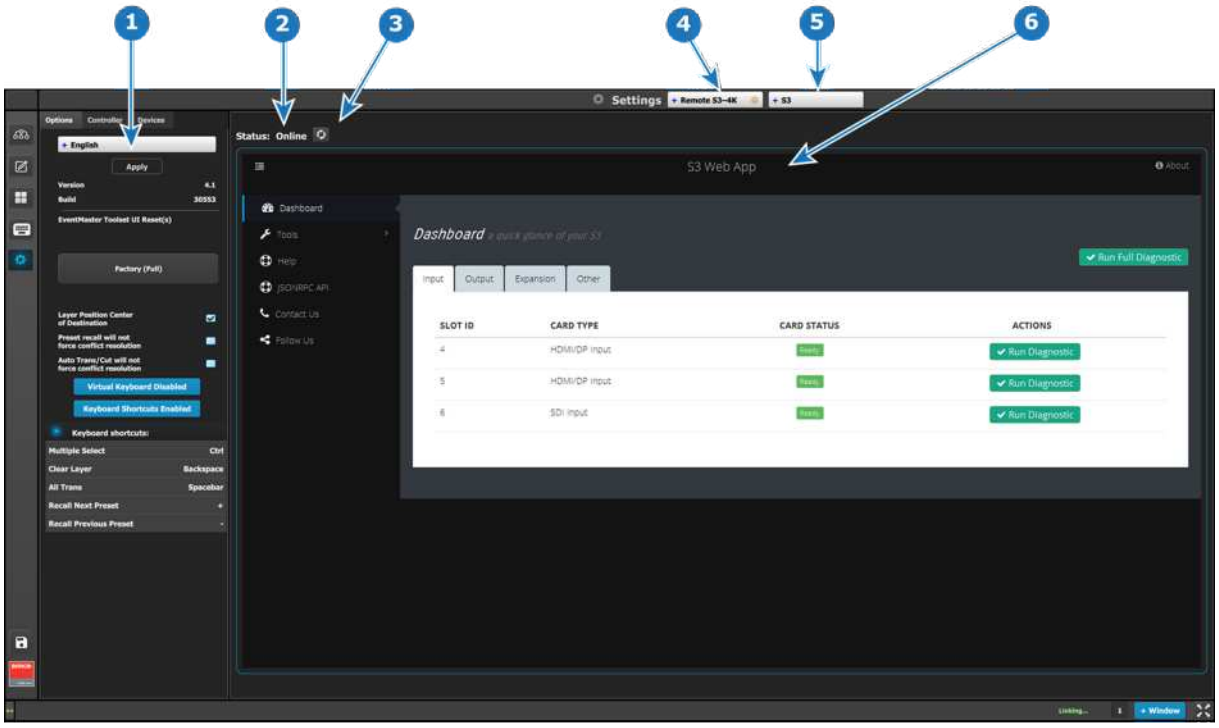


Image 6-116: Settings Menu

1	Resources area	The Resources area contains the Options, Controller, and Devices tabs. • The Controller tab shows EC series controller settings and is applicable only when an EC series controller is connected on the network or to a computer running the EMTS. • The Devices tabs shows what Barco devices (such as projectors) are detected on the network. • The Option tab allows the user to choose settings concerning the Event Master Toolset Software. Please see the sections below dedicated to these options.
2	Status	Show status: • **Online**: the VP is online and the web application can be reached. • **Web application error**: the VP is online but the web application cannot be displayed. • **Offline** (in red text): the VP is offline.
3	Refresh Web app area button	Similar to web browser, pressing this button will trigger an attempt to refresh / reconnect to the web interface of the selected VP.
4	System select combo box	Informs the users which System is currently being selected. If there is more than one System defined in the UI, this combo box can be used to select between the different Systems.
5	Device select combo box	Informs the user which Device is currently being selected in the current system.
6	Web app area	Main work area where the different menus are displayed.

Description of the Options tab of the Resources area

- **Language:** This parameter allows the user to choose the language of the GUI.
  Note: The only languages available are English and (Simplified) Chinese.
- **Version:** version number of the Event Master Toolset (read only).
- **Build:** build version of the version of Event Master (read only).
- **Event Master Toolset UI Reset(s)—Factory (Full):** A Factory (Full) reset deletes all information and returns the UI to factory settings, removes all added systems from the configuration page, clears the input thumbnails and any Programming page layouts, and returns to default all choices on the settings page.
- **Layer Position Center of Destination:** Coordinates for PIP's and Destination's origin is (0,0) positioning. Allows the user to choose the default layer position.
  - If selected the position X=0 and Y=0 will be in the center of the destination and Pixel 0 will be in the center of the PIP.
  - If unselected the pixel X=0 and Y=0 will be on top left of the destination and Pixel 0 will be on top left of the PIP.
- **Preset recall will not force conflict resolution:** When this box is checked, conflict resolutions are not forced when recalling a Preset. A pop-up window appears, requiring user confirmation. The user's choices are:
  - Resolve–All Trans
  - Resolve–Cut
  - Resolve–Wait
  - Cancel
- **Auto Trans/Cut will not force conflict resolution:** When this box is checked, conflict resolutions are not forced when either the All Trans button or the Cut button is activated.
- **Show ToolTip:** This button turns On or Off the ToolTips.
- **Keyboard Layout:** This button allows a choice between QWERTY and AZERTY keyboards.
- **Virtual Keyboard:** This button enables or disables the virtual (on-screen) keyboard. This is useful when the EMTS is running on a device that employs a touchscreen monitor, and there is no hardware keyboard available for typing.
- **Keyboard Shortcuts:** This button enables or disables keyboard shortcuts.
- **Keyboard shortcuts list:** The following keyboard shortcuts are available in the Event Master Toolset software.

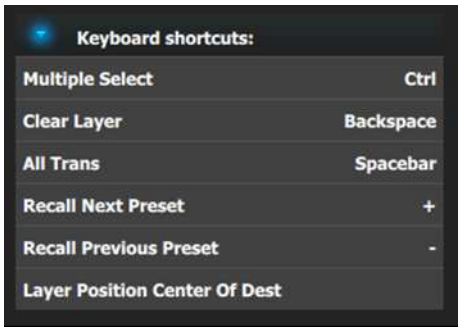


Image 6-117: Keyboard shortcuts list

It's possible to change any shortcut key:

a) Double click on the shortcut name (e.g. Multiple Select).
   A popup appears near the shortcut name.
b) Press any key on the keyboard.
   This key will affect to the selected shortcut.

Description of the Controller tab of the Resources area

The Controller tab shows EC series controller settings and is applicable only when an EC-30, EC-50 or an EC-200/EC-210 controller is connected to the system. The Controller tab has three subtabs: Software, User Pref, and Diagnostic.

Software subtab

Controller tab: Software subtab

This panel displays the serial number and the software version for each detected controller.

When the Controller > Software subtab is selected in the Resources area, the Web App area shows the EC-200/EC-210 web app. The user can upgrade the EC-200/EC-210 software through this web app.

User Pref subtab

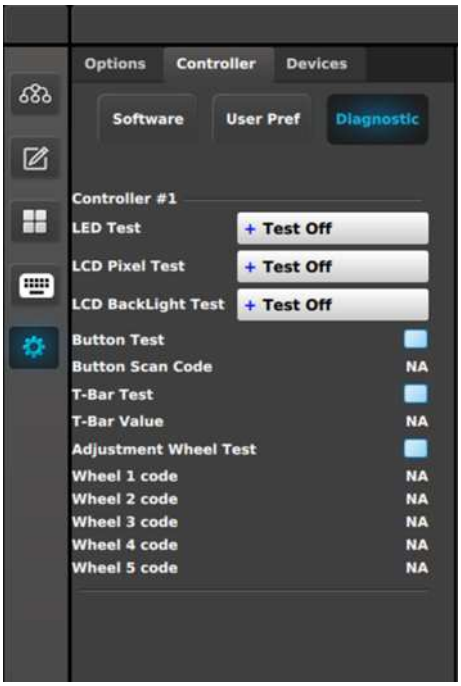
Controller tab: User Pref subtab

This panel displays the user-defined preferences for each detected controller. The user can also adjust the preferences in this panel.

- **Touch Screen Contrast:** Change the contrast of the touch screen displays. Range is 0–100.
- **Touch Screen Backlight:** Change backlight brightness of the touch screen displays. Range is 0–100.
- **LED Brightness:** Change the brightness of the LEDs under the buttons. Range is 0–6000.
- **Script Light Brightness:** Change the brightness of the LED script lights. Range is 0–16000.
- **Work Light Brightness:** Change the brightness of the white LEDs on the front bottom of the controller. Range is 0–16000.
- **Rear Light Brightness:** Change the brightness of the red LEDs on the rear top of the controller. Range is 0–16000.
- **LCD Brightness:** Change the LCD display brightness. Range is 0–7.

Note: These controls are N/A on the EC-30 controller.

Diagnostic subtab



Controller tab: Diagnostic subtab

This panel displays test controls for each detected controller.

- **LED Test:**
  - Test Off: LEDs are returned to normal behavior.
  - All Blue/Red: Turns on all blue and red LEDs; other LEDs are turned off.
  - All Green: Turns on all green LEDs; other LEDs are turned off.
- **LCD Pixel Test:**
  - Test Off: LCD text is returned to normal behavior.
  - All: All LCD displays are filled (all 256 bits are enabled).
- **LCD Backlight Test:**
  - Test Off: LCD colors are returned to normal behavior.
  - Red: Only LCD red color is turned on.
  - Green: Only LCD green color is turned on.
  - Blue: Only LCD blue color is turned on.
  - All: LCD red, green, and blue colors are all turned on.
- **Button Test:**
  - Checkbox checked: The test is on.
    When the test is on, do not trigger the behavior of the button. For example, if a button is mapped to a Preset, **do not** recall that Preset.
  - Button Scan Code: With the Button Test **On**, pressing a button on the controller shows the button number returned by the API (in place of the “NA”).
- **T-Bar Test:**
  - Checkbox checked: The test is on.
  - T-Bar Value: Moving the T-Bar shows the number returned by the API as the T-Bar changes positions.
- **Adjustment Wheel Test:** (EC-200/EC-210 only)
  - Checkbox checked: The test is on.
  - When the test is on, rotating the wheel shows the number returned by the API.

Description of the Devices tab of the Resources area

The Devices tab lists devices, such as projectors, that are available on the same network as the EMP. Devices such as other processors (E2, S3–4K, EX, etc.) are also displayed in this list.

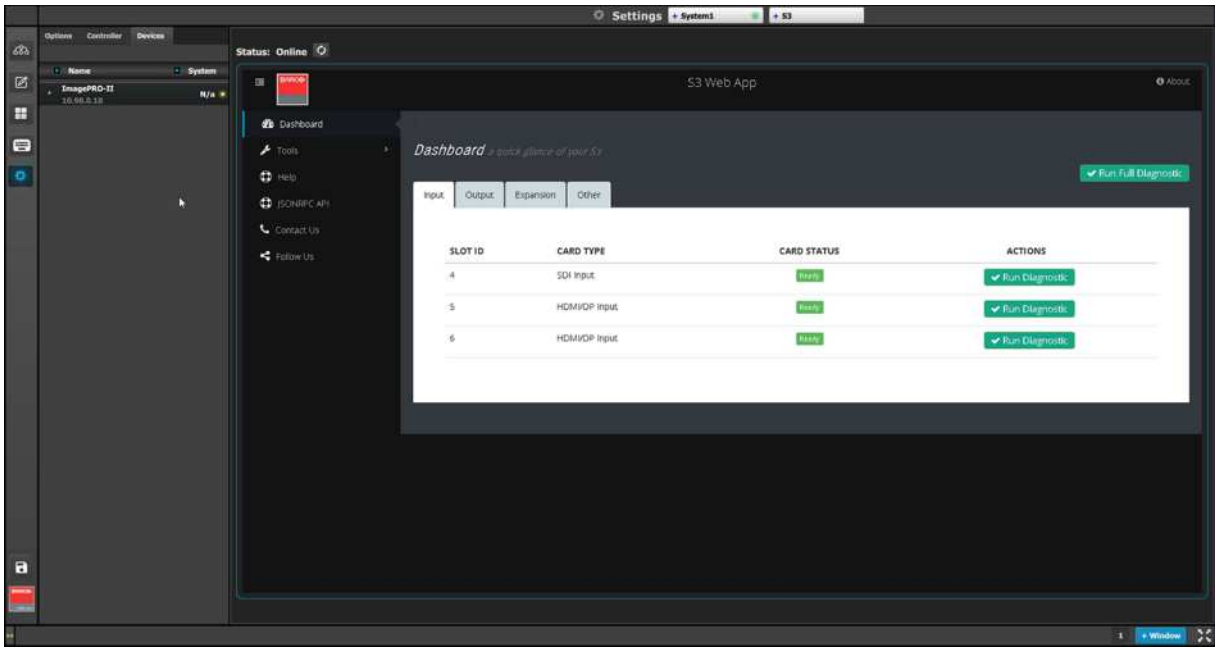


Image 6-118: Devices tab

Dragging and dropping any discovered device from the Resources area to the Web App area hosts the device (for example, an ImagePro II) in the Web App area.

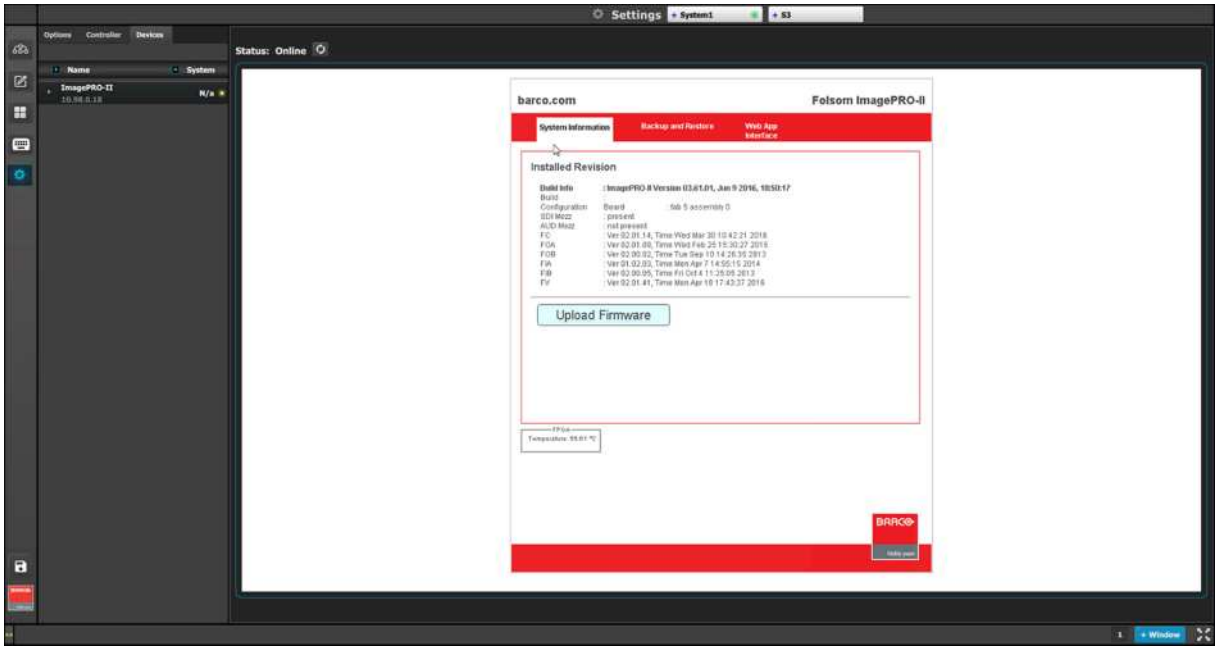


Image 6-119: Devices list

6.46 Settings Menu > Web App area

General

Main work area of the **Setting Menu**, where the user has access to a set of functions directly provided by the Event Master series processor.

All of the functions described in this section can also be performed by launching the web app directly from the browser outside of the GUI. You need to type the unit's IP address into your browser's address bar and the Web app will appear in the browser.

Description

There are several tabs in this area:

- Dashboard: The four subtabs in the Dashboard window provide access to card diagnostics software.
- Tools: This menu allows users to download software packages (Manage Software) and perform Backup and Restore operations.
- Preset: This menu provides another point of control for recalling and transitioning the saved presets of the Event Master processor.
- Use JSON: This menu allows the testing of the JSON RPC API commands on the Event Master processor.
- Help: This menu contains a list of frequently asked questions to help you implement your system.
- Contact us: Display information to Barco tech support.
- Follow us: Display links to obtain more information about image processing and Barco.

The following sections describe each tab of this area in detail:

- “Settings Menu > Web App area > Dashboard”, page 259
- “Settings Menu > Web App area > Tools”, page 263
- “Settings Menu > Web App area > Preset”, page 268
- “Settings Menu > Web App area > Use JSON”, page 268
- “Settings Menu > Web App area > Help”, page 269
- “Settings Menu > Web App area > Contact us”, page 270
- “Settings Menu > Web App area > Follow us”, page 271

6.47 Settings Menu > Web App area > Dashboard

General

The four subtabs in the Dashboard window provide access to card diagnostics software:

- Inputs
- Outputs
- Expansion
- Other

The user can perform the diagnostic of each card separately, or run a full diagnostic of all unit cards.

CAUTION: Running diagnostics will disrupt output videos. Diagnostics should only be run with no inputs or outputs connected. Do not run diagnostics during live production.

Inputs

The **Inputs** menu presents a list of the input cards installed in the system. The status column indicates whether any errors have been detected. Detailed diagnostics tests for each card are performed by selecting the diagnostics button under the action column.

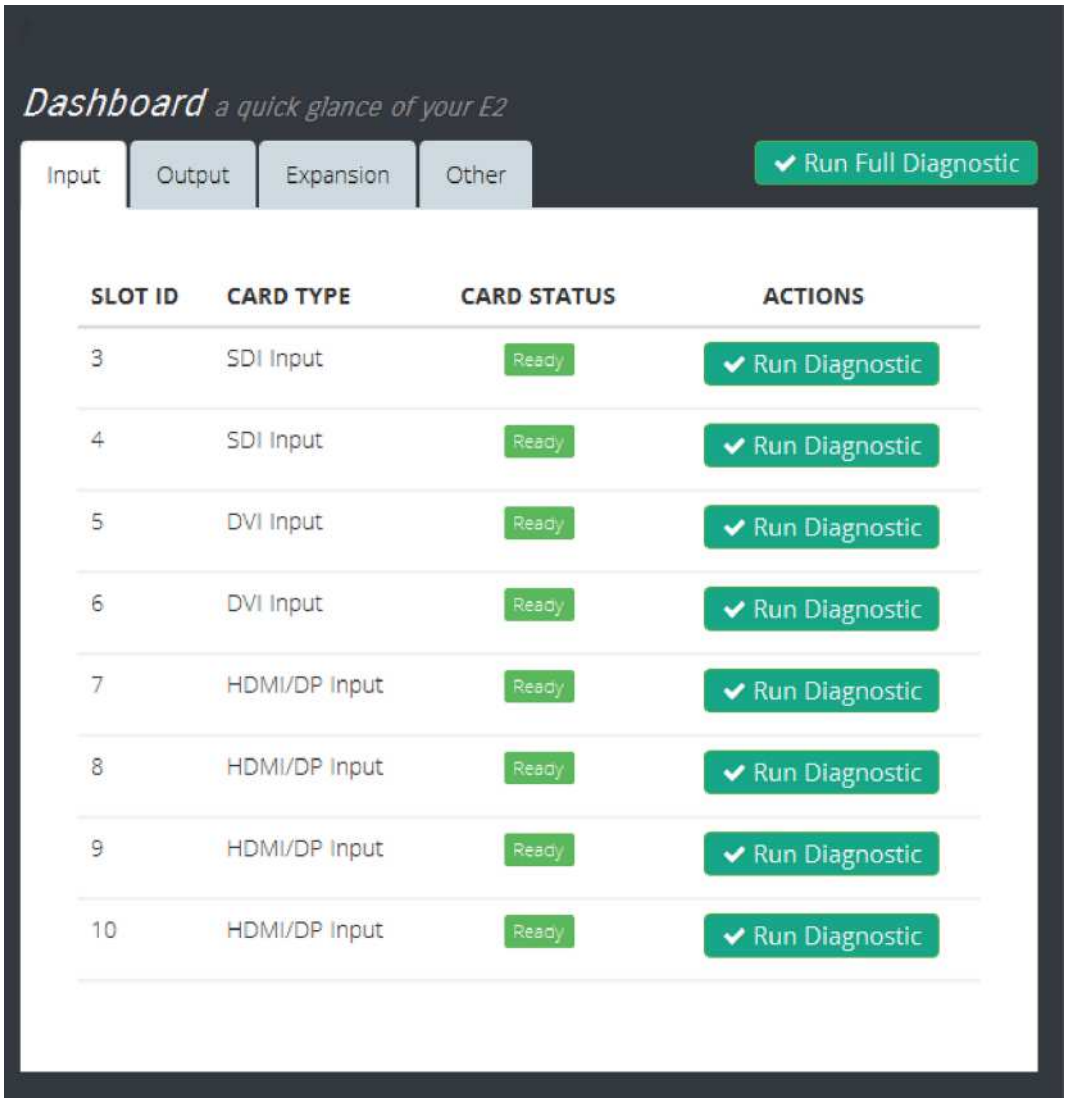


Image 6-120: Dashboard Input

Outputs

This menu presents a list of the output cards installed in the system. The status column indicates whether any errors have been detected. Detailed diagnostics tests for each card are performed by selecting the diagnostics button under the action column.

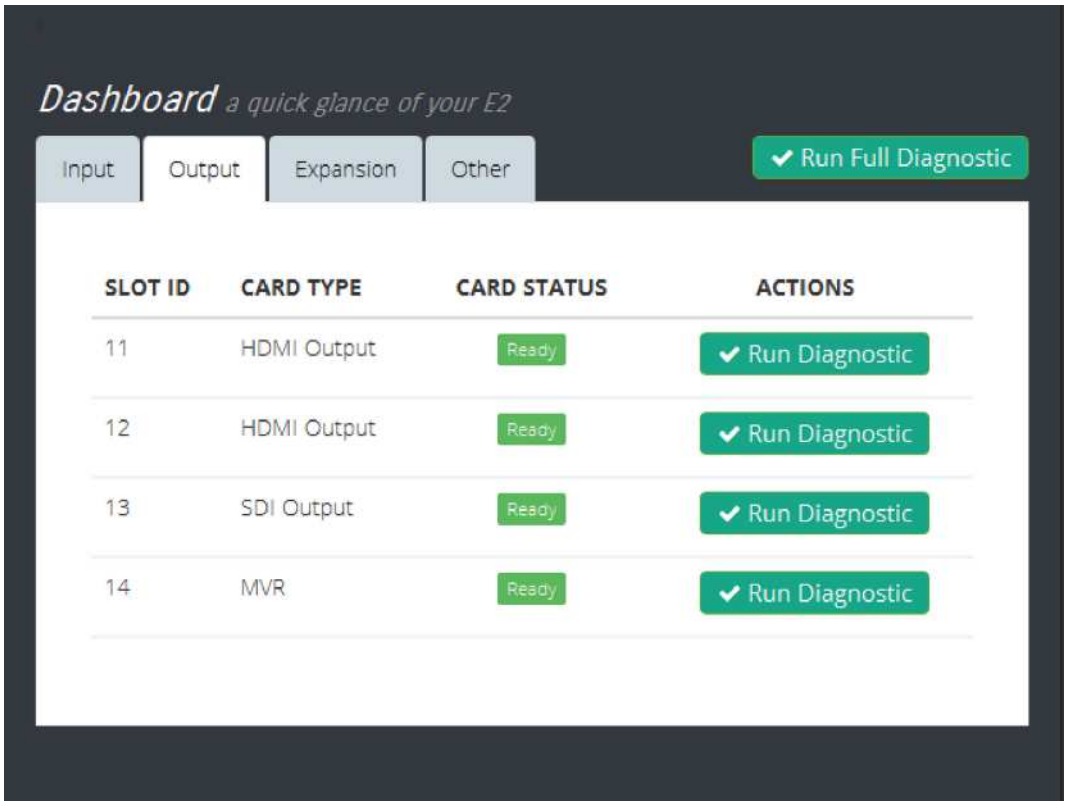


Image 6-121: Dashboard Output

Expansion

This menu presents diagnostics for the Expansion card. The status column indicates whether any errors have been detected. Detailed diagnostics tests for each card are performed by selecting the diagnostics button under the action column.

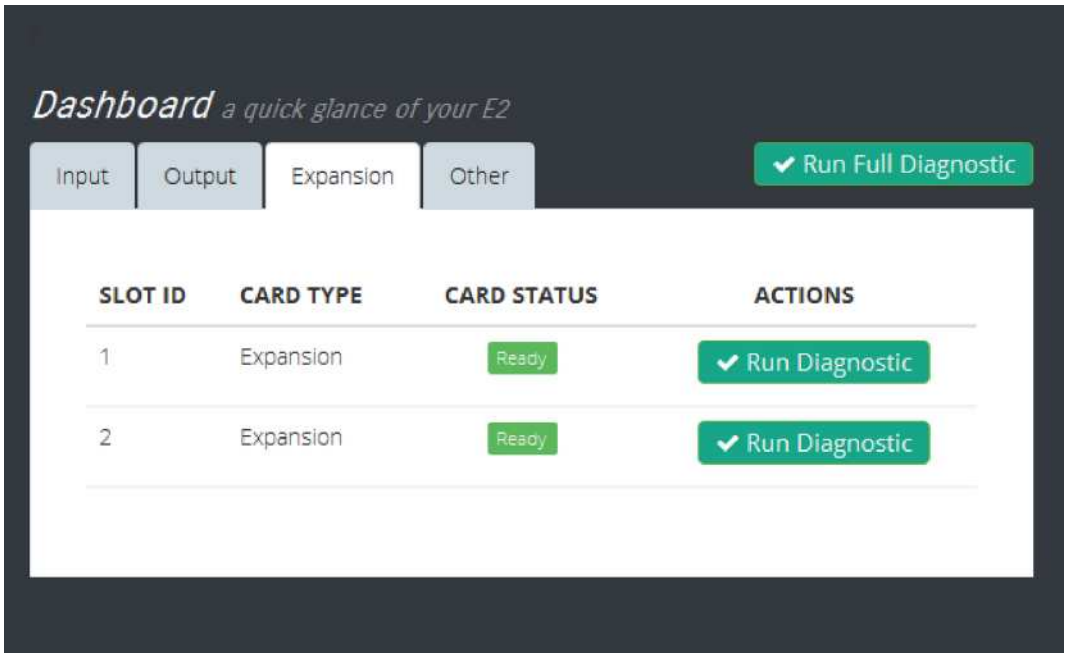


Image 6-122: Dashboard Expansion

Other

This menu presents diagnostics for the Motherboard and all VPU cards. The status column indicates whether any errors have been detected. Detailed diagnostics tests for each card are performed by selecting the diagnostics button under the action column.

Note that the Motherboard diagnostics test also provides status information for the power supplies.

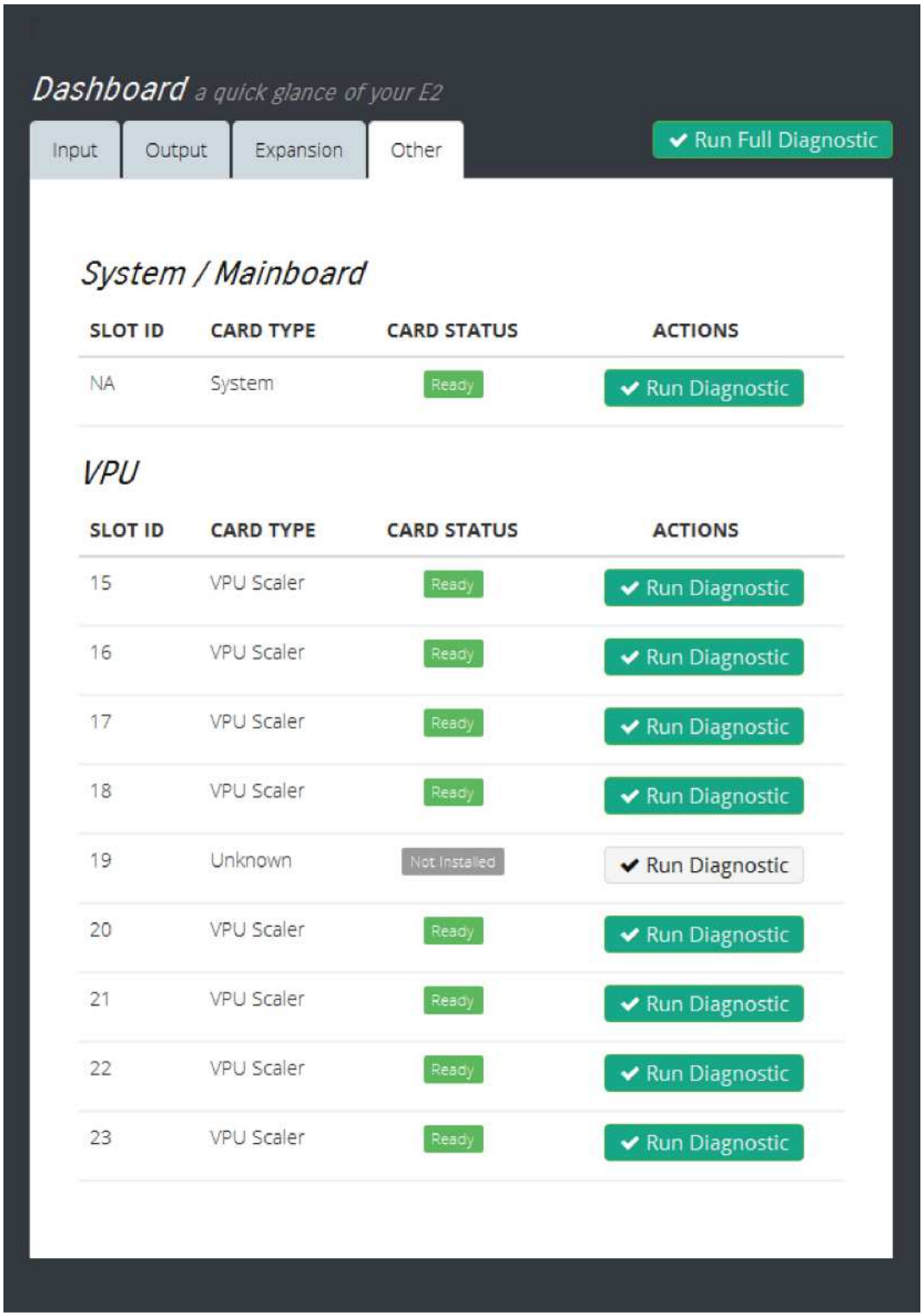


Image 6-123: Dashboard Other

Diagnostics

Running diagnostics will disrupt output videos. Diagnostics should only be run with no inputs or outputs connected. Do not run diagnostics during live production.

Select the Run Diagnostic button for any slot, and the unit generates a detailed report with a Pass or Fail indication.

Diagnostics for slot #1

```
Barco: E2, Version  0.6.11440, Nov 12 2014, 20:52:53
Module Info:
        Slot:                           1
        Status:                         Card ready
        Card Type:                      Expansion
        Fab:                            0
        Assembly:                       0
        Serial Number:                  9693164409
        ARM Version:                    0.2.11405
        FPGA Version:                   0.0.4
Memory tests:
        EEPROM (FTDI):                  PASS
FPGA tests:
        Die temperature sensor (C):     36.00
        Fan Tachometer (RPM):           8640
        Power supply sensor:
                Internal rail voltage:  0.99
                Aux rail voltage:       1.78
        Phase loopback:                 PASS
Communication Tests:
        PCIe:
                FPGA Access:            PASS
        SPI:
                FTDI -> FPGA:           PASS
                ARM -> FPGA:            PASS
        I2C:
                DS125DF410(I28):                PASS
                DS125DF410(I25):                PASS
                DS125DF410(I30):                PASS
                DS125DF410(I22):                PASS
                DS125DF410(I32):                PASS
                DS125DF410(I24):                PASS
                DS125DF410(I33):                PASS
                DS125DF410(I23):                PASS
                DS125DF410(I31):                PASS
                DS125DF410(I27):                PASS
                DS125DF410(I29):                PASS
                DS125DF410(I26):                PASS

DIAG
```

Image 6-124: Sample E2 diagnostic report.

FPGA temperatures may reach as high as 85ºC under normal operating conditions. Temperatures above 85ºC may affect processing performance.

6.48 Settings Menu > Web App area > Tools

General

This menu allows users to manage software, perform backups, or restore the system settings.

Description

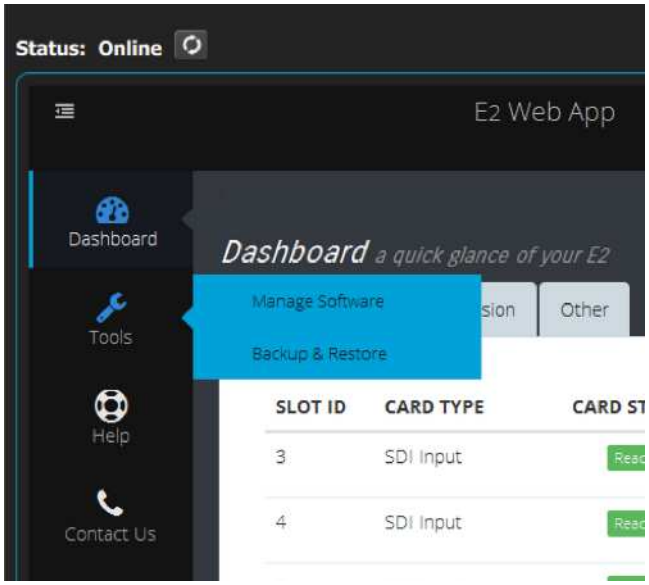


Image 6-125

There are two submenus in this menu:

- Manage Software: From this menu the user can install a new software version that the user previously downloaded from the Barco Server.
- Backup & Restore: From this menu the user can backup or restore the system settings.

The following sections describe each submenu in detail:

- “Settings Menu > Web App area > Tools > Manage Software”, page 264
- “Settings Menu > Web App area > Tools > Backup & Restore”, page 266

6.49 Settings Menu > Web App area > Tools > Manage Software

General

When you select the “Manage Software”, two tabs are presented: the “Software Install” tab and the “Software on USB” tab.

Although the examples in this section show the E2 processor, the instructions apply to all Event Master processors and to the EC-200 and EC-210 controllers.

Software on USB

From this menu the user can select a firmware package from the EM directory on a flash drive that is inserted in the front-panel USB connector of the EMP.

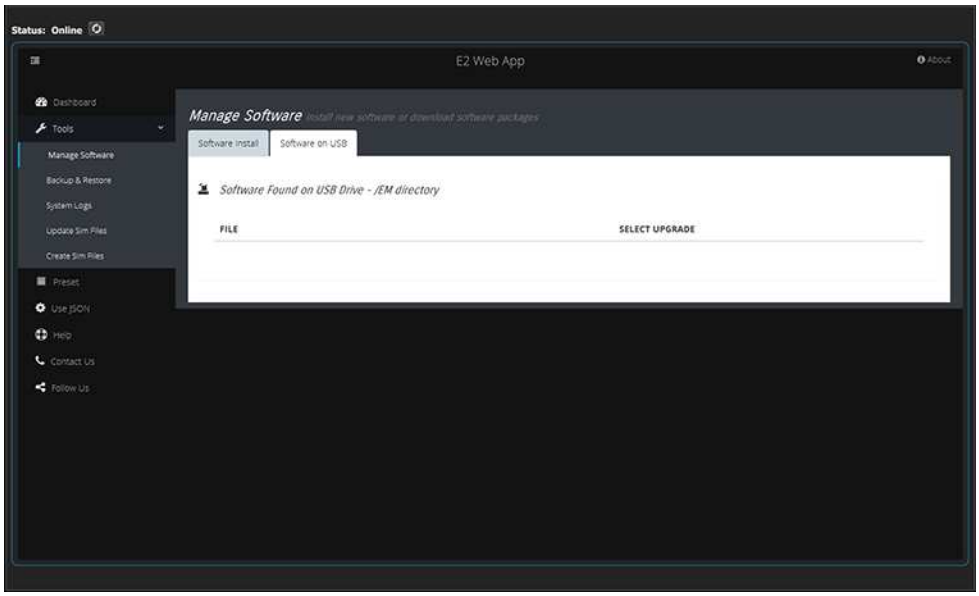


Image 6-126: Manage Software: Software on USB

Software Install

How to upgrade your system:

1. Outside of the GUI open a new window and navigate to the folder containing the file you want to use to upgrade your system with.
2. Select the file and “drag and drop” it on top of the green button. The file is compressed and it has tar.gz extension.

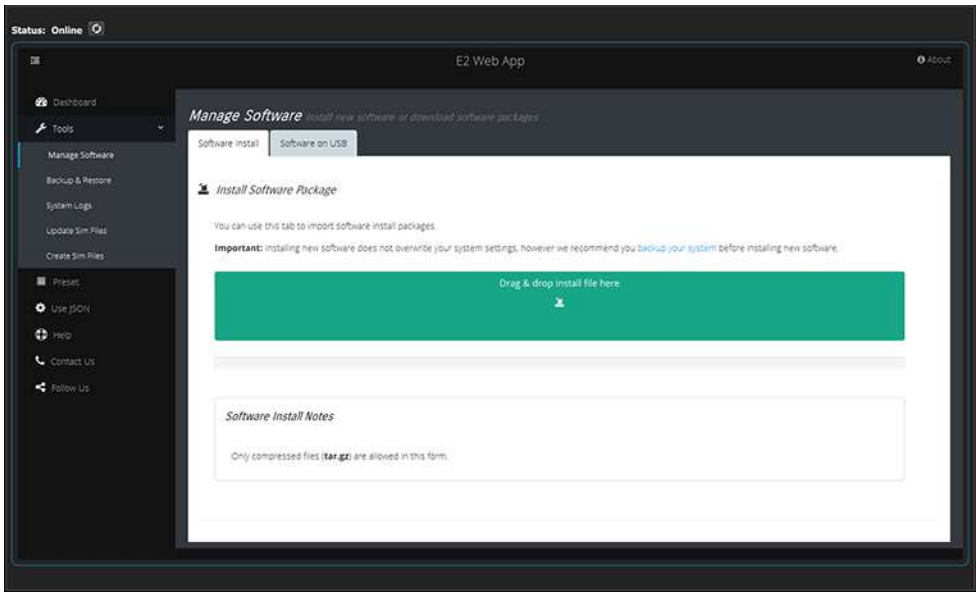


Image 6-127: Manage Software: Software Install

3. Click on the blue “Upload” button. This action will copy the file from the computer into the Event Master series processor.
4. A green bar appears indicating the progress of the upload process.
5. While the unit updates its software the following message appears:

   The system will now restart. Please wait...

   Note: The upload process takes several minutes.

6. When the upload is complete, a window appears instructing you to restart the unit.

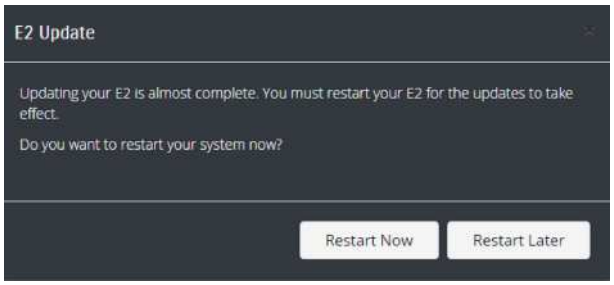


Image 6-128

7. While the system reboots and installs the new software, the web app displays a message indicating that it can't communicate with the unit. This is normal and no action is required on your part.

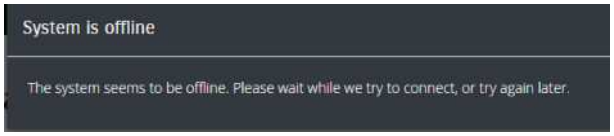


Image 6-129

6.50 Settings Menu > Web App area > Tools > Backup & Restore

WARNING: Backups from E2 work on E2 and E2 Gen2. Backups from E2 Gen2 are not backward compatible with E2.

General

In this menu the user can store presets, user keys and other system settings on the computer. The menu also allows the user to restore a previously stored system file.

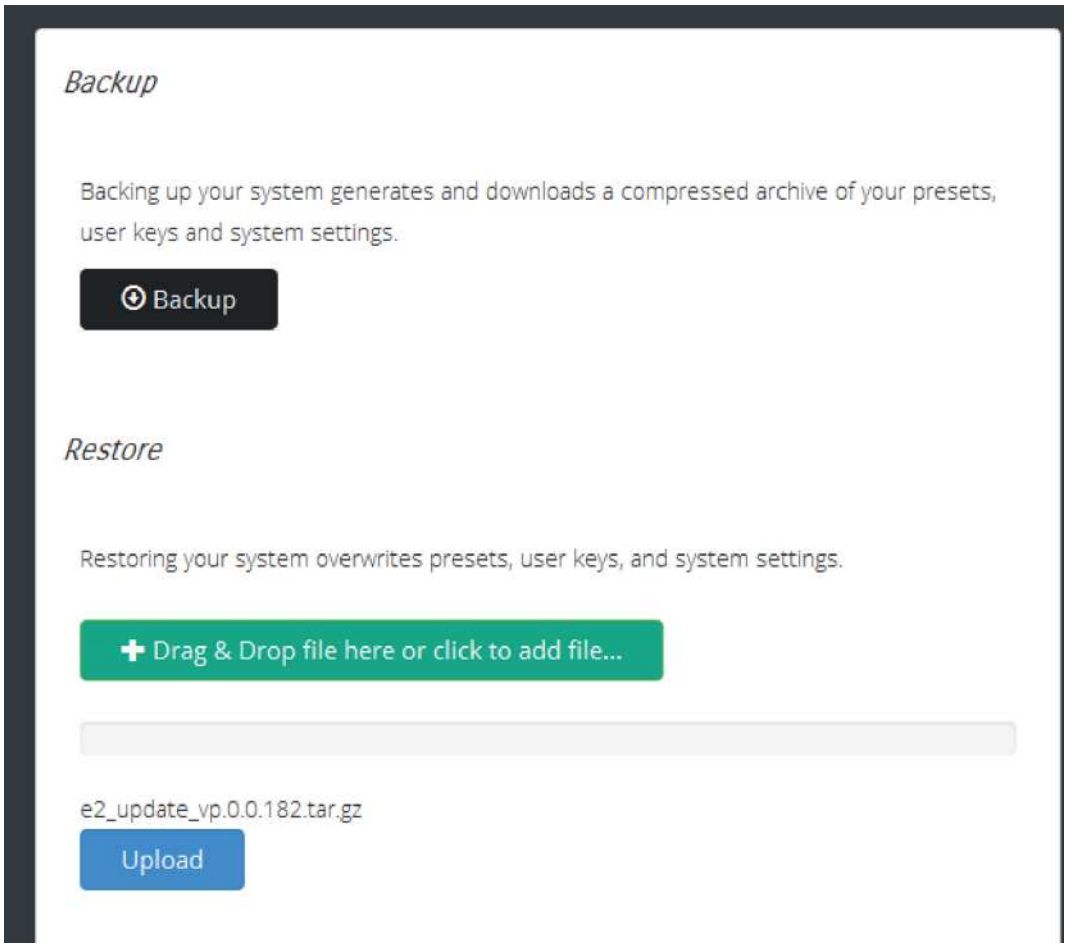


Image 6-130

How to backup presets, user keys and system settings

1. Click on the **Backup** button.

   A dialog box opens up.

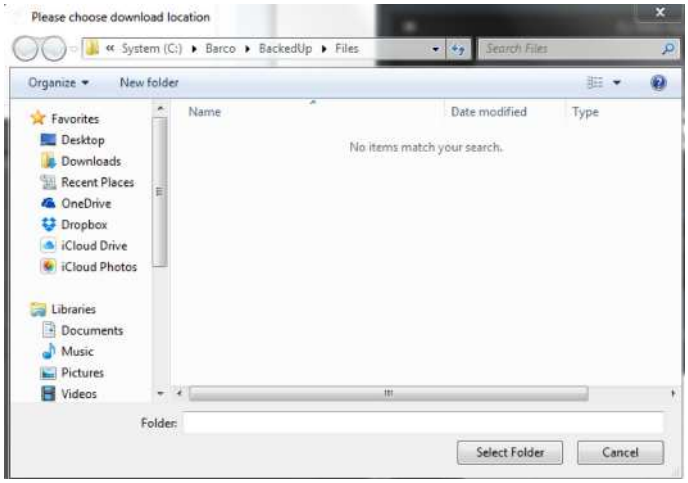


Image 6-131

2. Choose the folder location where you want to store the backed up file.
3. Click on **Select Folder**.

   The Dialog box will close and a new window appears displaying the location and name of the stored compressed file.

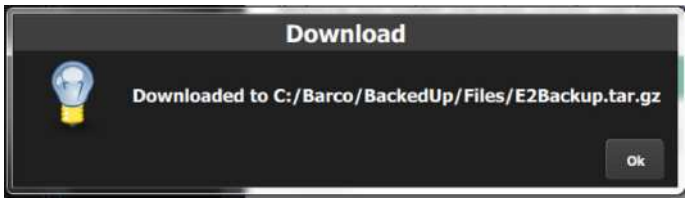


Image 6-132

4. Click on **OK**.

How to restore presets, user keys and system settings

The following procedure allows the user to restore a backed up file into a Event Master series processor:

1. Open an explorer window and navigate to the location where the backed up file is located.
2. Drag and drop the file on the green restore button.

   A progress bar and a blue **Upload** button appear.
3. Click on the **Upload** button

   The progress bar indicates the status of the upload procedure.
4. When the upload is complete a new window appears requesting you to restart the system.
5. While the system reboots and restore parameters, the web app displays a message indicating that it can't communicate with the unit. This is normal and no action is required on your part.

6.51 Settings Menu > Web App area > Preset

General

This menu provides another point of control for recalling and transitioning the saved presets of the Event Master processor.

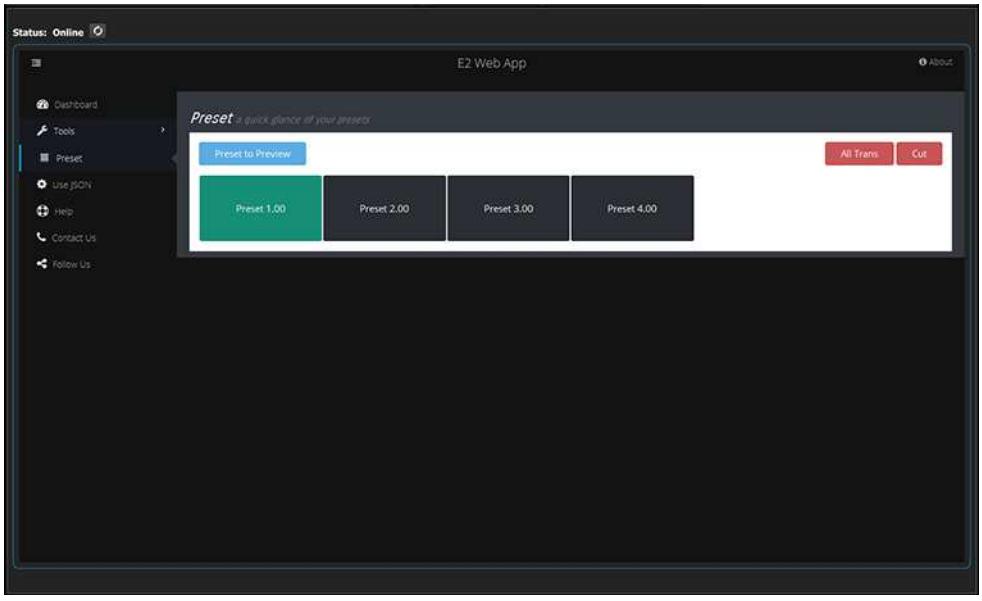


Image 6-133: Web App: Preset

6.52 Settings Menu > Web App area > Use JSON

General

This menu allows the testing of the JSON RPC API commands on the Event Master processor.

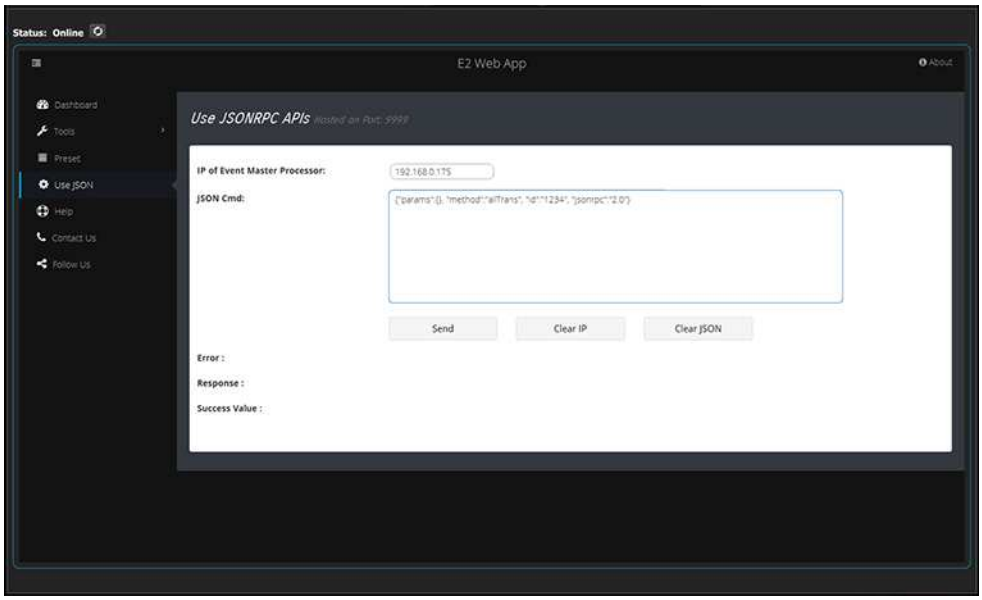


Image 6-134: Web App: Use JSON

6.53 Settings Menu > Web App area > Help

General

This menu contains a list of frequently asked questions (FAQ) to help you implement your system. This list is sorted by category.

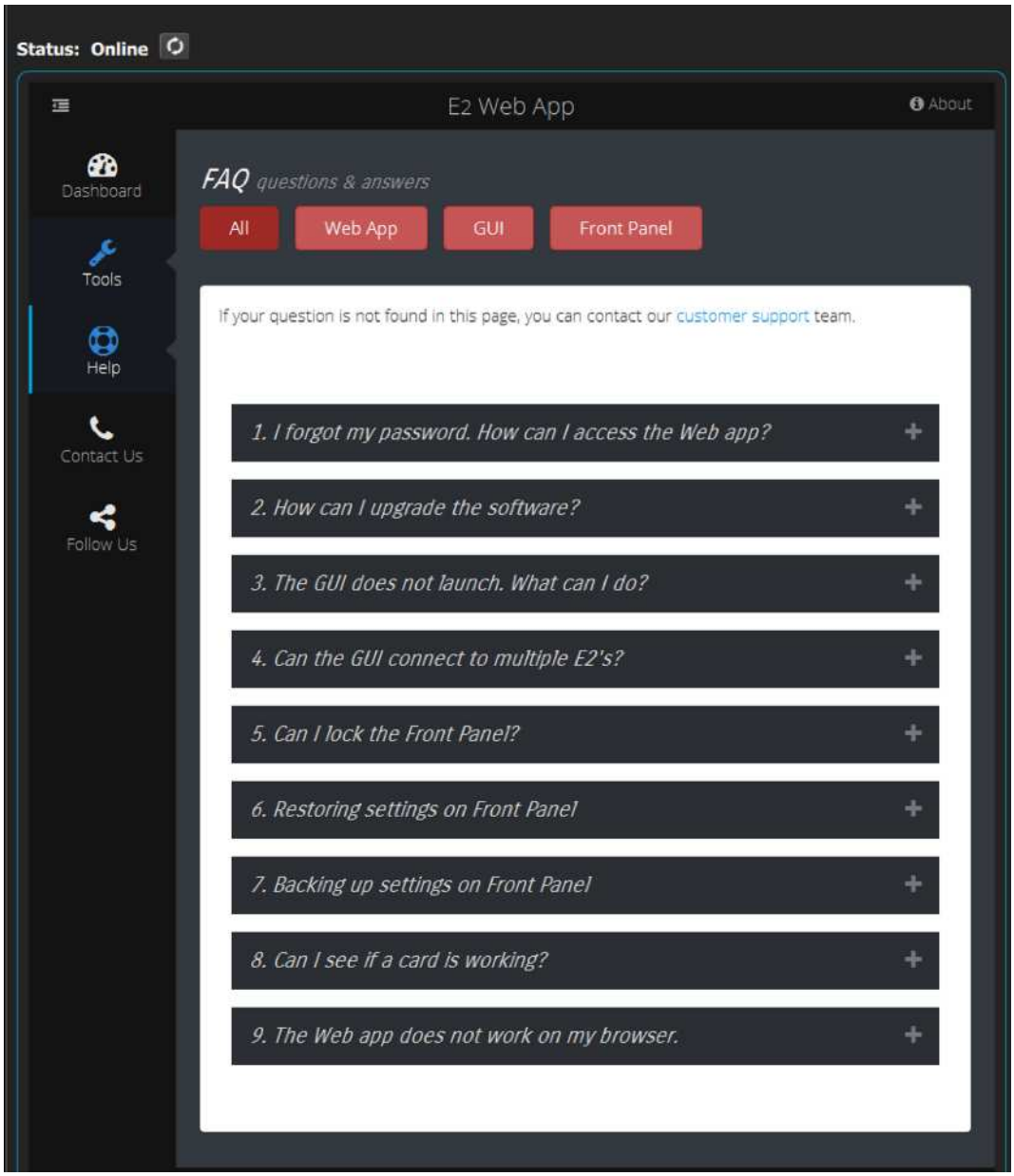


Image 6-135

6.54 Settings Menu > Web App area > Contact us

General

Displays contact information for the Barco tech support.

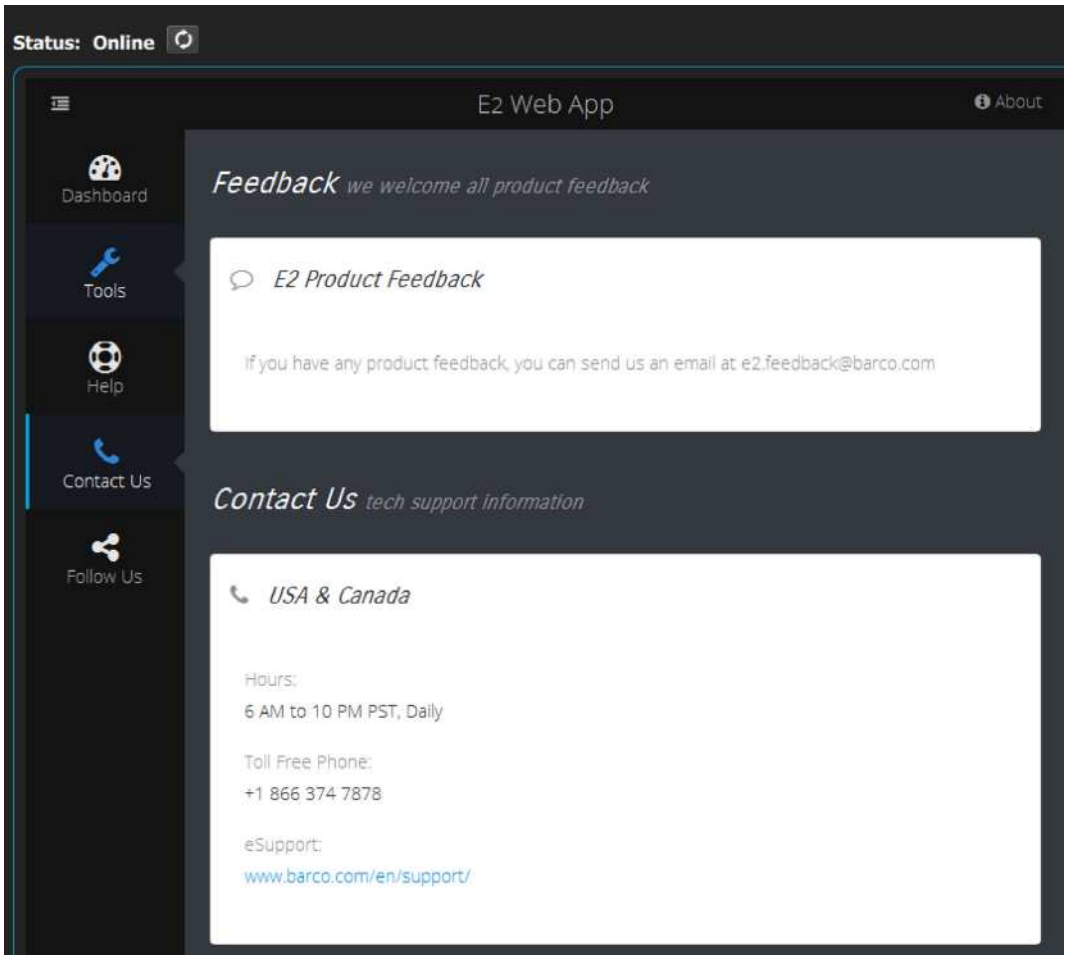


Image 6-136

6.55 Settings Menu > Web App area > Follow us

General

Displays links to Barco's and the Image Processing group's social media sites.

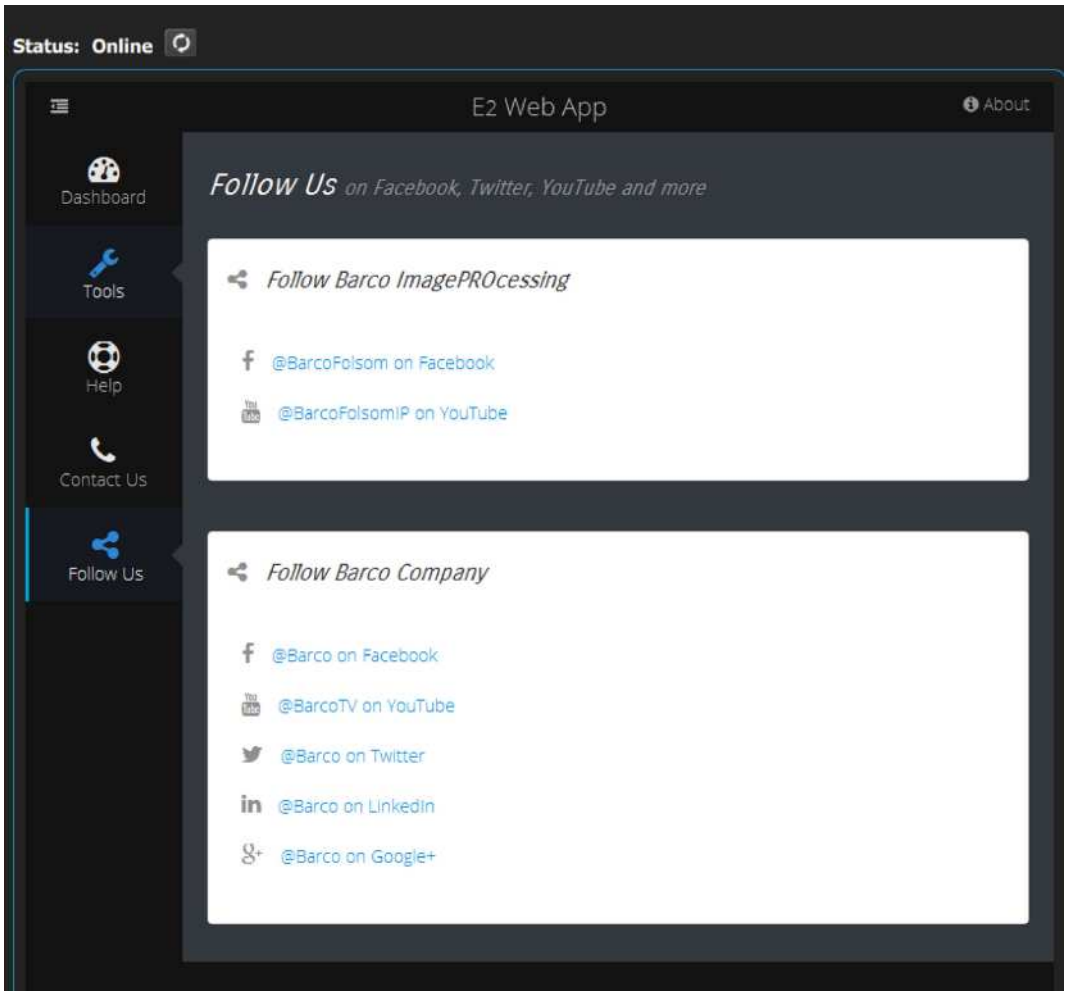

Status: Online
E2 Web App
About
Dashboard
Tools
Help
Contact Us
Follow Us
Follow Us on Facebook, Twitter, YouTube and more
Follow Barco ImagePROcessing
@BarcoFolsom on Facebook
@BarcoFolsomIP on YouTube
Follow Barco Company
@Barco on Facebook
@BarcoTV on YouTube
@Barco on Twitter
@Barco on LinkedIn
@Barco on Google+

Image 6-137

System Setup 7

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About this chapter

This chapter outlines procedures for setting up and configuring Event Master series processors.

CAUTION: Before starting to set up your Event Master series processor, please ensure that you are familiar with front panel menus and Event Master Toolset Software.

7.1 Setup Prerequisites

Prerequisites

Before starting to set up your Event Master series processor, please review the following prerequisites:

- Ensure that you are familiar with the Event Master devices, including system control means and features. For details, please refer to the chapter “General”, page 25.
- Ensure that you are familiar with front panel menus of the Event Master processors. For details on all menus, please refer to the chapter“Front Panel Menu orientation”, page 83
- Ensure that you are familiar with front panel menus and Event Master Toolset Software. For details on Event Master Toolset Software, please refer to the chapter“EM GUI orientation”, page 103
- Ensure that the unit is physically secured inside a rack or is placed on a flat surface with a stable support. If the unit is installed in a rack, it is mandatory that the rear brackets are also installed. For details, please refer to the chapter “Rack-Mount Procedure”, page 49.
- Ensure that all hardware is properly installed, and that all sources, displays and peripherals are properly connected. For details concerning Event Master series processor connectors, please refer to the unit rear panel description in the chapter “Rear panel”, page 55.
- Connect the AC power to the unit. If power redundancy is desired, connect power to both power plugs.
- Make sure that the Event Master series processor is connected to the Ethernet local network in order to communicate with the PC where the control software is installed.

7.2 System setup sequence

Set up from A to Z

This section provides a top level view of the entire Event Master series processor setup procedure, plus links to each individual sequence.

For the optimum Event Master series processor setup, it is recommended that you follow all procedures in the order outlined below.

Set up from A to Z

1. **Power up and Status check**. For more information refer to the section “Power up and Status check”, page 275.
2. **Return to factory default**. For more information refer to the section “Return to factory default”, page 276.
3. **Communication setup** allows setup to the Ethernet settings. For more information refer to the section “Communication setup”, page 276.
4. **Restoring the system** procedure restores the system to a previously saved configuration from a USB drive. For more information refer to the section “Restoring the system”, page 277.
5. **User preference setup** is used to set a variety of important user preferences. For more information refer to the section “User preference setup”, page 278.
6. **Saving the setup** procedure saves all system setup parameters. For more information refer to the section “Saving the setup”, page 278.
7. **Backing up the system** procedure backs up your system configuration to a USB drive. For more information refer to the section “Backing up the system”, page 279.
8. **Configuring Menu > Initial Setup**. For more information refer to the section “Configuration Menu > Initial Setup ”, page 279.
9. **Configuring Menu > Add Background(s)**. For more information refer to the section “Configuration Menu > Add Background(s)”, page 280.
10. **Configuring Menu > Add Inputs**. For more information refer to the section “Configuration Menu > Add Inputs”, page 281.
11. **Configuring Menu > Add Outputs**. For more information refer to the section “Configuration Menu > Add Outputs”, page 282.

12. **Configuring Menu > Add Screen Destinations & Layers**. For more information refer to the section “Configuration Menu > Add Screen Destinations & Layers”, page 285.
13. **Configuration Menu > Layer optimization**. For more information refer to the section “Configuration Menu > Layer optimization”, page 288.
14. **Configuring Menu > Add Aux Destinations**. For more information refer to the section “Configuration Menu > Add Aux Destinations”, page 289.
15. **Configuring Menu > Add MVR Outputs**. For more information refer to the section “Configuration Menu > MVR Outputs”, page 291.
16. **Programming Menu > Capture Stillstore from Inputs & Backgrounds**. For more information refer to the section “Programming Menu > Capture Stillstore from Inputs & Backgrounds”, page 292.
17. **Programming Menu > Select Thumbnails for Backgrounds**. For more information refer to the section “Programming Menu > Select Thumbnails for Native Backgrounds”, page 293.
18. **Programming Menu > Select Thumbnails for Inputs**. For more information refer to the section “Programming Menu > Select Thumbnails for Inputs”, page 293.
19. **Programming Menu > Create Sources from Inputs**. For more information refer to the section “Programming Menu > Create Sources from Inputs”, page 294.
20. **Programming Menu > Drop backgrounds into Screen Destinations**. For more information refer to the section “Programming Menu > Drop backgrounds into Screen Destinations”, page 295.
21. **Programming Menu > Drop Layers into Screen Destinations & Sources into layers**. For more information refer to the section “Programming Menu > Drop Sources, Layers into Screen Destinations & Sources into layers”, page 295.
22. **Programming Menu > Drop Inputs to Aux Destinations**. For more information refer to the section “Programming Menu > Drop Inputs to Aux Destinations”, page 297.
23. **Programming Menu > Presets And User Keys**. For more information refer to the section “Programming Menu > Presets And User Keys”, page 297.
24. **Programming Menu > Destination Transition**. For more information refer to the section “Programming Menu > Destination Transition”, page 299.
25. **Multiviewer Menu > Drop Inputs, Backgrounds and Destinations**. For more information refer to the section “Multiviewer Menu > Drop Inputs, Backgrounds and Destinations ”, page 299.

7.3 Power up and Status check

General

Use the following steps to power up your Event Master series processor and check system status.

Prerequisite

- Ensure that your system is properly installed and cabled.
- Ensure that you are familiar with the **System Menu**. For details on all menus, please refer to chapter “Front Panel Menu orientation”, page 83.

Power up system and check system status

1. Turn on the unit and wait while it initializes. During the initialization process the front panel displays: “Program Loading Please Wait”.

   The **Status** Menu is automatically displayed after initialization is completed.

2. Power up all peripherals, such as display devices (projectors, monitors) and sources.

3. Turn on the PC and run the Event Master Toolset Software.

   The system configuration page is the first page that appears when the Event Master Toolset Software is launched.

4. On the **Status** Menu:
   - **System1** is the default value displayed as System Name if this is the first start of the unit. This name can be changed in the configuration page of the GUI.
   - Ensure the Event Master series processor is connected on the local network. For more information about setting up the Event Master processor to be controlled on a local network, refer to “Communication setup”, page 276.

7.4 Return to factory default

General

Prior to performing any setup procedures, it is recommended that you perform a factory reset — in order to reset all input, output and source mappings to their default values.

Particularly for customers in the events and rental marketplace, this procedure guarantees that any previous input setups and memory registers (e. g., those that may have been programmed by other users) are completely cleared from system memory.

If you are continuing an event (for example, day two of a three-day event), you do not need to perform a factory reset. However, if you do elect to perform a factory reset, ensure that you have backed up your system. for details, please refer to the procedure “Backing up the system”, page 279.

Prerequisite

- Ensure that you are familiar with the **Reset Menu**. For details on all menus, please refer to chapter “Restoring Factory Default Settings”, page 99.

Restoring factory settings

To restore all default settings to the Event Master series processor, use the following procedure:

1. Select **Factory Reset** from the front-panel **Setup** Menu.

   The **Factory Reset** Menu appears.

2. Select **Factory Reset** to reset the entire system to its factory default values. Remember that all data will be lost.

   or

   Select **Factory Reset, Save IP** to reset the entire system to its factory default values, but retains the IP address of the unit.

   A prompt appears, asking if you want to clear all configurations.

3. Press **SEL.**

   The system turns off, then it reboots.

7.5 Communication setup

General

In this procedure, you will set up communication between the Event Master series processor and the local network.

Prerequisite

- Ensure that you are familiar with the **Ethernet Menu**. For details on this menu, please refer to chapter “System menu > Ethernet”, page 93.

Static IP or DHCP?

Use one of the following procedure to:

- turn on the DHCP feature and query the DHCP server to obtain a valid IP address. A DHCP server must be available on the local network.
- or turn off the DHCP feature and set a static IP address for the Event Master series processor, along with a subnet mask and gateway.

Define the Ethernet settings to remotely access is mandatory to control the Event Master series processor via the Event Master Toolset Software or via a web interface. Please contact the manager of the local network (LAN) to know how configuring your device.

Query the DHCP server

1. Select **Ethernet** from the **System** Menu.

   The **Ethernet** Menu appears.

2. Turn On the **DHCP** value.

   The Event Master series processor automatically queries the DHCP server for a valid IP address. If the Event Master series processor receives an IP address, that address is displayed in the Ethernet submenu.

It can take several seconds to obtain an address from the server. During this time, the **SEL** button remains lit.

Setting a static IP Address

1. Select **Ethernet** from the **System** Menu.

   The **Ethernet** Menu appears.

2. Turn Off the **DHCP** value.

3. Select **Set Static IP** from the **Ethernet** Menu.

   The **Set Static IP** Menu appears.

4. Select and set successively the **SUB**(net), **GW** and **IP** fields.

   Note: You must change the **SUB** parameter before editing either of the other parameters.

7.6 Restoring the system

WARNING: Backups from E2 work on E2 and E2 Gen2. Backups from E2 Gen2 are not backward compatible with E2.

This step in the Event Master series processor setup procedure is optional. If no backup file is available, or if you decide to configure your unit from scratch, please move to the next step to continue the procedure.

General

In this procedure, you will restore your system configuration from a USB drive — provided that you previously backed up your system to a USB drive.

Prerequisite

- Ensure that you are familiar with the **USB device (Backup/Restore) Menu**. For details on this menu, please refer to chapter “System menu > USB device (Backup/Restore)”, page 90.

Restore a system configuration file

Use the following steps to restore your system from the USB Drive:

1. Insert a FAT32-formatted flash drive in the unit's front-panel USB port.
2. From the **System** menu, scroll to the **USB Backup/Restore** submenu. Select **Restore** Config.

   The **USB Restore Config** submenu appears.
3. Press **SEL** and scroll through the list of configuration files. When you locate the file you want, press **SEL** again.

   A message confirms the restore operation and instructs you to reboot the Event Master series processor.

You must reboot the system to use the restored configuration file.

At the conclusion of this procedure, your system is completely set up — exactly the way that you left it when you performed a complete system "backup." No further setup operations are required.

7.7 User preference setup

General

This procedure enables you to set a variety of important user preferences and options.

Prerequisite

- Ensure that you are familiar with the **Black Invalid** menu. For details on this menu, please refer to chapter "System menu > Black Invalid", page 89.
- Ensure that you are familiar with the **VFD brightness** menu. For details on this menu, please refer to chapter "System menu > VFD brightness (display brightness)", page 94.

Set a variety of important user preferences

Use the following steps to set user preferences:

1. Select **System** from the **Setup** menu.
2. Select **Black Invalid** from the **System** menu to set Black on Invalid Video on or off.
3. Select **VFD brightness** from the **System** menu to adjust the intensity of the front panel vacuum fluorescent display (VFD) screen, from 1 (dim) to 6 (bright).

7.8 Saving the setup

General

In this procedure, you will save all system setup parameters to non-volatile memory.

Prerequisite

- Ensure that you are familiar with the **Save All** function. For details on this menu, please refer to chapter "Save All", page 100.

Save all system setup parameters

Use the following steps to save all system setup parameters:

1. Select **Save All** from the **Setup** menu.
2. Wait a few seconds. When the parameters are saved you are returned to the **Setup** menu.

7.9 Backing up the system

WARNING: Backups from E2 work on E2 and E2 Gen2. Backups from E2 Gen2 are not backward compatible with E2.

General

In this procedure, you will back up your system configuration to a USB drive.

Prerequisite

- Ensure that you are familiar with the **USB device (Backup/Restore) Menu**. For details on this menu, please refer to chapter “System menu > USB device (Backup/Restore)”, page 90.

Back up a system configuration file

Use the following steps to back up your system to a USB Drive:

1. Insert a FAT32-formatted flash drive in the unit’s front-panel USB port.
2. From the **System** menu, scroll to the **USB Backup/Restore** submenu. Select **Backup** Config.

   The **USB Backup Config** submenu appears. The navigation cursor appears at the default name for the first backup file.
3. If you wish to change the default name of the backup configuration, press **SEL**. Use the **ADJUST** knob to change the name, as described in section “Using menu system”, page 85. Press **SEL** again when you complete the name change.
4. Scroll to **Backup Config** and press **SEL**.

   A confirmation message appears when the backup is complete.

7.10 Configuration Menu > Initial Setup

General

In this procedure, you will run the Event Master Toolset Software (EMTS), verify communication between the Event Master series processor (EMP) and the program to the local network and perform basic setup.

Prerequisite

- Ensure that you are familiar with the **Configuration Menu**. For details on this menu, please refer to chapter “Configuration Menu”, page 109

Setup

1. Connect the PC running the EMTS to the same local network switch that the EMP is connected. Run the EMTS, and the software should discover the EMP automatically. The unit is listed in the System configuration page under the **Discovered** tab with the button on turning yellow.
2. Drag and drop the EMP from the device area into the middle diagram area.
3. If multiple units are connected to the PC, the yellow LEDs next to the system will turn green. You can assign a unique name to each unit. Confirm that you are connected to the right unit by clicking the arrow in front of EMP to reveal the unit’s IP address. Verify that this address is the same as the address listed on the unit’s front panel on the top status menu.

   Note: If the unit doesn’t connect automatically to the PC, you can type the PC’s IP address in the field under “Manual Connect”. A reason for this can be the PC´s firewall settings. Be sure to allow full communication for EMTS and EMP.
4. **(Optional)** Select the EMP´s native vertical refresh rate from the “**System Native Rate:**” drop-down menu. Default value is 59.94Hz.

5. **(Optional)** Select the EMP´s Genlock mode from “**Genlock**” drop-down menu. Default value is Freerun.

7.11 Configuration Menu > Add Background(s)

General

In this procedure, you will assign Backgrounds from the input connector(s).

Prerequisite

- Ensure that you are familiar with the **Configuration Menu**. For details on this menu, please refer to chapter “Configuration Menu”, page 109

If more than one background is utilized, repeat the below steps until all backgrounds are added and adjusted.

Add Background

1. Click on the connector that the background signal is connected to define it as a background. If the background spans into multiple connectors, click on all connector before you proceed. All connectors can be used as backgrounds, connector type and capacity needs to match. Any selected connector will be highlighted blue.
2. Click on the **Background** tab to show the controls that will be used to add and delete Native Background inputs.
3. Click on either the "**Add Single Background**" button or the "**Add Multiple Backgrounds**" button, depending on which action you would like the EMTS to do.

   Use the "**Add Single Background**" button to assign any selected connector(s) to a single background input configuration. Use the "**Add Multiple Backgrounds**" button to add independent backgrounds for each selected connector, individually.

(Optional) Edit the Name

1. Double click on default name in the Name list to edit the name.
2. When the area turns blue, click the **eraser** icon to clear the field.
3. Type a new name.

(Optional) Adjust Background Parameters

Click on the **Adjust** tab that is located on the top. From this menu you can adjust:

1. Select Format value, color space and connector type. Default value is 1920x1080p @ 59.94.
2. Select the background orientation, vertical or horizontal (available for multi-connector Backgrounds only).
3. Select EDID format (for DVI, HDMI and DisplayPort inputs). Select EDID from the drop-down list, then select frame rate from the drop-down list and finally select **Apply**.
4. Apply specific EDID parameters based on a standard EDID. VESA calculator needs to be used.
5. If several connectors should have the same EDID, check the Apply to all Backgrounds checkbox before Apply and Save.
6. Select HDCP mode (for DVI, HDMI and DisplayPort inputs).
7. Select color space, capacity and type (for SDI inputs).
8. Perform color adjustments.
9. Read all timing parameters associated with the selected format.
10. Add information like Passwords for connected computers or Phone numbers to a Specialist.

(Optional) Delete Backgrounds

1. Click on the blue button **Delete Backgrounds**.
2. From the Name list click on the “**x**” space next to the Background(s) you wish to delete. Or click on connectors.
3. Hit the red **Delete Background(s)** button. All selected Backgrounds will be removed from the list.

7.12 Configuration Menu > Add Inputs

General

In this procedure, you will add Inputs to the system. The system must have inputs configured in order for them to be available.

Prerequisite

- Ensure that you are familiar with the **Configuration Menu**. For details on this menu, please refer to chapter “Configuration Menu”, page 109

If more than one Input is required, repeat the below steps until all Inputs are added and adjusted.

Connector Capacity

Each connector has a capacity setting that assigns internal resources to the connector. In order to increase the capacity of an individual connector, you may first have to reduce or disable capacity from other connectors on the same card. For example, if two Dual Link signals are required to be input on an HDMI/DP combo card, the capacity of two of the connectors on that card must to be set to "None." For another example, if on the same card a single input connector is to be used for a 4K resolution input, the capacity of each of the other connectors must be set to "None."

(Optional) Auto add all Input(s)

If the **Auto add all Input (s)** button is pressed, the software configures all previously unassigned input connectors as individual, single link inputs, in order, from top to bottom of each card, starting from left to right.

This button is a shortcut for systems using a large number of single-connector inputs.

(Optional) Auto add live Input(s)

If the **Auto add live Input (s)** button is pressed, the software automatically configures all previously unassigned input connectors for which a valid sync has been detected, and assigns them as individual inputs, in order, from top to bottom of each card, starting from left to right.

This button is a shortcut for systems using a large number of single-connector inputs.

+Add Single Input

This is where you add specific input requirements in order to allow for the configuration of an indivdual input from a single connector or multi-connectors. Typical multi-Connector input examples are Dual Link inputs of 3840x1080, or quad link SDI for UHD, and 4K.

1. Click on the desired input connector(s) in the diagram area to select the input that will be defined. All connectors must be the same type and capacity, and the selection can be one, two, or four connectors, creating a max resolution of 4K.
2. Click on the **+Add Single Input** blue button to create a single input from the selected connectors.

(Optional) Adjust Input Parameters

Select any input from the input list and click on the **Adjust** tab that is located on the top. From this menu you can adjust:

1. Select Format value, color space and connector capacity. Default value is 1920x1080p @ 59.94.
2. Set Connector mapping, Horizontal is Default.

3. Select EDID format (for DVI, HDMI and DisplayPort inputs). Select EDID from the drop-down list, then select frame rate from the drop-down list and finally select Apply.
4. Apply specific EDID parameters based on a standard EDID. VESA calculator needs to be used.
5. If several connectors should have the same EDID, check the Apply to all Backgrounds checkbox before Apply and Save.
6. Select HDCP mode (for DVI, HDMI and DisplayPort inputs).
7. Select color space, capacity and type (for SDI inputs).
8. Perform color adjustments.
9. Read all timing parameters associated with the selected format.

Add Multiple Inputs

Use this feature to select more than one input connector to create an individual input for each connector selected. This is a shortcut, like the "**Auto add...**" buttons, but it is limited to only the selected connectors.

(Optional) Delete Inputs

1. Click on the blue button **Delete Input(s)**.
2. From the Name list click on the "**x**" space next to the Input(s) you wish to delete. Or select connectors.
3. Hit the red **Delete Selected** button. All of the selected Inputs will be removed from the list.

(Optional) Edit the Name

1. Double click on default name in the Name list to edit the name.
2. When the area turns blue, click the **eraser** icon to clear the field.
3. Type a new name.

Note: It is recommended to name inputs based on the actual connection scenario instead of the connected devices function. This is due to several layers of naming that can be done in the system to simplify understanding during operation.

7.13 Configuration Menu > Add Outputs

General

In this procedure, you will add Outputs to the system .

Prerequisite

- Ensure that you are familiar with the **Configuration Menu**. For details on this menu, please refer to chapter "Configuration Menu", page 109

If more than one Output is required, repeat the below steps until all outputs are added and adjusted.

Connector Capacity

Each connector has a capacity setting that assigns internal resources to the connector. In order to increase the capacity of an individual connector, you may first have to reduce, or disable capacity from other connectors on the same card. For example, if two Dual Link signals are required to be output on a HDMI 1.4 output card, the capacity of the two bottom connectors must first be set to "None."

If a connector is to be used to accommodate a 4K signal all other connectors on each card needs to be set to "NONE."

3G-SDI Outputs can only output UHD/4K over a Quad connection.

(Optional) Auto add all Outputs

If the **Auto add all Outputs** button is pressed, the software configures all previously unassigned output connectors as individual, single-connector outputs, in order, from top to bottom of each card, starting from left to right.

This button is a shortcut for systems using a large number of single-connector outputs.

Auto add live Outputs

If the **Auto add live Output(s)** button is pressed, the system adds an output for each of the single connectors, except for SDI, that is connected to an active display device, by reading its EDID and adjusting its connector capacity and output rate accordingly. These outputs are added in order, from top to bottom of each card, starting from left to right.

Add Single Output

This is where you add specific output requirements in order to allow for the configuration of an individual output from a single connector or from multi-connectors. Typical multi-Connector output examples are Dual Link outputs of 3840x1080 or quad link SDI for UHD and 4K

1. Click on the desired output connector(s) in the diagram area to select the outputs that will be defined.

   All connectors must be the same type and capacity, and the selection can be one, two, or four connectors, creating a max resolution of 4K.

2. Click on the **+Add Single Output** blue button to create a single output from the selected connectors.

Add Multiple Outputs

Select more than one output connector and click the **+Add Multiple Outputs** button to create an individual output for each connector selected. This is a shortcut like the **"Auto add..."** buttons but limited to only the selected connectors.

(Optional) Delete Outputs

1. Click on the blue button **Delete Output(s)**.
2. From the Name list click on the “**x**” space next to the Output(s) you wish to delete. Or select the connector.
3. Hit the red button **Delete Output(s)** button. All of the selected Outputs will be removed from the list.

(Optional) Edit the Name

Once all connectors are added they appear in a list directly under the Output Tab. It is recommended to name outputs based on the actual connection scenario instead of the connected devices function. This is due to several layers of naming that can be done in the system to simplify understanding during operation.

1. Double click on default name in the Name list to edit the name.
2. When the area turns blue, click the **eraser** icon to clear the field.
3. Type a new name.

(Optional) Adjust Output Parameters

Click on the **Adjust** tab that is located on the top. The output adjustment panel is divided in three sections (Main, Timing, Connector). In the Adjustment panel you can:

1. [Main tab] Edit the name.
2. [Main tab] Select Format value and Frame Rate.
3. [Main tab] Enable Test Patterns with raster box and enable diagonal motion.
4. [Main tab] Define the Area of interest (AOI).

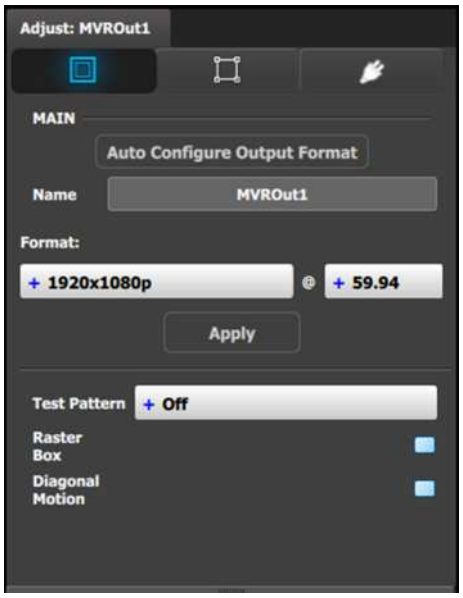


Image 7-1: Adjust MVR panel—Main

5. [Timing tab] Read all timing parameters associated with the selected format and make adjustments.

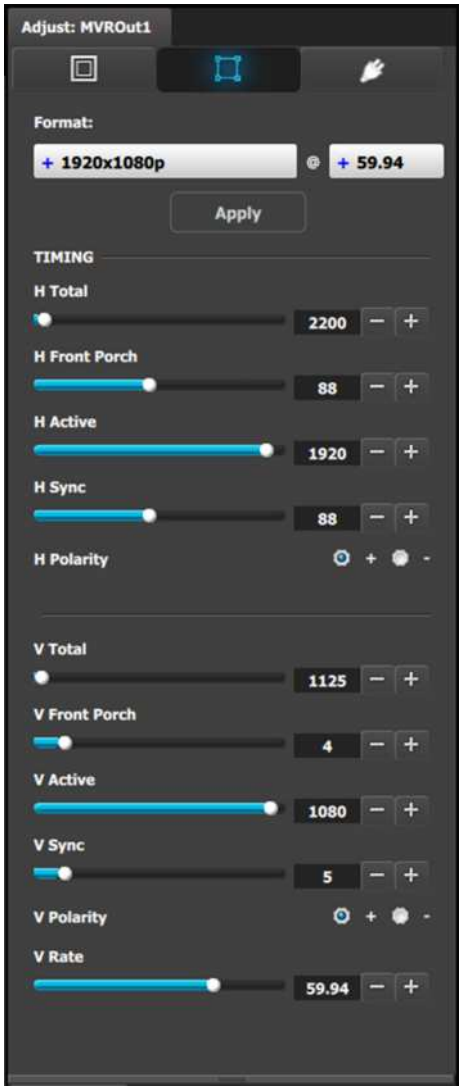


Image 7-2: Adjust MVR panel—Timing

6. [Connector tab] Select SDI type and Sync standards.

7. [Connector tab] Select Color space and Sample bit depth available as reported from the EDID of the Device.
8. [Connector tab] Change Connector capacity as long as the connector is not included in a Destination.
9. [Connector tab] Select HDCP Mode **On** or **Off**.

   The default for all outputs is Off. To turn On the HDCP Mode, click on the empty checkbox. When the checkbox displays a check mark, HDCP Mode is On. HDCP Mode is not applicable to SDI outputs.

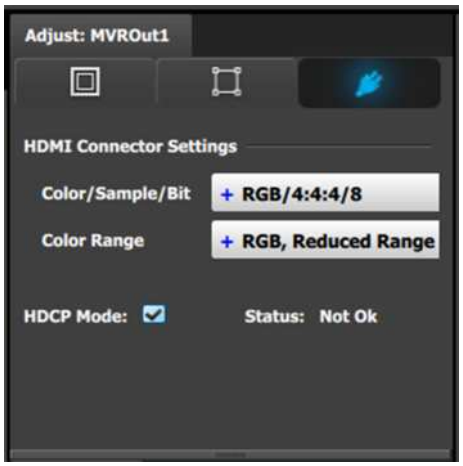


Image 7-3: Adjust MVR panel—Connector

7.14 Configuration Menu > Add Screen Destinations & Layers

General

In this procedure, you will Add Screen Destinations from the defined outputs.

Prerequisite

- Ensure that you are familiar with the **Configuration Menu**. For details on this menu, please refer to chapter “Configuration Menu”, page 109

If more than one Destination is utilized, repeat the below steps until all Destinations are added.

Add Screen Destinations

1. Click on the **Destination** tab to define destinations for the configured outputs.
2. From the diagram area click on the output that you want to be part of the new screen destination.
3. Click on the **+Add Screen Destination** blue button to assign the output to a new screen destination.
4. When the destination is created a green rectangle, with a label at the bottom of it, appears next to the unit diagram.
5. If more than one output is to be assigned to the destination, such as a wide-screen projection blend, drag and drop any additional outputs into the destination rectangle. You will observe that the destination size is automatically updated as new outputs are added to the destination.

An EMP allows only a certain mix of Screen (Program) Destinations and AUX Destinations. All Outputs can be AUX Destinations, or all Outputs can be assigned to Screen Destinations. Screen Destination sizes are determined by the available amount of pixel canvas, not by the number of Outputs assigned to a Screen Destination.

Add Layers to Destinations

With a screen destination selected, click on the **Adjust** tab that is located on the top of the adjustment panel.

1. Under the **Assign** sub-menu scroll down until you see the Layers section.

   There are three radio buttons for layer size (SL, DL, and 4K) and two buttons for layer type (Mix and Single). Chose the combination of radio buttons from the two choices for the layer size and type you wish to add. The default selection is SL Mix Layer.

2. Click on the **+Assign Layer to Destination** blue button.

   Click on this button as many times is required to add the layers you are assigning to the destination. Observe the number of layers indicated in the Layer box is incremented every time the add button is pressed. See also “Configuration Menu > Layer optimization”, page 288.

3. If you need to delete layers, click on the Blue button **Delete layers**.

(Optional) Edit the Name

1. Double click on “Destination1” in the Name list to edit the name.
2. When the area turns blue, click the eraser icon to clear the field.
3. Type a new name and press the **Enter** key when done.

(Optional) Adjust Destination Parameters

Click on the “Adjust” tab that is located on the top. In this Tab there are three sub tabs: Assign, Output and Wide (See below).

(Optional) Adjust Destination Parameters part 1 > Assign Tab

From this menu you can:

1. Edit the name.
2. Set the dimensions if more than one connector.
3. Use the Auto Configure Output Format function that reads the EDID of the connected device and will produce a signal like that if still within the rules of VESA timings.
4. Delete outputs (remove output(s) from the destination).
5. Assign or Delete Layers.

(Optional) Adjust Destination Parameters part 2 > Output Tab

From this menu you can:

1. See the output canvas (raster) size.
2. See in what order and place the outputs populate the Destination.
3. Select outputs for manipulation.
4. Choose more actions in sub tabs:

- Position:
  - Enable Test Patterns with raster box and enable diagonal motion
  - Define the Area of interest (AOI).
- Color:
  - Perform color adjustments.

- Timing:
  - Read the timing parameters associated with the selected format.
- Connector Settings:
  - Select Color/Sample/Bit depth, colorimetry, etc.

(Optional) Adjust Destination Parameters part 3 > Wide Tab

From this menu you choose between the two sub tabs:

- **Datadouble**,
  where you can adjust data Doubling parameters based on the selection done in the window below.

Image 7-4

- **Feathering**,
  where you can:
  - adjust feathering parameters based on the selection in the window below.
  - turn Feather on or off per selection.

Image 7-5

(Optional) Delete Destinations

1. Click on the blue button **Delete Destination(s)**.
2. From the Name list click on the "**x**" space next to the output(s) you wish to delete.
3. Hit the red button. All of the selected Destination(s) will be removed from the list.

7.15 Configuration Menu > Layer optimization

General

In this procedure, the usage of Layers inside the EMP will be elaborated.

Prerequisite

- Ensure that you are familiar with the **Configuration Menu**. For details on this menu, please refer to "Configuration Menu", page 109, as well as to "Configuration Menu > Add Screen Destinations & Layers", page 285.

Layers in an Event Master Processor

In the system there are banks of Video Processing Units, VPUs. These VPUs service the total screen destination's raster with layer resources.

The VPUs have a bandwidth setting that allow for a certain size of Resolution to enter the VPU and get scaled. Currently we have SL / DL and 4K as settings allowing for resolutions such as 2048 x 1200 / 2560 x 1600 / 4096 x 2400 respectively.

The higher the resolution, the higher the bandwidth of the input and output of the scaler, or as we call it, number of Links. (This can be found in the Aux Scaling settings too, where the highest setting is 8L, allowing for 8 Links of 2K resolution).

Here is an important difference from other systems, an EMP only scales the number of available layers based on the inputs size, not the output size as long we are inside a maximum of a 4K or 10MP output. Once passed the 10MP (MegaPixel), resources have to be added.

7.16 Configuration Menu > Add Aux Destinations

General

In this procedure, you will Add Aux Destinations from the defined outputs.

Prerequisite

- Ensure that you are familiar with the **Configuration Menu**. For details on this menu, please refer to chapter “Configuration Menu”, page 109

If more than one Aux Destination is utilized, repeat the below steps until all Destinations are added.

Add Aux Destinations

1. From the diagram area click on the output that you want to use for the auxiliary destination.
2. Click on the **Destination** tab to define auxiliary destinations for the configured outputs.
3. Click on the **+Add Aux Destination** blue button to assign the output to the Aux destination.
4. When the destination is created a green rectangle appears next to the EMP diagram.

(Optional) Edit the Name

1. Double click on “Destination1” in the Name list to edit the name.
2. When the area turns blue, click the eraser icon to clear the field.
3. Type a new name and hit enter when done.

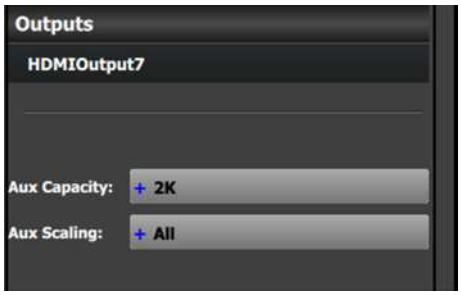
(Optional) Adjust Destination Parameters

Click on the “Adjust” tab that is located on the top. In this Tab there are three sub tabs: Assign, Output and Wide (See below).

(Optional) Adjust Destination Parameters part 1 > Assign Tab

From this menu you can:

1. Edit the name.
2. Delete outputs (remove the output assignment from the Aux destination).
3. Select the Auxiliary Capacity:



Aux Capacity defines how much resolution, or actual LINKs of data can be input into the scaler. The default setting is "2K" or single link, which refers to the limit of how much signal bandwidth can be input into the auxiliary scaler. The other three choices are: DL (Dual Link), 4K (four links worth of signal bandwidth) and 8L (eight links worth of signal bandwidth). 8L refers to eight Links of 2K data.

Each of the settings will allow for different size input / still and destination sources from the Input Resource tab covered in the Programming Section below.

Some examples of the scaling capacity limitations include:

- 2K = Up to 2048×1080p60 or WUXGA (1920×1200p60)
- DL = Up to 2560×1600p60 or 3840×1200p60
- 4K = UHD (3840×2160p60), 4K-DCI (4096×2160p60) or 7680×1200p60
- 8L = 8192×2160p60 or 16384x1080p60.

These examples are capable for backgrounds and screen destinations.

4. Select the Aux Scaling:

Aux Scaling defines how the input image is scaled/displayed inside the auxiliary destination. The default setting is "All." The other two choices are "Center Cut" or "Custom."

- **All** scales the entire image to fit within the horizontal and vertical resolution of the Aux destination's output. If the image has an aspect ratio that differs from that of the Aux destination, the image will appear either letter-boxed (black bars at the top and bottom of the image) or pillar-boxed (black bars at the left and right of the image).
- **Center Cut**, if the input image aspect ratio differs from that of the Aux destination, scales the center portion of that image to fit within the horizontal and vertical resolution of the destination's output. If the input image has the same aspect ratio as the Aux destination, the entire image is scaled to fit the vertical and horizontal resolution of the destination, showing the entire image.
- **Custom** scales the input image as if it is inside a "single" (non-mixing) layer. The window size and position, source size (zoom), and edge masking of the image can all be adjusted in this mode.

(Optional) Adjust Destination Parameters part 2 > Output Tab

From this menu you can:

1. See the output canvas (raster) size used for the Aux.
2. Choose more actions in sub tabs:

- Position:
  - Enable Test Patterns with raster box and enable diagonal motion
  - Define the Area of interest (AOI).
- Color:
  - Perform color adjustments.
- Timing:
  - Read the timing parameters associated with the selected format.
- Connector Settings:
  - Select SDI type and SMPTE standards.
  - Select Color/Sample/Bit, Color Space, Colorimetry, and Gamma Fx settings.
  - Turn HDCP mode On/Off (not applicable for SDI).
  - Adjust the Connector Mapping from Horizontal to Vertical or Grid.

(Optional) Adjust Destination Parameters part 3 > Wide Tab

No wide-screen adjustments are available for Aux Destinations.

(Optional) Delete Destinations

1. Click on the blue button **Delete Destination(s)**.
2. From the Name list click on the "**x**" space next to the output(s) you wish to delete. Or select the box to the right of the EMP representation in the workspace.
3. Hit the red button. All of the selected Destination(s) will be removed from the list.

7.17 Configuration Menu > MVR Outputs

General

In this procedure, you can adjust the MVR outputs of the system.

Prerequisite

- Ensure that you are familiar with the **Configuration Menu**. For details on this menu, please refer to chapter "Configuration Menu", page 109

Adjust MVR Output

1. Click on the **MVR** tab to select the outputs that will be adjusted.

   Note: The MVR outputs have a Unit ID, which in linked chassis systems helps to identify the particular unit in the system on which MVR outputs are physically located.

(Optional) Edit the Name

1. Double click on default name in the Name list to edit the name.
2. When the area turns blue, click the eraser icon to clear the field.
3. Type a new name and hit enter when done.

(Optional) Adjust Output Parameters

Select one of the MVR outputs and click on the **Adjust** tab that is located on the top. The output adjustment panel is divided in three sections (Main, Timing, Connector). In the Adjustment panel you can:

1. [Main tab] Auto Configure Output Format function is not available for MVR at this time.
2. [Main tab] Edit the name.
3. [Main tab] Select Format value and Frame Rate.
4. [Main tab] Enable Test Patterns with raster box and enable diagonal motion.
5. [Timing tab] Read all timing parameters associated with the selected format and make adjustments. Adjustments are limited to the formats that can be pre-selected.
6. [Connector tab] Select Color space and Sample bit depth available as reported from the EDID of the Device.
7. [Connector tab] Select HDCP Mode for Multiviewer outputs.

   The default for HDCP Mode is Off. To turn On the HDCP Mode, click on the empty HDCP Mode checkbox. When the checkbox displays a check mark, HDCP Mode is On. HDCP Mode is not applicable to SDI outputs.

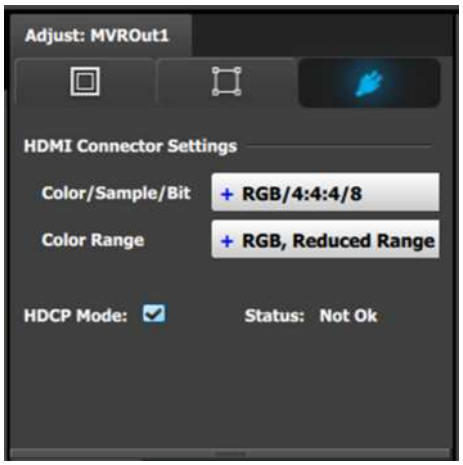


Image 7-6: Adjust tab: Connector Settings subtab

Only a few formats are available for the MVR Outputs as it is not a Program Output

Any Aux destination with a frame rate that is different from the System Native Rate will not be available to add to the MVR output. More details on this topic in the Help File in your Event Master Processor.

7.18 Programming Menu > Capture Stillstore from Inputs & Backgrounds

General

In this procedure, you will capture the inputs or background inputs as a Stillstored image.

Prerequisite

- Ensure that you are familiar with the **Programming Menu**. For details on this menu, please refer to chapter “Programming Menu”, page 196.

Captured Stills are used as thumbnails in general in the interface once they are used in a layer or destination.

Capture Stillstore (Stills)

1. Click on the Inputs subtab under the Input tab, or click on the Background subtab under the Native Background tab at the top of the Resource pane.
2. Click on the Camera icon.

Image 7-7

The icon momentarily changes to a grayed out version with a red "x" above a frame from which the input signal is captured into non-volatile memory.

3. When the icon reverts back, the Still Store is now available in the Stills tab of the Input Resource tab.

Capacities and limitations

As a reference 100 still stores of 2K resolution can be stored, if the size of the still is bigger, the memory allocation increases allowing for less number of stills. Image can be imported as described in the Operation Section below.

Still Stores can be used in Backgrounds and Layers.

7.19 Programming Menu > Select Thumbnails for Native Backgrounds

General

In this procedure, you will add select thumbnails for the Background Sources.

Prerequisite

- Ensure that you are familiar with the **Programming Menu**. For details on this menu, please refer to chapter “Programming Menu”, page 196.

(Optional) Update thumbnails from the PC memory

1. Click on the **Native Background** tab on the top of the Resource pane.
2. Click on the thumbnail icon.

Image 7-8

3. Click in the black box next to input name.
4. Navigate the computer’s file system to find and select the desired image file to be used.

Characteristics and limitations

Images need to be JPG, PNG, or BMP format.

(Optional) Update thumbnails from the input connector(s)

1. Click on the Native Background tab at the top of the Resource pane.
2. To add a thumbnail from the input(s)to all currently defined Native Backgrounds click the blue Refresh All button that is above the list of Background names. To add a thumbnail to individual Backgrounds, click the "Refresh Thumbnail" icon, which looks like two arrows forming a circle, located below the name of the input in question.

The system will take a few moments to add the thumbnail image(s) into the GUI.

7.20 Programming Menu > Select Thumbnails for Inputs

General

In this procedure, you will add select thumbnails for the Input sources.

Prerequisite

- Ensure that you are familiar with the **Programming Menu**. For details on this menu, please refer to “Programming Menu”, page 196.

(Optional) Update thumbnails from the PC memory

1. Click on the **Input** tab on the top of the Resource pane.
2. Click on the thumbnail icon.

Image 7-9

3. Click in the black box next to input name.
4. Navigate the computer's file system to find and select the desired image file to be used.

Characteristics and limitations

Images need to be JPG, PNG, or BMP format.

7.21 Programming Menu > Create Sources from Inputs

General

In this procedure, you will create new source files from an input's original source file.

Prerequisite

- Ensure that you are familiar with the **Programming Menu**. For details on this menu, please refer to chapter "Programming Menu", page 196.

When an Input is created, the software copies the Input to a source. More sources can be created by following the steps below.

(Optional) Create additional sources

1. Click on the "**Input**" tab on the top of the Resource pane.
2. Click on the List icon.

Image 7-10

3. Click on the arrow next the Input name.
4. To copy the raw original source file click on the **PLUS** icon at the right side of the name.
5. To copy the source click on the copy icon. This creates a copy of the Source including changes made and saved.

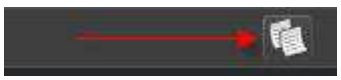


Image 7-11

(Optional) Rename the Source name

1. Click on the "**Input**" tab on the top of the Resource pane.
2. Click on the List icon.
3. Click on the arrow next the Input name.
4. Double-Click on the Source name that you wish to rename.

5. Type the new name in the blue box.

7.22 Programming Menu > Drop backgrounds into Screen Destinations

General

In this procedure, you will drop backgrounds into Screen Destinations.

Prerequisite

- Ensure that you are familiar with the **Programming Menu**. For details on this menu, please refer to chapter “Programming Menu”, page 196.

Drop Backgrounds

1. Click on the “**Native Background**” tab on the top of the Resource pane.
2. Click on either the thumbnail or list icon.

Image 7-12

3. Hover the mouse cursor over the desired Native Background input, then drag-and-drop the resource onto the desired Screen Destination.

7.23 Programming Menu > Drop Sources, Layers into Screen Destinations & Sources into layers

General

In this procedure, you will drop sources and Layers into Screen Destinations & Sources into layers.

Prerequisite

- Ensure that you are familiar with the **Programming Menu**. For details on this menu, please refer to chapter “Programming Menu”, page 196.

Drop Sources into Screen Destinations

1. Select the "Input" tab at the top left of the Resource pane, and choose from the available Source types:
   1. Inputs
   2. Stills
   3. Destinations
   4. Scaled BG
2. Drag and drop any of the available resources into a Destination.

   When dragging and dropping a PNG with a transparency onto a Key type Layer already set to Cut + FIll:
   1. Drag the PNG to a Layer in a Destination.
   2. Select the "Both" option in the Cut + Fill prompt.
      The system detects the transparency as the "Cut" signal and the non-transparent portion of the image as the "Fill" input.

Input Sources work only with Layers and Auxes, and Native Background Sources work only for Backgrounds.

Advanced Layer management in Screen Destinations

1. From the top of the layout area click on the screen destination that you wish to add layers into.
2. On the right hand side click on the Layers tab.
3. Click on the arrow next to the Destination name to reveal all the layers and background that were assigned to the destination.
4. Drag Layer1 into the preview screen. A black square box will appear.
5. Select the layer (black box) and then click on the **Adjust** tab on the top.
6. Select the "**Window Adjustment**" Icon and then unlock the aspect ratio lock by clicking in the **lock** icon.
7. Adjust the sizing parameters according to the size and position you want the layer to assume.

As the layer menu allow to hide and show the layer representation in the workspace it is an effective way to select layers if they are hidden or outside of the workspace.

(Optional) Adjust Layer Parameters

With a Layer selected, click on the Adjust tab that is located on the top right. All layer related adjustments can be reached here.

1. Select the layers type, PIP (Standard) or KEY
2. Add Keyframes (See below).
3. Set the keyframe motion rate for the layer. 30 is standard and is in frames based on the Native Frame rate.

(Optional) Adjust Layer Parameters > Main submenu

With the Layer Main submenu you can:

1. Set border to any of the available versions, including Off.
2. Manipulate the border Width and Color.
3. Enable the Shadow and adjust its Sizing and Color parameters.

(Optional) Adjust Layer Parameters > Window Adjustment submenu

With the Window Adjustment submenu you can:

1. Adjust the size of the layer either with direct numerical entry, slider or + and – actions
2. Adjust Mask of the layer. This is used to crop the edges of the layer.

(Optional) Adjust Layer Parameters > Layer Effects submenu

With the Layer Effects submenu you can:

1. Adjust the opacity setting of the layer. (The default is 100%.)
2. Activate and Adjust Strobe effect for the layer.
3. Activate and Adjust Flip effect for the layer.
4. Activate Freeze effect for the layer. This also have a shortcut in the bottom of the workspace.
5. Activate and Adjust Color Effects for the layer.
6. Activate Monochrome effect for the layer.
7. Activate Invert effect for the layer.

If the Layers are supposed to toggle between Preview and Program, click the Toggle button in the Layer Modification panel at the bottom of the window.

A source can be dropped into the Program of an Aux if the Program is Un-Locked. Un-lock the Program by clicking on the small white lock in the bottom of the Destination.

(Optional) Key Frames

Click on the **Adjust** tab that is located on the top.

1. Select the layer you want to create the Key Frame.
2. Place the layer at the initial position and size.
3. Click the Blue “**Add KF**” button to create a new keyframe.
4. Move the layer to the end position and size.
5. Click the green button with the left-facing arrow to move the layer back to the start position.

Now the END state is saved only. The layer can move between the two states by clicking on the green arrows. To execute the effect you now select the button ARM in the bottom of the workspace.

Keyframe will move the layer from the layers current position in Program to the Keyframed END position. This allows re-using keyframe moves and other effects from ANY Preset as long as they are on the right layer.

Now you are ready to execute the presets and transition the composed look from Preview onto Program. Remember to select the corresponding destinations when you use the All Trans button.

7.24 Programming Menu > Drop Inputs to Aux Destinations

General

In this procedure, you will drop Inputs into Aux Destinations.

Prerequisite

- Ensure that you are familiar with the **Programming Menu**. For details on this menu, please refer to chapter “Programming Menu”, page 196.

Drop Inputs to Aux Destinations

1. Make sure the Aux Destination is visible in the workspace by selecting the proper layout or view.
2. Click on the Inputs tab on the left-hand side of the Resource pane.
3. Drag any Input Source into the preview screen of the Aux destination.

(Optional) Additional Adjustments

1. If the Aux is supposed to toggle between Preview and Program, click the Toggle button in the top of the Destinations Preview
2. A source can be dropped into the Program of an Aux if the Program is Un-Locked. Un-lock the Program by clicking on the small white lock in the bottom of the Destination.

7.25 Programming Menu > Presets And User Keys

General

In this procedure, you will drop sources and Layers into Screen Destinations & Sources into layers.

Prerequisite

- Ensure that you are familiar with the **Programming Menu**. For details on this menu, please refer to chapter “Programming Menu”, page 196.

(Optional) User Keys

Select a layer on Preview and make any adjustments to the layer's parameters (size, position, border, etc.), using the Adjust tab's settings, then create a user key.

1. Click on the User Keys tab.
2. To create a user key, from the selected layer, use the check boxes to enable/disable the layer parameters to be saved in the User Key: Type, transition, Effects, Border, Shadow, Key, Position, Size, Source and Mask. All or None can be selected with the checkbox.
3. Click on the **Save to new User Key** button.
4. If desired, double-click on the User Key name to edit the name.
5. If desired, double-click on the Number to edit the number. It can be any number with ### format up to 300.
6. You can overwrite the same user key by clicking on the name box and then select the **Overwrite User Key** Button.
7. All of the User Keys are sequentially numbered. A specific User Key can be found by typing the number in the first gray box next to “#”. Immediately the respective preset will be highlighted and ready for further actions.
8. The box with the magnifying lens icon allows for a text string search. For example by typing “4by3”, it will return all User Keys with the “4by3” part of its name.
9. User Keys can be applied to layers in a drag and drop fashion.
10. If there are several layers selected they can all get the same User Key applied by using the Apply Selected (User Key) Button in the bottom of the List.

(Optional) Presets tab

1. Click on the Presets tab.
   Before creating a Preset…
   1. Select the desired creation option from the Creation Option drop-down list.
   2. Show or hide Layers or Backgrounds as desired for Relative Presets.
2. To create a new preset first click on the Save From PVW button or Save From PGM button. It will save the selected Destinations Preview set up or Program Respectively.
3. If desired, click on the Preset name to edit the name.
4. You can overwrite the same Preset by clicking on the name box and then select the Overwrite From PVW or Overwrite From PGM button. It will save the selected Destinations Preview set up or Program Respectively.
5. Any Preset can be deleted by first clicking on the Delete Preset(s) blue button.

   Then select the Presets desired to be deleted and click on the red Delete Selected button.
6. Presets can be re-ordered via the Enable Reorder button.

   When enabled, this button allows the user to reorder the list by dragging and dropping the Presets to new positions in the list. Click the red Disable Reorder button to exit the reorder mode.
7. You can execute presets and navigate through the stored presets by clicking one of the three buttons at the bottom in this section:

   Recall Previous, Recall Current, and Recall Next.

   Presets can also be applied to Preview in a drag-and-drop fashion.
8. Click on the blue "Preset To PVW" button at the bottom of the Presets tab to alter the function of the recall to recall a Preset to Program.

   The button becomes a red "Preset to PGM" button.

To alter the function of the recall to recall a Preset to Preview, click on the red "Preset to PGM" button, and the button becomes a blue "Preset to PVW" button.

9. All of the presets are sequentially numbered. A specific preset can be found by typing the number in the first black box next to “#”. Immediately the respective preset will be highlighted.
10. The box with the magnifying lens icon allows for a text string search. For example by typing “Cam”, it will return all presets with the characters “Cam” part of its name.
11. Presets can be locked from accidental deletion by activating the small blue lock to the right in the name area of each preset.
12. Any preset can be re-numbered in the format of ###.## but a maximum of 1000 presets is possible.

7.26 Programming Menu > Destination Transition

General

Any selection of Destinations or Destination Groups can be transitioned. It is done by selecting the Destinations name tab in the top of the Preview area of the workspace. This selection is also recorded into Presets and recalled with them.

Procedure

1. Select the Screen Destination(s) you would to transition from Preview to Program.
2. Click either the "**All Trans**" or "**Cut**" button, in the Destination Transition area at the bottom of the Adjustment pane, to transition all selected destinations from Preview to Program.

Note: The Destination transition dissolve can follow different curves in order to better match camera brightness or after preference. The default is S-Curve.

Note: The time of the Transition is set in frames of the Native Frame rate and is recorded in Presets.

Note: The time per destination CAN be set, but only one destination at a time.

7.27 Multiviewer Menu > Drop Inputs, Backgrounds and Destinations

General

In this procedure, you will setup the Multiviewer layout(s) to the MVR monitors.

Prerequisite

- Ensure that you are familiar with the **Multiviewer Menu**. For details on this menu, please refer to chapter “Multiviewer (MVR) Menu”, page 245.

Drop Inputs, Backgrounds and Destinations into Multiviewer windows

We will setup the top window to display all the inputs and the bottom window to display the Program and preview screens.

1. Click on the Multiviewer icon on the left hand side of the screen.
2. Click on the top tab that is labeled “Input” and drag the desired inputs to view into the multiviewer window .
3. Click on the top tab that is labeled “Background” and drag the desired backgrounds to the multiviewer window.
4. Click on the top tab that is labeled “Destination.”

For each destination that is to be added to the Multiviewer, click the triangle at the left of the destination's name to view its Program and Preview (if available) space. Click and drag the desired Program or Preview to the multiviewer window.

(Optional) Color Adjustments

Click on the **Adjust** tab that is located on the top.

1. For each or multiple multiviewer windows you can perform color adjustments for the borders, UMD and multiviewer background .

(Optional) Auto Layout Input

All of the inputs available to the unit's multiviewer may be automatically added to a multiviewer layout.

1. Click on one of the tabs at the top of the workspace to bring it into full view.
2. Click on the **Auto Layout Input** button that is located at the bottom of the display area. All of the available Inputs and Backgrounds will appear lined up at the top of the window.

(Optional) Auto Layout Destination

All of the destinations' preview and program spaces that are available to the multiviewer may be automatically added to a multiviewer layout.

1. Click on one of the tabs at the workspace to bring it into full view.
2. Click on the **Auto Layout Dest** button that is located at the bottom of the display area.

   All of their windows will appear lined up at the top of the window.

8 Updating firmware

8.1 Upgrading firmware using the USB port 302

About this chapter

This chapter provides a detailed procedure for upgrading Event Master series processor software (firmware).

The Event Master series processor provides an option for upgrading firmware using the USB port on the front panel.

Another solution is available to upgrade the Event Master series processor with the built-in web interface. For details on the upgrade procedure via the Setting Menu in the Event Master Toolset Software (EM GUI), please refer to chapter “Settings Menu > Web App area > Tools > Manage Software”, page 264

In the event the Event Master series processor gets into a state in which it constantly reboots after a software upgrade, press and hold the **SEL** and **ESC** keys simultaneously until the front panel shows the choice of performing a factory reset or continuing. Performing a factory reset will allow the Event Master series processor to boot normally.

8.1 Upgrading firmware using the USB port

Necessary tools

USB drive (Not supplied by Barco) formatted in FAT32.

How to upgrade the firmware

1. Ensure that your flash drive is formatted to use the FAT32 file system. If necessary, reformat the drive as described in the following section “Formatting the flash drive”.
2. Prepare the flash drive with the upgrade file as describe below in the section “Preparing the flash drive with the upgrade file”

   Note: Upgrading software with the USB port requires the “em_update_vp.xx.xx.tar.gz” file to be within a directory named EM.

3. When the drive is ready, refer to the chapter “Performing the firmware upgrade using the USB” describe below for the upgrade procedure.

CAUTION: Reformatting the flash drive erases existing data. To avoid losing data, download any files that you wish to keep to a computer or a secure site, then format the drive.

Formatting the flash drive

1. Insert the flash drive into a Windows PC or laptop’s USB port.
2. Select a Windows Explorer or a panel allowing an overview on the disk drives and the hardware connected to your computer (e.g. **Start > Computer** on Windows 7 or **Start > My Computer** on Windows XP).
3. On this view, right-click the drive that represents the flash drive.
4. Select **Format** from the menu that appears.

   The Format Disk screen appears.

Image 8-1: Format Disk screen

5. Select **FAT32** as the file system, and **Quick Format** under **Format Options**, as shown above in the Format Disk screen illustration.
6. Click **Start**.

   A message appears, warning that data will be erased during the formatting process.

7. Click **OK** to continue.

   A confirmation message appears after a few seconds. The flash drive is now ready to use

Upgrading software with the USB port requires the “em_update_vp.xx.xx.tar.gz” file to be within a directory named EM.

Preparing the flash drive with the upgrade file.

1. Download the software upgrade for free from Barco’s website (URL: http://www.barco.com). Click on **myBarco** and login to get access to secured information. Registration is necessary.

   Note: If you are not yet registered, click on **New to myBarco** and follow the instructions. With the created login and password, it is possible to login where you can download the Event Master series processor software. It is not necessary to install any other software.

2. Unzip the downloaded software upgrade package to the USB drive. This operation automatically creates an EM folder on the USB drive with the firmware file (em_update_vp.xx.xx.tar.gz) inside it.

Performing the firmware upgrade using the USB

1. Insert the flash drive into the unit’s USB port.
2. Select **Firmware Upgrade** from the Setup Menu. The **Firmware Upgrade** submenu appears.

Image 8-2

3. Select **USB Firmware Upgrade**. The menu shown in the following illustration appears.

Image 8-3

4. Scroll to the file you want to use, and press **SEL**.
5. Scroll to Upgrade and press **SEL** again.

   A progress message appears.
6. When the file is loaded, the unit powers down and reboots.

CAUTION: Do not remove the flash drive or power down the Event Master series processor until the firmware file is uploaded.

General operation example

9

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About this chapter

The application below is presented to demonstrate the basic E2 operation. The example provides the user a step-by-step setup and operation instructions in order to meet some specific event requirements.

9.1 Event requirements

Description

Inputs for the event are provided from a Windows PC, two AJA KiPROs file recorders, an Apple Macbook and two video cameras.

Several outputs are required as follows:

- Two program outputs for the projectors dedicated to the Main screen. Two PIPs are displayed that are equal in size and are side-by-side. Two looks are desired:
  - One look displays the two video clips simultaneously from the KiPROs.
  - The other look shows the PowerPoint and the stage camera.
  - Background will be provided from a PC dual-head card.
- Single Screen Site Screen: Displays the videos from two KiPROS and two cameras. The images are always full screen and transition on screen at 0.5 sec.
- A DSM monitor is required for camera adjustments.
- Two 2 monitors for multi-viewing.

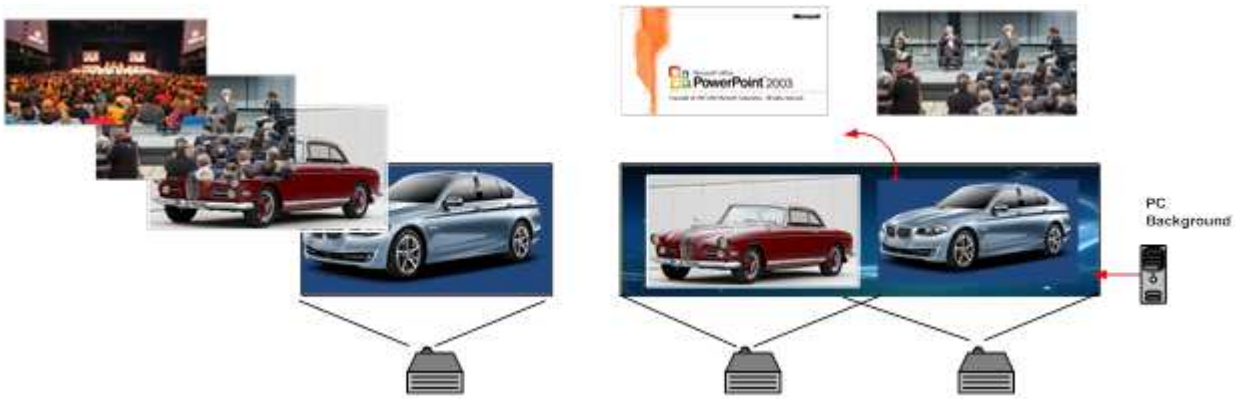

Image 9-1

9.2 Preliminary

Application Diagram

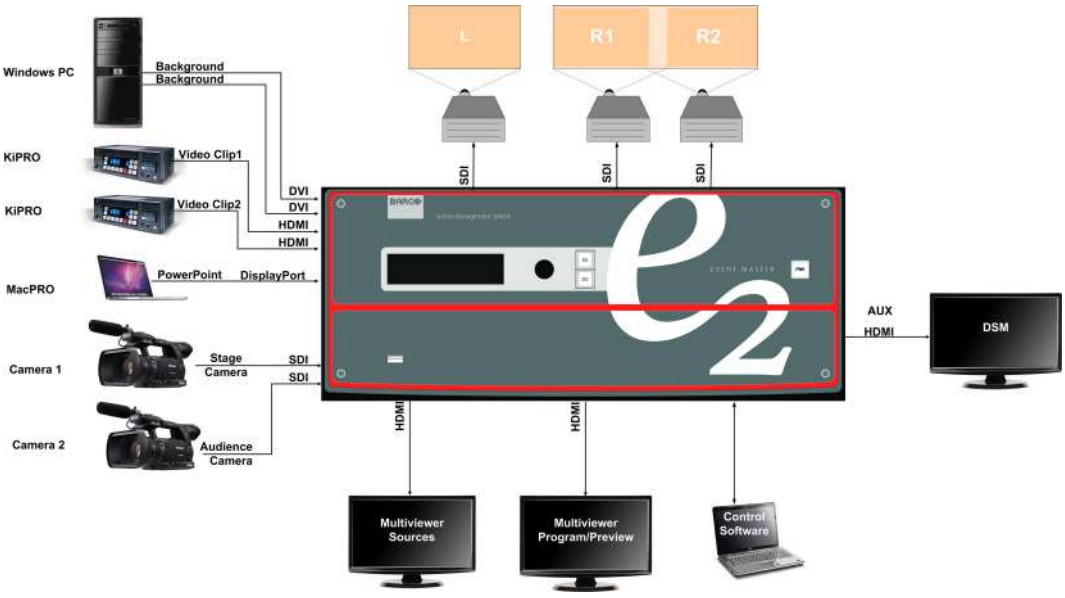

Image 9-2

wiring

Connect the input and output devices to the E2 as follows:

Signal Type	Device Name	Content	Connector Type	Slot-Connectors
Input	CAM1	Audience camera	3G-SDI	4-1
Input	CAM2	Stage Camera	3G-SDI	4–3
Input	PC	Background	DVI	6–1
Input	PC	Background	DVI	6–2
Input	KiPRO1	Video Clip1	HDMI	8–3
Input	KiPRO2	Video Clip2	HDMI	9–3
Input	MacPRO	Power Point	DisplayPort	10–1
Output (AUX)	DSM	DSM for PowerPoint	HDMI	11–1
Output	Proj-L	Projector Left Screen	SDI	13–1
Output	Proj-R1	Projector Right Screen 1	SDI	13–3
Output	Proj-R2	Projector Right Screen 2	SDI	13–4
Multiviewer	MVR1	Program/ Preview Monitor	HDMI	14–1
Multiviewer	MVR1	Input Sources Monitor	HDMI	14–3

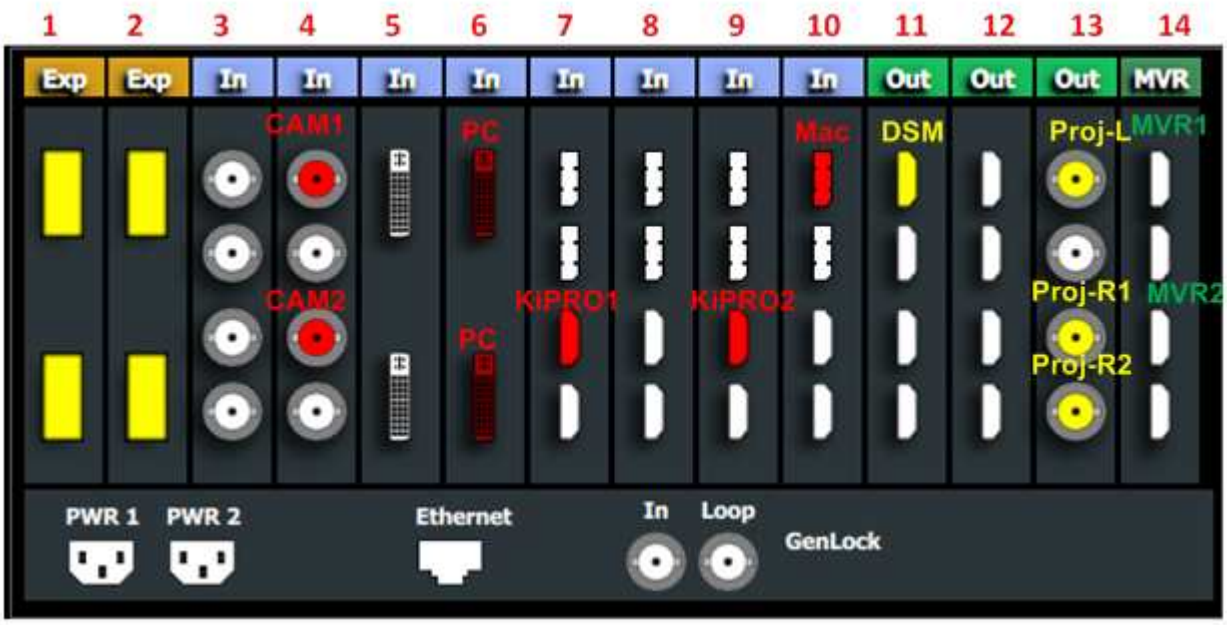

Image 9-3

9.3 Control Software Operation

Overview

In this section we will use the control software (Event Master Toolset Software) to setup the E2 and create presets and user keys to be used during the event. We will follow the steps sequentially outlined in diagram bellow.

Workflow Diagram

This diagram shows all the steps necessary to setup the system.

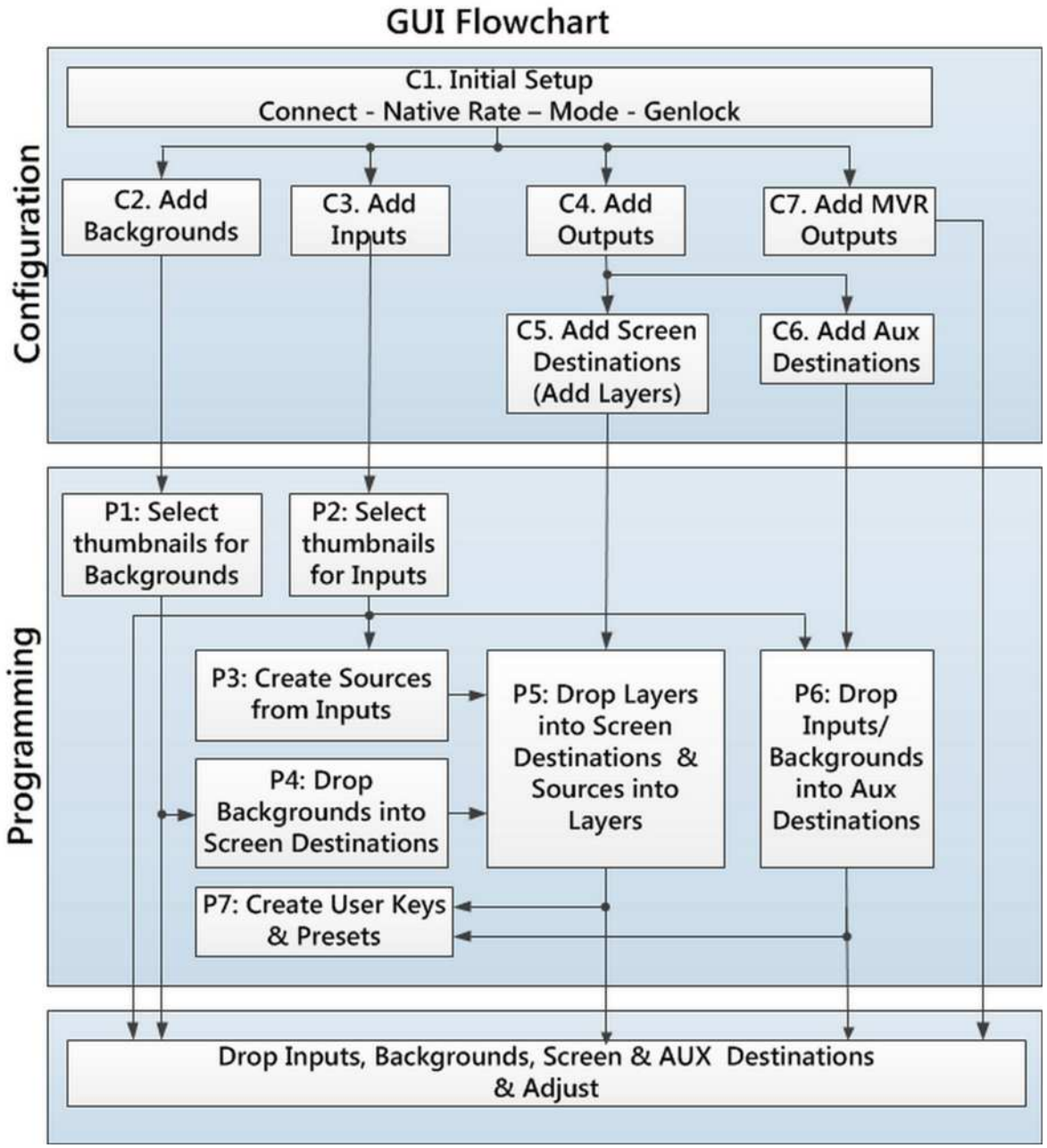

Image 9-4

Set up from A to Z

As outlined in the previous chapter the control software is divided in 3 parts:

1. **Configuration Menu**. In this section users define the system components like inputs, backgrounds, outputs and destinations. See the detailed procedure in section“Configuration Menu”, page 309.
2. **Programming Menu**. In this page users create sources from inputs, drop layers and backgrounds into screens and create User keys and presets. See the detailed procedure in section “Programming Menu”, page 313.
3. **Multiviewer (MVR) Menu** is the module used to setup the Multiviewer outputs (on one or more monitors). See the detailed procedure in section “Multiviewer (MVR) Menu”, page 324.

9.4 Configuration Menu

Overview

Here, we define system components by adding inputs, backgrounds, outputs and destinations.

C1: Initial Setup

1. When you connect to an actual unit, instead of working offline, the software should connect automatically. The unit is listed in the System configuration page under the “Discovered” tab with the button on turning green.
2. Drop the E2 from the device area into the middle diagram area.
3. If multiple units are connected to the PC, the green LEDs next to the system name will turn green. You can assign a unique name to each unit. In this application we will connect to only one unit and assign the name “Godzilla” to it. For online operations, you can confirm that you are connected to the right unit by clicking the arrow in front of E2 to reveal the unit’s IP address. Verify that this address is the same as the address listed on the unit’s front panel on the top status menu

Image 9-5

Note: If the unit doesn’t connect automatically to the PC, you can type the PC’s IP address in the field under “Manual Connect”.

4. For this application we will leave the default setting for …
   - Canvas Mode: PGM and PVW
   - Preset Conflict Mode: Auto
   - System Native Rate: 59.94
   - Genlock: Freerun

C2: Add Background

1. Click on the top DVI connector of slot 6 to select the input to define as background.
2. Click on the bottom DVI connector of slot 6 to select the input to define as background.

   We need to do this twice because the background comes from a dual-head DVI card. Both DVI Connectors on the card will now be selected.
3. Click on the “Background” tab in the Adjustment pane to make it active.
4. Double click on the **+Add Single Background** button to bind both connectors to a single background input configuration.
5. Double-click on **DVIBackground1** in the Name list to edit the name.
6. When the area turns blue, click the eraser icon to clear the field.

7. Type a new name, “PC-Background”. Press enter when done.

Image 9-6

In this application only one background is required, but in applications where more than one background is required, repeat the appropriate steps above until done.

C3: Add Input

1. Click on the first SDI connector of slot 4 to be defined as the camera 1 input.
2. Click on the “**Input**” tab in the Adjustment pane to make the Input tab active.
3. Click on the **+Add Single Input** button to add that connector as an input for the system.
4. Double click on **SDIInput2** in the Name list to edit the name.
5. When the area turns blue, click the eraser icon to clear the field.
6. Type a new name: “CAM1-Stage”. Press enter when done.
7. Repeat steps 1 thru 6 for the remaining connectors in Image 9-3. Enter the names as shown in the image below.

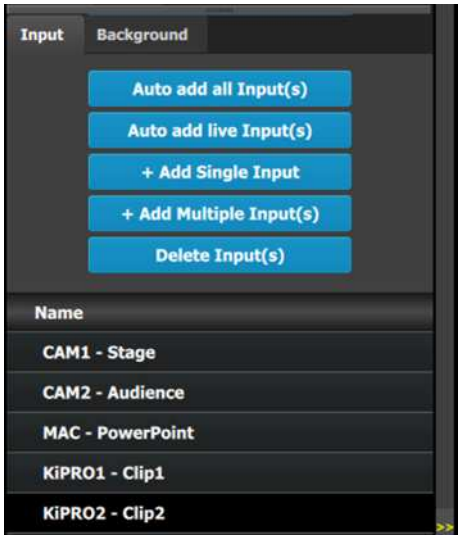

Image 9-7

C4: Add Output

1. Click on the **Output** tab to make it active.
2. Click on the first HDMI connector of slot 11 to select it.
3. Click on the **+Add Single Output** button to add the output to the system.
4. Double click on **HDMIOutput1** in the Name list to edit the name.
5. When the area turns blue, click the eraser icon to clear the field and type a new name, “DSM”. Press enter when done.

6. Repeat steps 2 thru 5 until done to add the rest of the output connectors with the following names:
   - Site projector (SDI, Slot 13–1)
   - Main-Left Projector (SDI, Slot 13–3)
   - Main-Right Projector (SDI, Slot 13–4)

   When you are done the menu should look like this:

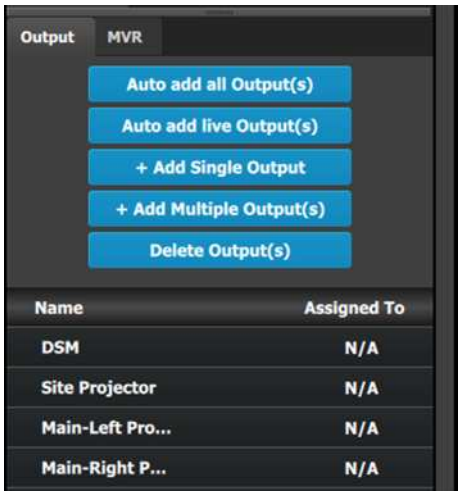

Image 9-8

Note: The “N/A” at this end refers to the destinations that will be added next.

C5 – Part1: Add Site Screen Destinations

In this section we will create the Site Screen Destination and assign two layers.

1. Click on the **Destination** tab to define destinations for the created outputs.
2. From the diagram area click on the first BNC of slot 13 that is the Site Projector output connector. The BNC will be highlighted.
3. Click on the **+Add Screen Destination** blue button to assign the output for the screen destination.
4. When the destination is created a green rectangle appears next to the E2 diagram.
5. Double click on the **ScreenDest1** area in the Name list to edit the name.
6. When the area turns blue, click the eraser icon to clear the field and type a new name, “Site Screen”.
7. Click on the top at the **Adjust:Site Screen** tab and in the **Assign** menu under the Output section click on the **+Assign Layer to Destination** blue button to assign a single link (SL) mix layer to the destination .
8. In the layout area “1 layer” will appear in the green area of the destination rectangle.
9. Repeat the Step 7 to add one more layer.

C5 – Part2: Add Main Screen Destinations

In this section we will create the Main Screen Destinations and assign 3 layers.

1. To create the Main Screen destination, please repeat steps 2 thru 6 of the previous stage (C5–Part1) by first clicking on the “Main-Left Projector” BNC.
2. Rename the destination to “Main Screen”.
3. After the destination is created, click on the “Main-Right Projector” BNC and drag it into the “Main Screen” destination box. The Screen size will immediately change to 3840x1080.
4. Repeat the same steps as above to add a layer to the destination but click the add button 3-times to add 3 layers.

C5 – Part3: adjust the projector overlap in Main Screen destinations

In this section we will adjust the projector overlap area for the Main screen.

1. Under the Wide menu, the small diagram area shows the destination's outputs layout. Click on the line between the two rectangles that represent the outputs. The line turns blue.
2. Click on the **Data Double** button and enter "100" for the H overlap value. Note: We will leave the feathering disabled (default).

Image 9-9

C6: Add Aux Destinations

1. From the diagram area click on the DSM output. The connector will be highlighted.
2. Click on the **+Add Aux Destination** blue button to assign the DSM output to an Aux destination.
3. When the Aux destination is created a green rectangle appears next to the E2 diagram.
4. Double click on the **AuxDest1** area in the Name list to edit the name.
5. When the area turns blue, click the eraser icon to clear the field.

6. Type a new name, “DSM”. Press **enter** when done.

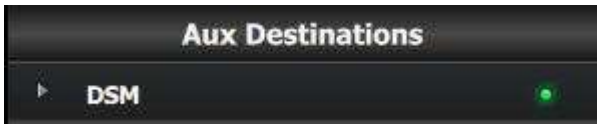

Image 9-10

C7: Add MVR Output

1. Double click on **MVROut1** in the Name list to edit the name.
2. When the area turns blue, click the eraser icon to clear the field and type a new name, “Sources”. Press enter when done.
3. Double click on **MVROut2** in the Name list to edit the name.
4. When the area turns blue, click the eraser icon to clear the field and type a new name, “Program/Preview”. Press enter when done.

Result

At this stage the layout section of the GUI should look like this:

Image 9-11

9.5 Programming Menu

Overview

The programing Menu is accessed by clicking on the Programming icon on the left hand side of the screen. The area in the middle will display a composite of the two screen destinations and the Aux destination created in the previous section.

We will assign layers and backgrounds into the screens, adjust sizing and positioning parameters, and finally, drop sources into the layers.

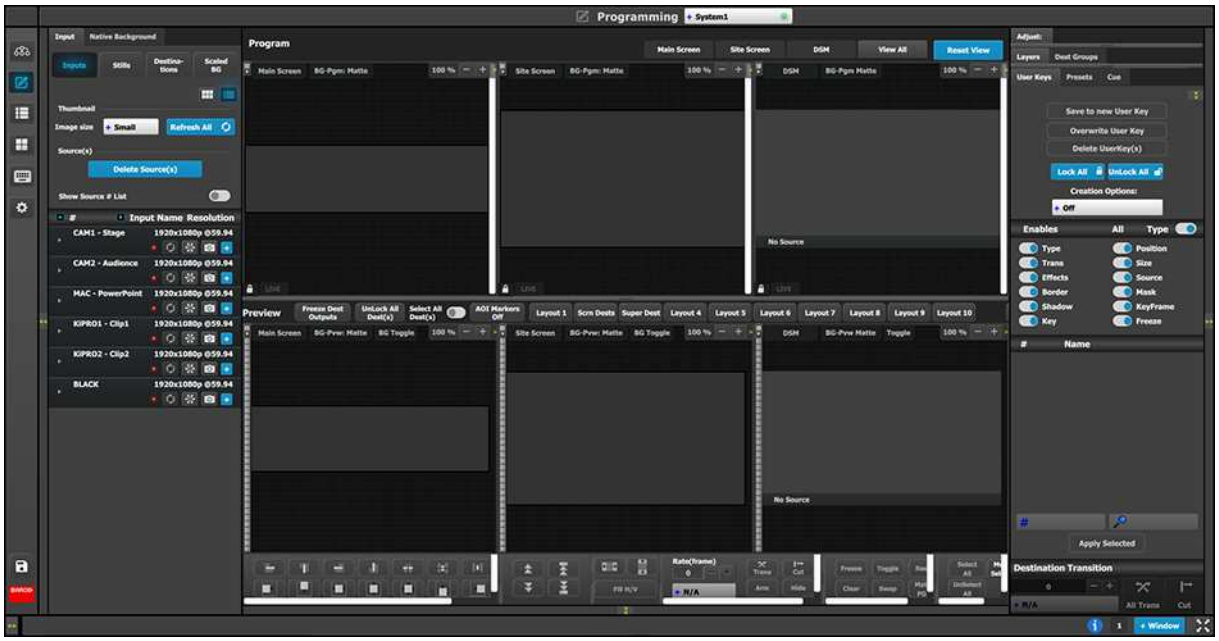

Image 9-12

P1: You can skip this step if you don't want thumbnail images to represent the background. In this case, the background in the destinations area will be black and noted only by the assigned name.

P1: Select thumbnails for Background.

1. From the left hand side, click on the **Native Background** tab.
2. In the Native Background menu, click on the **Background** button.
3. Click on the **thumbnail** button.

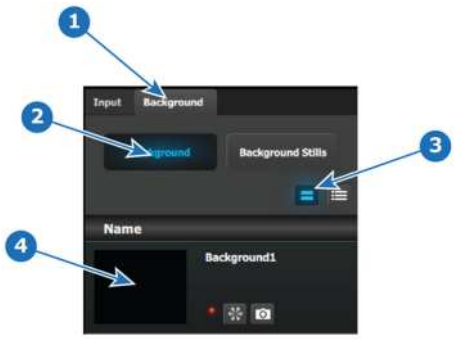

Image 9-13

4. Click the black rectangle.

   A dialog box will open for you to navigate the computer to locate the desired picture file to used as a thumbnail image.
5. After a pic is selected, the image will fill the black rectangle as shown below.

Image 9-14

P2: You can skip this step if you don't want thumbnail images to represent the inputs/sources. In this case, the layers in the destinations area will be black and noted only by the assigned source name.

P2: Select thumbnails for Inputs

1. From the left hand side, click on the **Input** tab.
2. In the Input menu, click on the **Inputs** button
3. Click on the **thumbnail** view icon.
4. Click in the black box and navigate the computer to find and select the desired pic.
5. After a pic is selected, the image will fill the black square.
6. Repeat this sequence until a pic is selected for each input.
7. When these steps are completed, the section will appear similar to the following image.

Image 9-15

P3: Created Additional Sources from Inputs

As noted previously, a source is generated automatically for each input. For this application, only one source will be used for each input, so no additional sources need to be created. Therefore, in this example this step will be skipped.

P4: Drop Backgrounds into Screen Destinations

1. On top click on the **Main Screen** tab to only view the Main Screen.
2. Select the Background tab from the top left side and drop it into the preview layer.

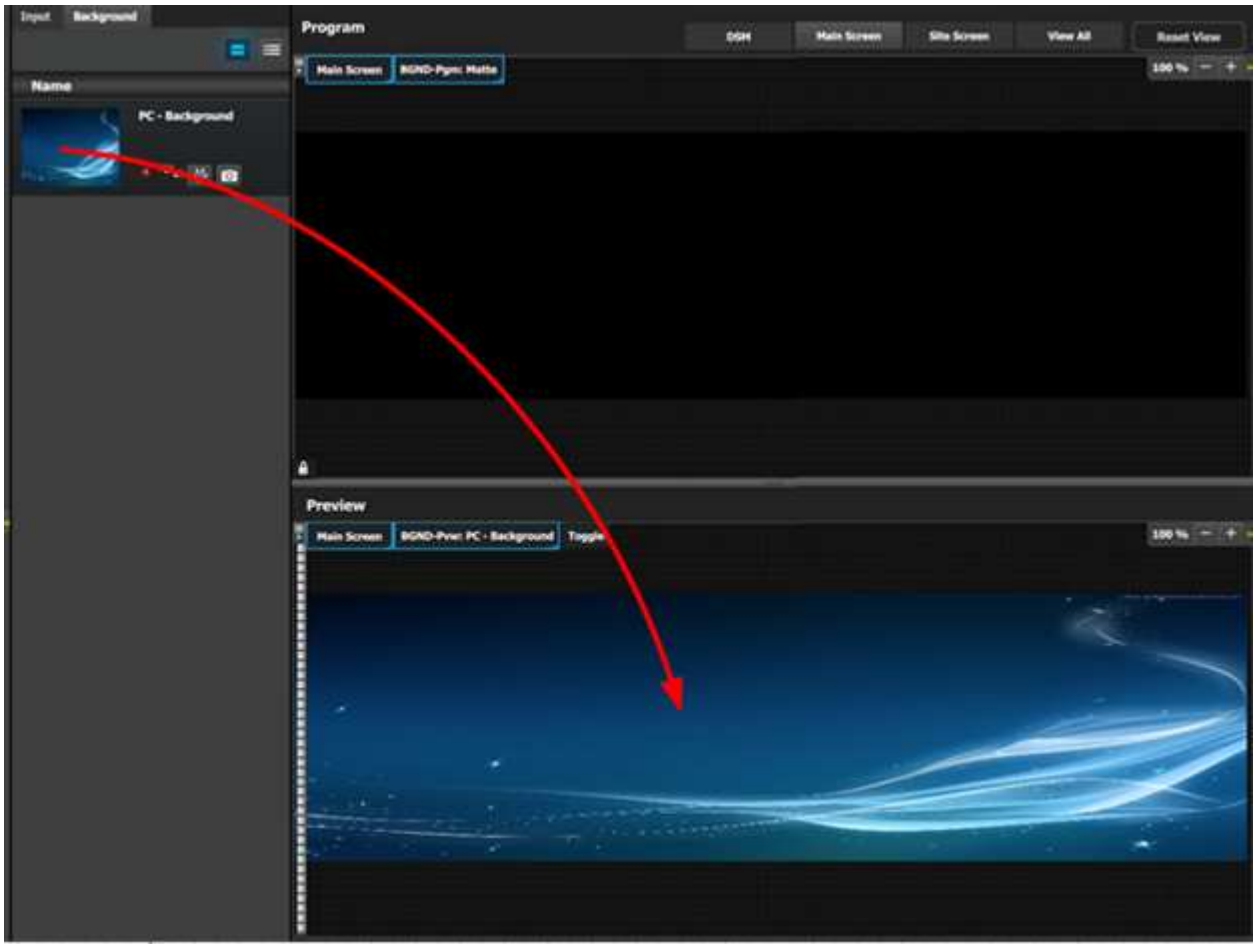

Image 9-16

P5: Drop Layers into Screen Destinations & Sources into layers

In this step we will add layers into each Destination, assign sources to layers and adjust their size and position parameters.

Part1: Site Screen

1. On top, click on the **Site Screen** tab to only view the Site Screen.
2. On the right hand side of the screen click on the **Layers** tab and then click on the arrow next to the Destination name to reveal all the layers and background that were assigned to the destination.
3. Drag Layer1 into the preview screen. A black, square box, surrounded by a blue “selected” border will appear.

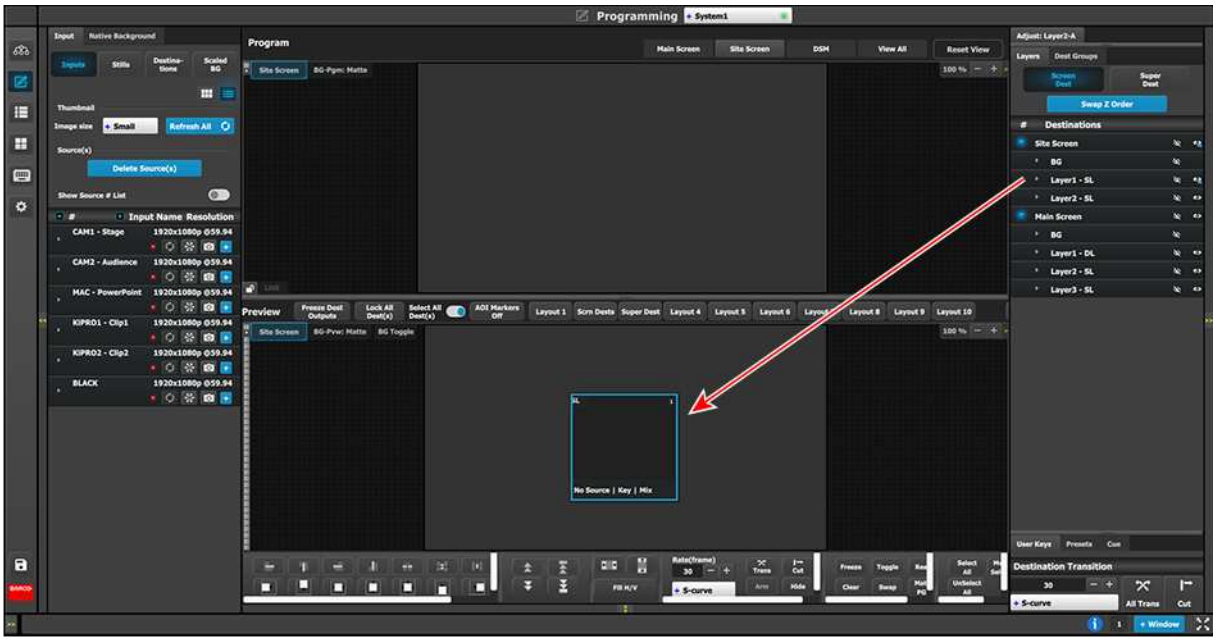

Image 9-17

4. Click on the Adjust tab at the top of the adjustment pane (on the right-hand side of the screen).
5. Select the **Window Adjustment** Icon and then unlock the aspect ratio lock by clicking in the lock icon.

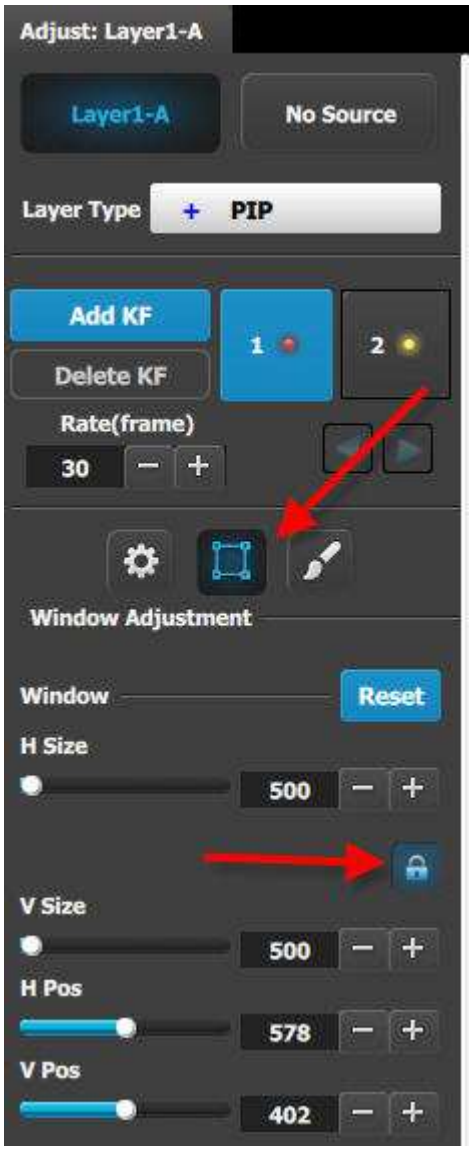

Image 9-18

6. Adjust the sizing parameters as follows:
   1. H Size: 1920
   2. V size: 1080
   3. H Pos: 0
   4. V Pos: 0
7. From the left hand side, click on the Input tab.
8. Click the source under CAM1 and drop it into the layer.

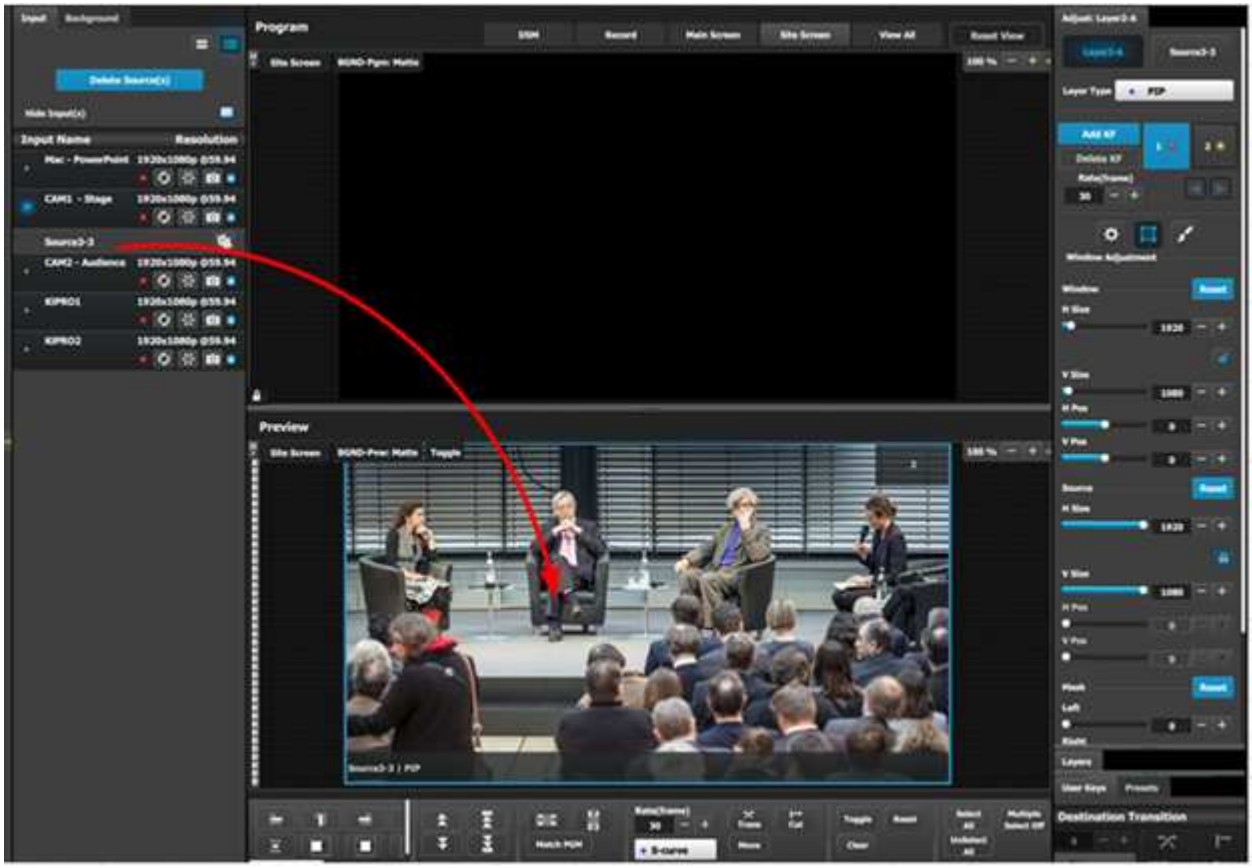

Image 9-19

9. Transition the layer to program.
10. Drop the source for CAM 2 to the preview layer.

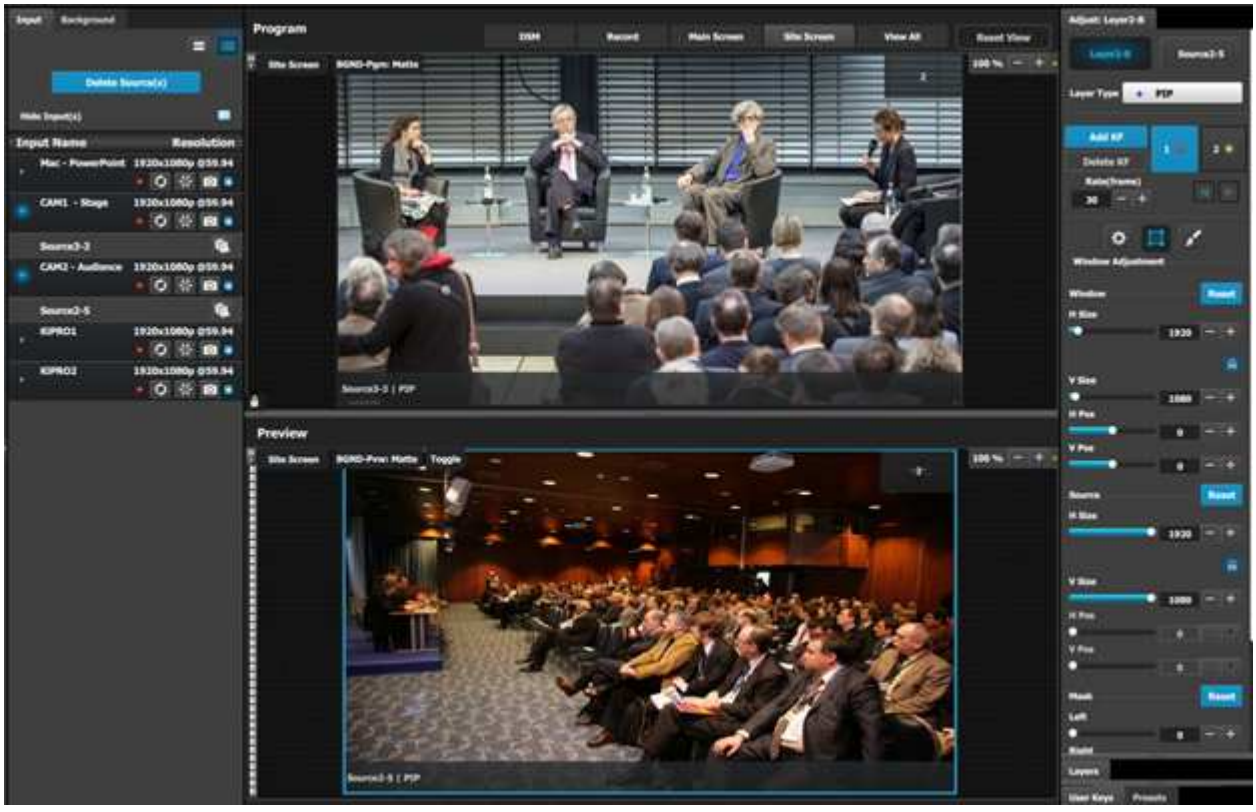

Image 9-20

Part2: Main Screen

1. On top click on the **Main Screen** tab to only view the Main Screen.
2. Under the **Layers** tab, click on the arrow next to “Main Screen”.
3. Drag Layer1 and Layers 2 anywhere into the preview screen. Two black, square boxes will appear.

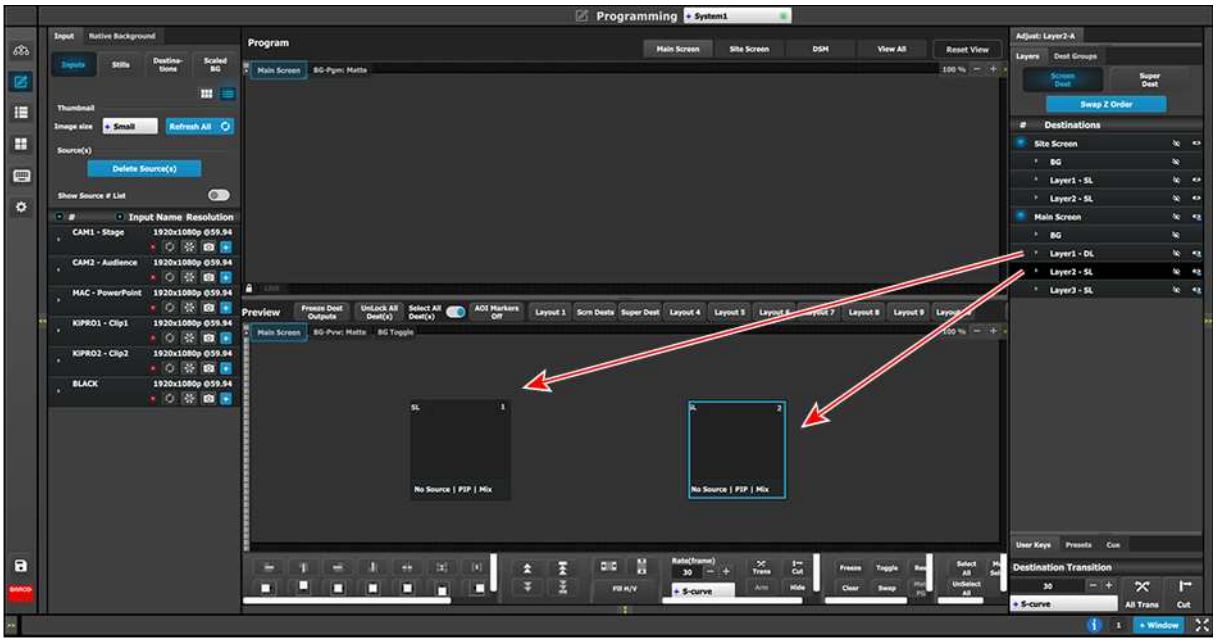

Image 9-21

4. Click on the Adjust tab on the top and select the “Window Adjustment” Icon.
5. Unlock the aspect ratio lock by clicking in the lock icon.
6. Click each layer separately and adjust their sizing parameters as follows. Note: You need to unlock the aspect ratio for each layer.

   Layer1
   1. H Size: 1720
   2. V size: 970
   3. H Pos: 100
   4. V Pos: 50

   Layer2
   1. H Size: 1720
   2. V size: 970
   3. H Pos: 1920
   4. V Pos: 50
7. Click the sources under KiPRO1 and Mac-Power Point and drop them into the respective layers.
8. Select both layers on the Preview.
9. Transition the layers to program.
10. Drop the KiPRO2 source to the layer on the left.

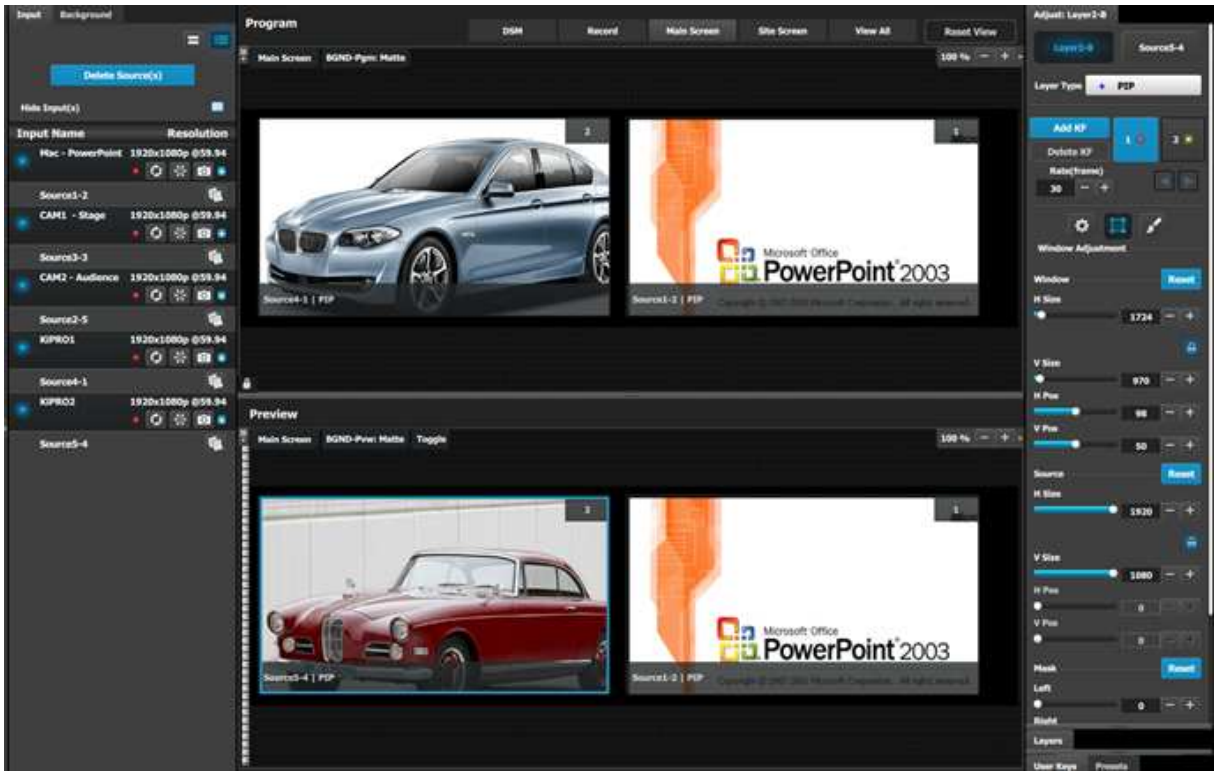

Image 9-22

P6: Drop Sources into Aux Screens (DSM Output)

1. On top click on the **DSM** tab.
2. Drag the CAM 1 input1 into the preview screen.

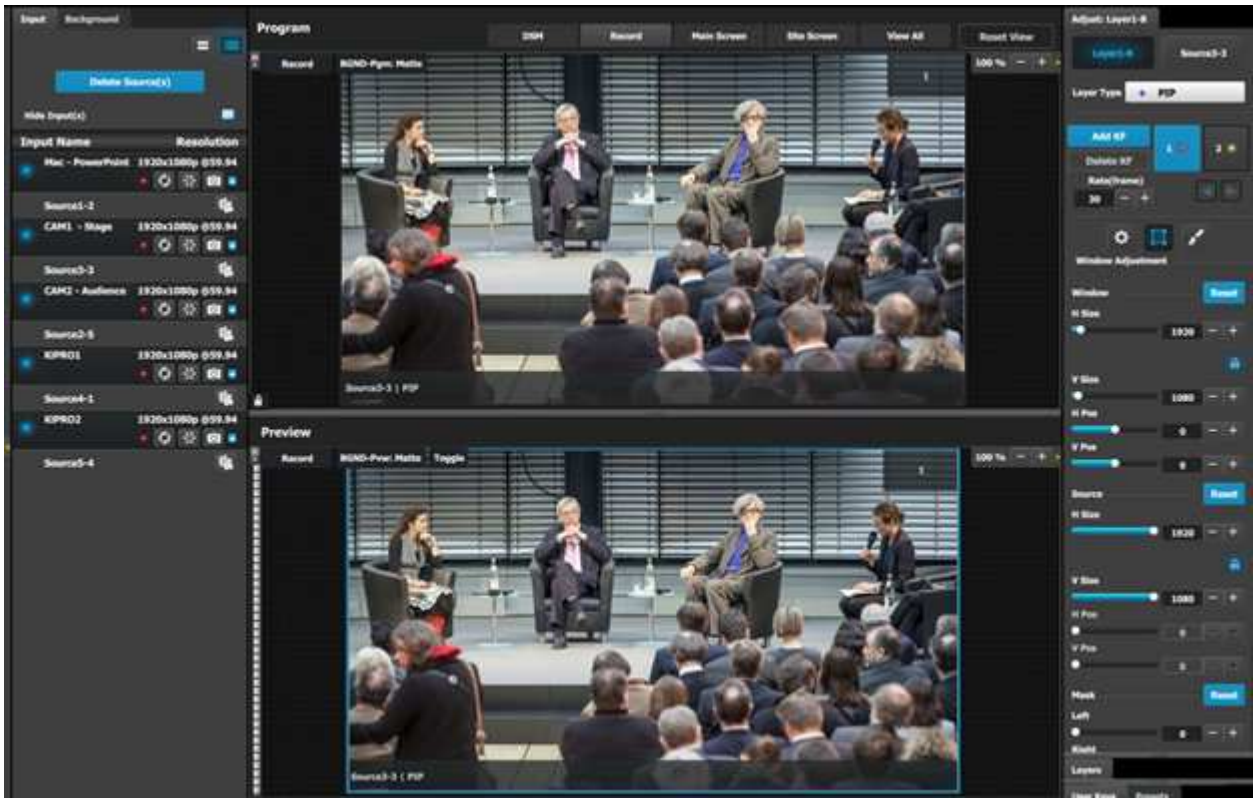

Image 9-23

P7: In this application we will not save any user keys. All layers attributes will be saved.

P7: Create user Keys and Presets

1. Select the Site screen destination and the layer in preview.
2. Under the Preset tab click in the “Save to new Preset” button.
3. Edit the name to reflect the source that is on Preview.
4. Repeat the previous steps to save 3 more presets, so we have a preset for both video clips and both cameras.

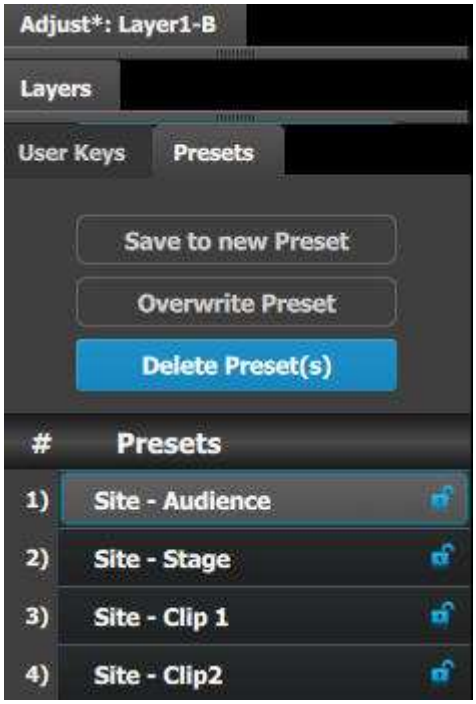

Image 9-24

5. Select the Main screen and select the sources into the two PIPs are the event requirements described in the introduction of the application note.
6. Save each look into a preset and give it an appropriate name.

Result

Now you are ready to execute the presets and transition on the desire preview look into Program. Remember to select the corresponding destinations when you use the **All Trans** button.

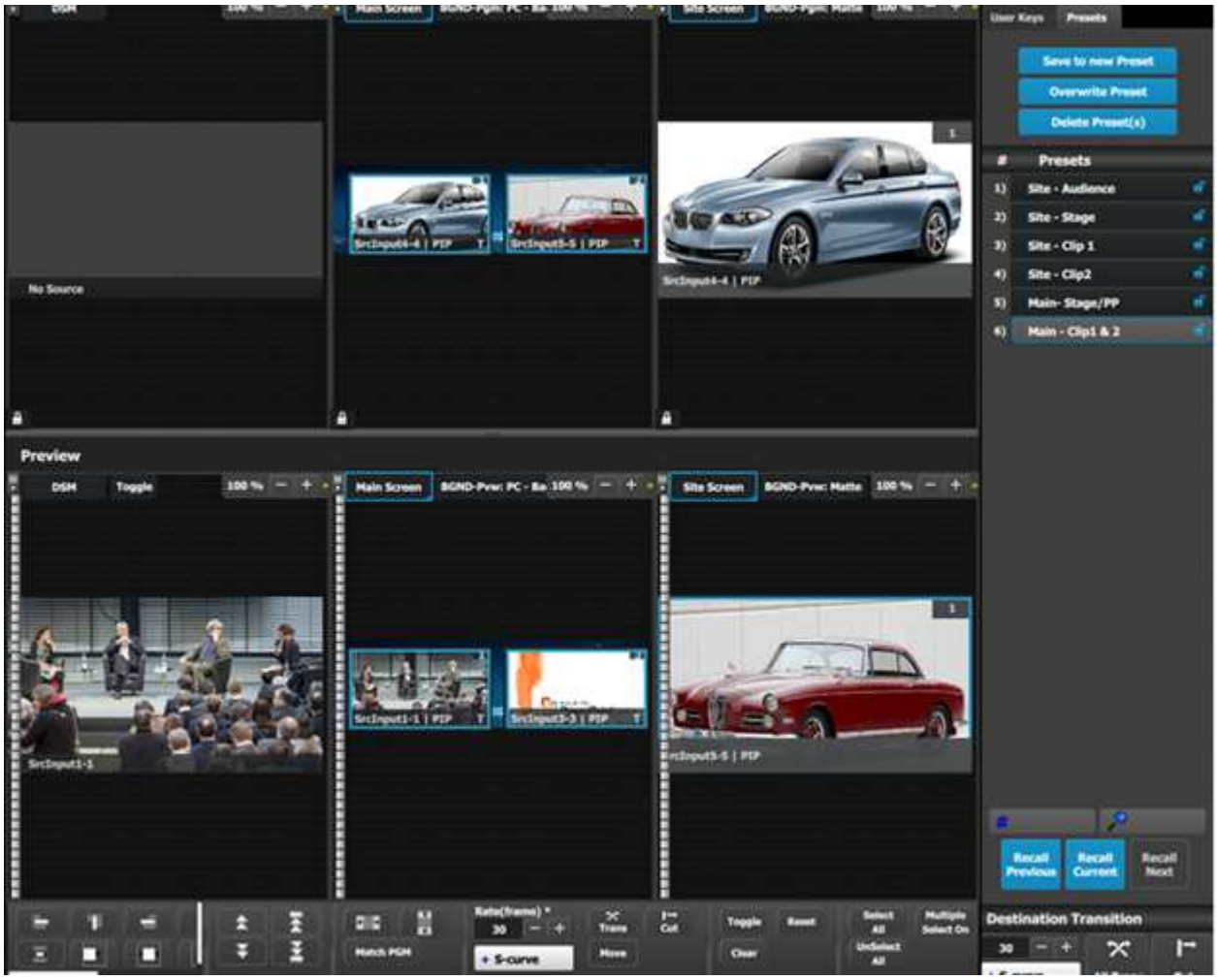

Image 9-25

9.6 Multiviewer (MVR) Menu

Overview

Click on the Multiviewer icon on the left hand side of the screen to reach the Multiviewer Menu, the module used to setup the Multiviewer outputs to the MVR monitors. You should see two screens since two Multiviewer outputs exist.

We will setup the top window to display all the inputs and the bottom window to display the Program and preview screens.

Setup the “Sources” MVR

1. Click on the top tab that is labeled “MVROut1”.
2. Click on the **Auto Layout Input** button that is located at the bottom of the display area. All of the inputs and backgrounds will appear lined up at the top of the window.

Image 9-26

3. Resize and arrange the PIPs to fill the screen.

Image 9-27

Setup the “Program/Preview” MVR

1. Click on the top tab that is labeled “MVROut2”.
2. Click on the **Destination** tab and the top of the right hand side.
3. Drag the Program and Previews under the Site and Main Screens into the window area.
4. Resize and arrange the PIPs so they appear as follows:

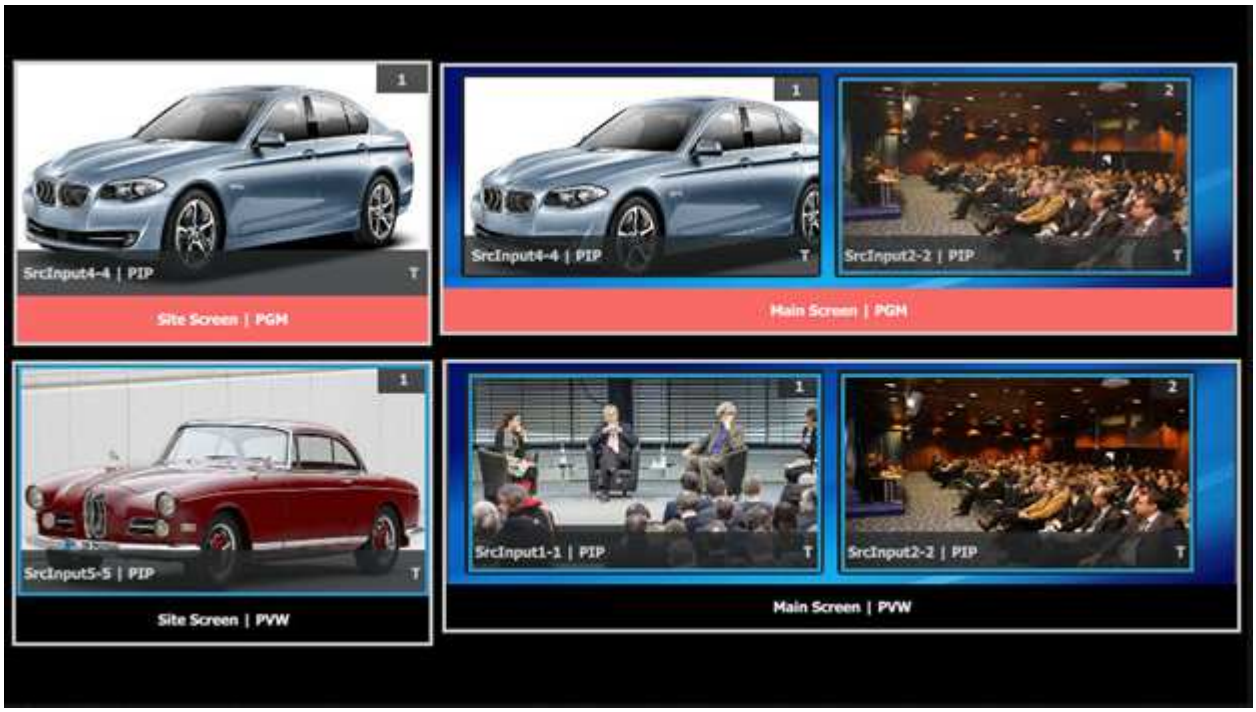
1
SrcInput4-4 | PIP
T
Site Screen | PGM
1
SrcInput4-4 | PIP
T
2
SrcInput2-2 | PIP
T
Main Screen | PGM
1
SrcInput5-5 | PIP
T
Site Screen | PVW
1
SrcInput1-1 | PIP
T
2
SrcInput2-2 | PIP
T
Main Screen | PVW

Image 9-28

Controller Orientation 10

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About this chapter

This chapter provides a detailed description of the Event Master controllers.

10.1 General description

General

Event Master controllers are dedicated hardware consoles specifically designed to support the Event Master series processors, devices, and systems created from several of them. They run the Event Master Toolset Software (EMTS) and the EC-200 on an industrial operating system with optimized hardware. They include tactile operation style with buttons and touchscreen displays, allowing for easy and direct control of the Event Master series processors..

There are three models of Event Master controller:

- EC-30 (compact controller).
- EC-50 (small controller).
- EC-200/EC-210 (large controller).

The EC-30 is the most compact version of the EC-series Event Master controllers. As an extension of the EMTS, the EC-30 provides essential selections for sources, presets, layers, and destinations. The EC-30 connects as a USB peripheral to an existing Event Master control computer.

The EC-50 is a small form factor, stand-alone control surface that also incorporates a 15-inch full HD touch screen. Its button layout is the same as the left side of the EC-200/EC-210 controller, and it has the same functions as the left side of the EC-200/EC-210. The EC-50 requires a USB host connection to a computer running the EMTS.

The Event Master EC-200/EC-210 controller is a dedicated hardware console specifically designed to support Event Master series processors and devices. It runs the EMTS on a purpose built, internal computer and can connect directly to the Event Master devices on the network.

Main components overview

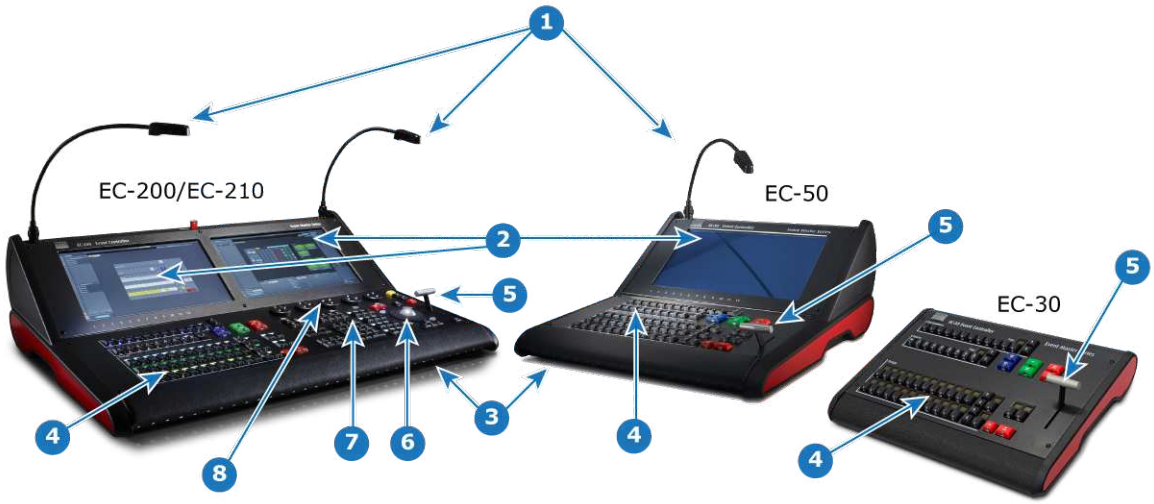

Image 10-1: Controller main components overview

	EC-200/EC-210 large controller	EC-50 small controller	EC-30 compact controller
1	2x script lights (flexible support)	1x script light (flexible support)	NA
2	2x Touchscreens	1x Touchscreen	NA
3	Work light on front face	Work light on front face	NA
4	User assignable presentation buttons	User assignable presentation buttons	User assignable presentation buttons
5	T-bar	T-bar	T-bar
6	Trackball and ring	NA	NA

		EC-200/EC-210 large controller	EC-50 small controller	EC-30 compact controller
7	Function buttons and numpad	NA		NA
8	Wheel (rotary encoders) layout	NA		NA

EC-200/EC-210 General description

The Event Master EC-200/EC-210 controller is dedicated computing hardware. Its front has a keyboard area and two touchscreens, and the back has connectors. It runs its software, the Event Master Toolset, on an industrial Linux operating system.

Tactile operation with buttons and touchscreen displays allow for easy and direct control of the Event Master series processors.

EC-50 General description

The small form factor of the EC-50 is equally at home next to an EC-200/EC-210 or as part of a Event Master Toolset Win PC or MAC OSX System.

It provides a traditional T-Bar and button interface for the Destination, layer and preset functions of the EventMaster Toolset.

It uses the same high quality controls as found in the EC-200/EC-210 console, ensuring responsive and reliable operation.

A 15.6 inch HD widescreen with 10 point multi touch is integrated in the controller allowing you to connect a screen output from your host system.

One LED desk light is supplied, fully dimmable and software controllable. The other light intensities are also adjustable via the EMTS Settings Menu page.

EC-30 General description

The compact EC-30 is a USB peripheral added to an Event Master control computer. It provides essential selections for sources, presets, layers, and destinations.

10.2 EC-30 front panel overview

Overview

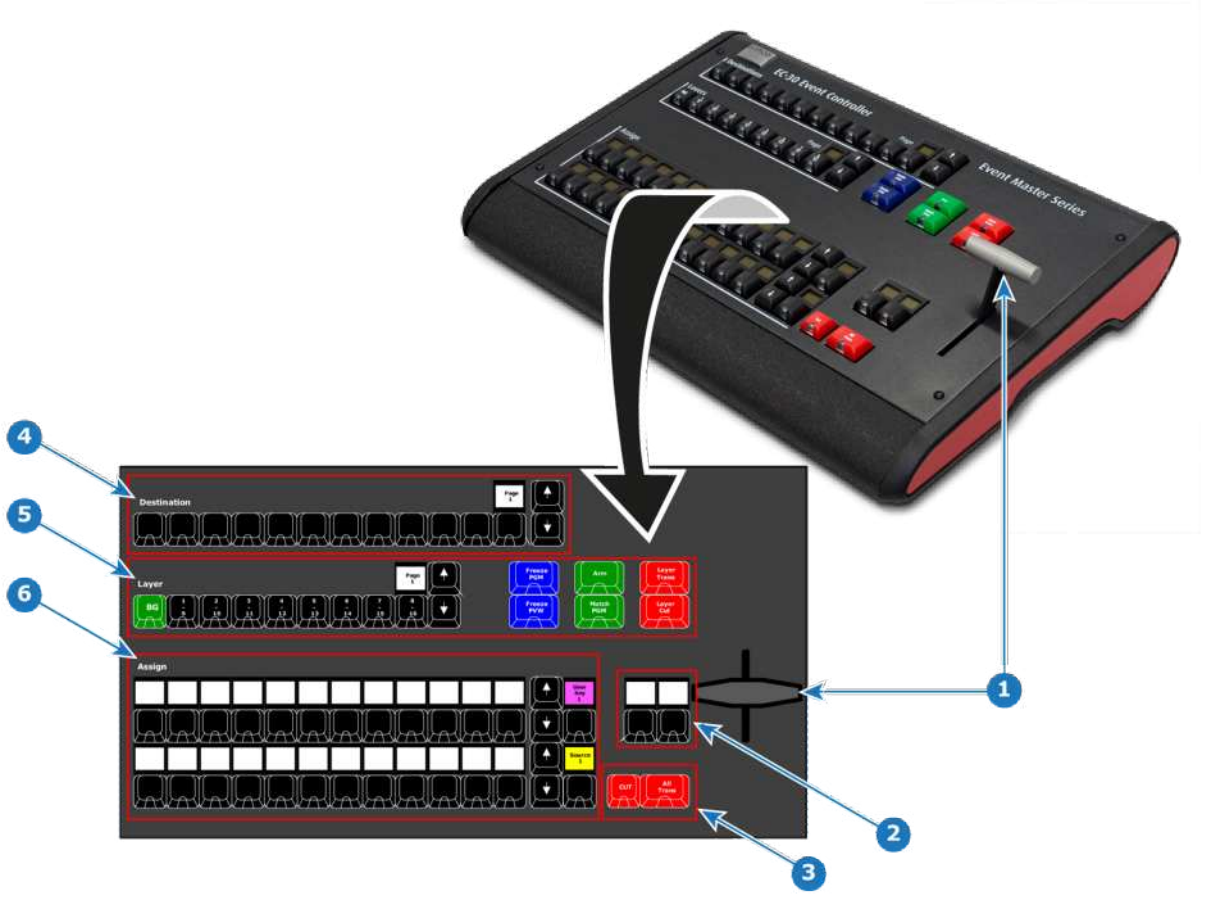

Image 10-2: EC-30 front panel overview

1 T-bar
2 User-assignable function buttons, with their label displays
3 Cut and All Trans buttons
4 12 Destination buttons and a display showing the current page of Destinations
5 Layer buttons and a display showing the current page of Layers
6 Assign buttons in two identical rows that can host multiple selections and a contextual display showing page of the Assign button row

10.3 EC-30 backside overview

Overview

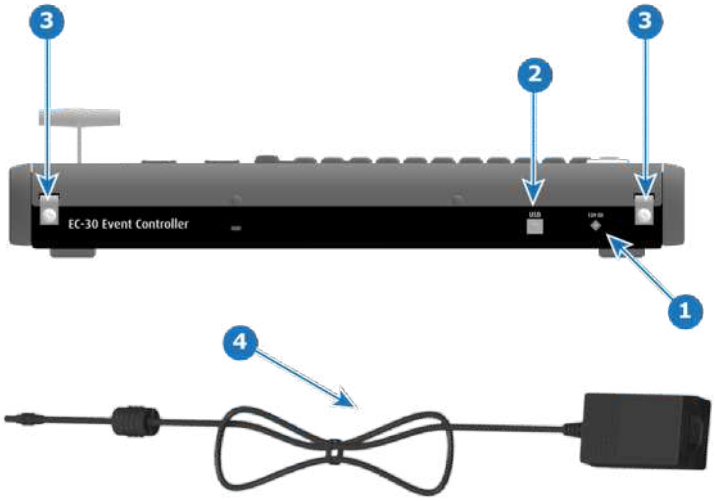

Image 10-3: EC-30 backside overview

1 DC power receptacle
2 USB B to Host
3 Strain-relief tabs
4 25W, 12V power supply

10.4 EC-50 front panel overview

Overview

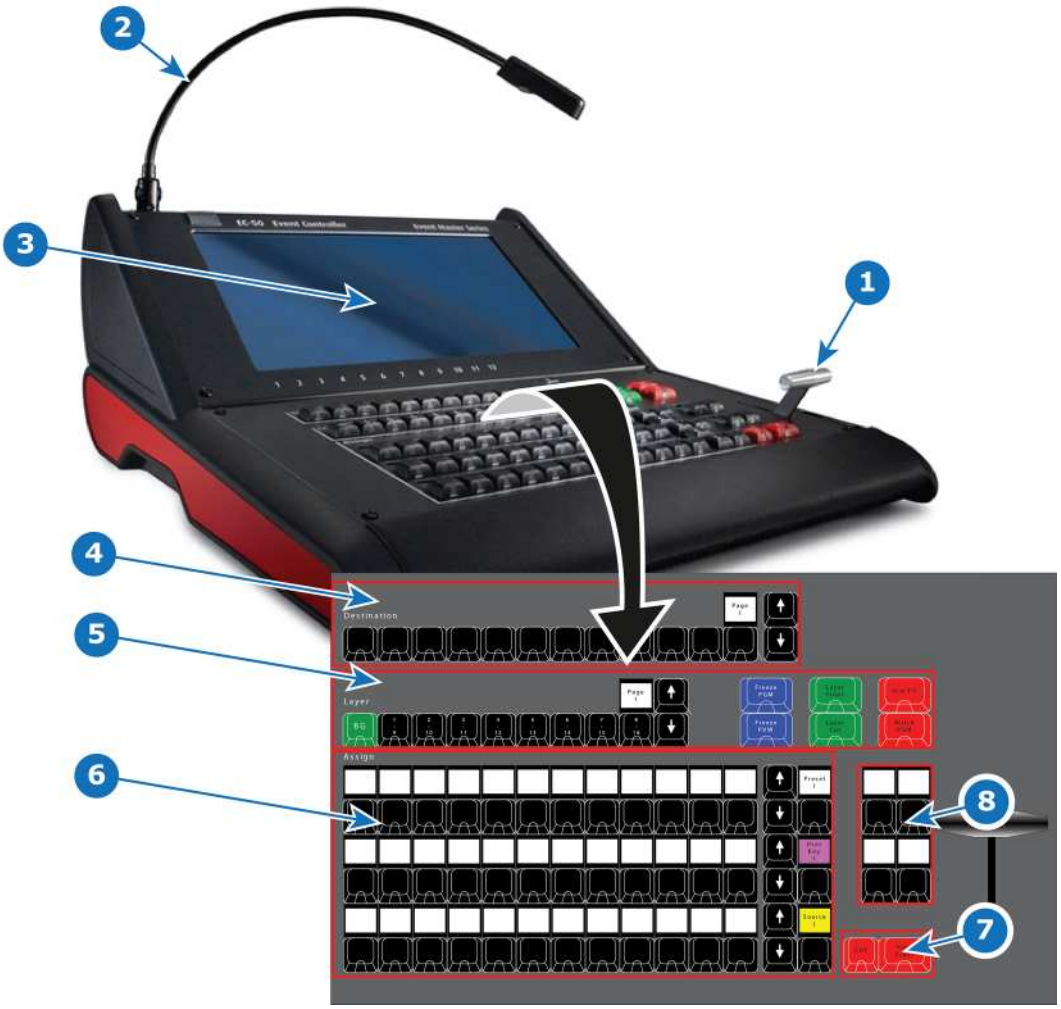

Image 10-4: EC-50 front panel overview

1 T-bar
2 Script light (flexible support)
3 Touchscreen
4 12 Destination buttons and a display showing the current page of Destinations
5 Layer buttons and a display showing the current page of Layers
6 Assign Buttons in three identical rows that can host multiple selections and a contextual display showing page of the Assign button row
7 Cut and All Trans buttons
8 User-assignable function buttons, with their label displays

10.5 EC-50 backside overview

Overview

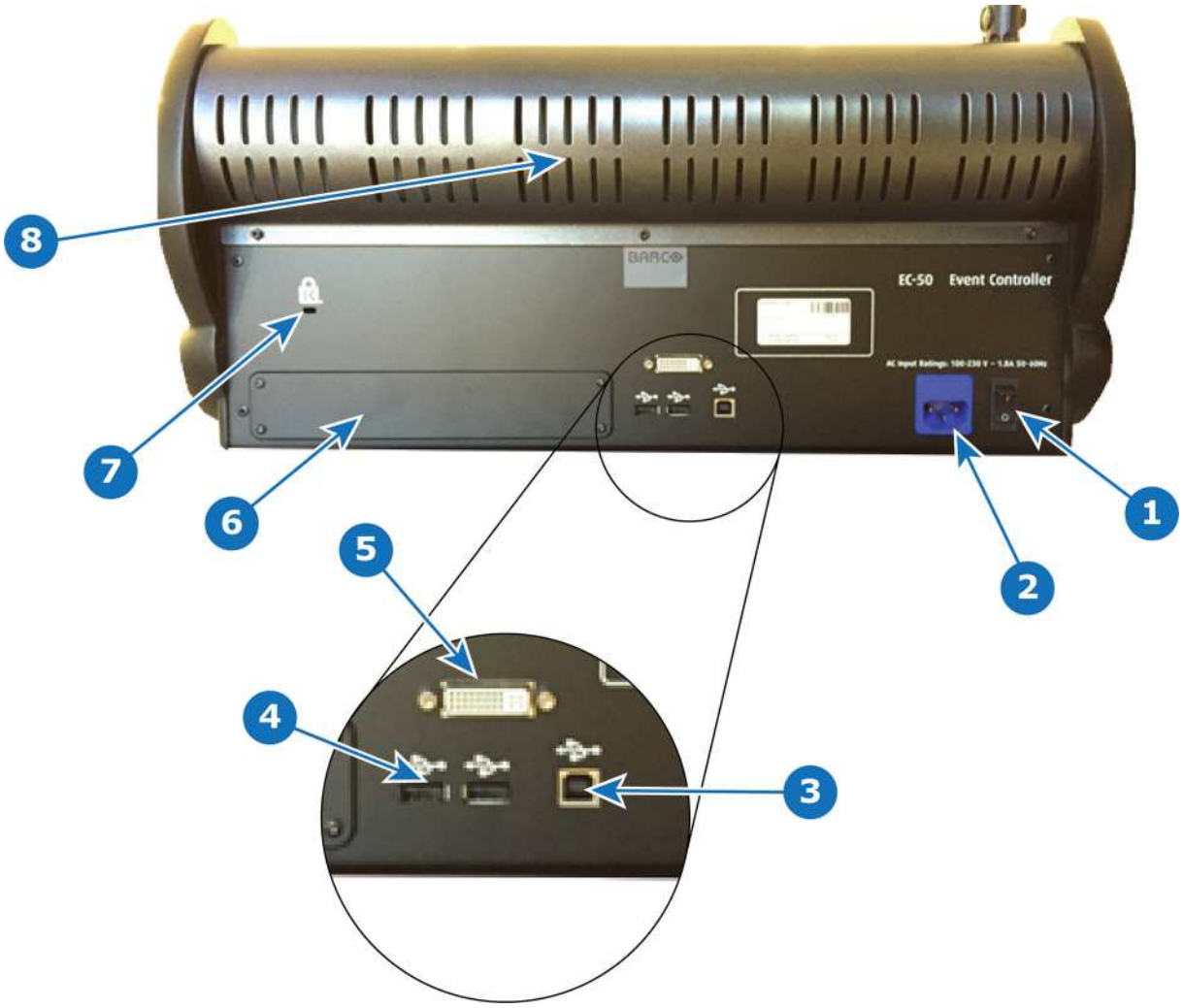

Image 10-5

1 Power switch
2 Power receptacle
3 USB B connector for connection to Host system
4 2x USB A Connectors for USB peripherals, such as mouse and keyboard
5 DVI Input connector for a standard DVI video signal
6 Optional accessory location for future expansions
7 Kensington Lock attachment point
8 Red effects light (located behind rear vent holes)

10.6 EC-200/EC-210 front panel overview

Overview

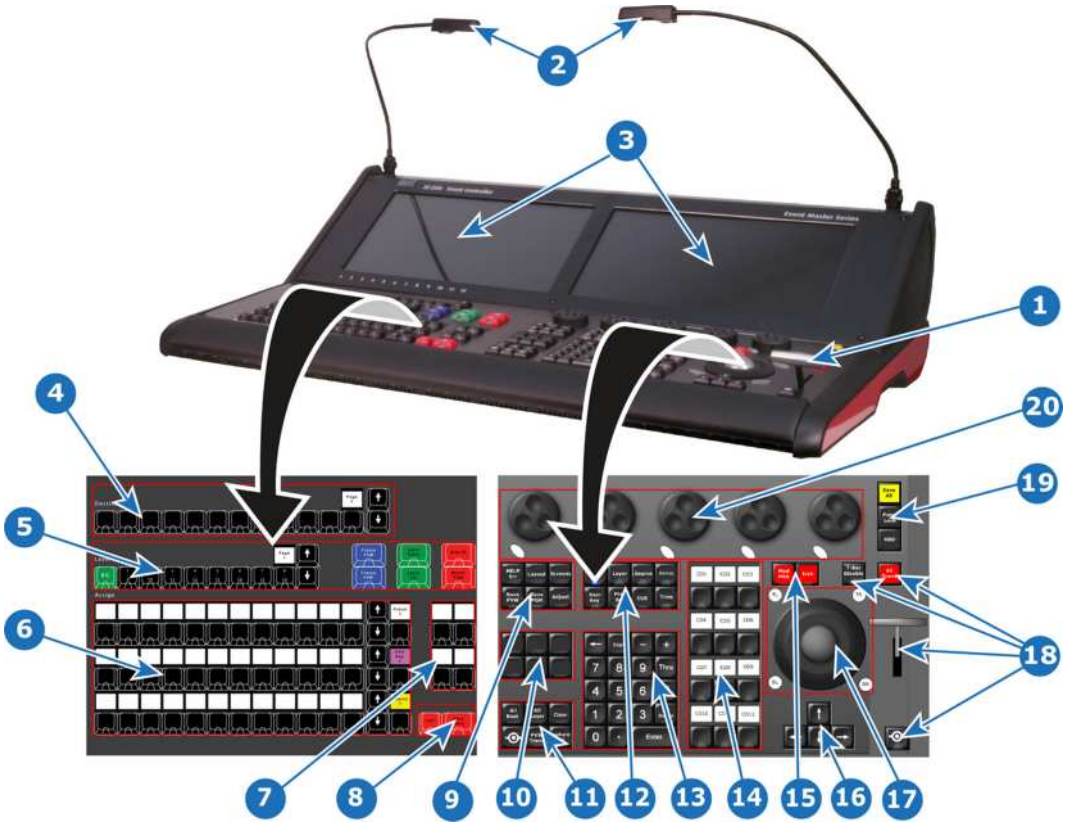

Image 10-6

1	T-bar	11	Direct selection button group
2	Script light (flexible support)	12	Syntax entry button group
3	Touchscreen	13	Numpad
4	12 Destination buttons and a display showing the current page of Destinations	14	Contextual display button group
5	Layer buttons and a display showing the current page of Layers	15	Live function button group
6	Assign buttons in three identical rows that can host multiple selections and a contextual display showing page of the Assign button row	16	Arrow button group
7	User-assignable function buttons, with their label displays	17	Trackball with 4 modifier buttons
8	Cut and All Trans buttons	18	T-bar with Disable button, All Trans, and Barco Eye function button
9	System function button group	19	On-screen keyboard button, console lock button, Save All button
10	Future expansion button group*	20	Rotary encoders, referred to as wheels, with modifier buttons

* On the EC-210 the future expansion button group features the “Play/Pause” and “Stop” CUE buttons.

10.7 EC-200/EC-210 backside overview

Overview

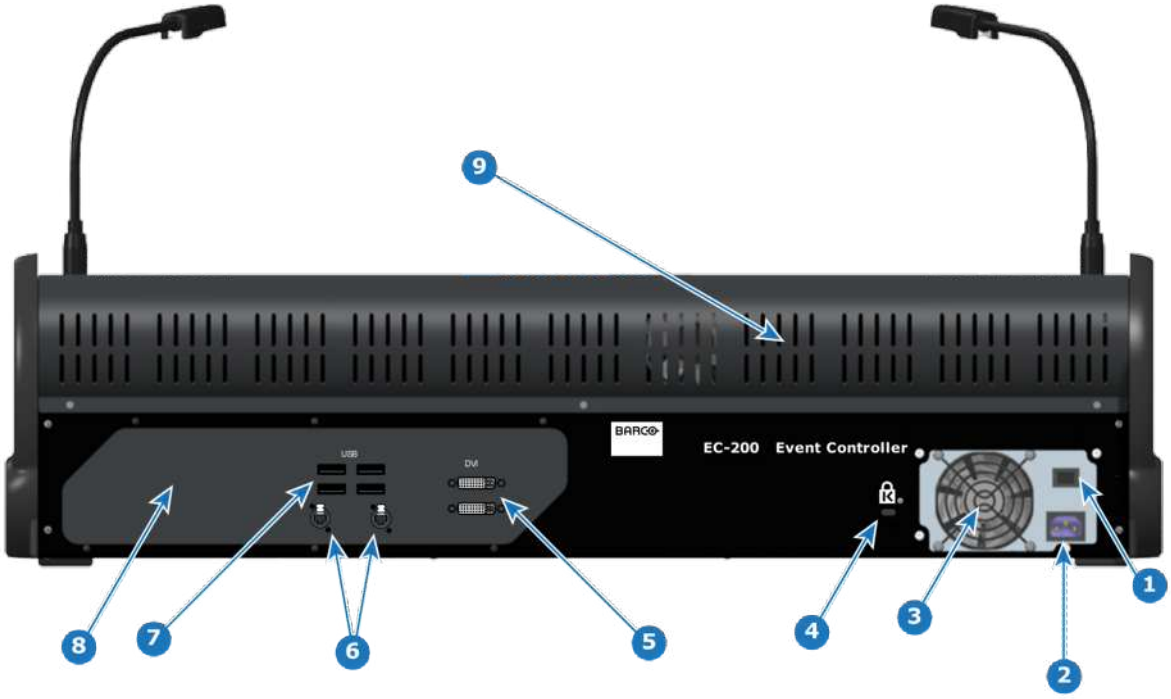

Image 10-7: EC-200 backside overview

1 Power switch
2 Power receptacle
3 PSU fan outlet, not to be blocked
4 Kensington Lock attachment point
5 2x DVI Output connector for a standard HD DVI signal
6 2x Ethernet RJ45 network connectors
7 4x USB A connectors for USB peripherals, such as mouse and keyboard
8 Rear I/O plate
9 Red effects light (located behind rear vent holes)

EC-210 Overview

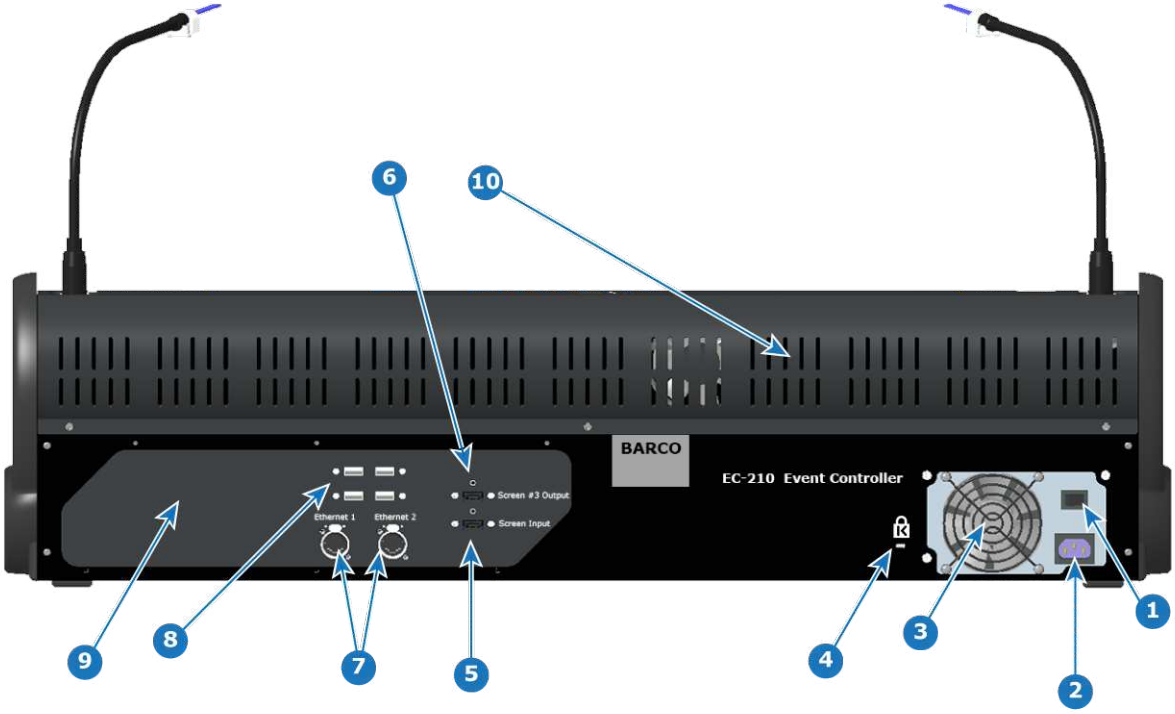

Image 10-8: EC-210 backside overview

1 Power switch
2 Power receptacle
3 PSU fan outlet, not to be blocked
4 Kensington Lock attachment point
5 HDMI input connector
6 HDMI output connector
7 2x Ethernet RJ45 network connectors
8 4x USB A connectors for USB peripherals, such as mouse and keyboard
9 Rear I/O plate
10 Red effects light (located behind rear vent holes)

10.8 Use of color

General

The unit has several colored buttons and LED indicators which support the user by indicating selections and possible actions.

Button color

- Blue buttons indicate the Freeze function.
- Green buttons indicate a layer selection or an action to a layer selection.
- Red buttons always indicate actions that can affect Program.
- Yellow is used for the Save function.
- Black is neutral.

LED Color in buttons

- Blue indicates selected destination buttons.
- Green indicates that the layer on preview is selected (Normal).
- Green can also indicate that the button's function has an opposite function or other mode.
- Red indicates that the layer on program is selected (Live or Unlocked Program).
- Red can also indicate that the button's function is selected / active, like T-Bar Disable.

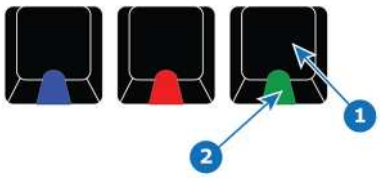

Image 10-9

1 Button
2 LED

Backlight color for display

Applies to an entire row of displays.

- Background Source = Green backlight.
- Cue = Cyan backlight.
- Preset = White backlight.
- Source = Yellow backlight.
- User Key = Magenta backlight.

A Red backlight is reserved for LOS (Loss Of Signal).

10.9 Touchscreen

General

The touchscreen is a 10 point multi touch HD (1920x1080) screen. It offers direct interaction with the Toolsets UI. Most notably the console setup page that works both as the assign page and a “virtual controller” allowing for button interaction.

10.10 Destinations buttons

Overview

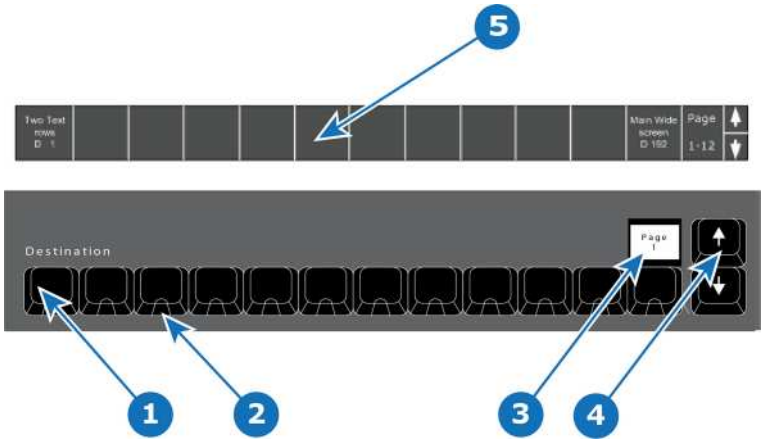

Image 10-10

1 12 destinations buttons.
2 Blue LED.
3 Current page display.
4 Arrow buttons (Page change: up and down).
5 Names of destinations displayed at the bottom of the screen.

Description

The 12 destinations buttons have several pages which allows an operator to define custom orders and layouts of mapped Destinations.

The name of the destination is displayed at the bottom of the GUI on the touchscreen. It can be shown or hidden on preference.

The Display above button 12 will show the current page (1 – 8) of Destinations. Use the **Arrow** (up and down) to change the page.

LED color under the Destinations buttons are BLUE. This indicates the Destination is selected when lit.

10.11 Layer buttons

Overview

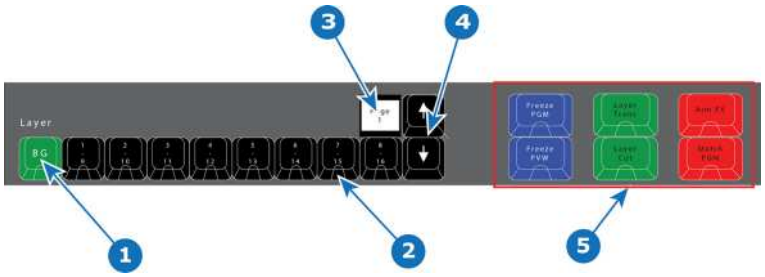

Image 10-11

1 Background button + 8 Layer buttons.
2 LED (Red or Green).
3 Layer range display (show the range of buttons — 1–8, 9–16, etc.).
4 Arrow buttons (Layer range: up and down).
5 Layer Operator buttons.

Description

The system supports 9 Layer buttons with 13 pages (up to Layer 104). The red or green LEDs under these buttons indicate the selection of layers. The first button is ALWAYS background layer and therefore marked BG.

LED color under Layer buttons are RED and GREEN:

LED color	Description
Red	Selected on PGM
Green	Selected on PVW

Buttons 2 – 9 are marked 1 through 8 along the top row and 9 through 16 along the bottom row of their labels.

The Layer range display above the button marked 8/16 will show the range of buttons 1 – 8, 9 – 16, etc. Use the **Arrow** (up and down) to change the range.

Layer Operator Buttons

The six larger buttons to the left of the Layer buttons are Layer Executor buttons mapped to the corresponding functions in the EMTS. These are further explained below in chapter “Controller Operation”, page 359.

10.12 Assign buttons with contextual displays

Overview

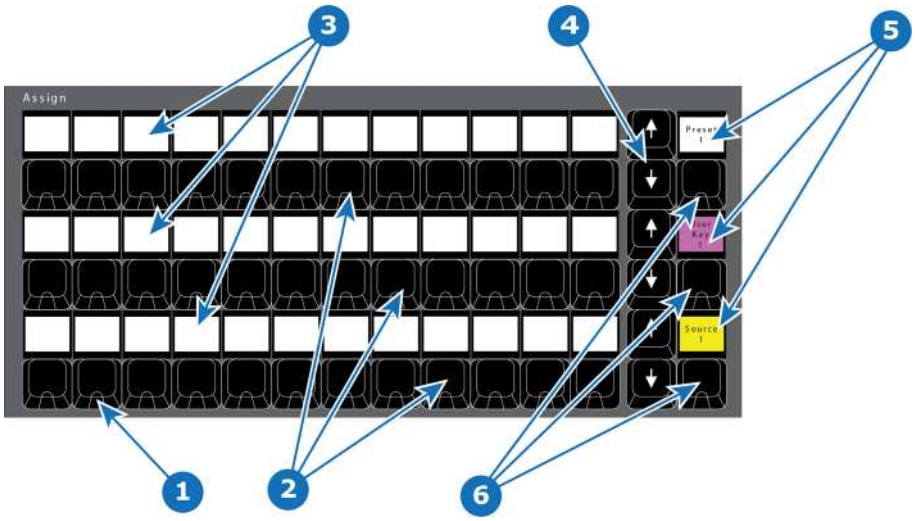

Image 10-12

1 LED (Red or Green).
2 Three rows of 12 Assign buttons
3 Three rows of 12 displays
4 Three rows of 2 Arrow buttons (up and down).
5 Three bus-type displays
6 Three bus-type buttons

Description

The three rows of 12 buttons, each with a dedicated display can be assigned with several types of functions including Backgrounds, Source Files, Presets and User Keys.

Each row also has Up and Down arrow buttons which are used to switch between pages per row.

An additional button to the right of the arrow buttons on that row is called BUS TYPE. It has a display above it. The button toggles among bus types with the display above showing a color that indicates the currently selected Assign bus type.

LEDs under the Assign buttons are either RED or GREEN:

LED color	Description
Red	for On PGM
Green	for On PVW

Backlight color assign per function (for an entire row) :

Function	Color
Source	Yellow backlight
User Key	Magenta backlight
Background Source	Green backlight
Preset	White backlight
Cue	Cyan backlight

10.13 T-Bar

EC-50 Overview

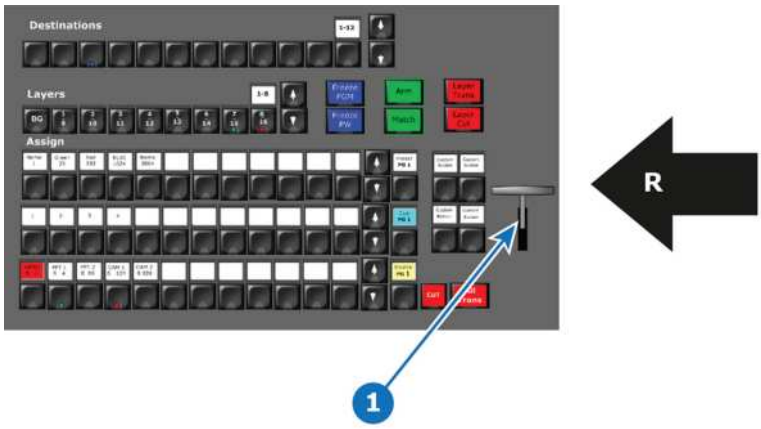

Image 10-13

1 T-Bar
R Right Side of the Controller

EC-200/EC-210 Overview

Image 10-14

1 T-Bar
2 T-Bar disable button
R Right Side of the Controller

Description

A traditional manual transition T-bar is included in the consoles. It is placed on the far right side of the console for convenience.

The EC-200/EC-210 has a T-Bar disable button above to the left. The button has a red LED indicator that stays lit when the T-Bar is disabled.

The T-Bar transitions from 0 to 100% of the transition for Destinations and cuts Auxiliary at 100%.

In the event of a unknown state, an up or down motion of the T-Bar re-aligns the T-Bar to 0%. If the unknown state was between 0 and 100%, the T-Bar continues and pushes the transition through to 100%.

10.14 Transition buttons

EC-50 Overview

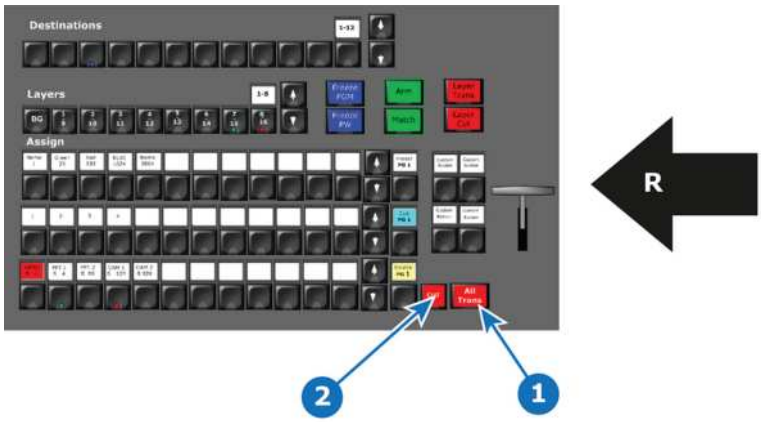

Image 10-15

1 All Trans
2 Cut
R Right Side of the Controller

EC-200/EC-210 Overview

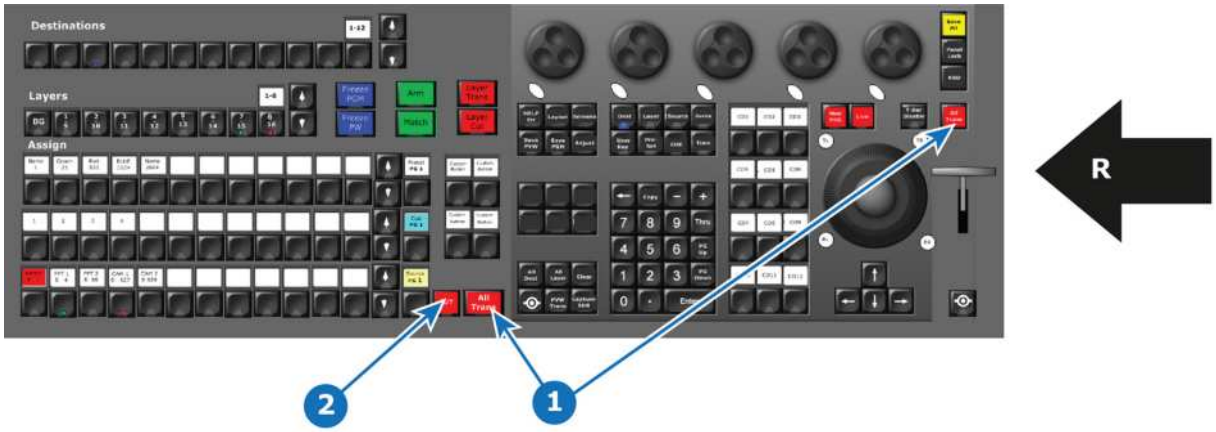

Image 10-16

1 All Trans
2 Cut
R Right Side of the Controller

Description

Depending the controller type, two or three buttons are provided for transitional triggering:

Type of transition	EC-50	EC-200/EC-210
All Trans	1 button	2 buttons
Cut	1 button	1 button

All Trans

Preview transitions to Program at the rate indicated in the rate box following the s-curve pattern on the Programming menu of the EMTS. The layer on Program does NOT fade in preview at the same time. The layer on Program appears in Preview when the transition is completed.

Cut

Instantly transitions the Preview to Program.

10.15 Future Expansion Button Group (EC-200/EC-210 only)

Overview

This group of buttons is present only on the large controllers (EC-200 and EC-210).

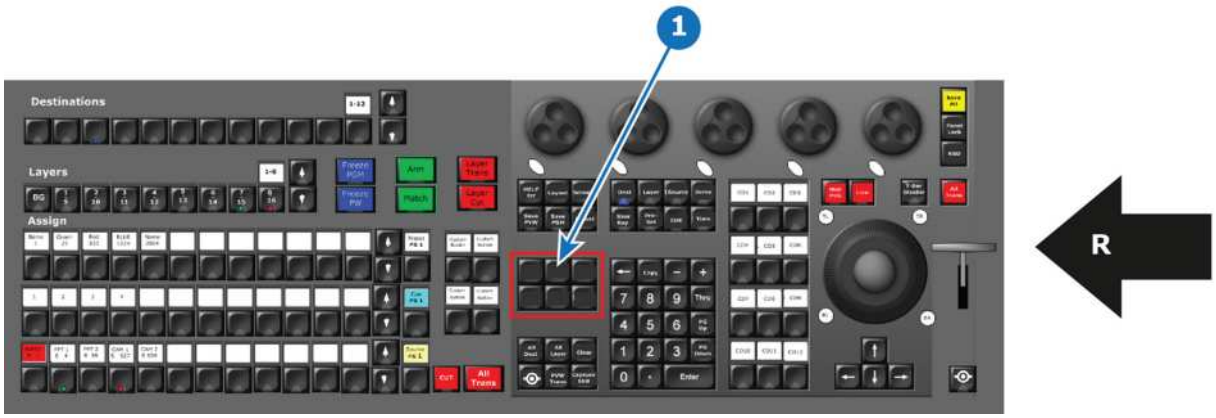

Image 10-17

1 Future Expansion Button Group
R Right Side of the Controller

Description

This group of buttons holds a promise for future functions. On the EC-210, this group contains pre-labeled “Play/Pause” and “Stop” CUE buttons.

Image 10-18: “Play/Pause” and “Stop” CUE buttons

With the release of software version 6.2, Play/Pause and Stop button functionality has been added to the EC-200. To add the Play/Pause and Stop buttons to an EC-200, use the Key Cap Set EC-210 Upgrade Kit (P/N: 90405353).

10.16 Direct Selection Button Group and Barco Eye Button (EC-200/EC-210 only)

Overview

These buttons are present only on the large controllers (EC-200 and EC-210).

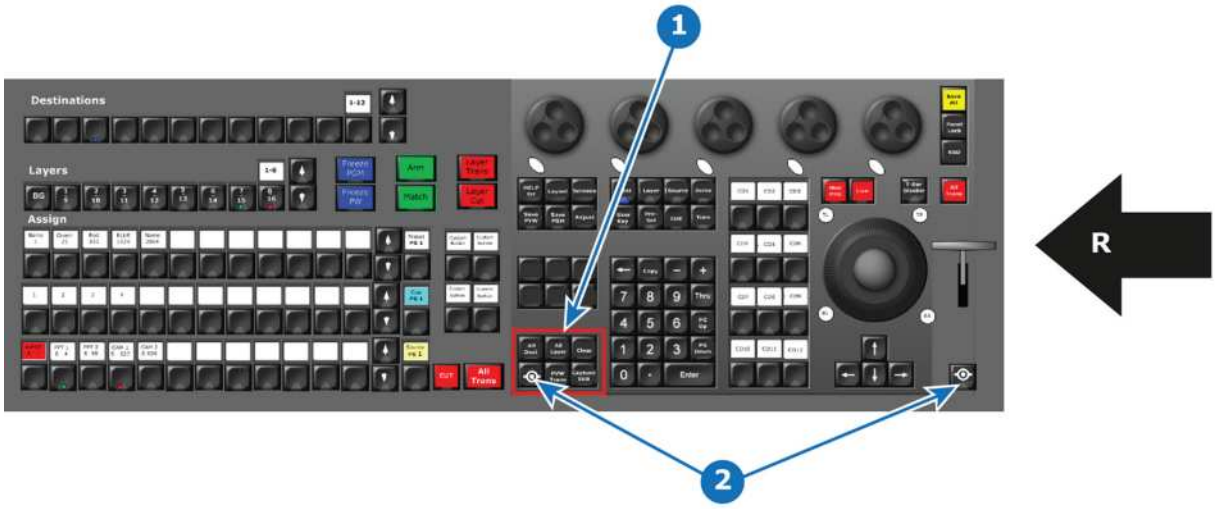

Image 10-19

1 Selection Button Group
2 Barco Eye button (2x)
R Right Side of the Controller

Description

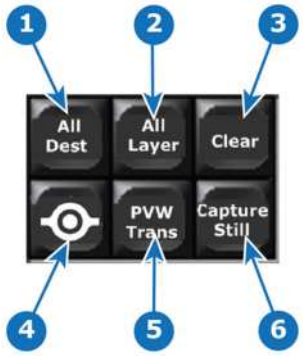

Image 10-20

	Button Name	Description
1	All Dest	Selects all Destinations for further actions or with Press and Hold have extended function.
2	All Layer	Selects all Layers in selected Destination(s) for further actions or with Press and Hold have extended function.
3	Clear	The CLEAR button has the same function as the Clear button on the EMTS Programming menu. Extended functionality is reached with Press and Hold, along with pressing other buttons.
4	Barco Eye	Modifier Button, like Windows/CTRL/Fn button on a keyboard. Further described in functionality around other buttons. Note: Both Barco Eye buttons (one on either side of the console) have the same function.
5	PVW Trans	The PVW Trans button is used to preview a PIP move, without having to transition it to Program.
6	Capture Still	The Capture Still Button is used in Syntax entry to record Still Stores from the Inputs.

10.17 System Function Button Group (EC-200/EC-210 only)

Overview

These buttons are present only on the large controllers (EC-200 and EC-210).

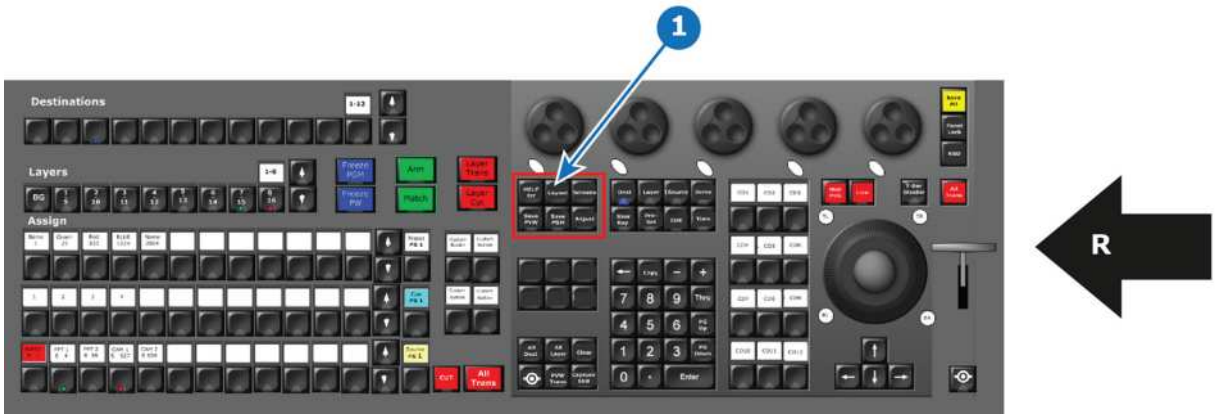

Image 10-21

1 System function Button Group
R Right Side of the Controller

Description

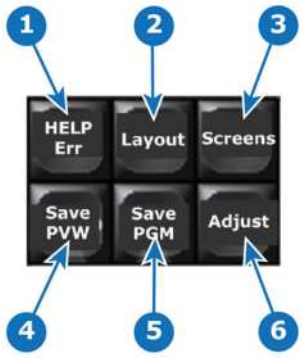

Image 10-22

	Button Name	Description
1	HELP Err	This button has currently no function.
2	Layout	The Layout Function Button allows for recalling layouts where applicable like Multiviewer, Programming menu, and controller (Assign side) benefit from this function.
3	Screens	This is the function to change the active page of the GUI to the touchscreens and the HDMI output (EC-210).
4	Save PVW (Save Preview)	Latches and lights a RED LED and activates a Store/Record Mode with applicable functions from Preview. The Save PVW of the GUI will be RED as long this mode is active.
5	Save PGM (Save Program)	Latches and activates a Store/Record Mode with applicable functions from Preview. The Save PGM of the GUI will be RED as long this mode is active.
6	Adjust	Pressing the Adjust Button opens the Adjust tab on the active touchscreen.

10.18 Syntax Entry Button Group (EC-200/EC-210 only)

Overview

These buttons are present only on the large controllers (EC-200 and EC-210).

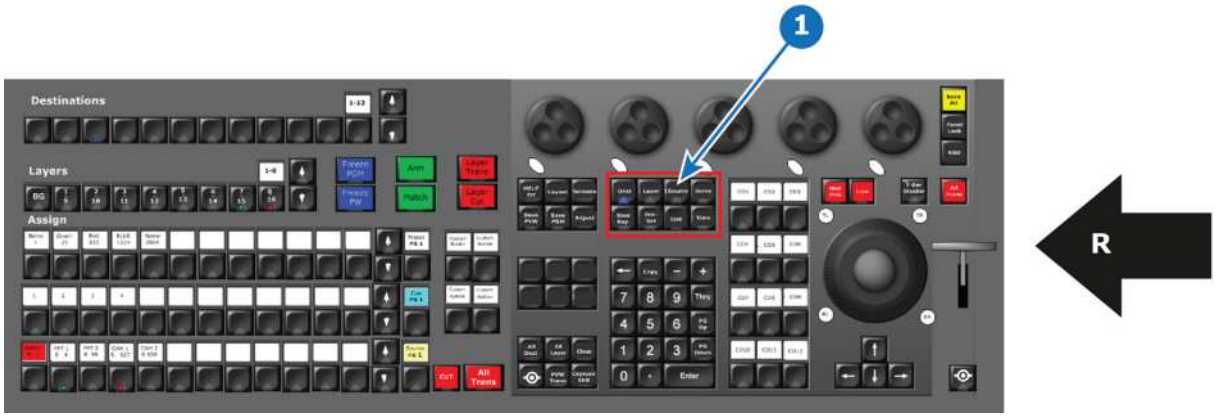

Image 10-23

1 Syntax entry Button Group
R Right Side of the Controller

Description

Image 10-24

These buttons are used in the programming syntax introduced with EC-200. A programming syntax will be necessary in order to effectively program the Event Master System once its full size becomes available.

When each group of resources can be several hundred, direct select buttons seize to be effective. The syntax allow direct access with a few keystrokes.

Each button is further explained in the chapter “Controller Operation”, page 359,

10.19 Contextual Display Button Group (EC-200/ EC-210 only)

Overview

These buttons are present only on the large controllers (EC-200 and EC-210).

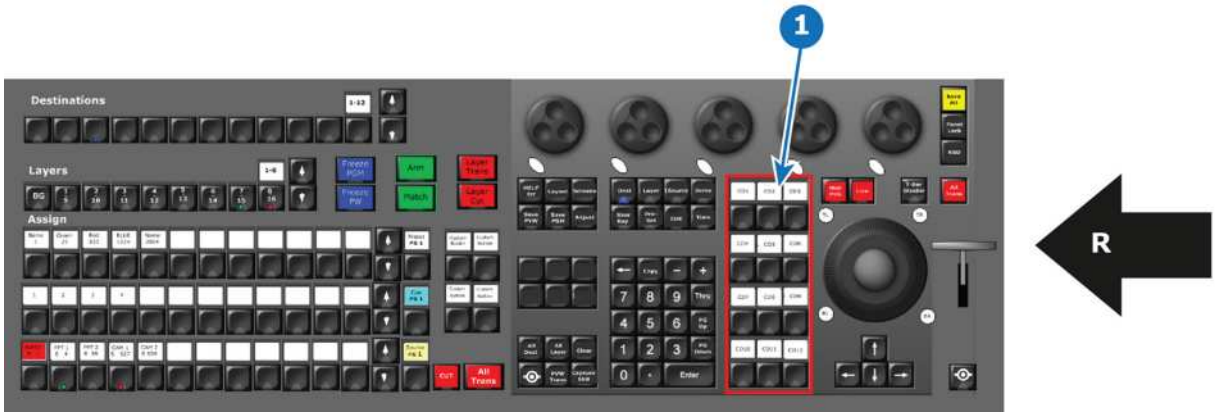

Image 10-25

1 Contextual Display Button Group
R Right Side of the Controller

Description

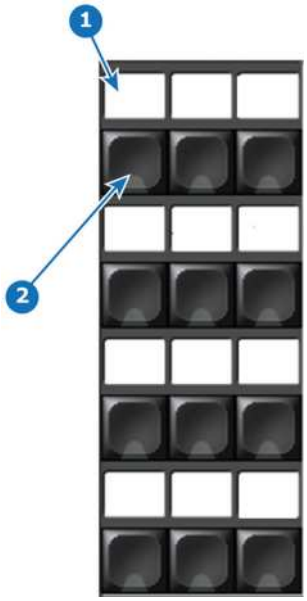

Image 10-26

1 Display
2 Button

These 12 Displays with its adjoining button allow different function based on the current programming need or “contextually mapped functions” and are called Contextual Display Buttons.

The Mapping of these are closely described in “Controller Operation”, page 359

10.20 Num Pad Button Group (EC-200/EC-210 only)

Overview

These buttons are present only on the large controllers (EC-200 and EC-210).

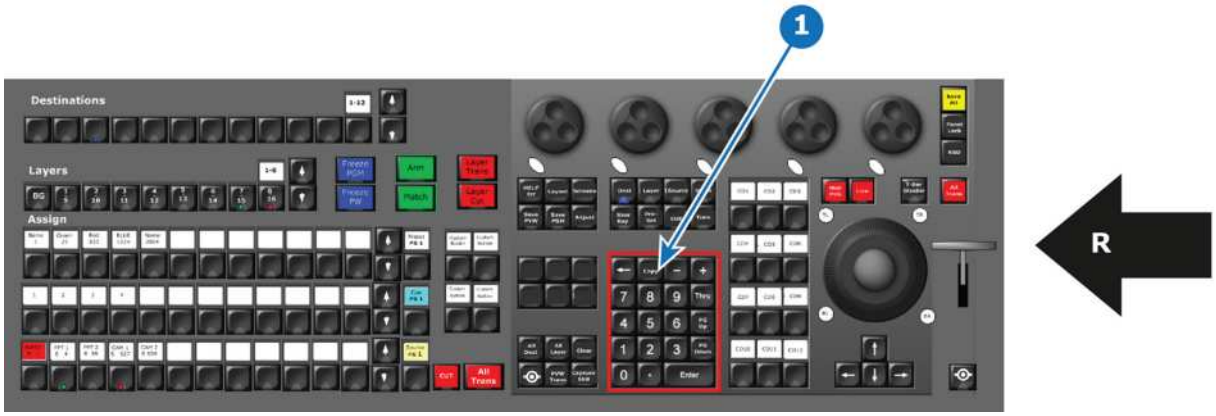

Image 10-27

1 Num Pad Button Group
R Right Side of the Controller

Description

Image 10-28

The almost standard layout numpad buttons resemble a standard numpad from a keyboard or other device.

With its specifically added, Copy, Thru, Pg Up, and Pg Down buttons, the numpad is essential for the Syntax Entry Programming introduced in EC-200.

The Numpad is used in conjunction with its own buttons or other buttons on the EC-200/EC-210. Its use is covered in “Controller Operation”, page 359.

10.21 Live Function Button Group (EC-200/EC-210 only)

Overview

These buttons are present only on the large controllers (EC-200 and EC-210).

Image 10-29

1 Live Function Button Group
R Right Side of the Controller

Description

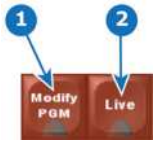

Image 10-30

	Button Name	Description
1	Modify PGM (Modify Program)	The red **Modify PGM** latching button toggles on and off the possibility to modify a destination in the Program Part of the GUI. The LED is red when active.
2	Live	The red **Live** latching button toggles the "Live" function for selected Destiantions, as if it were in Encore™. The LED is red when the Live mode is active.

The functionality of each of these buttons is more closely described in “Controller Operation”, page 359.

10.22 Trackball (EC-200/EC-210 only)

Overview

This assembly is present only on the large controllers (EC-200 and EC-210).

Image 10-31

1 Trackball
2 Ring
B1 TL (Top Left) Button
B2 TR (Top Right) Button
B3 BL (Bottom Left) Button
B4 BR (Bottom Right) Button

Description

This is a ergonomic control device used with thumb, finger or palm of your hand to move the cursor like with a mouse. Interaction with other parts of the interface is also possible.

Additional functionality of the Trackball and its modifiers is described in Chapter “Controller Operation”, page 359.

10.23 Rotary Encoders (EC-200/EC-210 only)

Overview

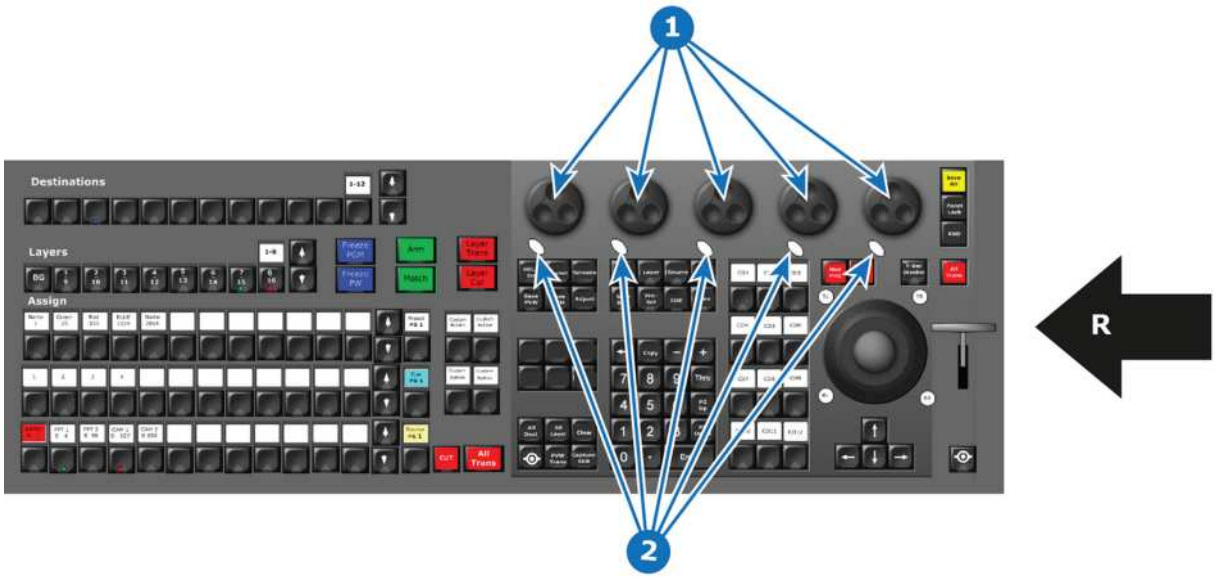

Image 10-32

1 Rotary encoders
2 Modifier buttons
R Right Side of the Controller

Description

The five (5) rotary encoders to the top right are referred to as wheels or modifier wheels. Wheels are named from left to right WH1 – WH5. They have one modifier button each.

These encoders are present only on the large controller.

10.24 Panel Lock button (EC-200/EC-210 only)

Overview

Image 10-33

1 Lock Panel Button
R Right Side of the Controller

Description

Pressing the Panel Lock button locks the console buttons and touchscreens, which prevents them from being used. To unlock the console, using the numpad, key in **4096** and press **Enter**.

This button is present only on the large controller.

10.25 Save Button (EC-200/EC-210 only)

Overview

Image 10-34

1 Save Button
R Right Side of the Controller

Description

This button replicates the Save button (floppy disk icon) in the EMTS (Event Master Tool Set).

This button is present only on the large controller.

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About this chapter

This chapter provides a detailed description of how to connect and configure the EC-30, EC-50, and EC-200 and EC-210 controllers.

11.1 General

Overview

The EC-200/EC-210 is a stand-alone controller that supplies full control over Events Master series devices.

The EC-50 is a wing-concept in the sense that it needs a host computer to work. Host computers specs should follow the outline for the Event Master Toolset “Preferred” spec.

The EC-30 is a compact version of the EC-series Event Master controller that is added to an existing Event Master control computer as a USB peripheral. The EC-30 provides essential selections for sources, presets, layers, and destinations.

11.2 EC-30 controller connection

Prerequisites

Event Master Toolset revision 4.2 or higher must be installed on the Host computer prior to the connection of the EC-30.

Verify that the Host computer is equipped with the latest software version available on the Barco web site (URL:*https://www.barco.com/*). Refer to the chapters “Download of Event Master Toolset Software”, page 105 and “Software installation”, page 106 for more information on the software downloading and how install it on the Host computer.

Connection diagram

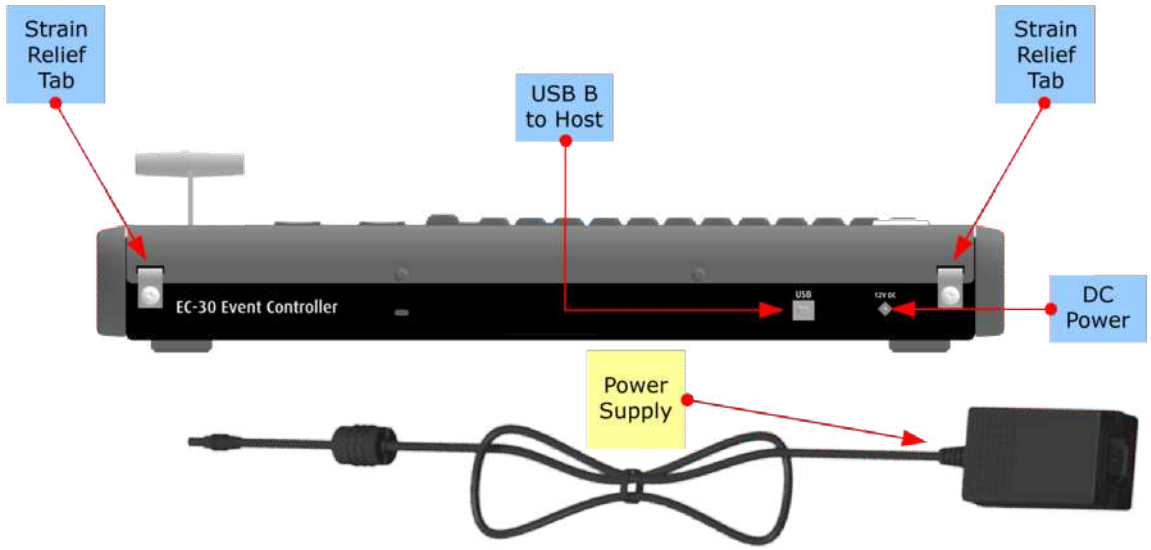

Image 11-1: EC-30 connections

Description

1. Connect the Host computer to the USB B connector on the EC-30. Necessary cables are provided in a new system. In the case that the original cables are missing, simply use standard computer cabling to make these connections.
2. Connect AC power to the power supply, and connect the power supply to the DC power receptacle on the rear panel of the unit.
   Running the power-supply cable through one of the strain-relief tabs on the rear of the unit can help to keep the cable from pulling out of the DC power receptacle. Loosen the screw on a relief tab; run the power-supply cable through the tab; tighten the screw.
   You can consume extra cable length, if necessary, by passing the cable through both tabs.
3. Power up the EC-30 control panel, Host computer, and peripherals.

During the Event Master Toolset installation you are asked to add a driver, be sure to answer yes to this question in order to use the EC-30 with your host computer. If the driver is not installed the EC-30 will not work.

11.3 EC-50 controller connection

Prerequisites

Event Master Toolset revision 2.0 or higher must be installed on the Host computer prior to the connection of the EC-50.

Verify that the Host computer is equipped with the latest software version available on the Barco web site (URL:*https://www.barco.com/*). Refer to the chapters “Download of Event Master Toolset Software”, page 105 and “Software installation”, page 106 for more information on the software downloading and how install it on the Host computer.

Connection diagram

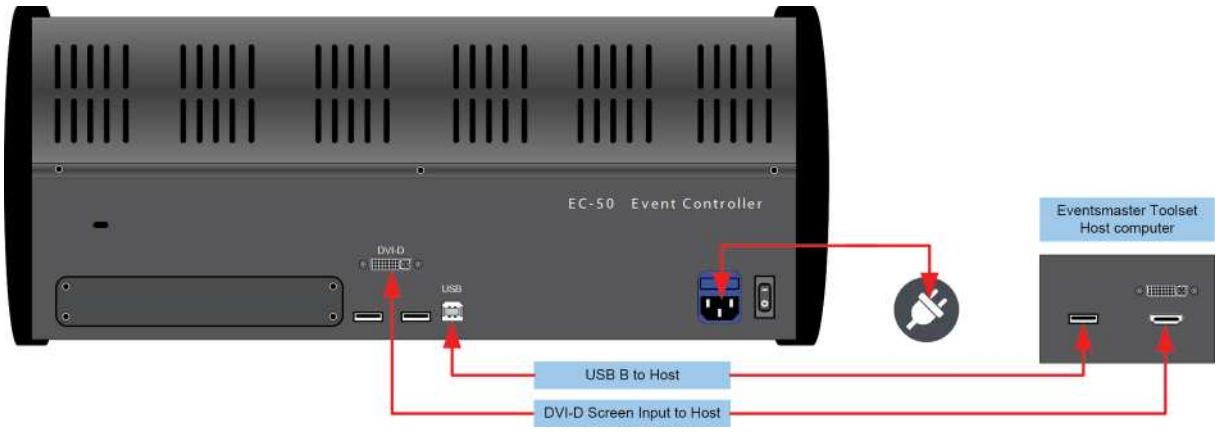

Image 11-2: EC-50 connections

Description

Connect the external screen and USB communication from the host computer to the DVI and USB B connector on the EC-50.

Plug the cord to the power outlet.

Necessary cables are provided in a new system. In the case that the original cables are missing, simply use standard computer cabling to make these connections.

11.4 EC-200/EC-210 controller connection

Prerequisites

EC-200 is delivered with Event Master Toolset revision 3.0 or higher. EC-210 is delivered with Event Master Toolset revision 6.0 or higher.

Verify that the EC-200/EC-210 is equipped with the latest software version available on the Barco web site (URL:*https://www.barco.com/*). Refer to the chapters “Download of Event Master Toolset Software”, page 105 and “Software installation”, page 106 for more information on the software downloading and how to install it on the controller.

Connection diagrams

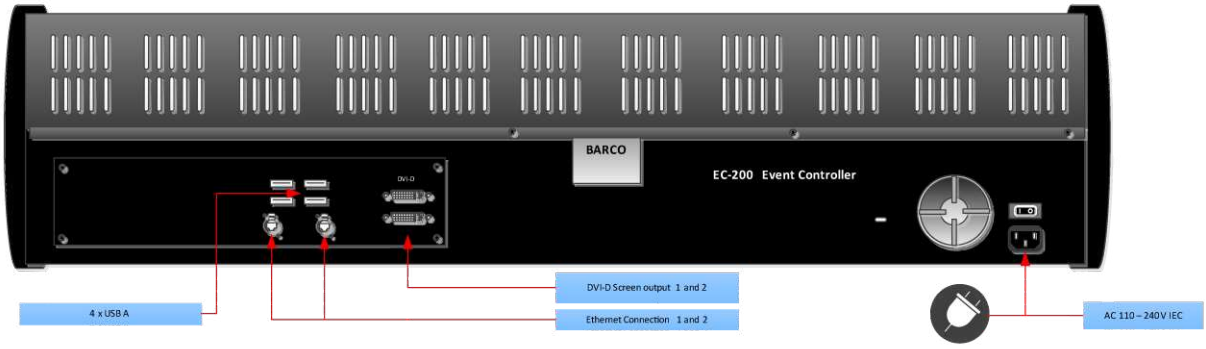

Image 11-3: EC-200 connections

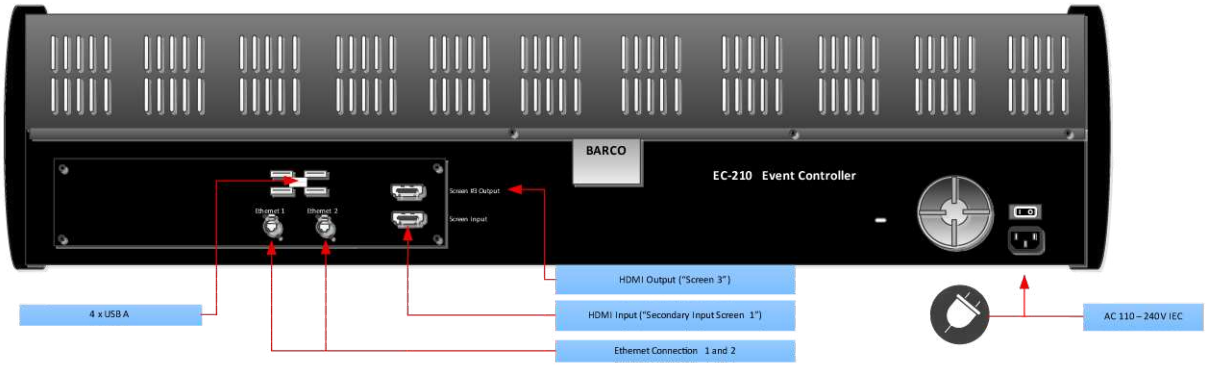

Image 11-4: EC-210 connections

Description

Connect the network outlet 1 to your Event Master Device Network for static IP address and outlet 2 for a DHCP assigned IP address. Plug the cord to the power outlet. Necessary cables (except a network cable) are provided in a new system. In the case that the original cables are missing, simply use standard computer cabling to make these connections.

The 4 USB connectors in the back can be used for keyboard and mouse and other supported USB devices. The USB connector in the middle of the top of the console is to be used with the USB flash drive that ships with the controller.

11.5 Touchscreen calibration

General

This feature depends on the controller type:

EC-50

The EC-50 requires a host computer. Calibration of the touchscreen could be necessary when your touchscreen responds imprecisely.

EC-200/EC-210

The EC-200/EC-210 has 2 integrated capacitive touchscreens that do not require calibration. If they don't behave properly there can be dirt between the surface of the screen and the cover.

EC-50 Touchscreen calibration

Image 11-5

The operating system on the host computer provides this capability as it would for any standard touchscreen. Refer to the OS manual for the correct procedure.

11.6 Lights

EC-50 Overview

Image 11-6

1 Script Light
2 Work Light
3 Red Backlight

EC-200/EC-210 Overview

Image 11-7

1 2 x Script Light
2 Work Light
3 Red Backlight

Description

Script Light

EC-50 and EC-200/EC-210 controllers are respectively supplied with one and two flexible script light connections equipped with LED light. Light can be adjusted for brightness in the Event Master Toolset Settings menu page in the tab User Prefs, only available when hardware is connected.

Work light

White work light under the hand rest is available as additional light directly in front of the console. Light can be turned on and off in the Event Master Toolset Settings menu page in the tab User Prefs, only available when hardware is connected.

Red backlight

The Red backlight indicates, from the rear, that the console is powered on and also serves as a design element. Light can be turned on and off in the Event Master Toolset Settings menu page in the tab User Prefs, only available when hardware is connected.

11.7 Assigning resources to the desk

Overview

Image 11-8

In the Event Master Toolset, click on the icon to open the controller menu setup page.

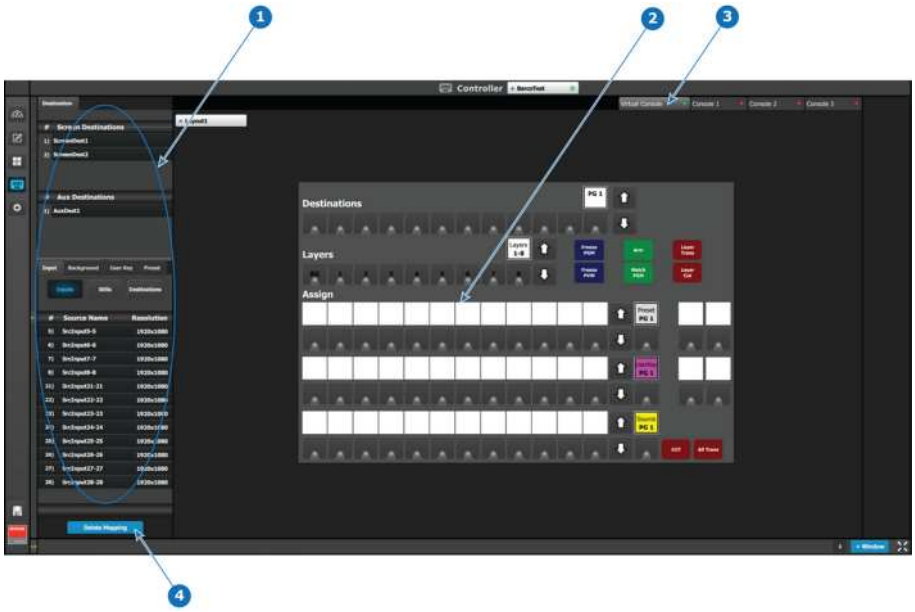

Image 11-9

1 Resources
2 Virtual console
3 Console Representation Selection
4 Delete Mapping button

How to Assign resources

Drag and drop the resources from the left side onto the buttons corresponding to the ones on the console.

How to remove incorrect mapping

In case of incorrect button mapping(s), the **Delete Mapping** button in the lower part of the resource pane is available. When this button is clicked on it will turn in red. Select the button(s) the incorrect mapping of which is to be deleted, then click the red **Delete Selected** button.

How to use the Console Representation Selection

At the top right of the screen are two tabs with LED indicators. A green LED means available, and a red LED means unavailable or not connected. The Virtual console is always available for use in Event Master Toolset. When an EC-30/EC-50 is connected or if an EC-200/EC-210 is used the Console 1 tab is also available.

Button assignments made on the Virtual Console tab follow suit onto the Console 1 tab, and vice versa, for each of the four layouts. The Virtual Console can display a layout separately from the Console 1 page, allowing the Virtual Console to be used as a "soft" extension of the physical console.

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About this chapter

This chapter describes the proper usage of the EC-30, EC-50, and EC-200/EC-210 controllers. The left-hand side of the EC-200/EC-210 and the EC-50 are identical in operation.

12.1 General Overview

Overview

The layout of the keyboard of the EC-30, the EC-50, and the left-hand side of the EC-200/EC-210 is designed to give direct access to memories and selections in a live situation.

Programming, Playback, and Edit of any given event is greatly sped up, enhancing the abilities of an operator to react quickly to any given situation.

Image 12-1: Event Master controllers

12.2 EC-200/EC-210 Firmware Upgrade

General

The EC-200/EC-210 controller firmware can be updated through the Web App in the Settings Menu > Controller > Software tab. Please refer to “Settings Menu > Web App area > Tools > Manage Software”, page 264 for instructions on how to perform a firmware upgrade through the Web interface.

For more information on upgrading the EC-200/EC-210 firmware, see “*InfoT-1322: Upgrading the Firmware and Operating System on the EC-200 Controller*” on the Technical Downloads tab of the EC-200 Large event controller web page (URL: *https://www. barco. com/en/Products/Image-processing/Presentation-switchers/Large-event-controller. aspx#! downloads*).

12.3 How to power down and restart the EC-200/ EC-210

General

Because repeated hard power cycling over time may lead to corruption of the solid-state drive (SSD), all versions of the EC-200/EC-210 Event Master Toolset, version 4.0.29026 or higher, have a power-off soft button on the touchscreen.

Power-off soft button

The power-off soft button is above the save button on the Menu navigation bar. See Image 12-2 for the location of the power-off soft button.

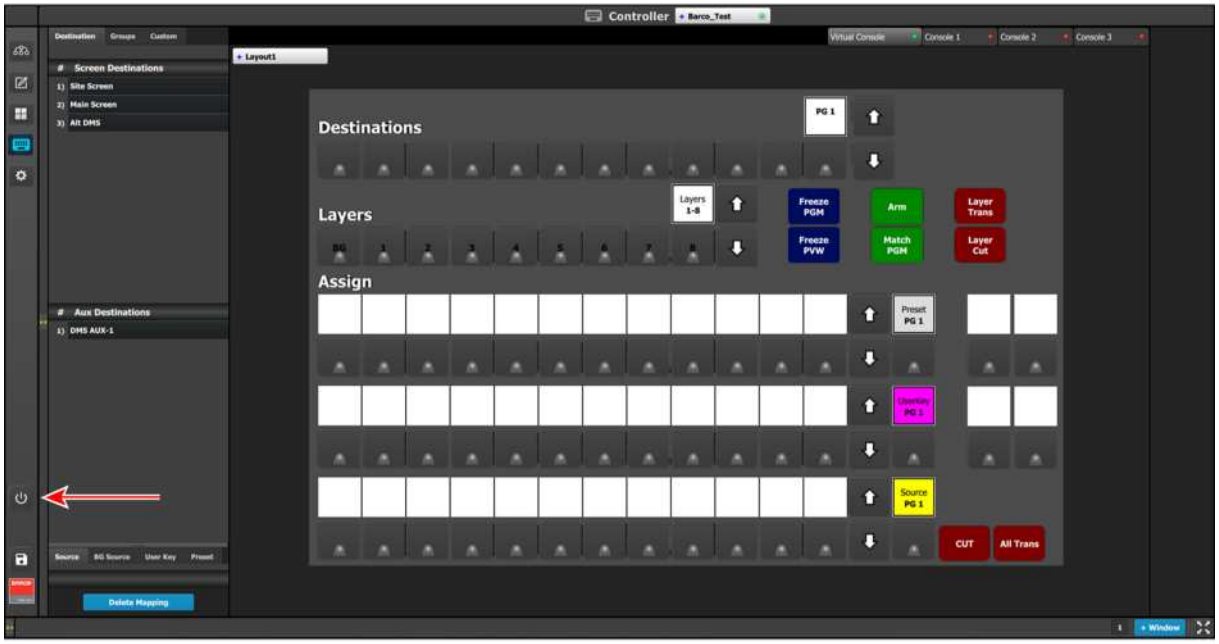


Image 12-2: Soft-Off button on the EC-200/EC-210 GUI

To shut down the EC-200/EC-210 console …

1. Click on the power-off soft button in the Menu navigation bar.
2. Select **PowerOff** in the confirmation window.

The user must power cycle the main (hardware) switch to power on the console. There is no soft PowerOn button.

For more information on the power-off soft button and SSD recovery, see "*InfoT-1325: SSD Recovery on the EC-200 Controller*" on the Technical Downloads tab of the EC-200 Large event controller web page (URL: *https://www. barco. com/en/Products/Image-processing/Presentation-switchers/Large-event-controller. aspx#!downloads*).

EC-200 power-off

The user must use the power-off soft button on the EMTS GUI to shut down the unit. When the shutdown sequence is finished, the main power switch, on the back of the unit, may then be moved to the off position and AC power can be removed. The power supply should be de-energized for at least one minute before re-applying mains power to the console.

EC-210 power off

The EC-210 may be powered off in the same manner as the EC-200, however, the unit may also be powered down by use of the power button to the right of the right-hand touchscreen. When the shutdown sequence is finished, the main power switch, on the back of the unit, may then be moved to the off position and AC power can be removed. The power supply should be de-energized for at least one minute before re-applying mains power to the console.

Image 12-3: EC-210

1 Power button

12.4 How to select destinations

General

Once the row of Destination buttons have been mapped they can be used to select or deselect screens, AUXes, and destination groups.

A range of actions can be performed with this selection:

- Transition via Cut or All-Trans.
- Included in the record of a Preset;
- Prepare the destination for Layer manipulation.
- Change time of the destinations Transition. Note: time is assigned to each destination individually.

Destinations selected via the console have the same actions available as are available in the Event Master Toolset, just in a more hands-on direct way.

12.5 How to use the Layer buttons

General

Similar to the Destination Buttons the Layer buttons create a selection for further actions.

Buttons are as standard in the same select mode as the destinations, latch on, latch off.

A range of actions can be performed with this selection:

- Assign a Source file via the Assign buttons from the Source bus.
- Layer Transition or Cut via the Red Layer Executors to the right of the Layer button row.
- Freeze via the Blue Layer Executors to the right of the Layer button row.
- Arm via the Green Layer Executors to the right of the Layer button row.
- Match Program via the Green Layer Executors to the right of the Layer button row.

A layer selection via the console has the same actions available as are available in the Event Master Toolset, just in a more hands-on direct way.

If a layer is not on preview or program, pressing the button will add the layer to preview and select it for modification.

Once on PVW only the clear button in the GUI or on the right side of the controller will remove the layer from PVW.

12.6 What are Layer executers?

General

These are the buttons to the right of the Layer Buttons, the function of them is described in context above and in detail below.

Freeze PGM

Button Freezes program of selected Layer(s) of the selected destination(s), blue LED when active.

Press again to release freeze.

Freeze PVW

Button freezes preview of selected Layer(s) of the selected destination, blue LED when active.

Press again to release freeze.

Arm

Button arms key-frame effects on selected layers in all selected destinations.

Indication of armed FX on PGM, red LED.

Indication of armed FX on PVW, green LED.

Match PGM

Match the selected layer in Preview to its corresponding layer in Program.

Button matches the function of Match Program in the GUI.

Blinks red when pressed.

Can be used across multiple layers and destinations.

Layer Trans

Transitions Selected Layers into Program, at a rate based on the # of frames set for the layer in the GUI.

Button matches the function of Trans in the GUI below the workspace.

Layer Cut

Cut selected layer into Program.

Button matches the function of CUT in the GUI below the workspace.

12.7 How to use assign buttons

General

The Assign buttons are rows of 12 user-mappable buttons that allow for quick recall of a memory or resource.

Each row can be selected independently to several function (bus) types.

Currently available assignment are:

Source (Yellow)

Places the mapped source into the selected layer(s) or AUX.

User Key (Magenta)

Recalls the mapped User Key to the selected layer.

Preset (White)

Recalls the mapped Preset to the whole Preview.

Cues (Cyan)

Recalls the mapped CUE for “Play/Pause” and “Stop” actions.

BG Source (Green)

Places the mapped BG to the selected Destination.

If LIVE mode is activated the above actions happen to the Program instead of the Preview.

12.8 How to use the page arrow buttons

General

Each row of **Assign** buttons has a display that shows the active page and **up and down arrow** buttons that are used to change pages.

Up and **down** increase or decrease the page number.

The controllers allow for many pages of each function type to be assigned. The following two-key combinations allow the user to change pages in larger increments (jumps).

1. Press and hold the **UP** button and then press a button on the assign row. Button 1 jumps to page 10, button 8 to page 80, and so forth for all of the buttons.
2. Press and hold the **DOWN** button and then press a button on the assign row. Button 1 jumps to page 1, button 12 to page 12, and so forth for all of the buttons.

A quick return to page 1 is also possible by holding the **Barco Eye** and tapping the down arrow.*

(*) This functionality is not available on the EC-30/EC-50.

12.9 How to use transition buttons

General

Four types of transitional triggering are available:

All Trans

All Trans (Transitions All) is the way to start a timed transition of Destinations. It transitions the set up preview into program. This function can also be found in the GUI, in the bottom right corner, below the assignment pane.

In the case a transition is not completed it can be reversed.

A manually started transition can be finished with an All Trans command and an All Trans command can be finished with the T-bar.

Only selected destinations are affected. Unselected destinations are not affected by the transition.

Cut

Cut transitions the selected destination(s) from preview to program, in a single frame's time, set by the System Native Rate. This function can also be found in the GUI, in the bottom right corner, below the assignment pane.

Layer Trans

Layer Trans transitions the selected layer in any Destination, whether the Destination is selected or not. This button is placed on the right side of the Layers selection bus. It can also be found in the GUI, below the workspace.

Layer Cut

Layer Cut transitions the selected layer(s) in any Destination, whether the Destination is selected or not. This button is placed on the right side of the Layers selection bus. It can also be found in the GUI, below the workspace.

12.10 How to use the T-bar

General

The **T-bar** is the way to manually transition Destinations. It works both ways to transition the set up preview into program. In the case a transition is not completed it can be reversed. A manually started transition can be finished with an All Trans command.

Only selected destinations will be transitioned with the T-bar. Any unselected destinations will not be affected.

12.11 How to use the Custom Function Buttons

General

The 4 custom function buttons to the right of the Assign Buttons are used for several tasks and can be mapped to various system or layer functions, which can be found on the Custom tab in the Resources area of the Console Menu page.

12.12 EC-200/EC-210 Philosophy

General

The EC-200/EC-210 introduces a new way of programming a Video controller in parallel with a more traditional way. In order to understand what is possible a small session on philosophy is in order.

About programming on the EC-200/EC-210

The use of a control system is typically divided in the following major tasks:

1. **Configuration and Setup of Unit and System.**

   The Configuration menu is available on the touchscreen monitors. The actions to configure the system, however, are performed with trackball (mouse) or touch and drag operations on the touchscreen, rather than by using control surface buttons.

2. **Programming creation/edit.**
   - Creation is when information is added into the system
   - Edit is when parameters are changed or adjusted and then saved.

3. **Execution playback/live control-edit.**
   - Playback is when memories and cues are recalled to be executed
   - Live control is when memories are recalled and modified or expanded with direct interaction, either in Preview (normal) or direct on program if LIVE is selected.

Programming will typically happen on the right side of the desk, and Execution will still be possible to the left, like selecting Layers and sources and record presets. The user is of course free to mix these concepts according to the user's own workflow preference.

A word about the hardware

There are two main parts in the EC-200/EC-210 controller. The Left side is dedicated to the industry's feedback on many buttons and Encore like presentation switching. The Right side is inspired by some of the ideas from the lighting industry, which has a much longer tradition of managing large numbers of instruments. We will need this in order to effectively use our E2 and its family members, including other devices like projectors and playback devices.

General guidelines

Selection

By using the **Numpad** of the console we will allow for the selection of several parts of the system and once selected allow them to be manipulated (apply an action via function buttons).

The primary group of Function Buttons are located just above the Numpad.

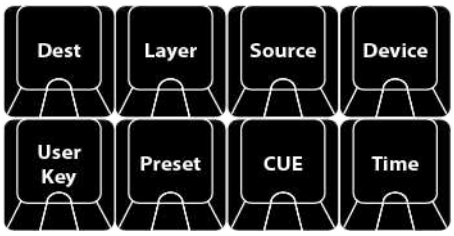


Image 12-4

The following buttons are available:

Button	Description
Dest	Destination refer to the most downstream location in the chain, usually a screen.
Layer	Layer refers to a layer that can hold live video (source).
Source	Source refers to an image source, such as a Source file, Still image, and more.
Device	Device refers to devices in an Event Master System. At present, this button has no functionality assigned.
Preset	Preset refers to Presets stored, as viewed in the Event Master Toolset.
User Key	User Keys are building blocks of settings for the Layers.
Time	Time refers to the timing parameter of the selected Top Functions (Destination or Layer).
Cue	Cue refers to Cues stored, as viewed in the Event Master Toolset.

With these function buttons a syntax can be applied to make a selection that is then used for further action.

For example, a selection can be made like:

`DEST 1 ENTER`

This syntax will Select the Destination 1, just like clicking on the Tab in the destination.

Further there are modifiers to the syntax:

`DEST 1 + 3 ENTER`

This syntax will select Destination 1 and 3.

Or:

`DEST 1 Thru 3 ENTER`

This syntax will select Destinations 1 thru 3.

You can probably see how efficient this is when you have lots of destinations.

Your modifiers are:

– , **+**, **Thru** to add or subtract from the selected function.

There are several examples below in this manual to understand how this can work in favor of the user.

Numbering

Destination, Layer, Source, Cue, Preset, and Userkey all have a number and a name that are independent from each other. The Default name include the number, but does not need to remain in order to recall over syntax.

There are further functions that can be controlled with syntax like screens, layouts and such. This is further described below.

There are also a range of combined button presses that is meant to speed up the programming and control.

Contextual Buttons

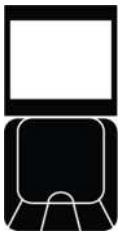


Image 12-5

The 12 Contextual Buttons to the left of the numpad are used to add situational functionality to the syntax. Certain button presses change the naming of the displays and the functions of the buttons. They are referred to as CD1 thru 12 per row from the top left.

General rules

Note that all possible syntax is not supported.

A few general rules:

- Any Syntax entry must end with **ENTER.**
- Any Syntax is max 3 Functions deep before **ENTER**.
- In the case of unsupported syntax it will just not work or register.

The Syntax Feedback line in the Controller Menu Page is a huge help to understand what is supported and not.

12.13 Function Button For Syntax

Destination

Image 12-6

Destination refers to the most downstream location in the chain, usually a screen. See the earlier Chapters for the definition of Destination.

When **DEST** is pressed it lights its blue LED and opens the syntax entry for numbers and modifiers as per above.

The contextual Buttons to the right of the numpad also light up and is populated with functionality that can be used in the syntax. These are:

Contextual Button	Display	Description
CD1	AUX	• `DEST + AUX # ENTER` select the Aux #, just as clicking it in the GUI. • `DEST + AUX 1 + 2 + 5 ENTER` will select Aux 1, 2, and 5. • `DEST + AUX – 2 ENTER` will unselect Aux 2, but 1 and 5 stays selected
CD2	BG Input	0 is Matte and maps the WH1 Red, WH2 Green, WH 3 Blue
CD3	Group	• `DEST + Group # ENTER` arms the Destinations in that particular group, just like clicking it in the GUI. • `DEST + Group 1 + 3 + 5 ENTER` arms Destination Groups 1, 3, and 5. • `DEST + Group – 3 ENTER` disarms Destinations in Group 3 while leaving destinations in Groups 1 and 5 armed.
CD4	Super Dest	• `DEST + Super Dest # ENTER` arms that particular Super Destination (including the destinations that compose it). • `DEST + Super Dest 1 + 2 + 4 ENTER` arms Super Destinations 1, 2, and 4.

Contextual Button	Display	Description
		• DEST + Super Dest –2 ENTER disarms Super Destination 2 while leaving Super Destinations 1 and 4 still armed.
CD5	Super Aux	• DEST + Super Aux # ENTER arms that particular Super Aux (Including the AUXes that compose it). • DEST + Super Aux 1 Thru 3 ENTER arms Super Auxes 1, 2, and 3. • DEST + Super Aux - 3 ENTER disarms Super Aux 3.
CD6	Empty	
CD7	BG Toggle	Activate Toggle mode on selected destinations BG on/off .
CD8	Trans Curve	will toggle between Linear / S-curve / Log / Exp.
CD9	Empty	
CD10	Empty	
CD11	Freeze PGM	Freezes Program in selected Destinations including Sources and Backgrounds.
CD12	Empty	

Layer

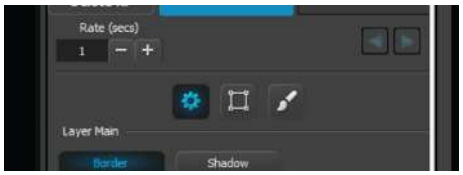
Image 12-7

Layer refers to a layer that can hold live video. See the earlier Chapters for the definition of Layer.

When Layer is pressed it lights its blue LED and opens the syntax entry for numbers and modifiers as per below:

- LAYER # ENTER will select LAYER #, just as clicking it in the GUI.
- LAYER 1 + 3 + 5 ENTER will select LAYER 1, 3 and 5 just as clicking it in the GUI with Multiple Select on.
- LAYER – 3 ENTER deselects LAYER 3, while LAYERS 1 and 5 stay selected.
- LAYER CLEAR removes all currently selected layers from Preview and unlocked Program.

The contextual Buttons to the right of the numpad also light up and are populated with functionality that can be used in the syntax. These are:

Contextual Button	Display	Description
CD1	PIP	Selects selected Layer as PIP, indicates that by color Green backlight.
CD2	KEY	Selects selected Layer as KEY, indicates that by color Red backlight.
CD3	Super Layer	• LAYER + Super Layer # ENTER selects Super Layer #, just as in the GUI. • LAYER + Super Layer 1 + 4 + 6 ENTER selects Super Layers 1, 4, and 6, just like clicking on them in the GUI with Multiple Select turned on. • LAYER + Super Layer –1 ENTER deselects Super Layer 1 and Super Layers 4 and 6 stay selected. • LAYER + Super Layer + CLEAR clears all selected Super Layers from their respective Destinations.
CD4	Layer Main	Thumbnail like GUI “Sprocket”. Selected layer Adjustment area is indicated by light blue backlight. Selects and open the Layer Main area: 

Contextual Button	Display	Description
CD5	Layer Window	Thumbnail like GUI “Box” Selected layer Adjustment area is indicated by light blue backlight Selects and open the Window Adjustment area:
CD6	Layer Effects	Thumbnail like GUI “Brush” Selected layer Adjustment area is indicated by light blue backlight Selects and open the Layer Effects area:
CD7	Empty	Empty
CD8	Border ON/OFF	Toggles Border setting of selected layer ON vs OFF.
CD9	Shadow ON/OFF	Toggles Shadow setting of selected layer ON vs OFF.
CD10	Reset	Same as Reset in GUI
CD11	Full H	Same as in GUI
CD12	Full V	Same as in GUI

PAGE 2 via **PG Up** (Page 1 via **PG Down** respectively) :

Contextual Button	Display	Description
CD1	Add Keyframe	Adds Keyframe to selected Layers.
CD2	Delete Keyframe	Deletes Keyframe of selected Layers.

Layer functions are mapped as below:

WH 1	H Pos
WH 2	V Pos
WH 3	Layer size (Keep AR whether unlocked or not.)

Arrow Buttons

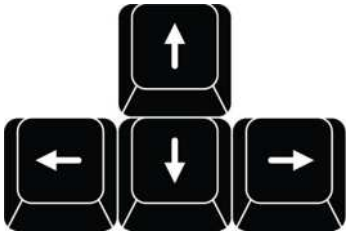


Image 12-8

The standard function is moving a layer just as in EMTS now.

When the Barco Eye Button is pressed and held the arrow buttons will allow for Z-Order alignment, selected layers will move one Z-order up or down according to the arrow indication- Left arrow is top most Z-order Right arrow is bottom most Z-order.

Source

Image 12-9

Source refer to an source of image or video such as a Source file, Still store and Destination. See the earlier Chapters for the definition of Source.

When Source is pressed it lights its blue LED and opens the syntax entry for numbers and modifiers as per above and in detail below:

- `SOURCE # ENTER` will add Source file # to the selected layer or add a layer, just as dragging it in the GUI.
- `SOURCE 1 THRU 4 ENTER` will add Source file 1 to the Z-order first selected layer and continue to add source files 2 – 4 to Z-order layers 2 – 4 or add as many layers needed until no layers are available.
- `SOURCE 1 + 5 + 88 ENTER` will add Source file 1 to the Z-order first selected layer and continue to add source files 5 and 88 to Z-order layers 2 – 3 or add as many layers needed until no layers are available.
  Note: SOURCE syntax support the . (dot) as indicating a source file like 88.5

For live input sources, Source is the actual source file, not the input in number.

The contextual Buttons to the right of the numpad also light up and is populated with functionality that can be used in the syntax. These are:

Contextual Button	Display	Description
CD1	RESET Size	Once pressed Resets the Sizing Adjustments of the source in the selected Layer, just as clicking the Blue Reset icon button in the GUI. If multiple layer are selected, no source files sizing is Reset.
CD2	Create Source (file)	Creates new source file just like the plus button in the GUI
CD3	SAVE Source	Saves the source file
CD4	Source Adjust	Opens the Adjust of the selected source on the Sprocket page.
CD5	Color Adjust	Opens the Adjust of the Color correction of the selected source on the Brush page
CD6	Empty	
CD7	Freeze Input	Will freeze the INPUT of the selected source file. If the selected source IS frozen it will be un-frozen.
CD8	Bind	Binds Source file to User key per syntax. `SOURCE` # (is source file) `BIND` # (is user key number) `ENTER`
CD9	Empty	
CD10	Empty	
CD11	Empty	
CD12	Empty	

Wheels for Source Adjust (Sprocket)

WH1	Source H Size (AR lock must be unlocked to adjust seaparately from Source V Size)
WH2	Source V Size (AR lock must be unlocked to adjust seaparately from Source H Size)
WH3	Source H Pos
WH4	Source V Pos
WH5	Source Aspect Ratio (Selects from drop down list)

Wheels for Color Adjust (Brush)

WH1	Contrast Overall
WH2	Brightness Overall
WH3	Gamma
WH4	Hue
WH5	Saturation

Device

Image 12-10

At present, this key has no functionality assigned.

User Key

Image 12-11

User Keys are building blocks of settings for the Layers. See the earlier Chapters for the definition of user Keys.

When User Key is pressed it lights its blue LED and opens the syntax entry for Record and Recall of user keys.

Recording of a Preset is done in conjunction with the Save PVW and Save PGM Buttons like below:

- `USERKEY # ENTER` will recall userkey # to all selected layers.
- `USERKEY 5 + 11 + 7 ENTER` will add userkey 5 to the Z-order first selected layer and continue to add userkey 11 and 7 to Z-order layers 2 – 3

To record userkeys you can have only one Layer selected. Recording a userkey is done via the below syntax:

Image 12-12

- `SAVE PVW USERKEY # ENTER` will save the currently selected layer properties in Preview into the selected number. If the number exists it will be overwritten with the current settings/enables.
- `SAVE PGM USERKEY # ENTER` will save the currently selected layer properties in Program into the selected number. If the number exists it will be overwritten with the current settings/enables.
- `USERKEY ENTER` saves next available userkey.

The contextual Buttons to the right of the numpad also light up and are populated with functionality that can be used in the syntax. These are:

CD1 -11	is the Enables and toggles on off
CD12	is All / None as toggle function

Enables of the User Keys are described in an earlier chapter.

Preset

Image 12-13

Preset refers to Presets stored in Event Master Toolset. See the earlier Chapters for the definition of Presets.

When **Preset** is pressed it lights its blue LED and opens the syntax entry for Record and Recall of user keys.

Recording of a Preset is done in conjunction with the **Save PVW** and **Save PGM** Buttons like below:

- `PRESET # ENTER` will recall preset #
- `PRESET 5 + 11 + 7 ENTER` recall these presets in order, 5 being recalled first in a stack on fashion, information is added but not replaced.

Recording a preset is done via the below syntax:

- `SAVE PVW PRESET # ENTER` will save the currently selected destination(s) into the selected number. If the number is already in use, the preset will be overwritten with the current composition on Preview for the selected destination(s).
- `SAVE PVW PRESET ENTER` without a # saves next available preset.

The contextual Buttons to the right of the numpad also light up and are populated with functionality that can be used in the syntax. These are:

Contextual Button	Display	Description
CD1	Lock / Unlock	Locks or unlocks the chosen preset(s), using the numpad.
CD2	Renumber	Renumber the Selected preset
CD3	Lock All	Locks all Presets so that they cannot be deleted or edited.
CD4	Unlock All	Unlocks all Presets so that they can be deleted or overwritten.
CD5	Complete/Relative Toggle	Displays the current type of Preset to be saved. The choice is either Complete (default) or Relative, and CD5 will display the active choice.

Example:

- `PRESET 45 Renumber 55 ENTER` will renumber Preset 45 to 55.

Special Function with Modifiers with Preset recall and Record:

- **+ numpad** will increase selection by one.
- **- numpad** will decrease selection by one.

Cue

Image 12-14

Cue refers to Cues stored in Event Master Toolset. A Cue can be placed into standby, waiting for the operator to press the **Play** button to start the Cue. The syntax is `CUE + # + ENTER`, then press **Play** to start the Cue.

Time

Image 12-15

Time refers to the timing parameter of the selected Top Functions. This button will allow entering time for different functions.

Dest sets Transition Time of the Destination, and Layer sets the Transition Time of the Layer in frames based on the System Native Rate.

Syntax for TIME is:

- `DEST # TIME # ENTER` will set the Transition time of # frames to Destinations # and add Destination # to any other selected Destinations for further actions.
- `DEST 1 + 5 TIME 60 ENTER` will set the Transition time of 60 to Destinations 1 and 5, and add Destination 1 and 5 to any other selected Desalinations for further actions.
- `LAYER 1 + 4 TIME 120 ENTER` will set the Layer Transition time of 120 to Layer 1 and 4, and add Destinations 1 and 4 to any other selected Destinations for further actions.

12.14 Additional direct access and functionality

Help Error

Image 12-16

At present, the **Help Error** button has no functionality assigned to it, and it is reserved for future use.

Layout

Image 12-17

The **Layout** function button allows for selection and recall of layouts where applicable.

Multi-viewer, Console Buttons and Programming page layouts are currently implemented.

To select a Layout use syntax like:

- `LAYOUT 1 [Contextual Button] ENTER` will recall Layout 1.

The same number of layouts is available as in the GUI. Layout changes also act as they do in the GUI.

When a layout is selected, changes are recalled for that layout in real time, automatically.

Pressing **Layout** button will populate the Smart Displays with:

Contextual Button	Display	Description
CD1	MVR	`LAYOUT MVR (CD1) 1 or 2 or 3 or 4 ENTER` will recall Layout 1 – 4 respectively into the Multi-viewer
CD2	Program	`LAYOUT Program (CD 2) 1 or 2 or 3 or 4 ENTER` will recall Layout 1 – 4 respectively into the Programming Window. The Programming page can have up to ten layouts.
CD3	Console	`LAYOUT Console (CD 3) 1 or 2 or 3 or 4 ENTER` will Recall Layout 1 – 4 respectively into the Assign Buttons.

Screens

Image 12-18

The **Screens** button is used to change the active top menu page in the displays of the controller. There are controls for both internal displays (and for one external display on the EC-210).

The built-in touchscreens are numbered 1 and 2. The DVI outputs on the back of the EC-200 mirror those monitors, while the output on the EC-210 shows a discrete third instance of the Event Master Toolset.

When the **Screens** button is pressed, the contextual displays will be populated with:

Contextual Button	Display	Description
CD1	Config 1	Changes the left touchscreen's active menu to the Configuration Page.
CD2	Program 1	Changes the left touchscreen's active menu to the Programming Page.
CD3	MVR 1	Changes the left touch screen's active menu to the Multiviewer Page.
CD4	Config 2	Changes the right touchscreen's active menu to the Configuration Page.
CD5	Program 2	Changes the right touchscreen's active menu to the Programming Page.
CD6	MVR 2	Changes the right touchscreen's active menu to the Multiviewer Page.
CD7	Console 1	Changes the left touchscreen's active menu to the Controller Page.
CD8	Web 1	Changes the left touchscreen's active menu to the Settings Page.
CD9	Blank	
CD10	Console 2	Changes the right touchscreen's active menu to the Controller Page.
CD11	Web 2	Changes the right touchscreen's active menu to the Settings Page.
CD12	Dest Show/Hide	Reveals or hides the Destination banner in the Left screen

Save PVW (Save from Preview)

Image 12-19

Once pressed this button latches the function “Save from PVW Mode” and lights its LED as GREEN. This allows the user to store one or several Templates / Presets or User Keys after the syntax from Preview.

When the LED is RED, it indicates that the Save PGM button turned the EC-200/EC-210 in “Save PGM Mode”.

Example of use:

- `PRESET # ENTER` → Preset # is stored from Preview as new preset.
- `PRESET # ENTER` → If Preset # already exists, this action will **overwrite** it from Preview.
- `PRESET ENTER` → Next free preset number is created from Preview.

If either **Save PVW** or **Save PGM** is latched and the other is pressed it cancels the previous latch.

The GUI Button **Save PVW** will turn red to indicate the latched record state.

Save PGM (Save from Program)

Image 12-20

Once pressed this button latches the function “Save from PGM Mode”. This allows the user to store one or several Templates / Presets or User Keys after the syntax from Program.

This button does not have its own LED. Therefore, the LED on the **Save PVW** button will light RED to indicate that the "Save from PGM Mode" is active.

Example of use:

- `PRESET 5 ENTER` → Preset 5 is stored from Program as new preset.
- `PRESET 5 ENTER` → If Preset 5 already exists, this action will **overwrite** it from Program.
- `PRESET ENTER` → Next free preset number is created from Program.

If either **Save PGM** or **Save PVW** is latched and the other is pressed it cancels the previous latch.

As the Button for Save PGM does not have an internal LED the GUI also must indicate that the button is latched. The GUI Button Save PGM will turn red to indicate the latched record state.

Adjust

Image 12-21

The **Adjust** button provides a shortcut to open the Adjust tab on the active touchscreen.

If nothing is selected that has information that goes in the Adjust tab, it will still open and be empty.

All Dest

Image 12-22

All Dest provides a shortcut to select all Destinations for further actions. With press and hold key combinations, this button has added functionality:

A Single press selects all destinations.

When pressed and held and then the **CLEAR** button is tapped, all Destinations are un-selected.

When pressed and held and then the **BARCO EYE** button is tapped, the selection is inverted.

All Layer

Image 12-23

All Layer provides a shortcut to select all layers that are currently populated on Preview and unlocked Program areas of selected Screen Destinations for further actions. With press and hold key combinations, this button has added functionality:

A Single press selects all layers that are currently on Preview and unlocked Program areas of selected Screen Destinations.

When pressed and held and then the **CLEAR** button is tapped, all layers of selected Destinations are un-selected.

When pressed and held and then the **BARCO EYE** button is tapped, the selection is inverted.

Clear

Image 12-24

The **Clear** button has many functions and clearing selections and operands are often used in programming. Most of the CLEAR functionality has been included with each button and is not repeated here. The simplest function of CLEAR is:

- Clears the current selection of the latest selected DEST / LAYER / SOURCE to unselected.

After that it becomes more of a modifier with other buttons.

PVW Trans

Image 12-25

Currently selected layers in Preview will preview its Key Frame effect (move) without showing on program.

Capture Still

Image 12-26

With the **Capture Still** Button a Still Store can be captured via syntax. Declare the source file number to direct the capture process on the desired live source.

Syntax:

- `SOURCE # Capture Still ENTER`

Barco Eye

Image 12-27

The **Barco Eye** button works as a Modifier Button, like Windows/CTRL/Fn button on a keyboard. This is further described in functionality around other buttons.

Mod PGM (Modify Program) [Red button cap]

Image 12-28

Pressing button Unlocks Selected Destinations Program for Edit just as clicking the small lock in Program.

Red LED indicates active.

Live [Red button cap]

Image 12-29

The **Live** button latches and Red LED indicates active.

When the live function is active the Assign Key Source BUS or the Syntax actions regarding LAYERS/ SOURCE/PRESET/USER KEY are applied in the PROGRAM as opposed to the normal PREVIEW BUS.

LAYER

Layer Selection is made on PROGRAM.

SOURCE

Actions on layer SOURCE ONLY are executed on Program.

PRESET

Presets recalled with syntax and Assign Button are applied in Preview and transition direct to Program.

USER KEY

User keys recalled with syntax and Assign Button are applied direct in Program.

T-Bar Disable

Image 12-30

This button disables the T-bar from registering manual destination transitions.

The red LED stays lit while the T-Bar is disabled.

All Trans [Red button cap]

Image 12-31

Same function as the All Trans on the Left side.

Save All [Yellow button cap]

Image 12-32

Pressing this button saves all currently programmed parameters into non-volatile memory on the Event Master system hardware. It is the same as the Disk button in GUI. Confirmation is given in the bottom signal bar in red Save Done.

Panel lock

Image 12-33

Pressing the **Panel Lock** button disables the touchscreens and ignores all function buttons on the console. Once a button is pressed, or a screen is touched, the screens will show a request for a password to unlock the console.

Proceed like below:

- Press **Panel Lock** button.
- Once Locked all input from screens or panel result in a request for Password, 4 numbers from numpad + enter to unlock.

Standard Password to override all is **4096**.

Keyboard

Image 12-34

Pressing this button enables or disables the On Screen Keyboard. This setting is found in the Settings Menu Page.

Preventive maintenance actions

13

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13.2 S3 maintenance actions 380
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13.4 EC-30 maintenance actions 381
13.5 EC-50 maintenance actions 381
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13.1 E2 maintenance actions

MAINTENANCE TYPE C (perform every year)

The yearly maintenance actions, listed below, may be performed by the user in accordance with the procedures described in the E2 Maintenance chapter.

No.	Maintenance action	Remarks
1	Check battery valid date.	If the date is older than 4 years, replace battery as a preventative measure. See Image 14-51 for the location of the system battery. **Note**: When a new battery is installed, the user needs to place a sticker with the date on the inside of the metal plate (Bottom Panel) that indicates when the battery was last replaced. The absence of sticker means the battery has never been replaced. In this case the S/N sticker can be used for the reference date.

13.2 S3 maintenance actions

MAINTENANCE TYPE C (perform every year)

The yearly maintenance actions, listed below, may be performed by the user in accordance with the procedures described in the S3 Maintenance chapter.

No.	Maintenance action	Remarks
1	Check battery valid date.	If the date is older than 4 years, replace battery as a preventative measure. See Image 15-75 for the location of the system battery. **Note**: When a new battery is installed, the user need to place a sticker with the date on the motherboard mount that indicates when the battery was last replaced. The absence of sticker means the battery has never been replaced. In this case the S/N sticker can be used for the reference date.

13.3 EX maintenance actions

MAINTENANCE TYPE C (perform every year)

The yearly maintenance actions, listed below, may be performed by the user in accordance with the procedures described in the EX Maintenance chapter.

No.	Maintenance action	Remarks
1	Check battery valid date.	If the date is older than 4 years, replace battery as a preventative measure. See Image 16-15 for the location of the system battery. **Note**: When a new battery is installed, the user needs to place a sticker with the date on the motherboard mount that indicates when the battery was last replaced. The absence of sticker means the battery has never been replaced. In this case the S/N sticker can be used for the reference date.

13.4 EC-30 maintenance actions

No preventive action is needed on this device.

13.5 EC-50 maintenance actions

No preventive action is needed on this device.

13.6 EC-200/EC-210 maintenance actions

MAINTENANCE TYPE C (perform every year)

The yearly maintenance actions, listed below, may be performed by the user in accordance with the procedures described in the EC-200/EC-210 Maintenance chapter*.

No.	Maintenance action	Remarks
1	Check battery valid date.	If the date is older than 4 years, replace battery as a preventative measure. **Note**: When a new battery is installed, the user need to place a sticker with the date in the unit (on the rear of the chassis, near the Motherboard) that indicates when the battery was last replaced. The absence of sticker means the battery has never been replaced. In this case the S/N sticker can be used for the reference date.
2	Remove dust accumulation	Remove dust accumulation from the CPU fan on the motherboard with a few short bursts of compressed air.

14 E2 Maintenance

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About this chapter

This chapter describes how to service the E2 by replacing individual components.

Simple servicing

E2 is based on a modular design that ensures easy serviceability. Users can swap most of the E2 components in the case of damage, without shipping the unit to a Barco service center.

Methodology

Most procedures in these chapters include multiple steps to gain access to the parts requiring service. A workflow flow chart is provided next indicating all of the procedures and their relationships. Please refer to the chart to familiarize yourself with the sequence of procedures.

ESD recommendations

The following precautions must be taken:

- Perform the Service procedures only at approved anti-static work station equipped with anti-static mat.
- At all times use a conductive wrist strap attached to a solid earth ground.
- Always discharge yourself by touching a grounded bare metal surface before coming in contact with ESD sensitive electronic.

WARNING: Always switch power off and unplug the cords from the device before performing any maintenance operations described in this chapter.

WARNING: The device can be damaged by electrostatic discharge (ESD). When handling the device and any of its components, caution must be taken so that damage does not occur. Damage due to inappropriate handling is not covered by the warranty.

14.1 E2 Unit Overview

Orientation and main components

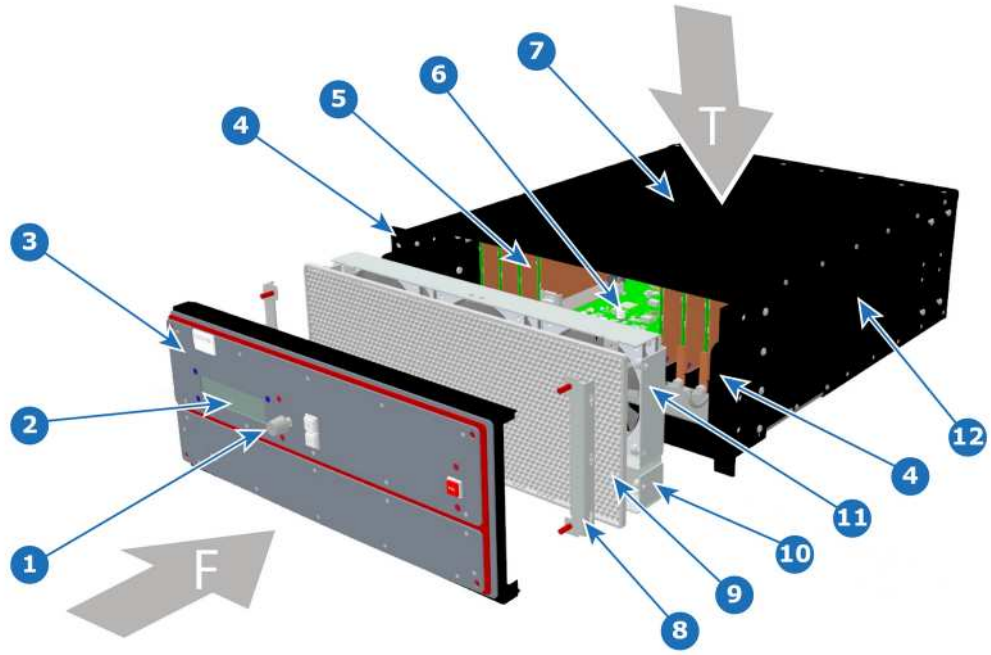

Image 14-1

T	Top	6	Mother Board
F	Front	7	Top Cover
1	Front Panel Knob	8	Front Brackets
2	VFD Display	9	EMI Filter
3	Front Cover Assembly	10	1RU Fan Tray
4	Rack Ears	11	3RU Fan Tray
5	VPU cards	12	Chassis

The EMI filter is no longer needed, and it can be removed.

14.2 Process Overview

Flow chart

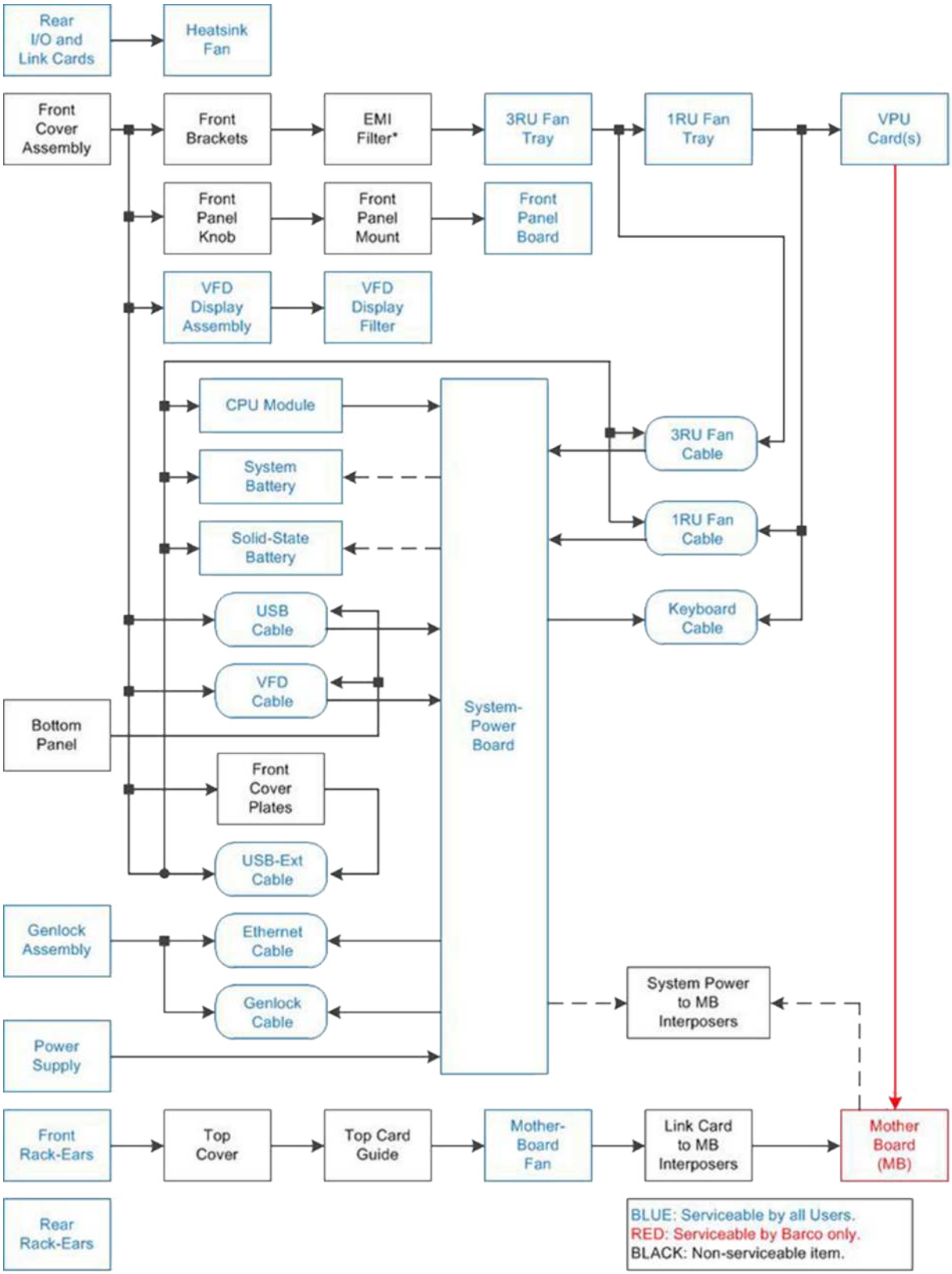

Image 14-2

The EMI filter is no longer needed, and it can be removed.

14.3 Spare Parts Serviceable by All Users

E2 Spare Parts list

P/N	Description	Comments
R767241K *	VFD Display assembly	
R767246K *	VFD Filter	
R767260K *	Front Panel board	
R767261K	System Power board	
R767263K *	Heatsink fan	One for each Input, Output, Link and VPU card
R767264K *	CPU module	
R767265K *	Motherboard Heatsink & Fan kit	
R767268K	Front Rack ears	Includes hardware for both sides
R767269K	Cable Kit set	Kit Contains: • 1x VFD-to-System board cable • 2x Fan tray-to-System board cables • 1x Genlock-to-System flat cable • 1x Front Panel Keyboard-to-System flat cable • 1x RJ45-to-System CAT5 Ethernet cable • 1x USB-to-System 5-pin cable
R767270K	1RU fan tray	The fans are not available separately
R767271K (Obsolete)	3RU fan tray	The fans are not available separately — will be replaced by R767280
R767273K *	Rear Rack ears (Connector protector)	Includes hardware for both sides
R767275K *	Solid-State Memory	
R767280K *	3RU fan tray	The fans are not available separately — will replace R767271K
R9004740 *	DVI Input Board	
R9004741 *	SDI Output Board	
R9004742 *	SDI Input Board	
R9004743 *	HDMI Output Board	
R9004744 *	DP/HDMI Input Board	
R9004745 *	DVI Output Board	Not available in release 1
R9004746 *	Link Card Board	
R9004747	VPU Board	Internal board
R9004748	Genlock Board	
R9004750 *	Link/CXP Cable	
R9004765 *	Quad DP 1.2 Output Board	
R9004769*	Power Supply (PS)	One PS only. System accepts two power supplies.
R9004785 *	Tri-Combo Input Board	
R9004786 *	Tri-Combo Output Board	
R9004791 *	Quad HDMI Input Board	
R9004792 *	Quad HDMI 2.0 Output Board	
R9004793 *	Quad DP 1.2 Input Board	
R9801120*	Motherboard Battery Kit	

(*) common between E2 and S3.

14.4 Rear I/O and Link Cards

Flow chart

Image 14-3

Overview

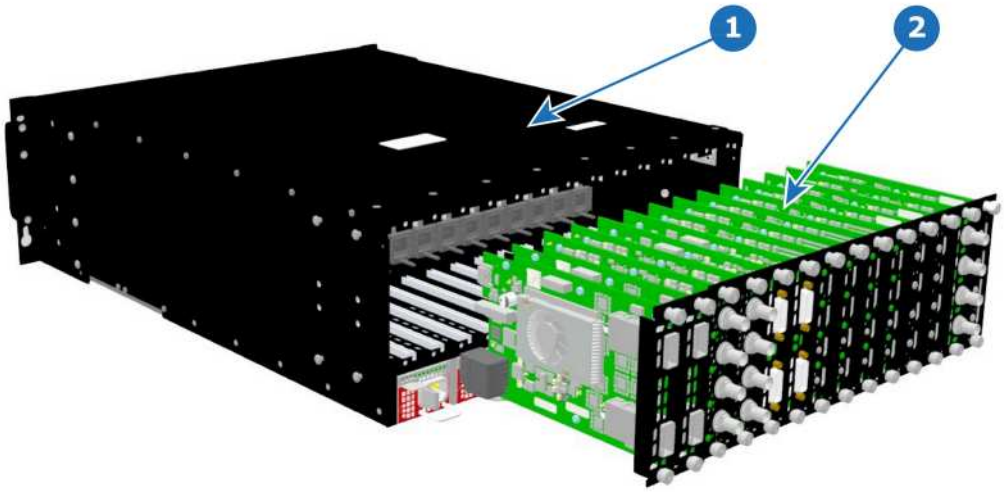

Image 14-4

1 Chassis
2 I/O and Link Cards

Concerned parts

R9004740	DVI Input
R9004741	SDI Output
R9004742	SDI Input
R9004743	HDMI Output
R9004744	DP/HDMI Input
R9004745	DVI Output
R9004746	Link Card
R9004765	Quad DP 1.2 Output Board
R9004785	Tri-Combo Input
R9004786	Tri-Combo Output
R9004791	Quad HDMI Input Board
R9004792	Quad HDMI 2.0 Output Board
R9004793	Quad DP 1.2 Input Board

Necessary tools

Phillips Screwdriver #2.

How to remove a card

1. Locate the card you wish to replace.

Note: There are 14 card slots. The first slot on the left is slot 1 and the last slot on the most right position is 14.

2. Loosen and unscrew the top and bottom thumbscrews that are holding the card to the chassis.
3. Gently pull the card out of its slot.

Tip: You may need to wobble it a little bit up or down to loosen it from the card guides as you are pulling out.

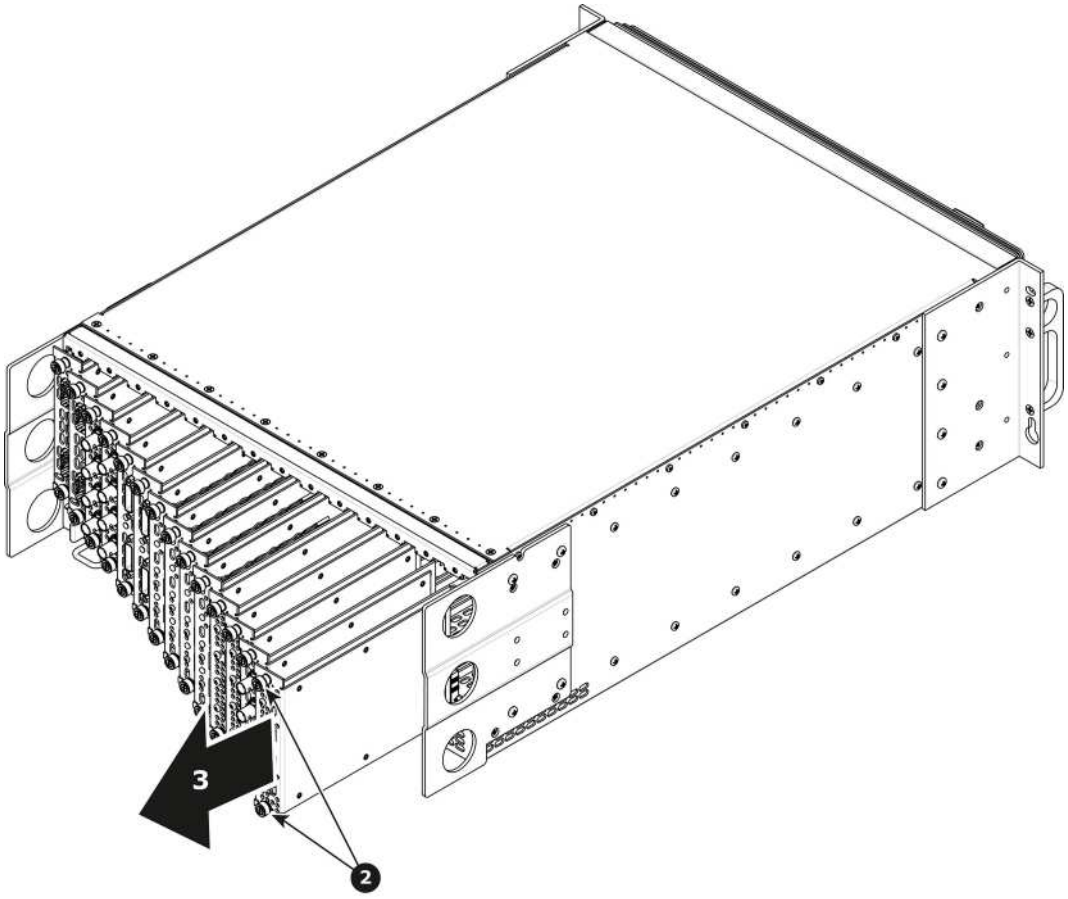

Image 14-5

How to install a card

To install a card follow the same procedure in the reverse order.

Apply a little pressure on the card until it is fully inserted in the back plane connector.

14.5 Rear I/O, VPU and Link card Heatsink Fan

Flow chart

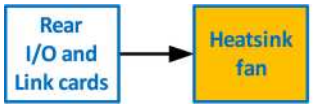

Image 14-6

Overview

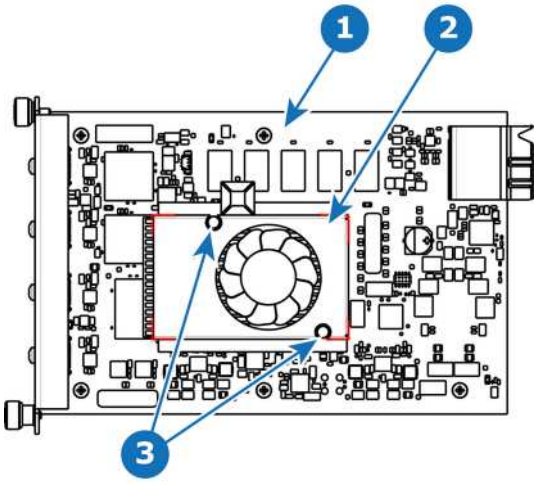

Image 14-7

1 I/O board
2 Heatsink Fan
3 Pins

Concerned parts

R767263K Heatsink Fan

Necessary tools

- 1 x Phillips Screwdriver #2.
- Small fine nose pliers.

How to remove the Rear I/O, VPU and Link card Heatsink Fan

1. After you remove the card from the chassis, unplug the heatsink fan power wire from the PCB connector.
2. Locate the two pins that are located on opposite corners of the Heatsink and secure the fan on to the board.
3. Turn the board over and with small fine nose pliers while bringing together the two sides of the pin push it through the hole.
4. After both pins are pushed through the holes, you can remove the heatsink from the card.

How to install the Rear I/O, VPU and Link card Heatsink Fan

1. Remove the heatsink with the fan from the package.
2. Remove the plastic cover from the bottom of the fan to expose the adhesive material.
3. Align the holes in the board with the pins of the Heatsink.
4. Press firmly the heatsink to the devices below.
5. Plug the heatsink fan power wire to the PCB connector.

14.6 Tri-Combo Input and Tri-Combo Output Card Disassembly and Assembly

Flow chart

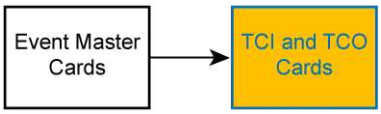

Image 14-8: TCI and TCO cards

Concerned parts

R9004785	Tri-Combo Input
R9004786	Tri-Combo Output
R767263K	Fansink kit

Required tools

Phillips screwdriver PH2

How to disassemble a Tri-Combo Input (TCI) or a Tri-Combo Output (TCO) card

The procedure for disassembling a TCI card is the same as that for disassembling a TCO card. The images accompanying these procedures show the TCI card, but the procedures apply to both cards.

1. Cut the zip tie that secures the fan cable, and remove the fan cable.

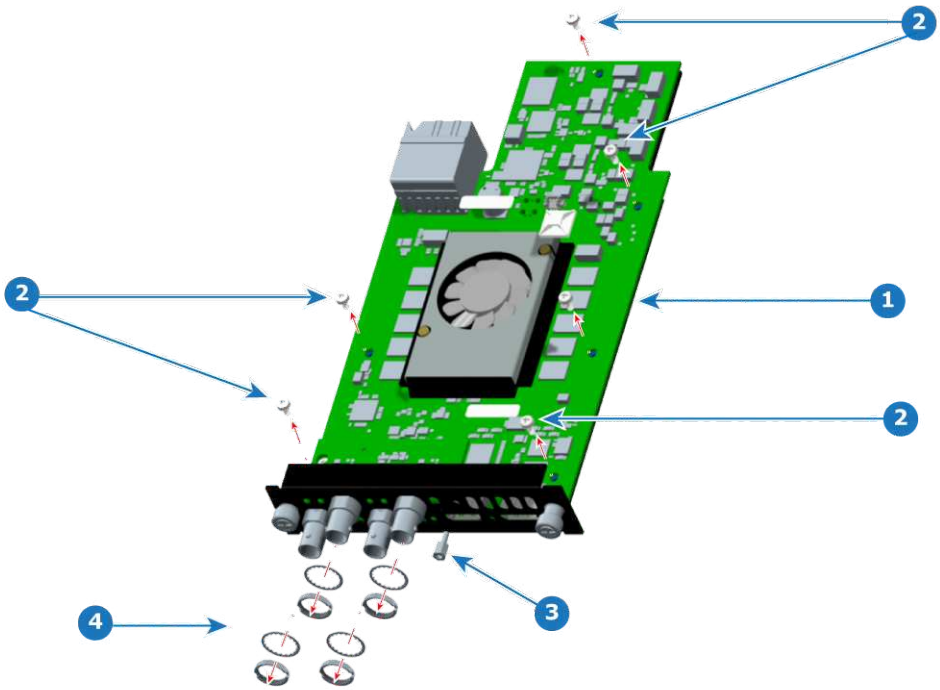

Image 14-9: Screws, standoff, washers, and nuts

1 PCBA (on mounting bracket)
2 Screws
3 Standoff
4 BNC washers and nuts

2. Remove the six screws that secure the PCBA to the mounting bracket.
3. Remove the BNC nuts and washers.

4. Loosen and remove the standoff.

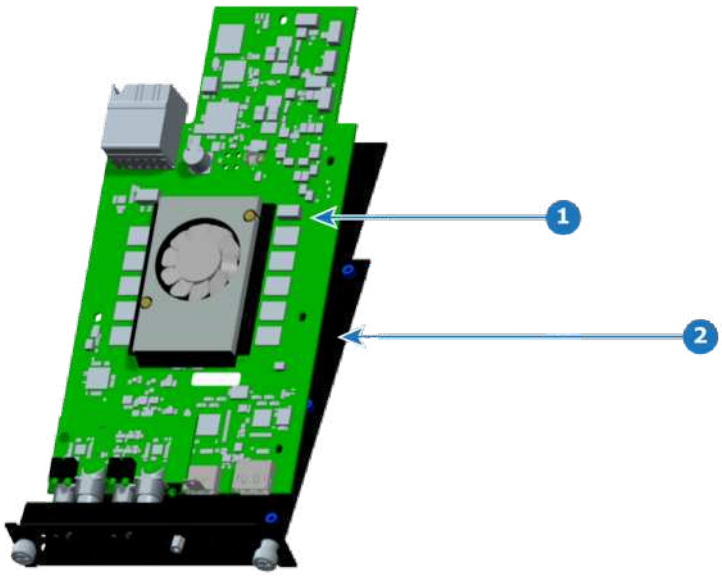

Image 14-10: PCBA and mounting bracket

1 PCBA (with mezzanine and fansink installed)
2 Mounting bracket

5. Remove the PCBA from the sheet metal bracket.

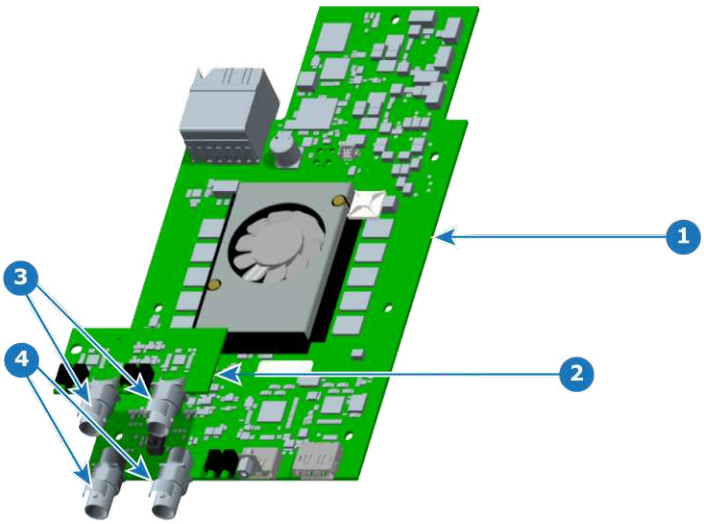

Image 14-11: Mezzanine removal

1 PCBA (with fansink installed)
2 Mezzanine
3 Mezzanine BNC connectors
4 Mainboard BNC connectors

6. Remove the mezzanine.

7. Remove the fansink (heatsink fan), if necessary.

   Turn over the PCBA and push the fansink pins. (The fansink pins will not come free of the fansink.)

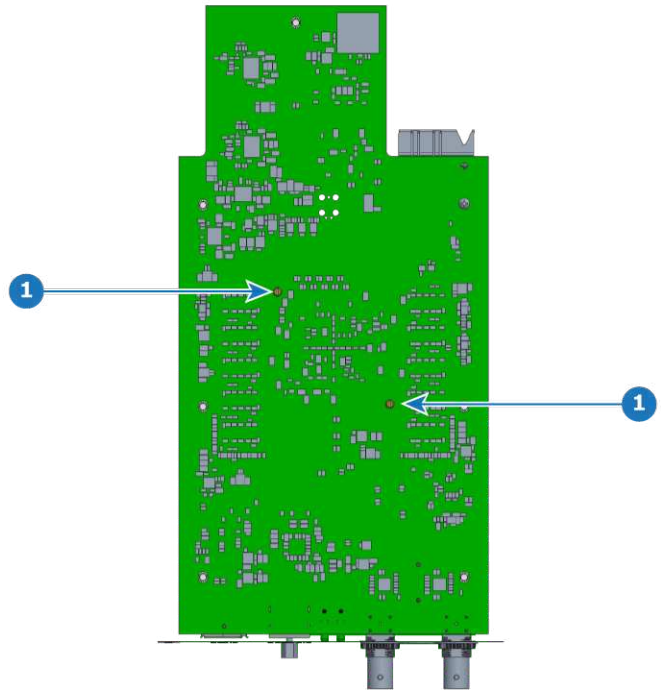

Image 14-12: TCI card fansink pin locations

1 Fansink pins

CAUTION: Do not reuse a fansink, once it has been removed from the mainboard (PCBA). The thermal compound will no longer be properly located, and the compression of the pins during removal will prevent them from fastening properly to the motherboard. Use the fansink replacement kit R767263K.

How to assemble a Tri-Combo Input (TCI) or a Tri-Combo Output (TCO) card

The procedure for assembling a TCI card is the same as that for assembling a TCO card. The images accompanying these procedures show the TCI card, but the procedures apply to both cards.

1. Install the fansink (heatsink fan) on the main board (PCBA), if the fansink is not already present.
    1. Align the fansink pins with the holes on the PCBA.
    2. Seat the pins so that they are flush with the top of the fansink.
    3. Install the fan connector (not shown) to the connector on the PCBA.
    4. Turn the card over and spread the fansink pins—using a small, flat-bladed screwdriver—to ensure that the fansink stays attached to the card.

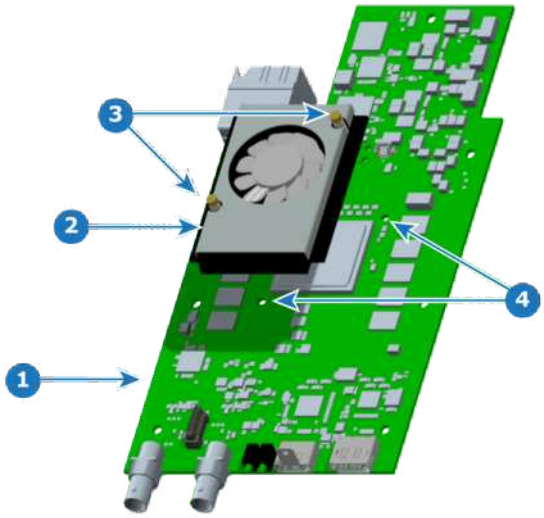

Image 14-13: Fansink installation

1 PCBA
2 Fansink (heatsink fan)
3 Fansink pins
4 Pin holes

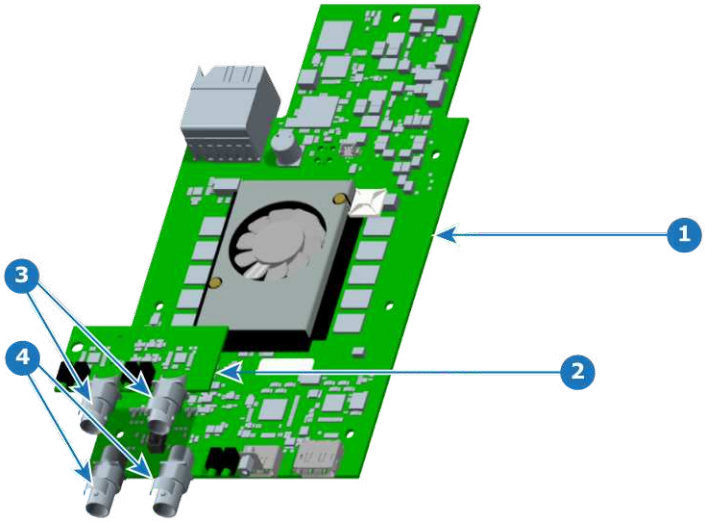

Image 14-14: Mezzanine installation

1 PCBA (with fansink installed)
2 Mezzanine
3 Mezzanine BNC connectors
4 Mainboard BNC connectors

2. Place kapton tape on the rear portion of the mainboard BNC connectors.

   (Kapton tape is not needed on the mezzanine BNC connectors.)

3. Install the mezzanine on the PCBA.

On the TCI card, make sure that the LED's length is a maximum of 1.2 mm below the bottom surface of the PCBA.

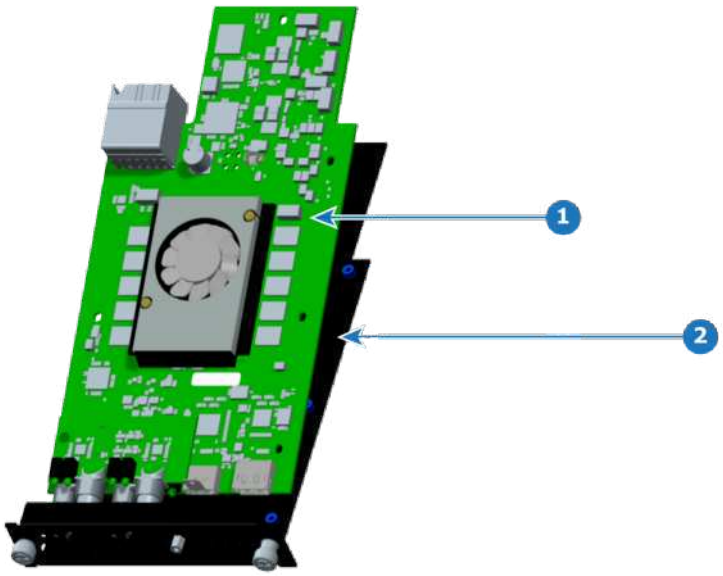

Image 14-15: PCBA and mounting bracket

1 PCBA (with mezzanine and fansink installed)
2 Mounting bracket

4. Place the PCBA on the sheet metal bracket, aligning the screw holes of the PCBA with the screw holes of the bracket.

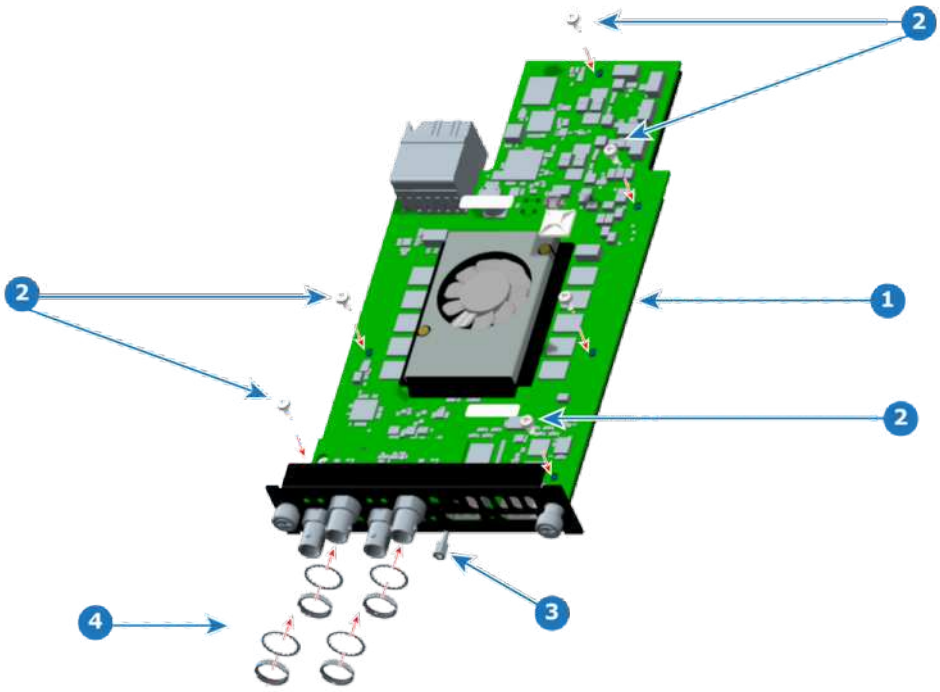

Image 14-16: Screws, standoff, washers, and nuts

1 PCBA (on mounting bracket)
2 Screws
3 Standoff
4 BNC washers and nuts

5. Install the six screws, but leave them loose.
6. Install the standoff through the front plate of the bracket.
7. Install the BNC washers and nuts.
8. Tighten the standoff to 5 in-lbs.
9. Tighten the BNC nuts to 12 in-lbs.
10. Tighten the six screws to 5 in-lbs.
11. Install the zip-tie mount and the zip tie.
12. Secure the fan cable with the zip tie.

14.7 Front Cover Assembly

Flow chart

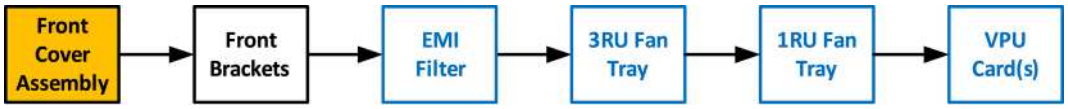

Image 14-17

Overview

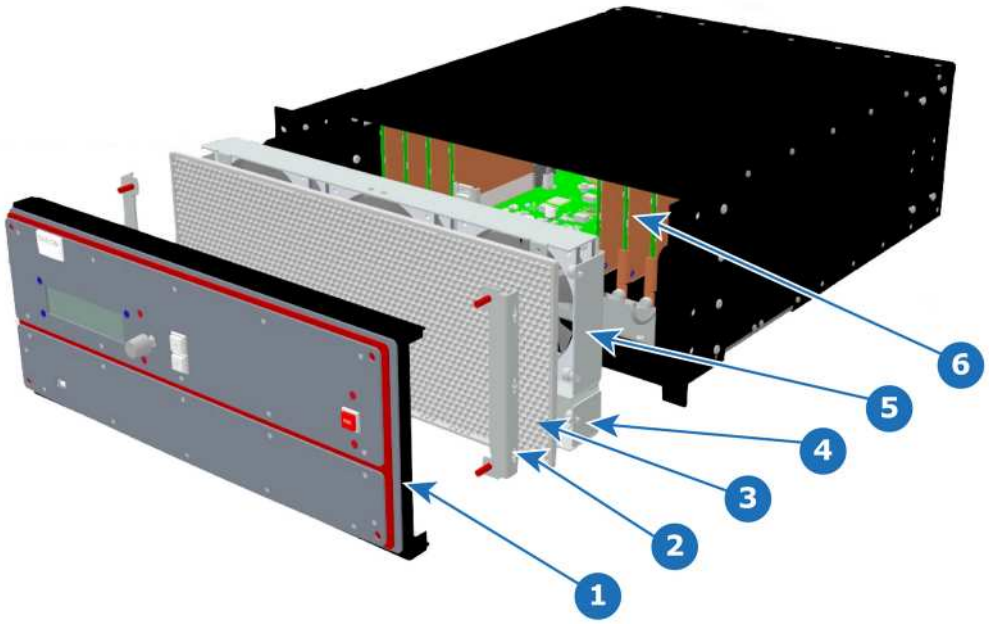

Image 14-18

1	Front Cover Assembly	4	1RU Fan Tray
2	Front Brackets	5	3RU Fan Tray
3	EMI Filter	6	VPU Cards

The EMI filter is no longer needed, and it can be removed. If the EMI filter is left in place, it requires servicing. See “E2 maintenance actions”, page 380.

Necessary tools

1 x Screwdriver HEX 0.05" 7.05" (Provide by Barco in the original package).

Image 14-19

How to remove the Front Cover Assembly

1. Use the Hex screwdriver to remove the 4 screws (Hex 6-32x.25) that attach the front cover to the brackets located behind it.

   Note: the standoffs go through the holes in sheet metal to properly align the front enclosure.

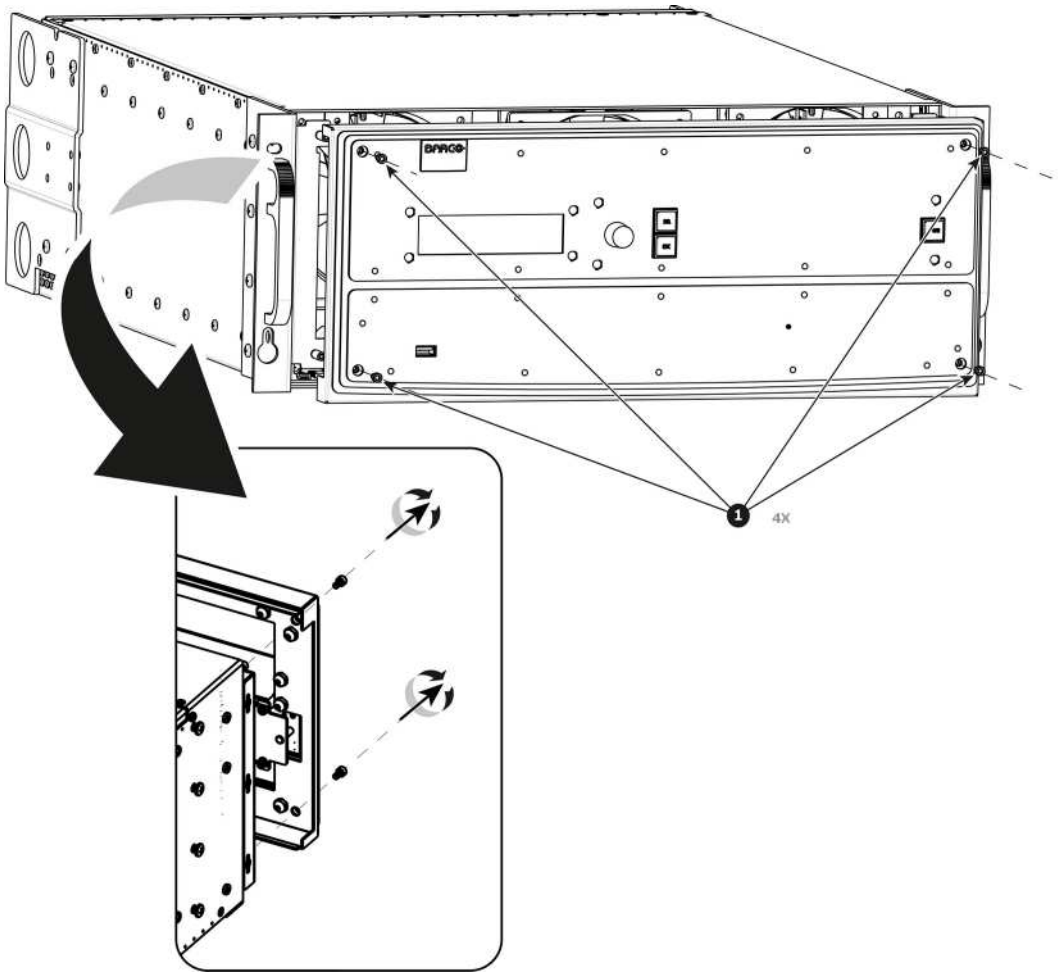

Image 14-20

2. Pull out the Front cover and lay it flat in front of the unit.

   At this point there are still 3 cables connecting the Front cover to the unit.

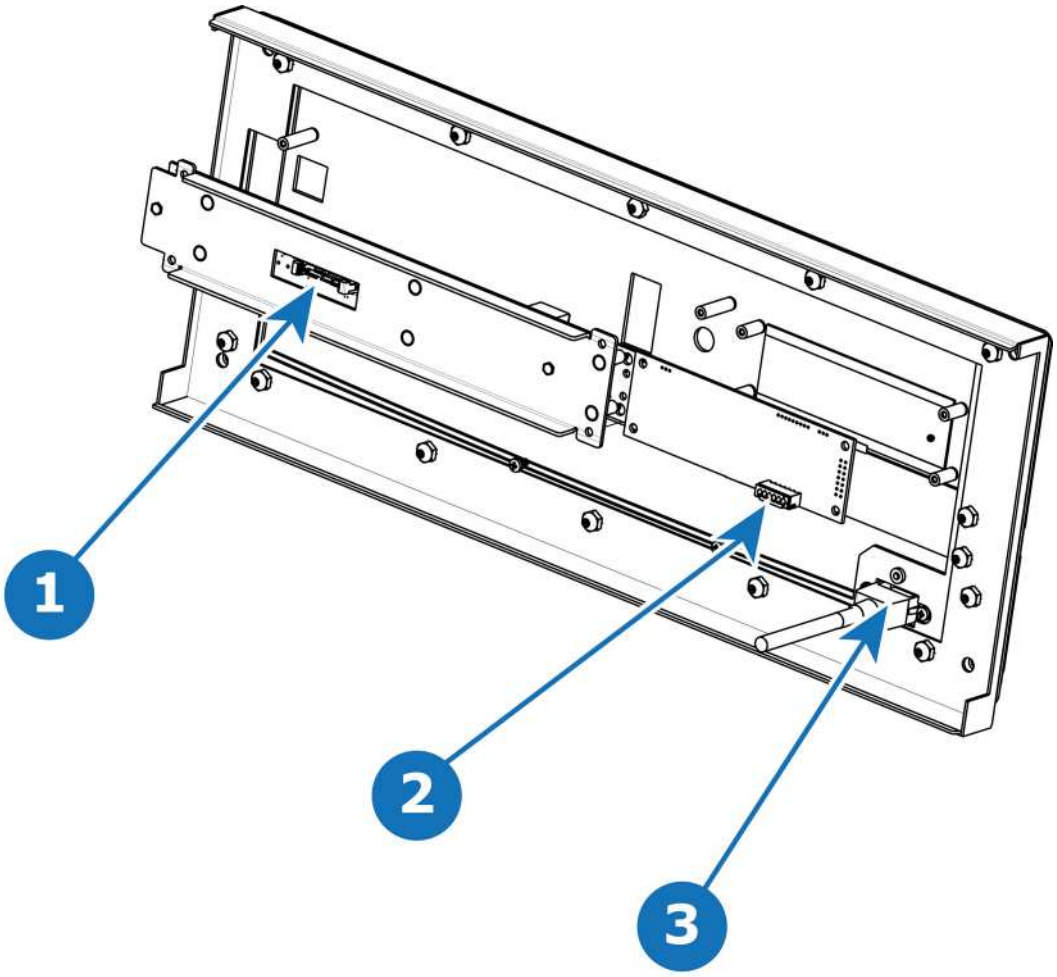

Image 14-21

1 Front Panel Connector
2 VFD Connector
3 USB Connector

3. Pull the latches away from connectors and gently pull the flat Front Panel away.
4. Remove cables as outlined in the related procedures (VFD, USB and Front Panel connectors).

How to install the Front Cover Assembly

To install the Front Cover Assembly follow the same procedure in the reverse order.

14.8 Front Brackets

Flow chart

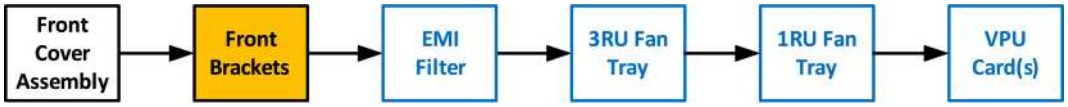

Image 14-22

Necessary tools

None.

How to remove the Front Brackets

1. Remove the two front brackets by lifting them up and then pulling them inwards and then out.

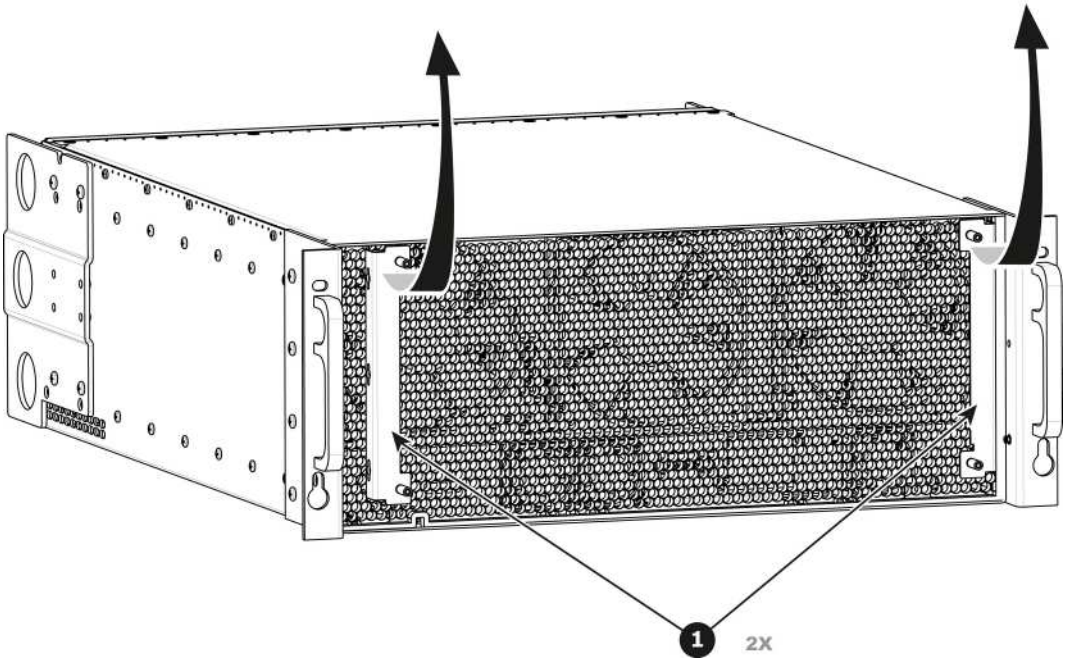

Image 14-23

How to install the Front Brackets

To install the front Brackets follow the same procedure in the reverse order.

14.9 3RU Fan Tray

Flow chart

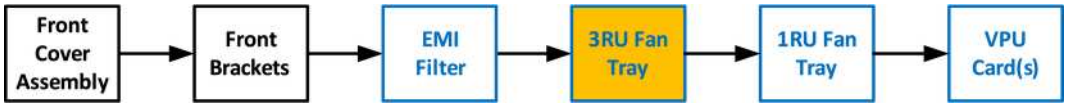

Image 14-24

Concerned parts

R767271K 3RU Fan Tray

Necessary tools

1 x Phillips Screwdriver #2 (optional).

How to remove the 3RU Fan Tray

1. Loosen and unscrew the 4 thumbscrews holding the 3RU fan tray to the chassis.

   Note: You may need a screwdriver if the thumbscrews are very tight.

2. Pull the tray out.

   Note: You need to tilt the tray and maneuver it to go around the dimples located on the side of the chassis.

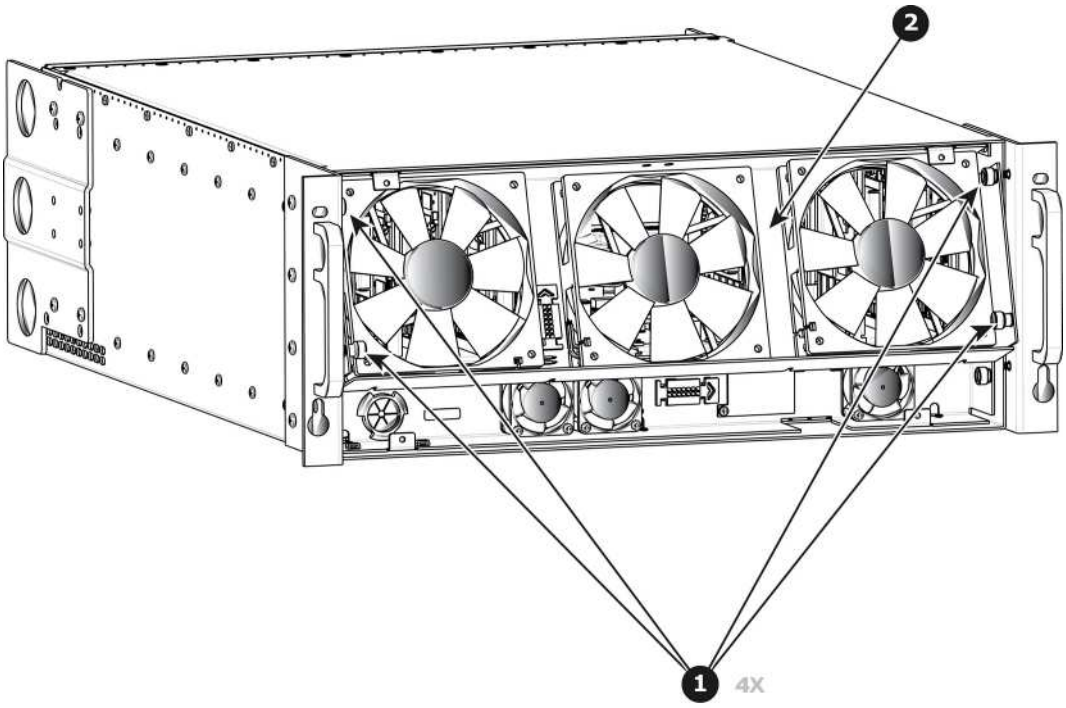

Image 14-25

How to install the 3RU Fan Tray

Follow the same procedure in the reverse order and in addition perform the following:

1. Ensure that the bottom slots at the bottom of the tray align with the pins located on the bracket in the chassis.
2. Make sure that the connector located at the back of the tray is aligned to the connector located on the bracket behind it.
3. Push so that the two connectors mate.

14.10 1RU Fan Tray

Flow chart

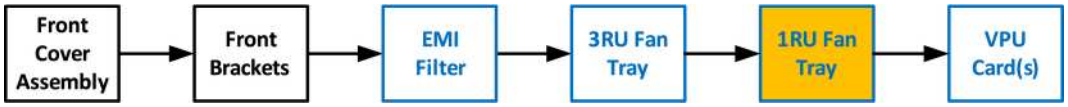

Image 14-26

Concerned parts

R767270K 1RU Fan Tray

Necessary tools

1 x Phillips Screwdriver #2 (optional).

How to remove the 1RU Fan Tray

1. Loosen and unscrew the 2 thumbscrews holding the 1RU fan tray to the chassis.

   Note: You may need a screwdriver if the thumbscrews are very tight.

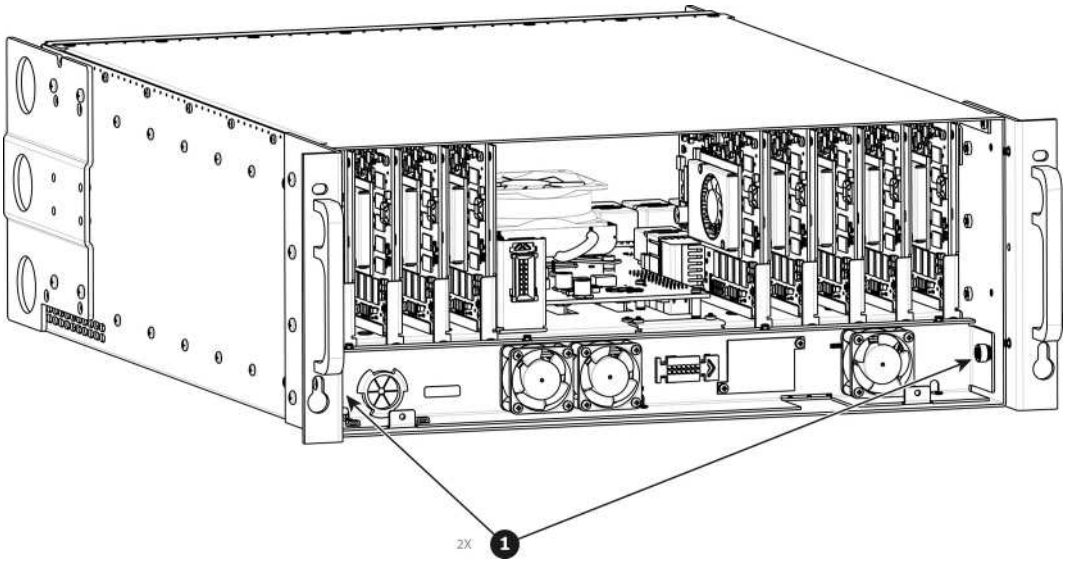

Image 14-27

2. Pull the tray out.

Note: You might need to tilt the tray and maneuver it to go around the dimples located on the side of the chassis.

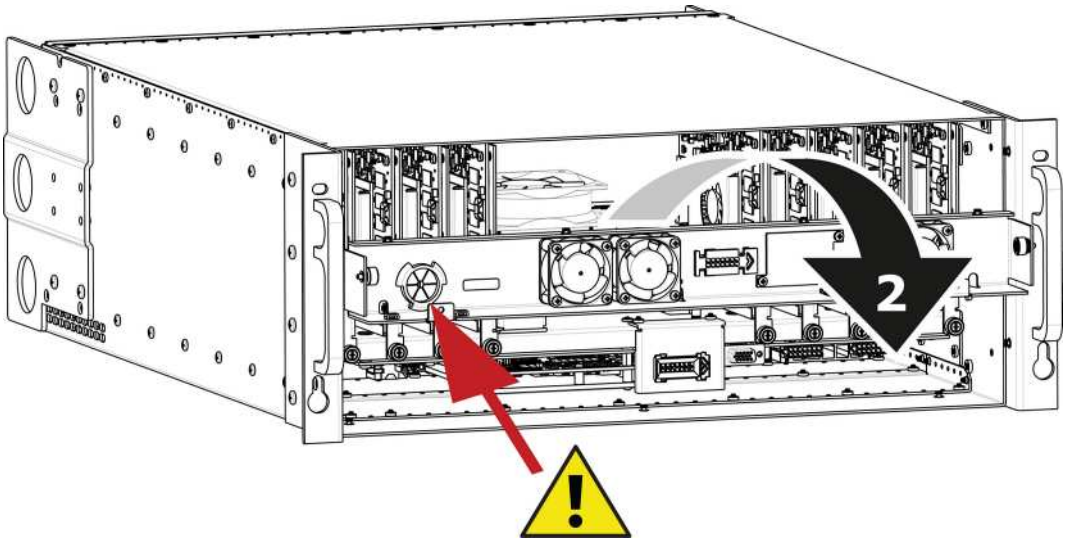

Image 14-28

Caution: Before you completely remove it from the unit carefully push the USB and Front panel cables through the grommet located on the left hand side.

How to install the 1RU Fan Tray

Follow the same procedure in the reverse order and in addition perform the following:

1. Pass the USB and VFD cable through the grommet.

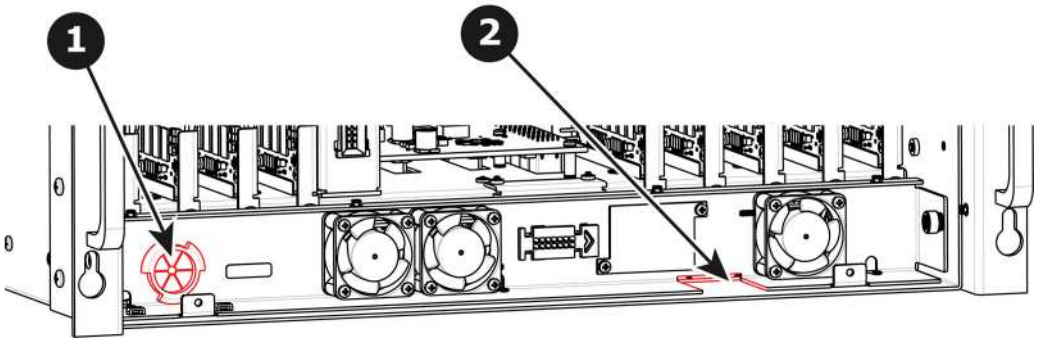

Image 14-29

2. Make sure that the front panel flat cable goes through the slot located on the right hand side.
3. Line up the connector behind the fan tray and the connector on the bracket behind it and push so the two connectors mate.

14.11 VPU Card(s)

Flow chart

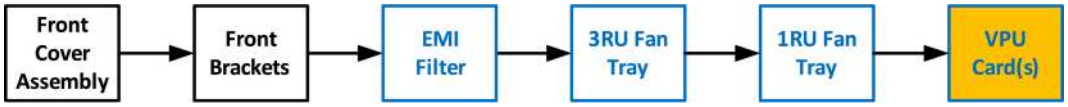

Image 14-30

Overview

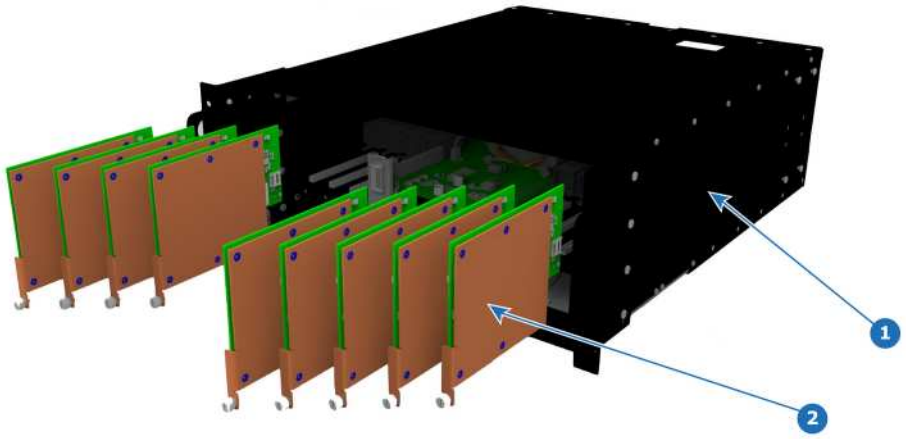

Image 14-31

1 Chassis
2 VPU cards

Concerned parts

R9004747 VPU Card

Necessary tools

1 x Phillips Screwdriver #2 (optional).

How to remove a VPU Card

1. Locate the VPU you need to replace.

   Note: There are 9 VPU slots. The first slot on the left is slot 15 and the last slot on the most right position is 23.

2. Loosen and unscrew the thumbscrew that is holding VPU card to the chassis.
3. Pull the VPU out of its slot.

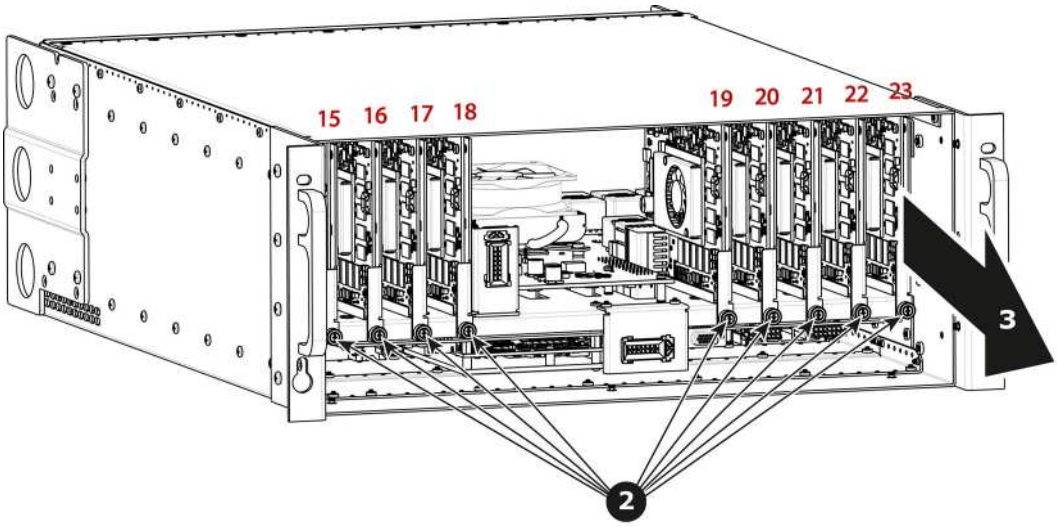

Image 14-32

How to install a VPU Card

To install a VPU Card follow the same procedure in the reverse order.

14.12 Front Panel Knob

Flow chart

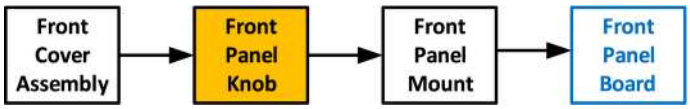

Image 14-33

Before you proceed removing the Front panel knob you need to remove the Front Cover Assembly as outlined in the related procedure.

Necessary tools

- Knob removal tool provided by Barco

Image 14-34

- Flat head screwdriver or a tool with a sharp edge

How to remove the Front Panel Knob

1. Remove the knob cover with a flat screw driver or a sharp object to expose the inside of the knob.

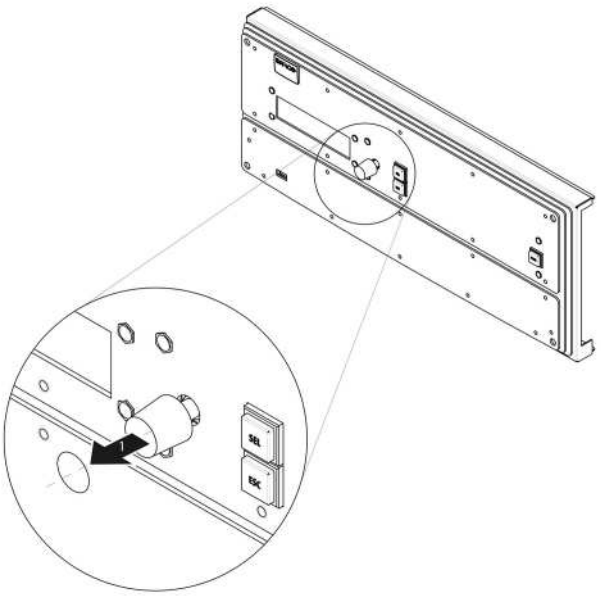

Image 14-35

2. Use the knob removal tool provided by Barco to take out the knob. Align the notches on the tool with the grooves in the knob as indicated below.

   Note: If the tool is not available use fine point needle nose pliers to squeeze at knob between the two grooves while pulling it out.

Image 14-36

How to install the Front Panel Knob

To install the Front Panel Knob follow the same procedure in the reverse order.

14.13 Front Panel Mount

Flow chart

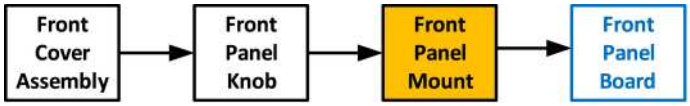

Image 14-37

Necessary tools

1 x Phillips Screwdriver #2

How to remove the Front Panel Mount

1. Turn the Front Cover over and remove the four screws (4-40X.25) that secure the control panel mount to the front panel.

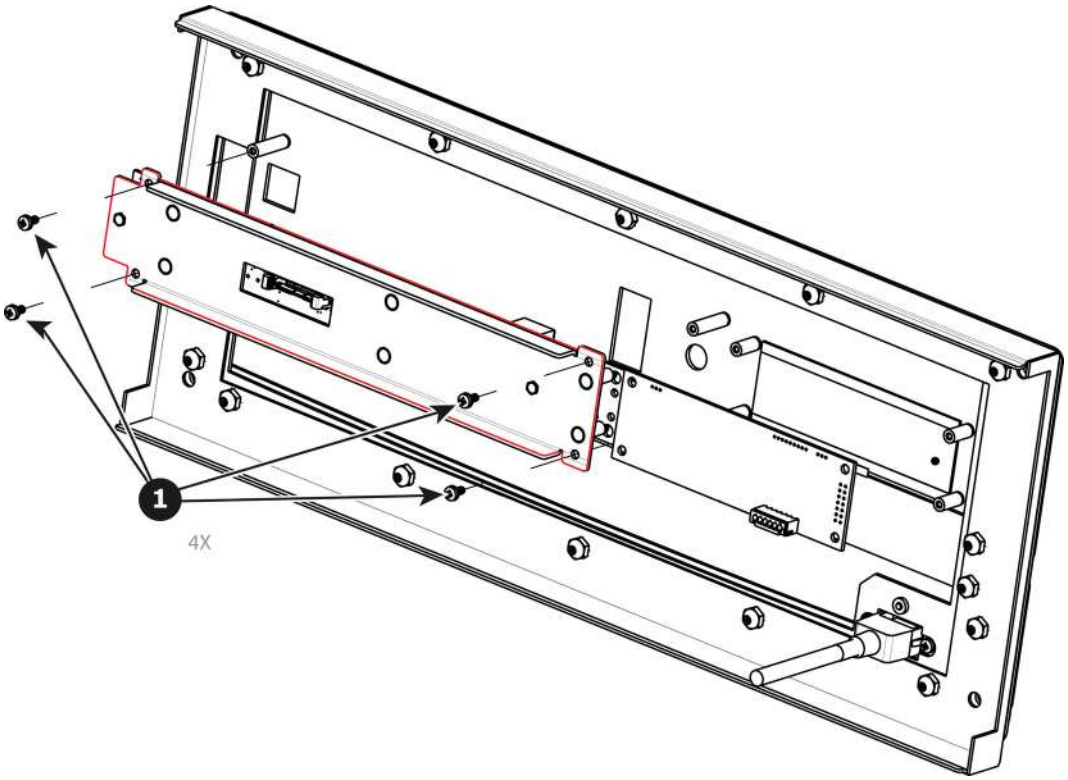

Image 14-38

How to install the Front Panel Mount

To install the Front Panel Mount follow the same procedure in the reverse order.

14.14 Front Panel Board

Flow chart

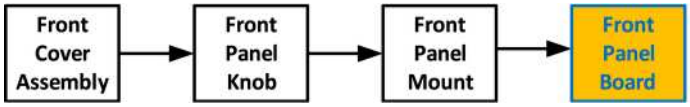

Image 14-39

Concerned parts

R767260K Front Panel Board

Necessary tools

1 x Phillips Screwdriver #2

How to remove the Front Panel Board

1. Remove the two screws (4-40X.25) that secure the PCB to the front mount.

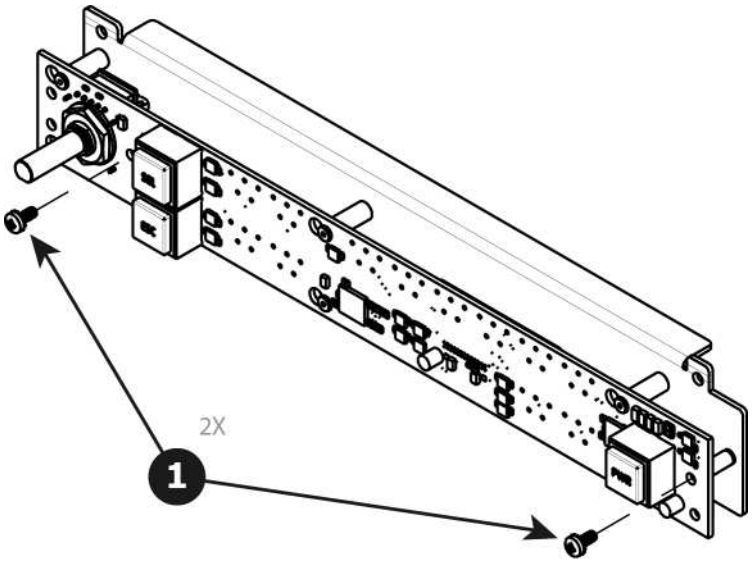

Image 14-40

2. Move the PCB to the right and then out to release it from the mount.

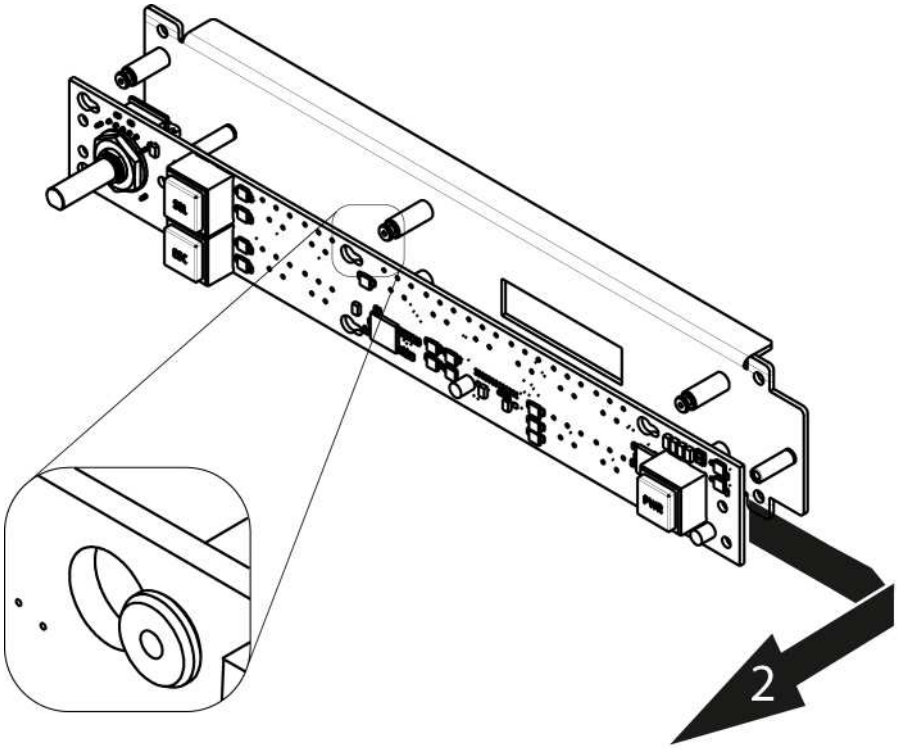

Image 14-41

How to install the Front Panel Board

To install the Front Panel Board follow the same procedure in the reverse order.

14.15 VFD Display Assembly

Flow chart

Image 14-42

Before you proceed removing the VFD Display mount you need to remove the Front Cover Assembly as outlined in the related procedure

Concerned parts

R767241K VFD Display Assembly

Necessary tools

1 x Phillips Screwdriver #2

How to remove the VFD Display Assembly

1. Turn the Front Cover over and remove the four screws (4-40X.25) that secure the VFD display assembly to the front panel mount.

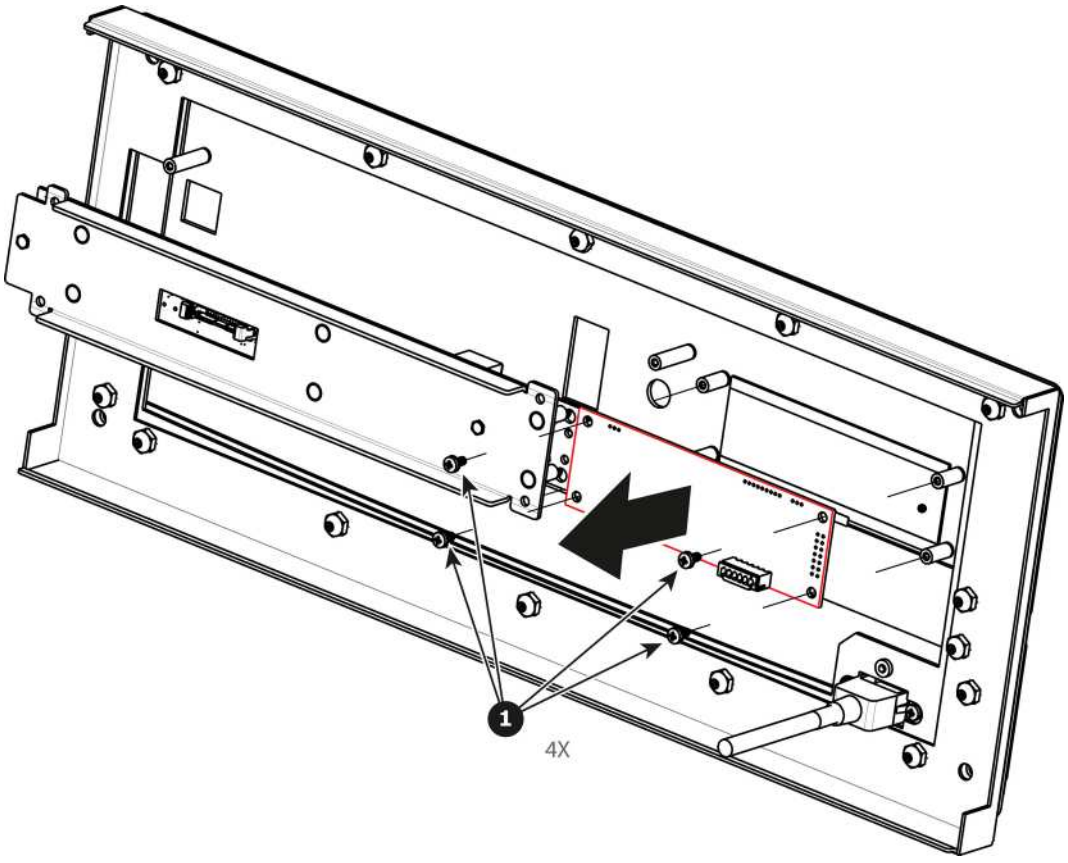

Image 14-43

How to install the VFD Display Assembly

To install the VFD Display Assembly follow the same procedure in the reverse order.

14.16 VFD Display Filter

Flow chart

Image 14-44

Concerned parts

R767246K VFD Display Filter

Necessary tools

None.

How to remove the VFD Display Filter

1. From the front of the unit push hard on the filter until it detaches from the unit.

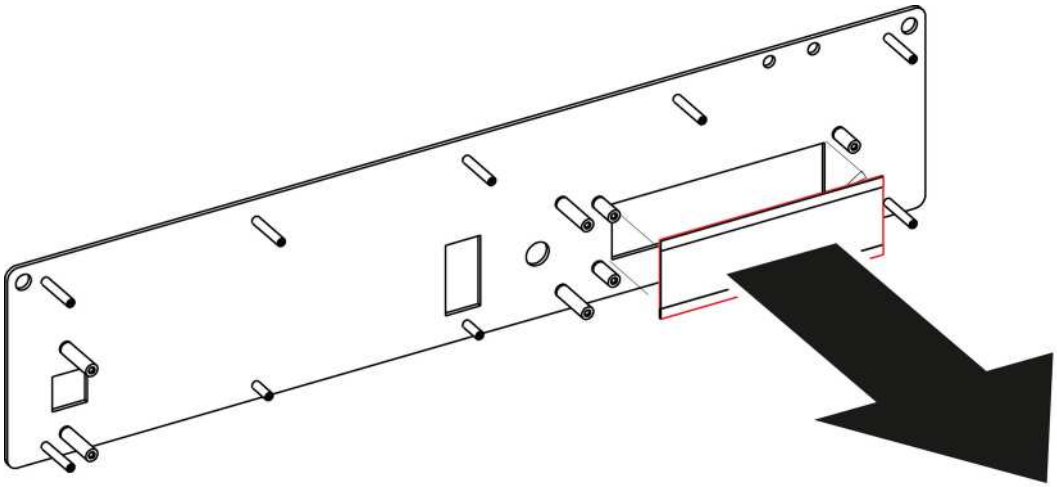

Image 14-45

2. Use alcohol to clean the adhesive residue that held the filter to the metal plate.

How to install the VFD Display Filter

1. Remove the protective film from the front of the filter and release the liner from the tape.
2. Press firmly the filter into the metal plate.

14.17 Bottom Panel

Necessary tools

1 x Phillips Screwdriver #2

How to remove the Bottom Panel

1. Turn the unit over to remove the bottom panel. The bottom panel is composed of two pieces.
2. Remove the 4 black round-head screws (4-40x1/4) that attach the panels to the side of the unit.
3. Remove the 6 screws that hold the two sides together.
4. Remove the rest of the screws from the perimeter of the panel as shown below.

5. Push on the edge of the piece that is in the middle of the chassis until it's loosened and release from the unit. Carefully remove this piece from the unit.
6. Remove the other piece.

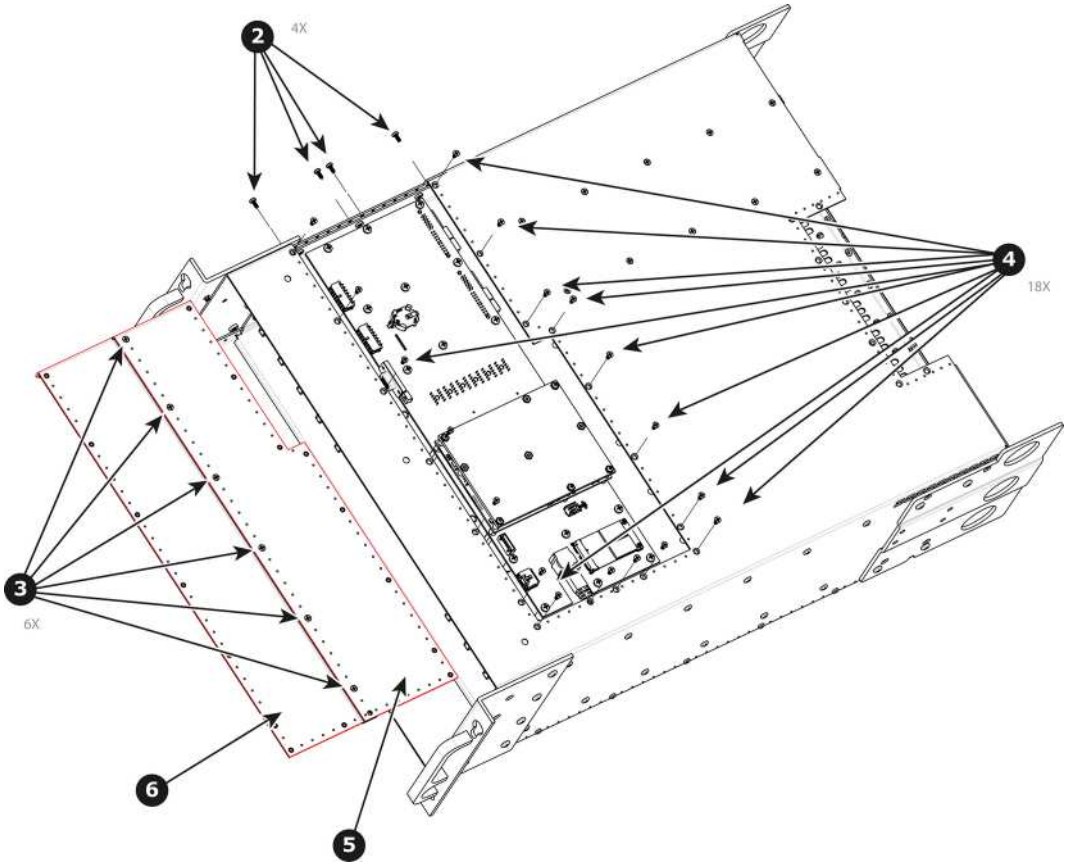

Image 14-46

How to install the Bottom Panel

To install the Bottom Panel follow the same procedure in the reverse order.

14.18 Solid-State Memory

Flow chart

Image 14-47

Before you proceed removing the Solid State Memory you need to remove the Bottom Panel as outlined in the related procedure.

The solid-state memory can also be replaced after the System Power board is removed from the unit.

Overview

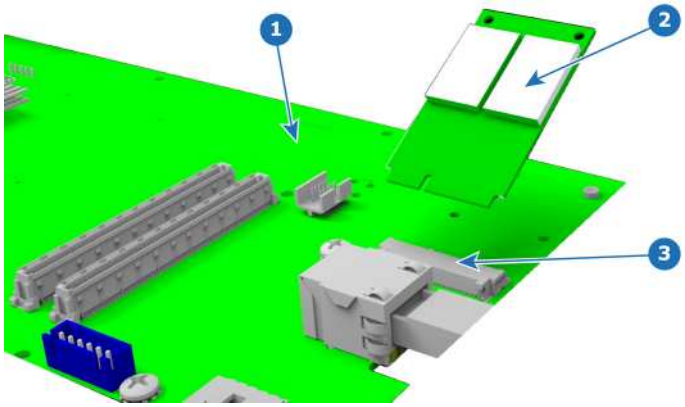

Image 14-48

1 System Power board
2 Solid State Memory card
3 Socket

Concerned parts

R767275K Solid State Memory

Necessary tools

1 x Phillips Screwdriver #2

How to remove the Solid State Memory

1. Remove the 2 screws that hold the memory card.
2. Carefully remove the memory card from the socket.

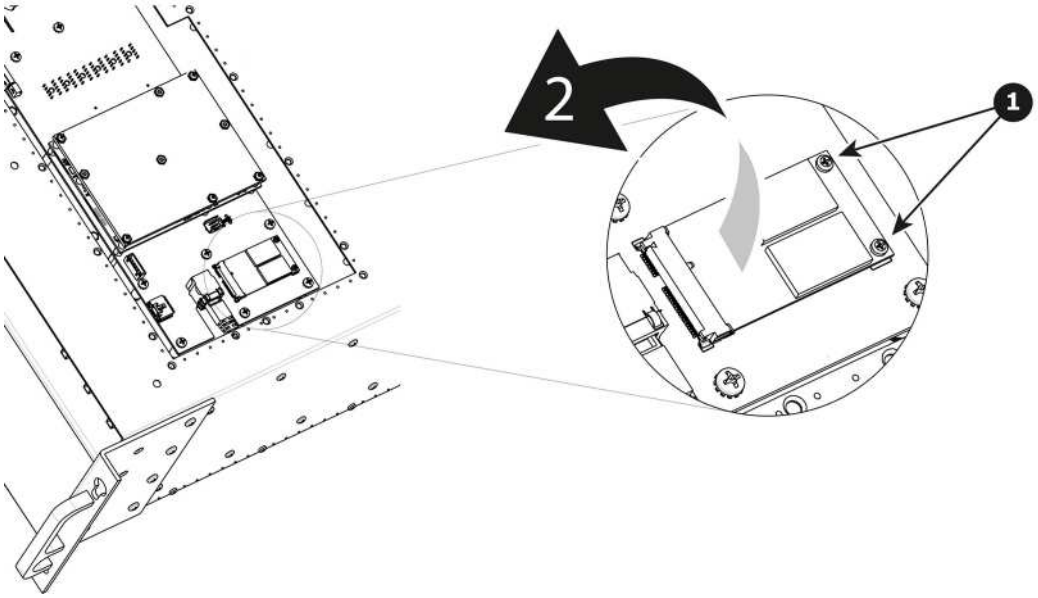

Image 14-49

How to install the Solid State Memory

To install the Solid State Memory follow the same procedure in the reverse order.

14.19 System Battery

Flow chart

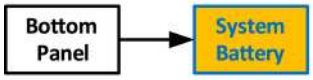

Image 14-50

Before you proceed removing the System Battery you need to remove the Bottom Panel as outlined in the related procedure.

The System Battery can also be replaced after the System Power board is removed from the unit.

Concerned parts

R9801120 Motherboard Battery Kit

Necessary tools

None.

How to remove the System battery

1. Carefully remove the battery from its socket.

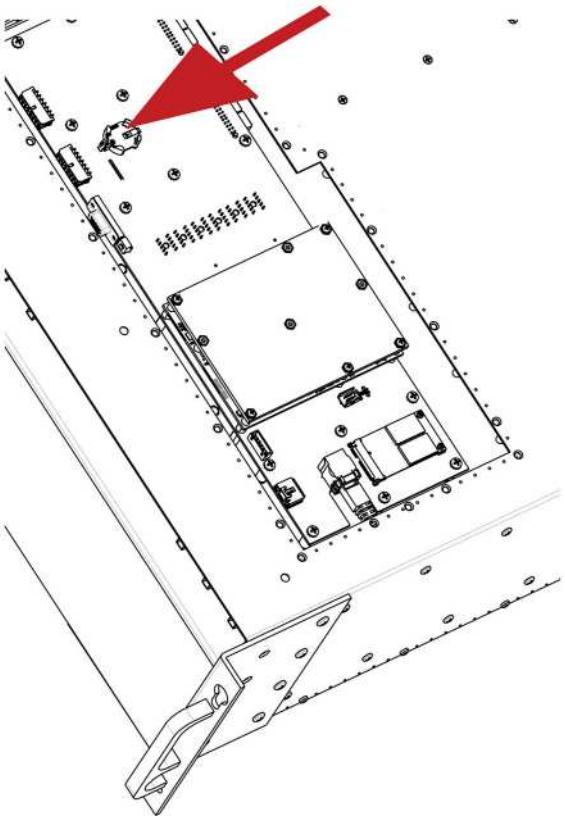

Image 14-51

How to install the System battery

To install the System battery follow the same procedure in the reverse order.

When a new battery is installed, the user need to place a sticker on the inside of the metal plate (Bottom Panel) that indicates when the battery was last replaced. The absence of sticker means the battery has never been replaced. In this case the S/N sticker can be used for the reference date.

Image 14-52

14.20 CPU Module

Flow chart

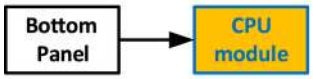

Image 14-53

Before you proceed removing the CPU module you need to remove the Bottom Panel as outlined in the related procedure.

Overview

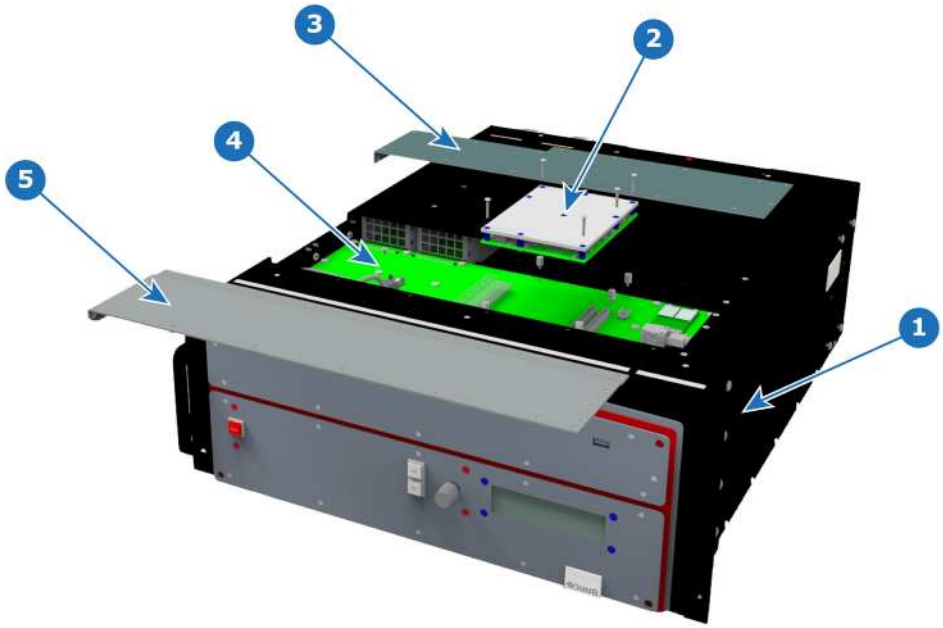

Image 14-54

1 Chassis
2 CPU Module
3 Bottom Panel Part 1
4 System Card.
5 Bottom Panel Part 2

Concerned parts

R767264K CPU module

Necessary tools

1 x Phillips Screwdriver #2

How to remove the CPU module

1. Remove the five screws that attach CPU module to the system card.
2. Carefully remove the CPU module by lifting it up.

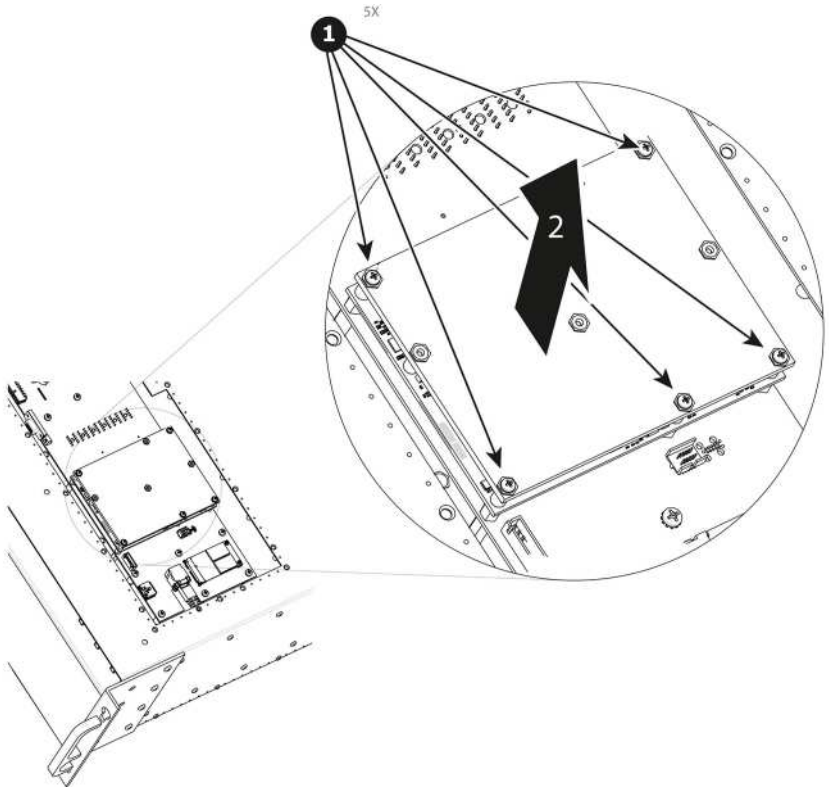

Image 14-55

How to install the CPU module

To install the CPU module follow the same procedure in the reverse order.

14.21 Power Supply

Concerned parts

R9004769 Power Supply

Necessary tools

None.

How remove Power Supply

1. Push the latch towards the right.

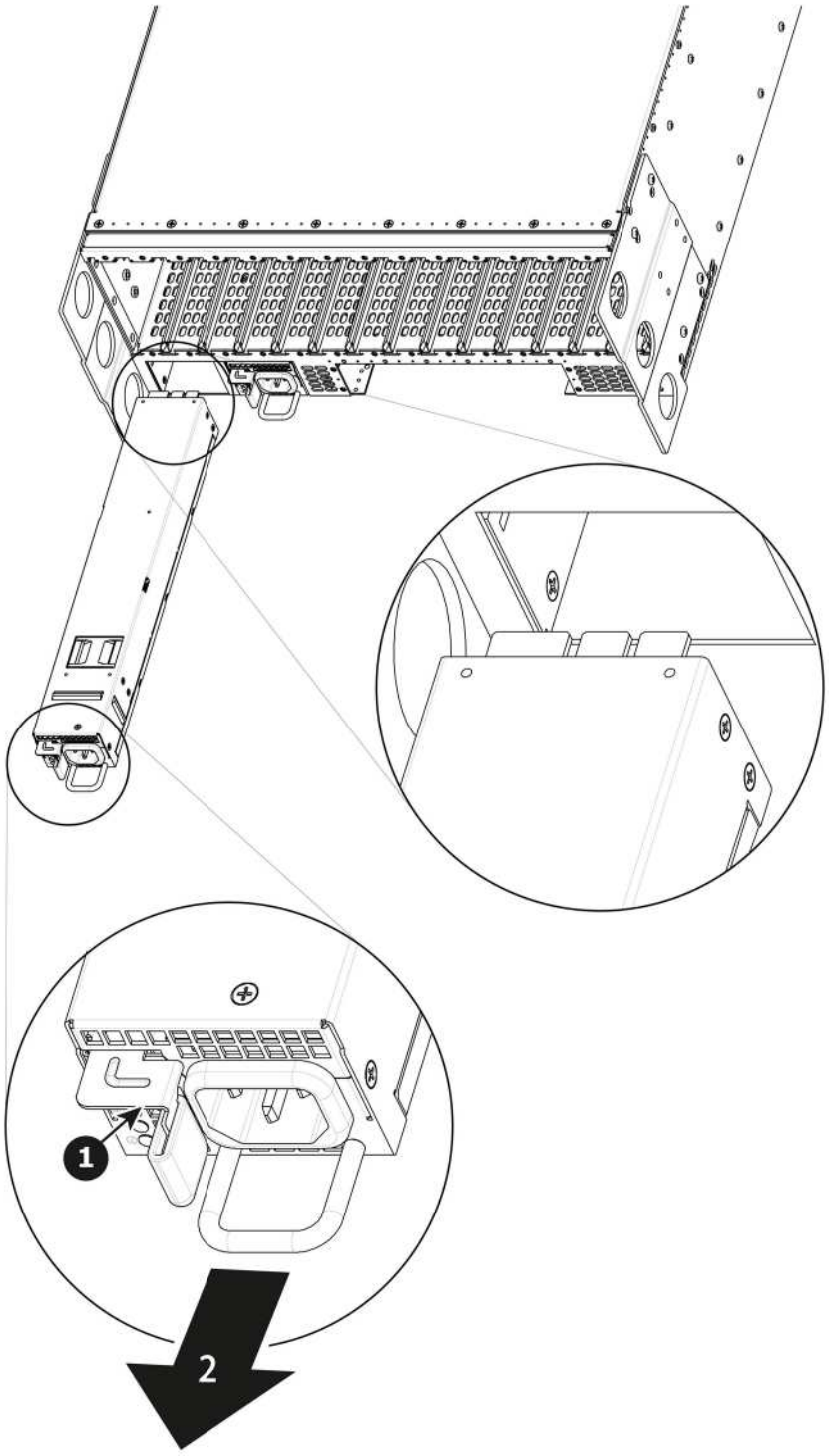

Image 14-56

2. Pull the Power supply out of its slot by pulling on the handle.

How to install Power Supply

1. Insert the Power Supply into the slot.

   Note: The card edge should be at the top of the power supply as shown in the drawing.

2. Push the power supply completely inside the slot. Apply a little pressure by using the handle until the power supply is fully inserted.

14.22 System-Power Board

Flow chart

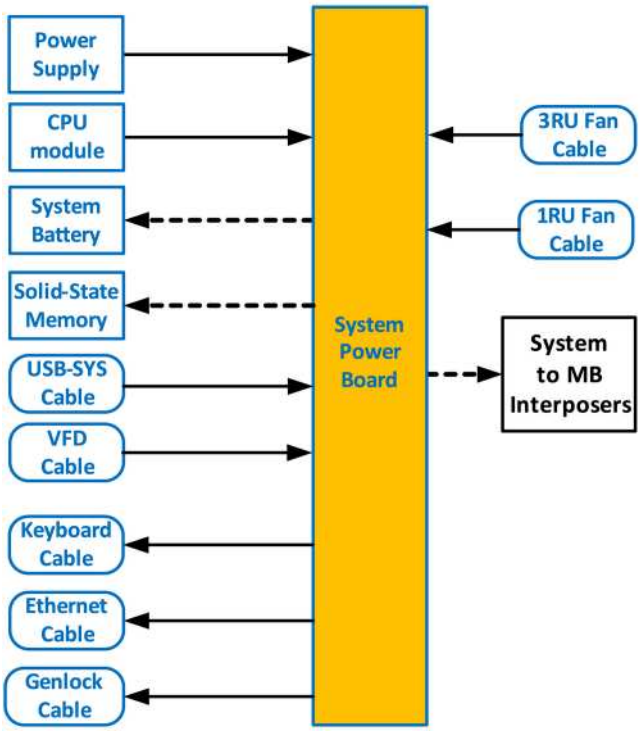

Image 14-57

Before you proceed removing the System-Power board you need to remove the Power Supplies, Bottom Panel and the CPU board. Follow the instructions provided in these sections.

Overview

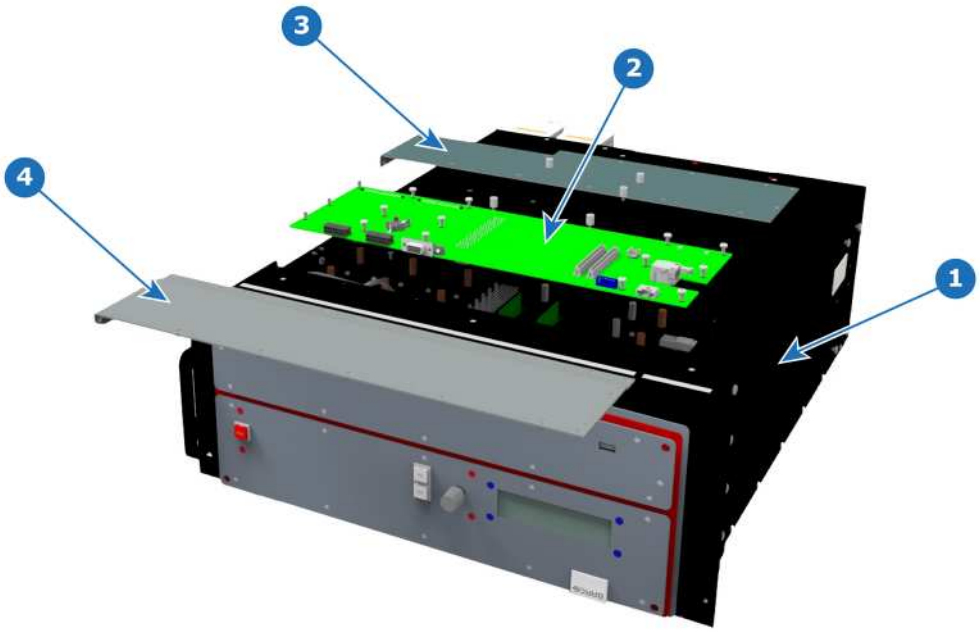

Image 14-58

1 Chassis
2 System-Power Board
3 Bottom Panel part 1
4 Bottom Panel part 2

Concerned parts

R767261K System-Power Board

Necessary tools

- 1 x Phillips Screwdriver #2
- Hex Screwdriver

How to remove the System-Power board

1. Unplug the USB, VFD, 3RU and 1RU cables that are plugged on the top side of the board and are visible when the bottom panel is removed. Refer to the drawing below (top side) to locate the cables.
2. With the Hex Screwdriver, remove the 5 standoffs (m 2,5 H6 Stainless Steel) which attach the CPU module to the motherboard.

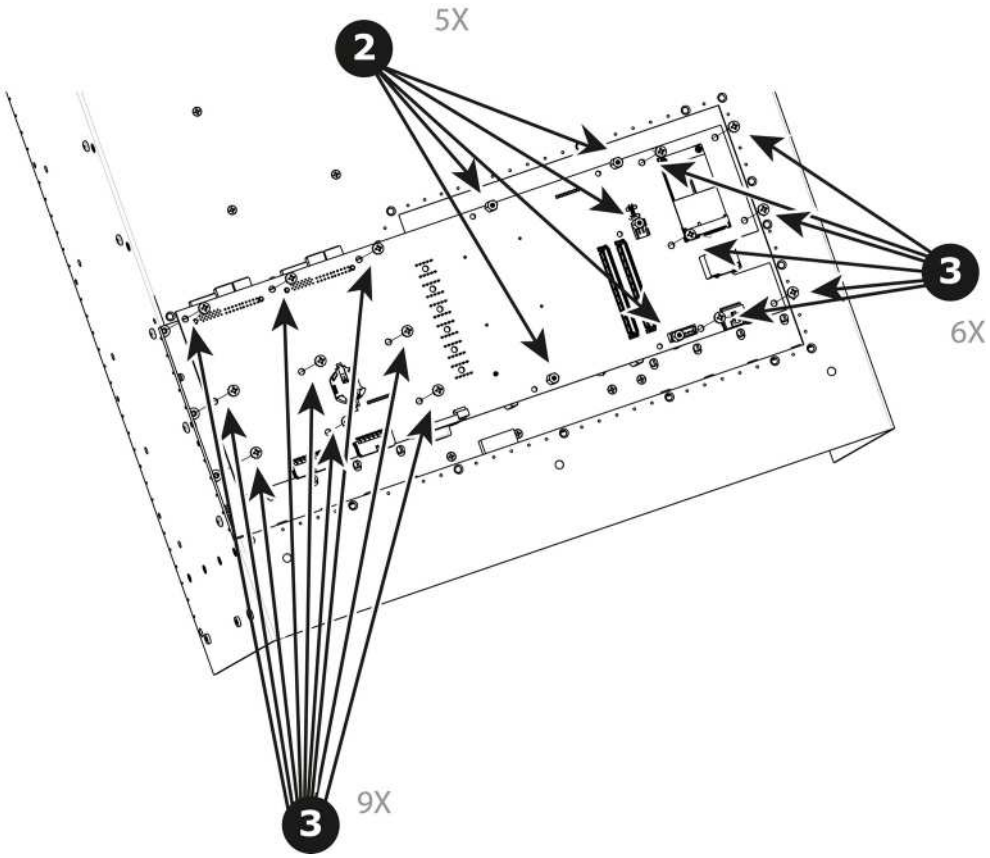

Image 14-59

3. Remove the 15 screws (6-32x.31 Stainless Steel) that attach the System Power Board to the Mother board.
4. Carefully lift the board up and remove the card from the System. Don't pull the board too far because there are still 3 cables attached to the card.

   Note: Interposer card(s) may come out. In this case, re-install the boards into the motherboard slots unit.

5. Turn the board over and unplug the Genlock, Ethernet cable and Front panel keyboard cable. Refer to the drawing below (Bottom side) to locate the cables.

After the system card is removed, you can also replace the System battery or the Solid-State memory. These items can be serviced without removing the System-Power board as described in other sections of this chapter.

How to install the System-Power Board

To install the System-Power Board follow the same procedure in the reverse order.

Top side

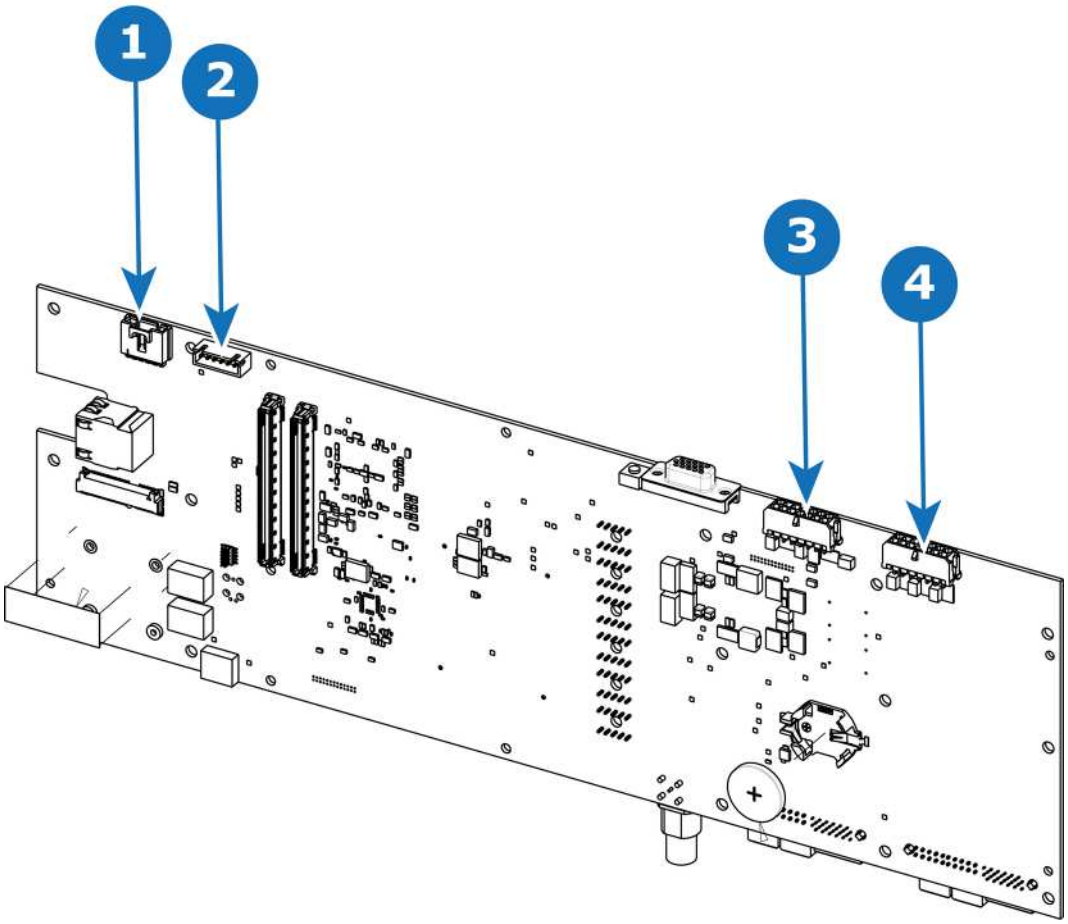

Image 14-60

1	USB connector	3	3RU connector
2	VFD connector	4	1RU connector

Bottom side

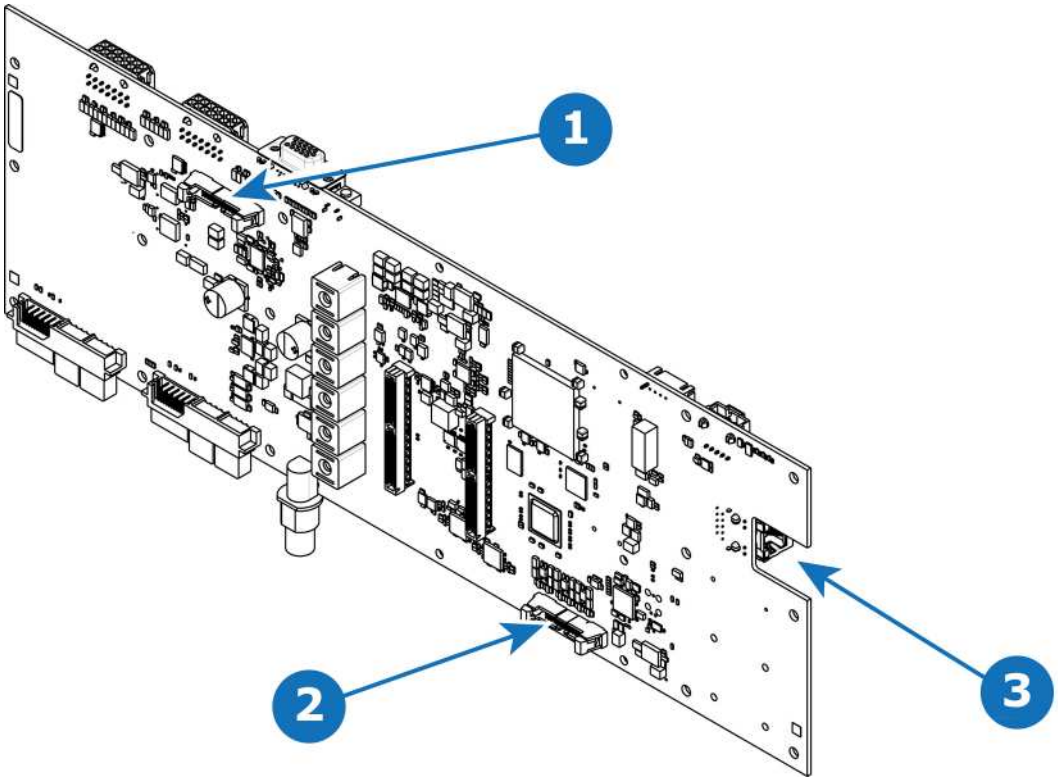

Image 14-61

1	Keyboard connector	3	Ethernet connector
2	Genlock connector		

14.23 Genlock Assembly

Flow chart

Image 14-62

Overview

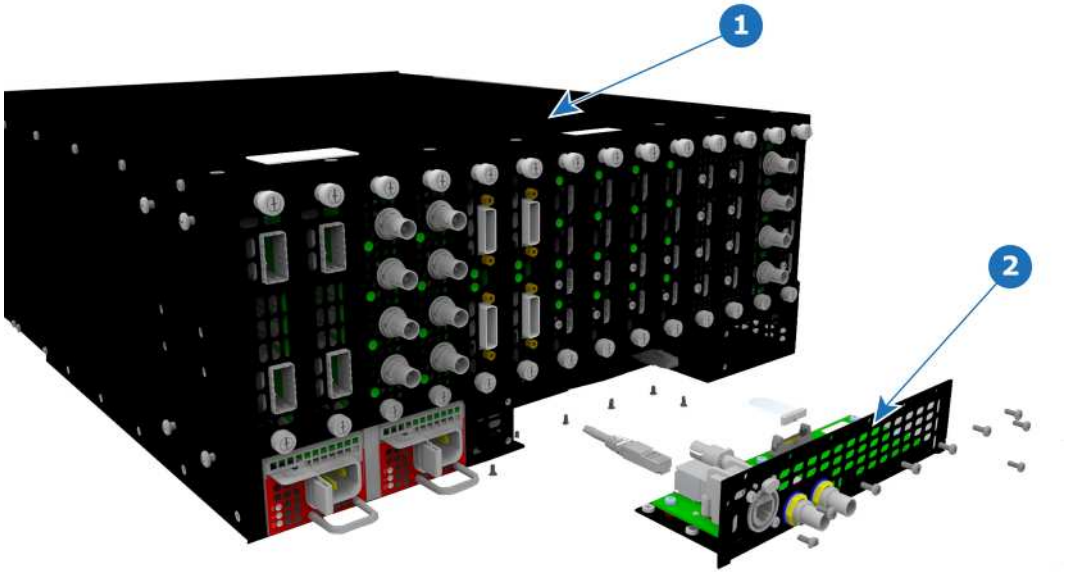

Image 14-63

1 Chassis
2 Genlock Assembly

Concerned parts

R9004748 Genlock Assembly

Necessary tools

1 x Phillips Screwdriver #2

How to remove the Genlock Assembly

1. Remove the seven flat head screws (4-40 X .25) that attach the Genlock assembly to the rear side of the chassis.
2. Remove the ten pan head screws (4-40 X .25) that attach the Genlock assembly to the rear of the chassis.

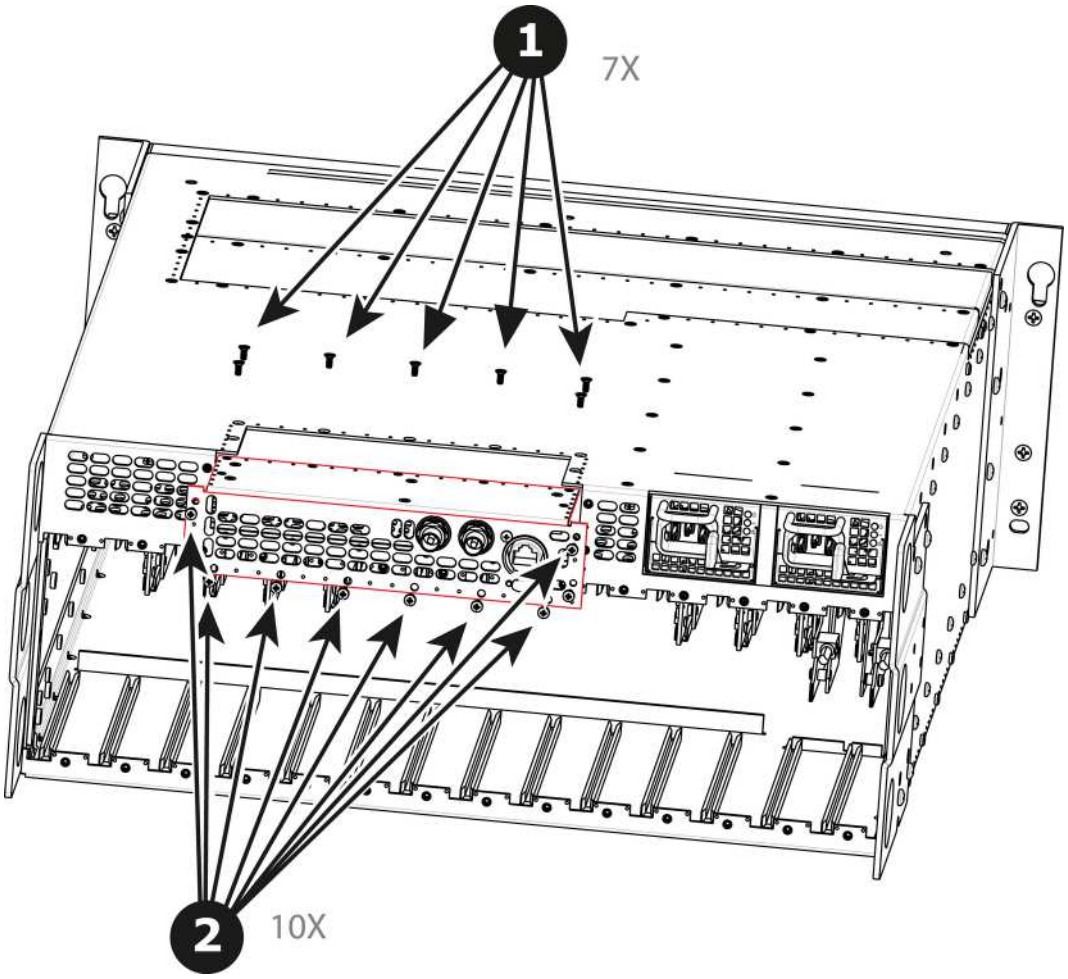

Image 14-64

3. Gently pull the Genlock assembly away from the unit . Don't pull the assembly too far back because there are still 2 cables attached.

   Note: At this point there are still 2 cables connecting the Genlock Assembly to the unit.

4. Unlatch the VFD ribbon cable from the connector and pull it up and away from the Genlock board.

   Note: This cable connects the Genlock board to the System-Power board.

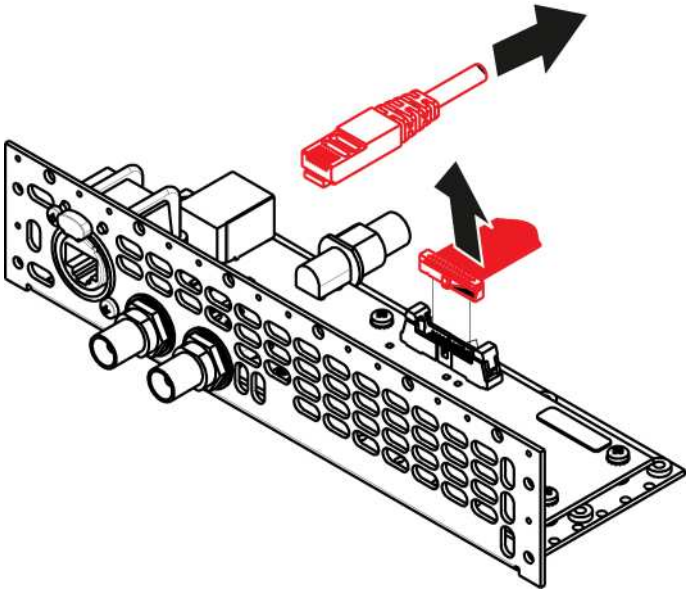

Image 14-65

5. Unlatch the Ethernet cable from the connector and pull back and away from the Genlock board.

   Note: This cable connects the Genlock board to the System-Power board.

How to install the Genlock Assembly

To install the Genlock Assembly follow the same procedure in the reverse order.

14.24 USB Cable

Flow chart

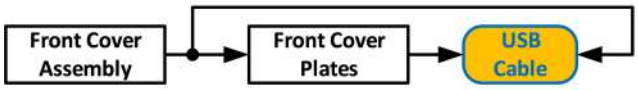

Image 14-66

The USB cable is connected to the USB extension cable (the cable that is connected to the System-Power board). This procedure provides instructions how to disconnect it from both sides of the cable.

Concerned parts

R767269K Cable Kit Set

Necessary tools

- 1 x Phillips Screwdriver #2
- Hex Screwdriver
- Nut socket.

How to remove the USB cable

1. Completely detach and pull the Front Cover assembly away from the unit (refer to the related procedure).
2. Disconnect the USB cable from the USB Extension cable (the other side of the cable is connected to the System-Power board).
3. Disconnect the VFD and Front Keyboard Panel cables from the VFD assembly and Front panel boards.

4. Place the Front panel enclosure face down on a flat area.
5. Use the nut socket to remove the 16 nuts (6-32) that attach the first plate to the assembly.
6. Remove and put aside the 16 spacers situated under the plate you just removed.

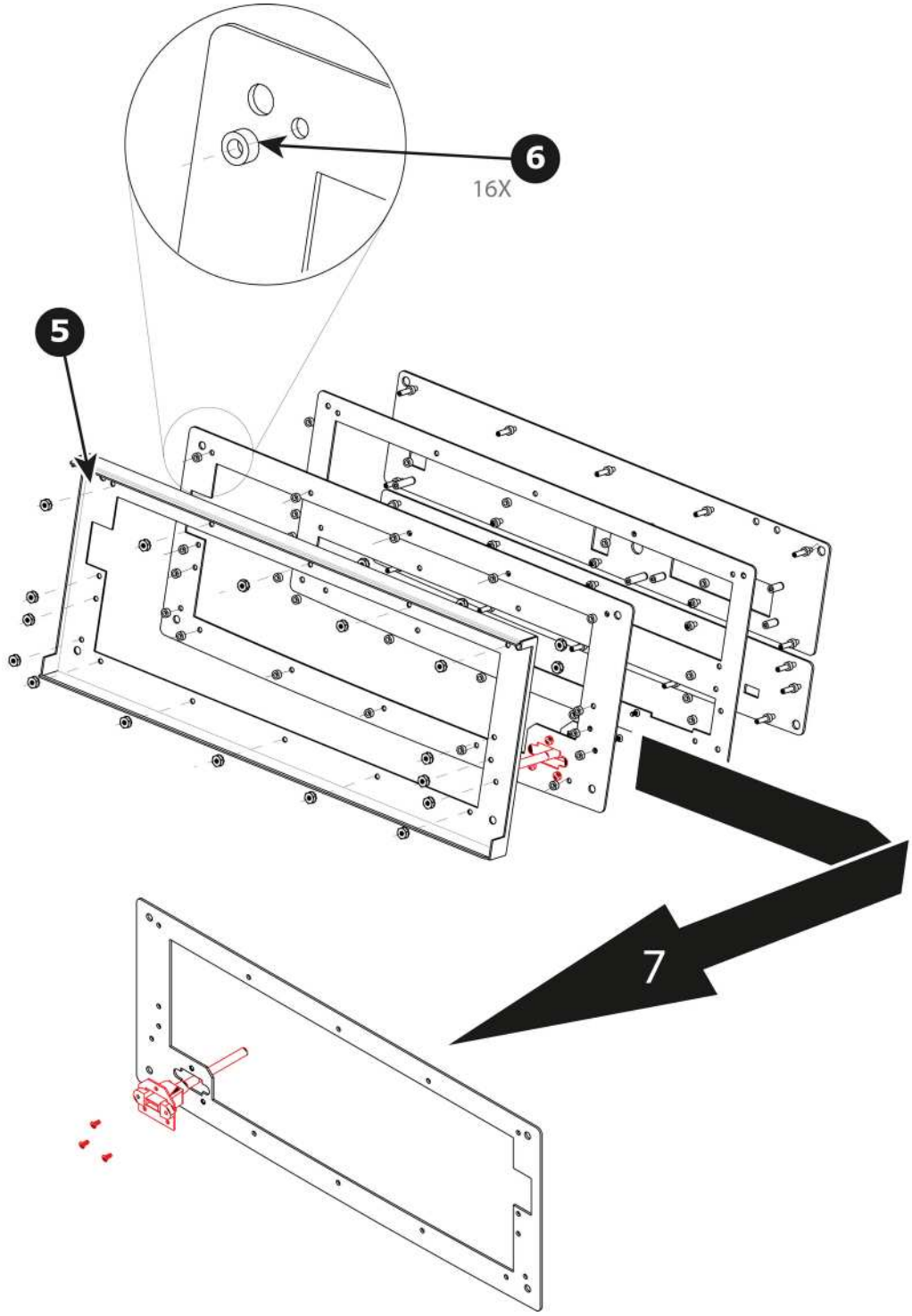

Image 14-67

7. Remove the plate that has been exposed after the nuts are removed.
8. Remove the three screws that hold the USB cable into the metal plate.

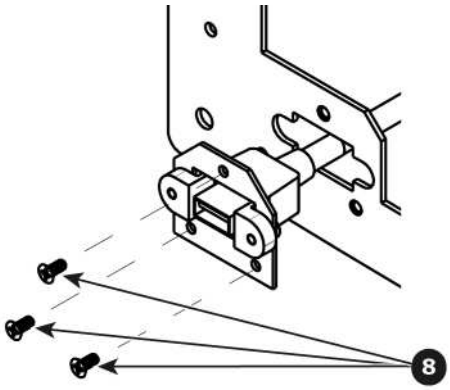

Image 14-68

9. Remove the USB cable.

How to install the USB cable

To install the USB cable follow the same procedure in the reverse order.

14.25 USB Extension Cable

Flow chart

Image 14-69

The USB Extension cable connects the USB cable to the System Power board. This procedure provides instructions on how to disconnect the cable on both sides.

Concerned parts

R767269K Cable Kit Set

Necessary tools

1 x Phillips Screwdriver #2

How to remove the USB Extension cable

1. Partially remove the front panel assembly and pull it away to expose the cables behind it (refer to the related procedure).
2. Disconnect the USB Extension cable from the USB cable.
3. Gently push the cable through the grommet located in the 1RU tray.

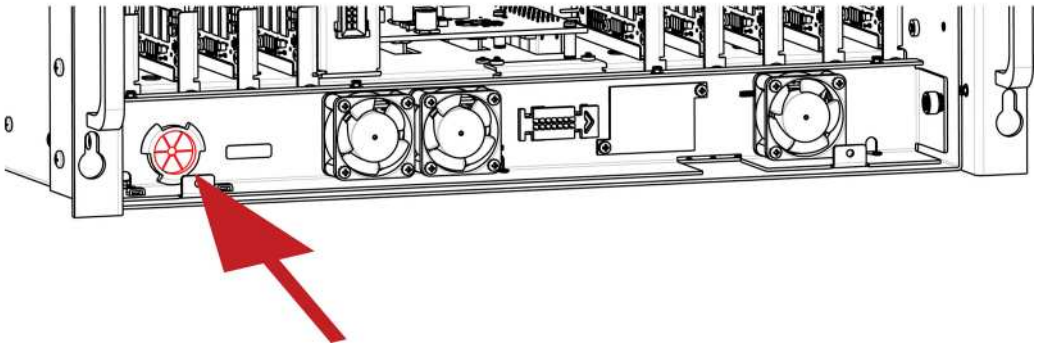

Image 14-70

4. Turn the unit upside down and remove the bottom panel (Follow the instructions provided in the bottom panel removal section).
5. Locate the USB Extension cable that is plugged on the System-Power board.

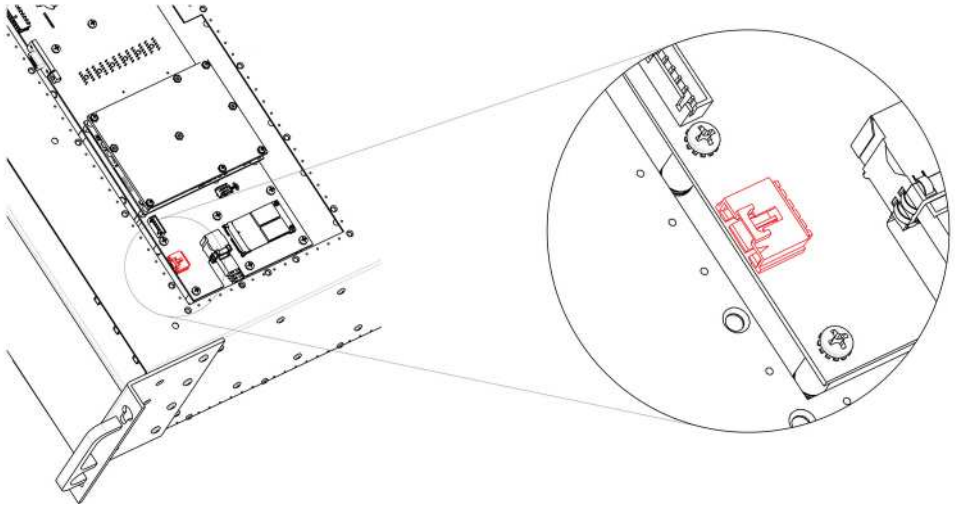

Image 14-71

6. Unplug the USB Extension cable by gently pushing it out.
7. Pull the cable out of the unit.

How to install the USB Extension cable

To install the USB Extension cable follow the same procedure in the reverse order.

14.26 VFD Cable

Flow chart

Image 14-72

The flat ribbon VFD cable connects the VFD assembly to the System Power board. This procedure provides instructions on how to disconnect the cable on both sides.

Concerned parts

R767269K Cable Kit Set

Necessary tools

- 1 x Phillips Screwdriver #2
- Hex Screwdriver

How to remove the VFD Cable

1. Partially remove the front panel assembly and pull it away to expose the cables behind it (refer to the related procedure).
2. Push out the side latches on VFD connector to release the VFD cable.

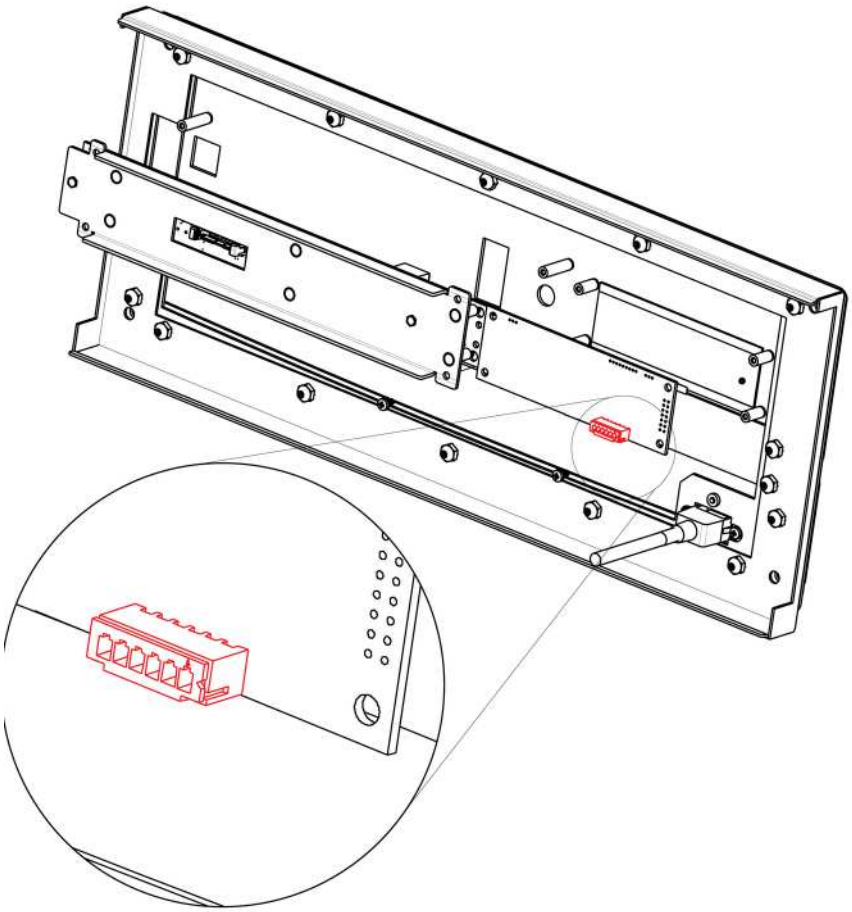

Image 14-73

3. Gently push the cable through the grommet located in the 1RU tray.

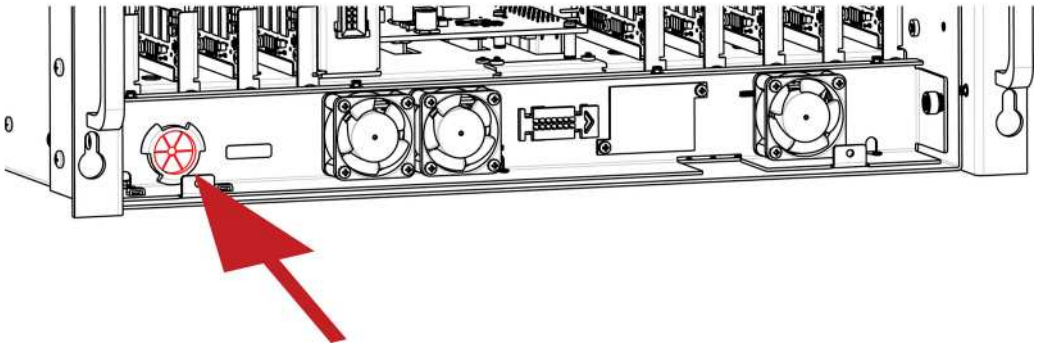

Image 14-74

4. Turn the unit upside down and remove the bottom panel (Follow the instructions provided in the bottom panel removal section).
5. Locate the VFD cable that is plugged on the System-Power board.

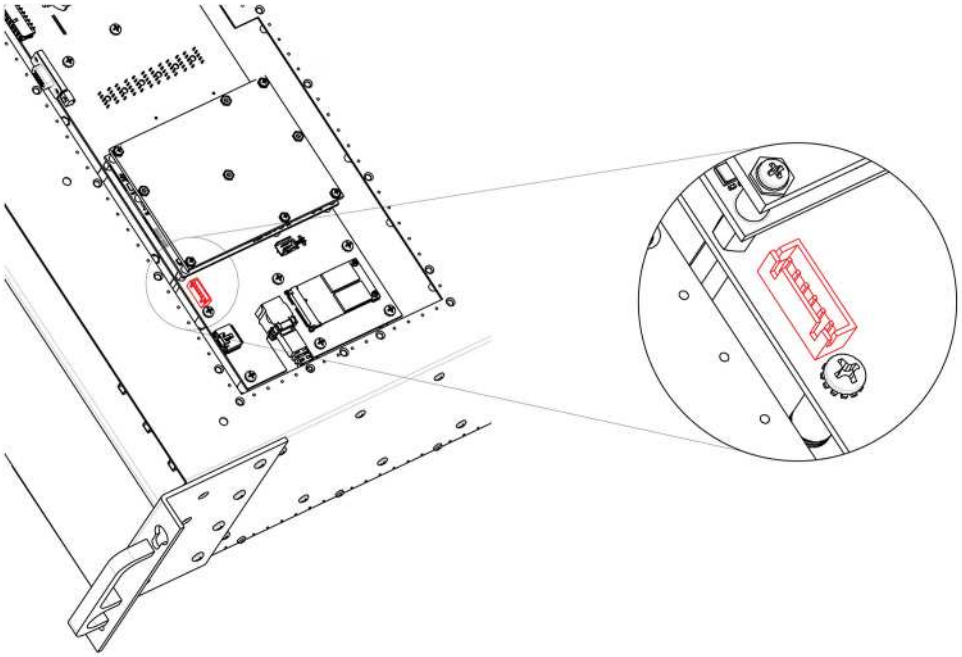

Image 14-75

6. Pull the cable out of the unit .

How to install the VFD Cable

To install the VFD Cable follow the same procedure in the reverse order.

14.27 Keyboard Cable

Flow chart

Image 14-76

The flat ribbon keyboard cable connects the Front panel board to the System-Power board. This procedure provides instructions on how to disconnect the cable on both sides.

Concerned parts

R767269K Cable Kit Set

Necessary tools

- 1 x Phillips Screwdriver #2
- Hex Screwdriver

How to remove the Keyboard cable

1. Follow the steps detailed in other procedures to remove the Front Cover Assembly, Front brackets, EMI filter*, 3RU Fan Tray and 1RU Fan Tray. Make sure that the Keyboard Cable is disconnected from the Front Panel board.

   Note: The EMI filter is no longer needed, and it can be removed. If the EMI filter is left in place, it requires servicing. See “E2 maintenance actions”, page 380.

2. Remove the Power supplies from the unit.
3. Turn the unit upside down and follow the steps detailed in other procedures to remove the Bottom Panel and the CPU module from the System-Power board.
4. Remove the USB, VFD, 3RU and 1RU cables that are connected to the System-Power board.
5. Remove the screws that attach the System-Power Board to the standoffs.
6. Lift the System Power Board from the standoffs and flip it over, but don’t extend it too much.
7. Locate the keyboard connector and push the latches out to release the cable.

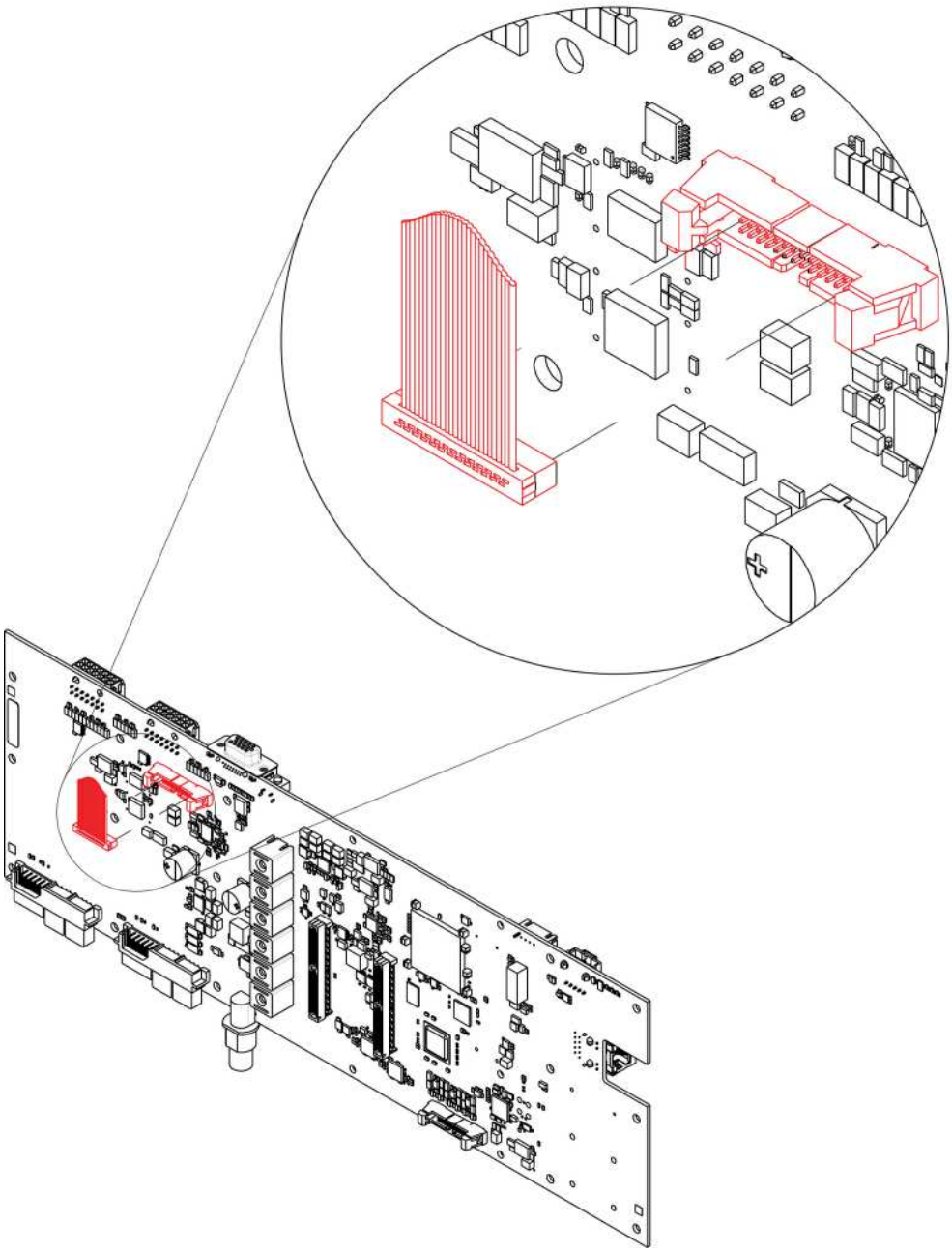

Image 14-77

8. Carefully remove the cable from the unit.

How to install the Keyboard Cable

To install the Keyboard Cable follow the same procedure in the reverse order.

There is a key on the connector to prevent incorrect insertion of the cable.

14.28 Genlock Cable

Flow chart

Image 14-78

The flat ribbon Genlock cable connects the Genlock Assembly to the System-Power board. This procedure provides instructions on how to disconnect the cable on both sides.

Make sure the latches are fully engaged to prevent the cable from coming loose.

Concerned parts

R767269K Cable Kit Set

Necessary tools

- 1 x Phillips Screwdriver #2
- Hex Screwdriver

How to remove the Genlock cable

1. Remove the Genlock Assembly and disconnect the Genlock cable from the board. Follow the instructions as provided in the previous section.
2. Turn the unit upside down and follow the steps detailed in other procedures to remove the Bottom Panel and the CPU module from the System-Power board.
3. Remove the USB, VFD, 3RU and 1RU cables that are connected to the System-Power board.
4. Remove the screws that attach the System-Power Board to the standoffs.
5. Lift the System Power Board from the standoffs and flip it over, but don’t extend it too much.
6. Unplug the side of the Genlock cable that is plugged into the System Power board.

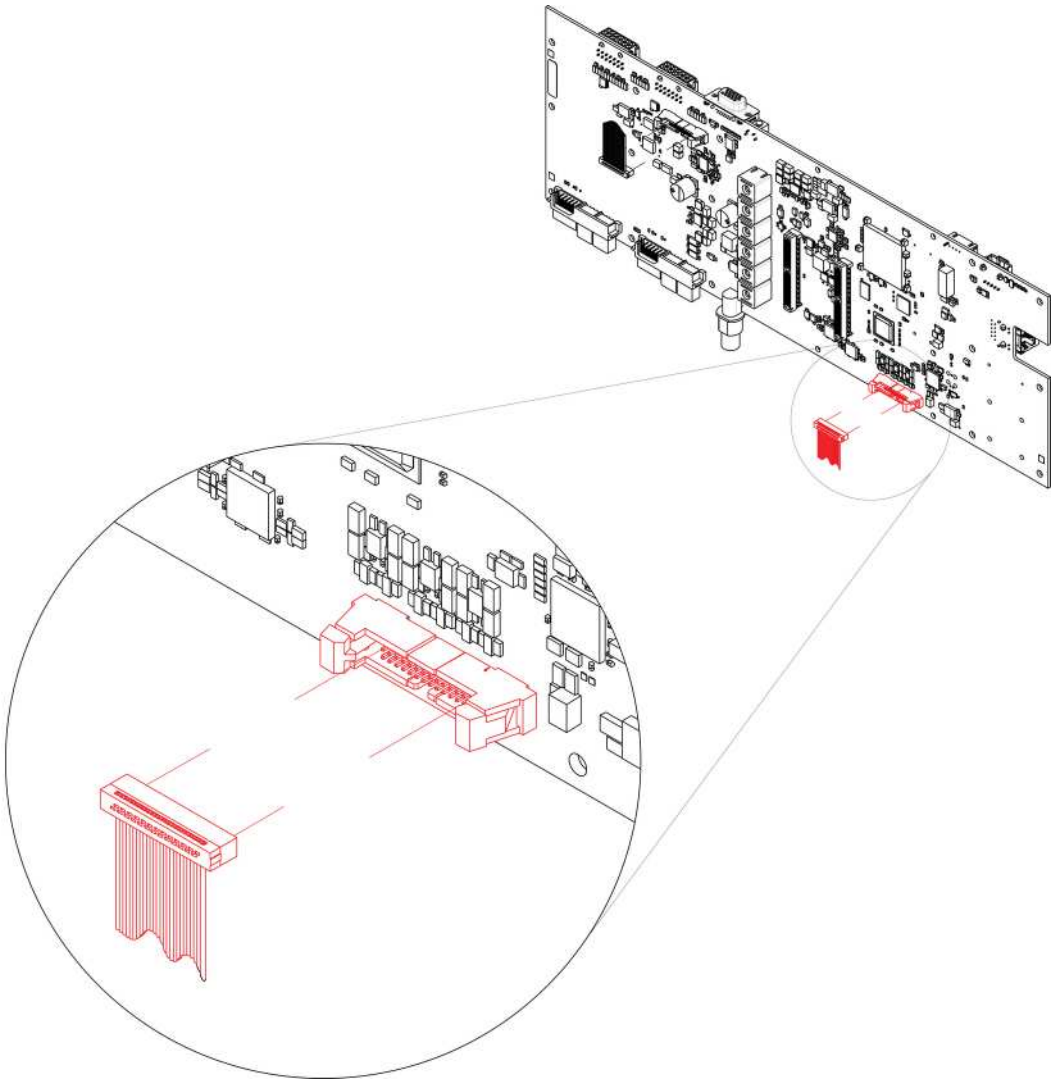

Image 14-79

7. Remove the cable from the unit.

How to install the Genlock Cable

To install the Genlock Cable follow the same procedure in the reverse order.

There is a key on the connector to prevent incorrect insertion of the cable.

Make sure the latches are fully engaged to prevent the cable from coming loose.

14.29 Ethernet Cable

Flow chart

Image 14-80

The Ethernet cable connects the Genlock board to the System Power board. This procedure provides instructions on how to remove the cable from both sides.

Concerned parts

R767269K Cable Kit Set

Necessary tools

1 x Phillips Screwdriver #2

How to remove the Ethernet cable

1. Follow the steps detailed in other procedures to remove Ethernet cable from the Genlock assembly.
2. Turn the unit upside down and follow the steps detailed in other procedures to remove the Bottom Panel and the CPU module from the System-Power board.
3. Remove the USB, VFD, 3RU and 1RU cables that are connected to the System-Power board.
4. Remove the screws that attach the System-Power Board to the standoffs.
5. Lift the System Power Board from the standoffs and flip it over, but don't extend it too much.
6. Locate the Ethernet connector and push the locking clip on the Ethernet cable so it can be released from the socket.

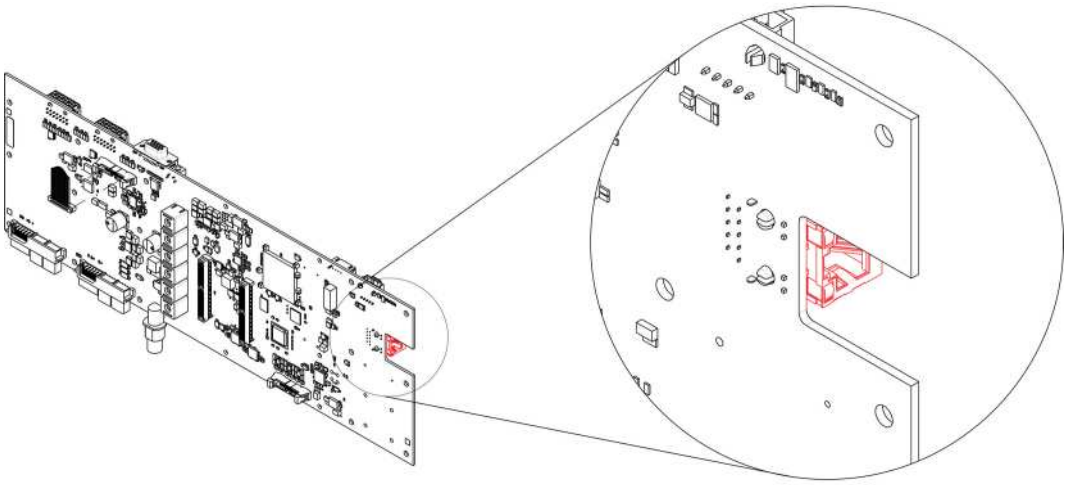

Image 14-81

7. Carefully remove the cable from the unit.

How to install the Ethernet Cable

To install the Ethernet Cable follow the same procedure in the reverse order.

14.30 3RU Fan Cable

Flow chart

Image 14-82

The 3RU cable assembly provides power to the 3RU fans from the System-Power board.

One side of the cable is attached to a metal bracket that is accessible after the 3RU fan tray is removed. The other side of the cable assembly connects to the System-Power board and is accessible when the bottom panel is removed

Concerned parts

R767269K Cable Kit Set

Necessary tools

- 1 x Phillips Screwdriver #2
- Hex Screwdriver

How to remove the 3RU Fan cable

1. Make sure the unit is placed in the upright position and the 3RU fan tray is removed
2. Locate the 3RU cable connector that is exposed after the 3RU fan tray is removed. The connector is attached on a metal bracket that is vertically mounted in the chassis.

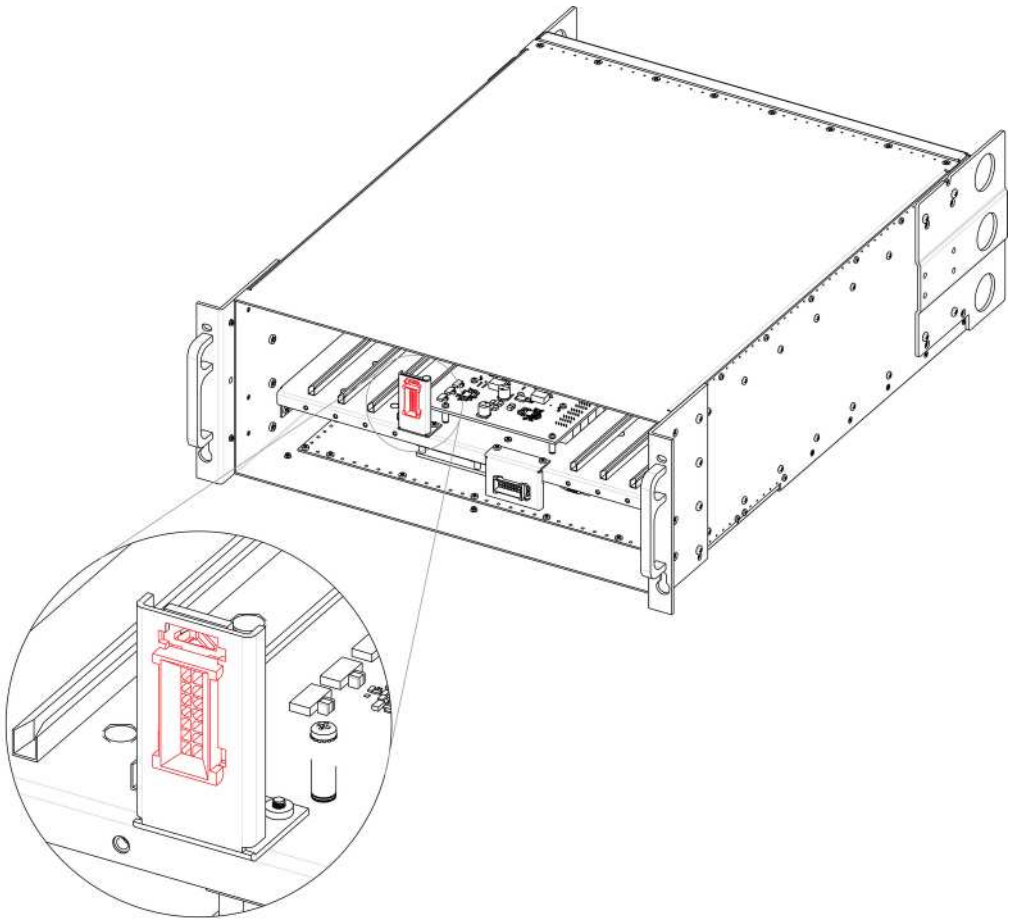

Image 14-83

3. Locate the snap lock on the top of the connector and push it back to release the connector from the bracket.

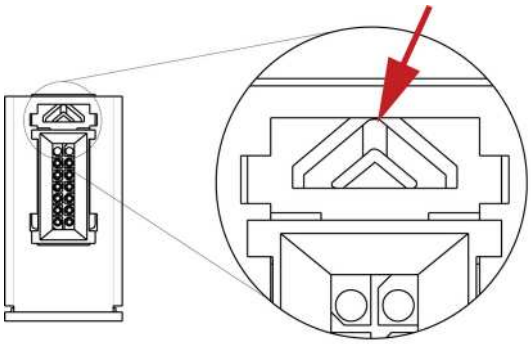

Image 14-84

4. Push the connector up until the slots in the metal bracket align with the flanges on the connectors.

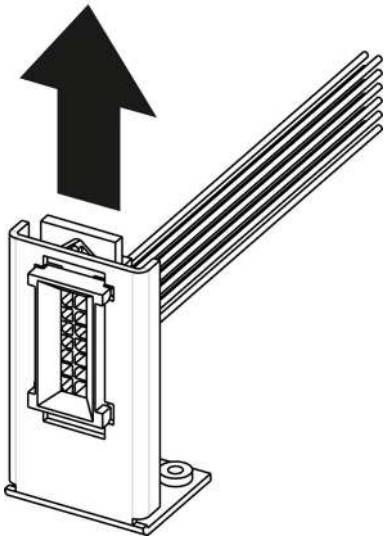

Image 14-85

5. Gently pull the 3RU cable assembly away from the bracket.

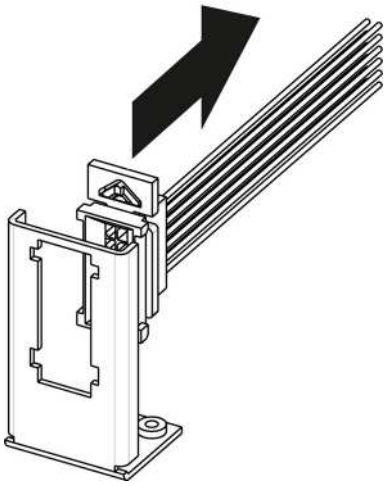

Image 14-86

6. Turn the unit upside-down and remove the bottom panel.
7. Locate the 3RU cable that is plugged on the System-Power board.

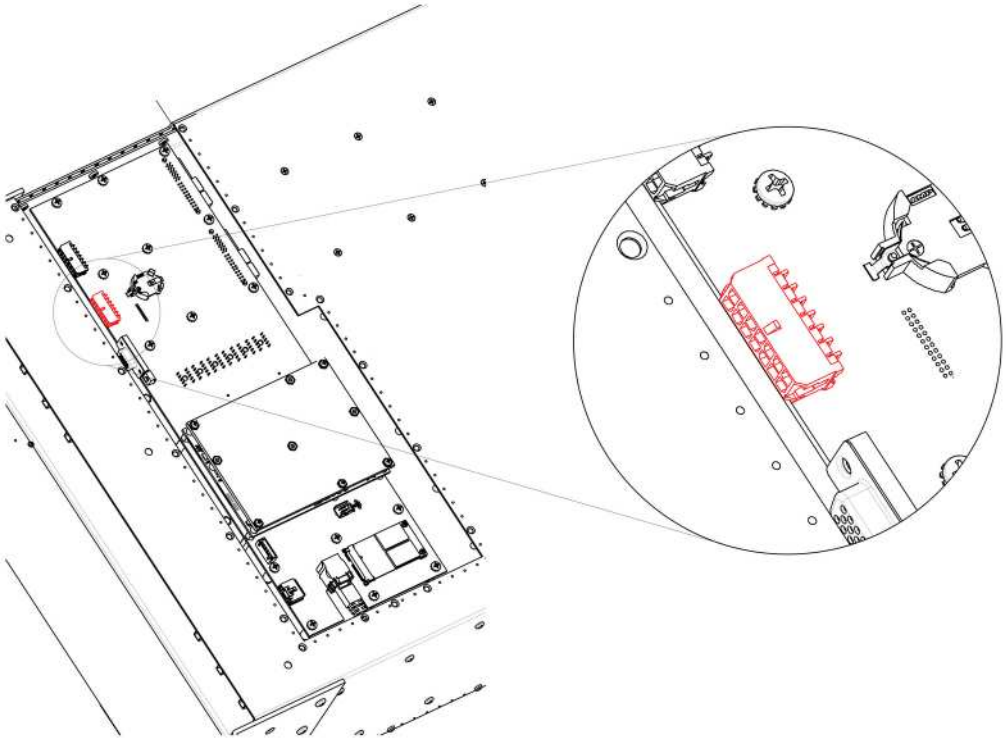

Image 14-87

8. Remove the 3RU cable by gently pushing it out.

How to install the 3RU Fan Cable

To install the 3RU Fan Cable follow the same procedure in the reverse order.

14.31 1RU Fan Cable

Flow chart

Image 14-88

The 1RU cable assembly provides power to the 1RU fans from the System-Power board.

One side of the cable is attached to a metal bracket that is accessible after the 3RU and the 1RU fan trays are removed. The other side of the cable assembly connects to the System-Power board and is accessible when the bottom panel is removed.

Concerned parts

R767269K Cable Kit Set

Necessary tools

- 1 x Phillips Screwdriver #2
- Hex Screwdriver

How to remove the 1RU Fan cable

1. Make sure the unit is placed in the upright position and the 3RU and 1RU fan trays are removed.
2. Locate the 1RU cable connector that is exposed after the 1RU fan tray is removed. The connector is attached on a metal bracket that is horizontally mounted in the chassis.

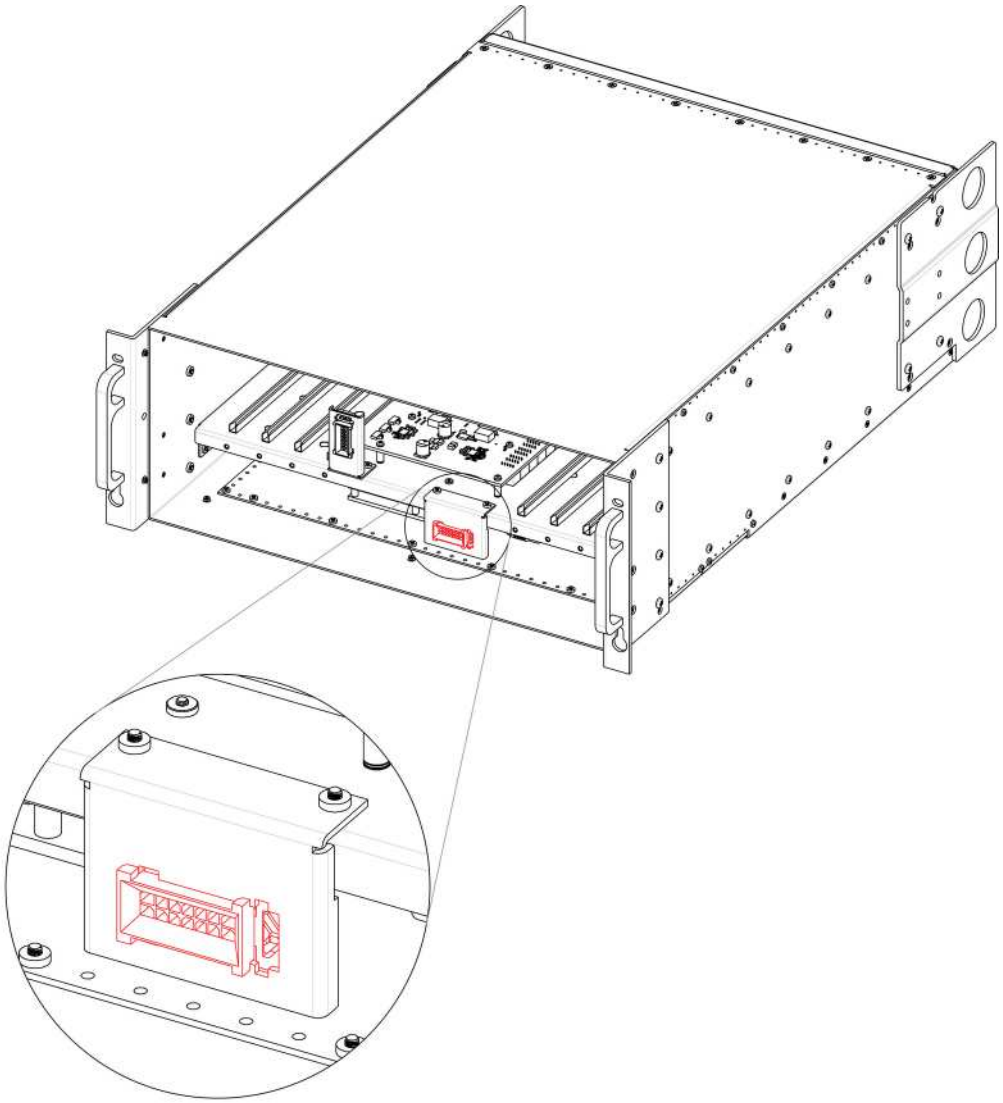

Image 14-89

3. Locate the snap lock on the connector and push it back to release the connector from the bracket.

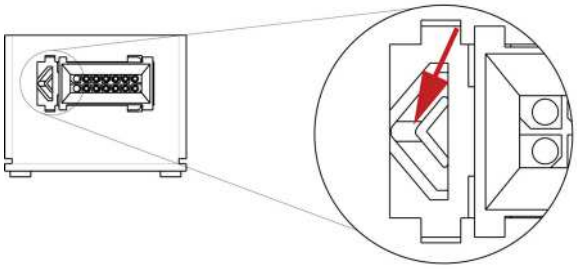

Image 14-90

4. Push the connector to the left until the slots in the metal bracket align with the flanges on the connectors.

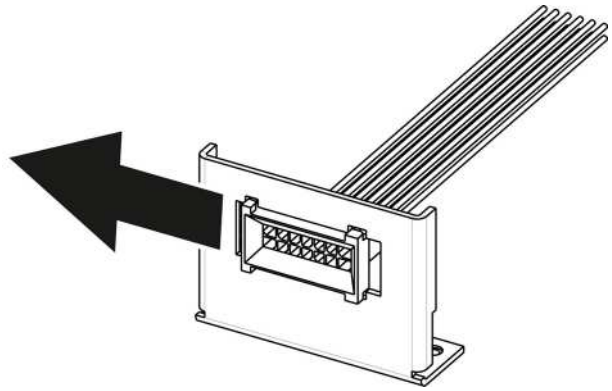

Image 14-91

5. Gently pull the cable away from the bracket.

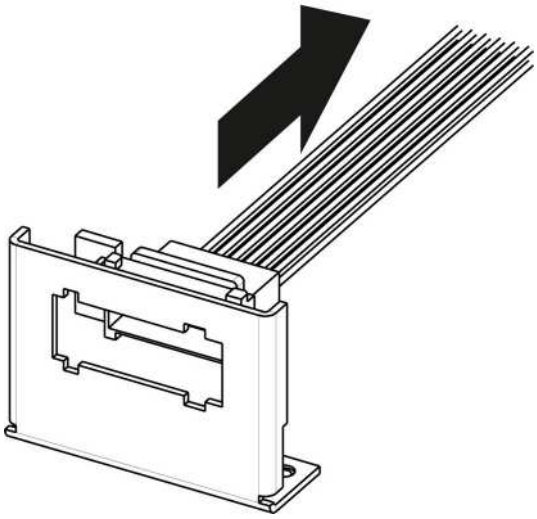

Image 14-92

6. Turn the unit upside-down and remove the bottom panel.
7. Locate the 1RU cable that is plugged on the System-Power board.

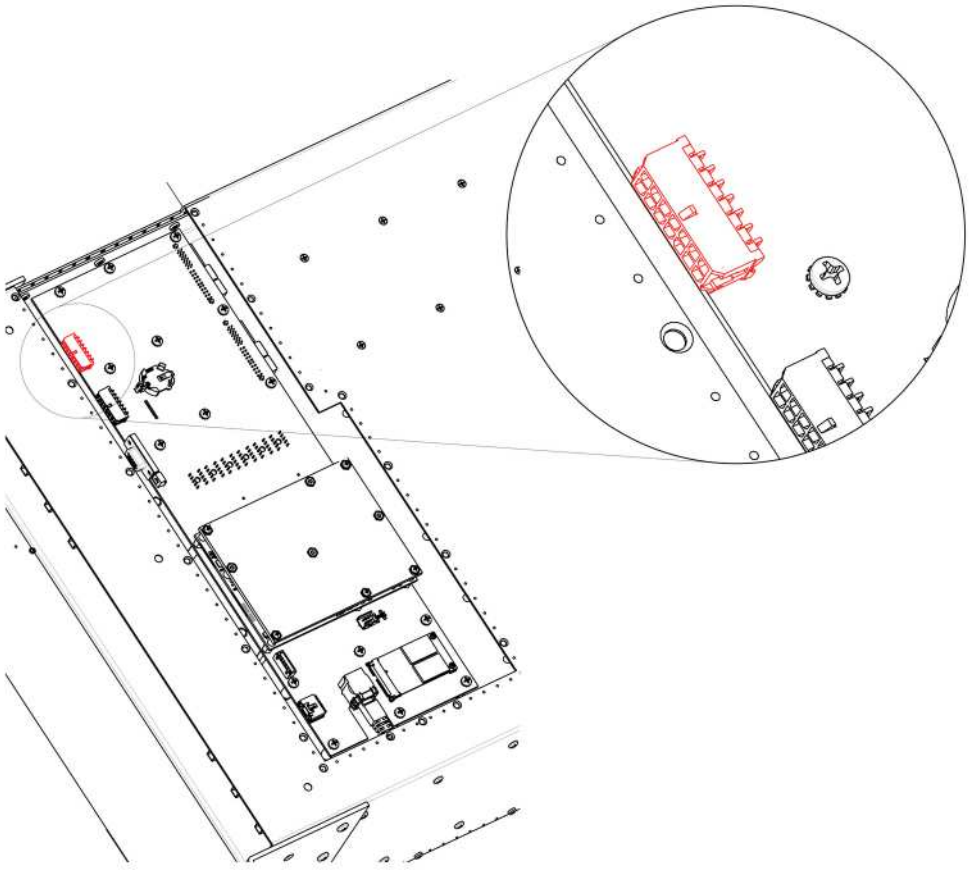

Image 14-93

8. Remove the 1RU cable by gently pushing it out.

How to install the 1RU Fan Cable

To install the 1RU Fan Cable follow the same procedure in the reverse order.

14.32 Rear Rack Ears

Concerned parts

R767273K Connector protector

Necessary tools

1 x Phillips Screwdriver #2

How to remove Rear Rack-Ears

1. Remove the eight pan head screws (8-32x.31), four from each side, to detach the rear rack ears and connector protectors from the unit.

Note: If the rear rack ears have been removed, do not re-install the 8-32x.31 screws. Without the rack ears in place, the screws may damage the multiviewer card.

Note: You don't need to remove the rear rack ears to access any other part of the unit.

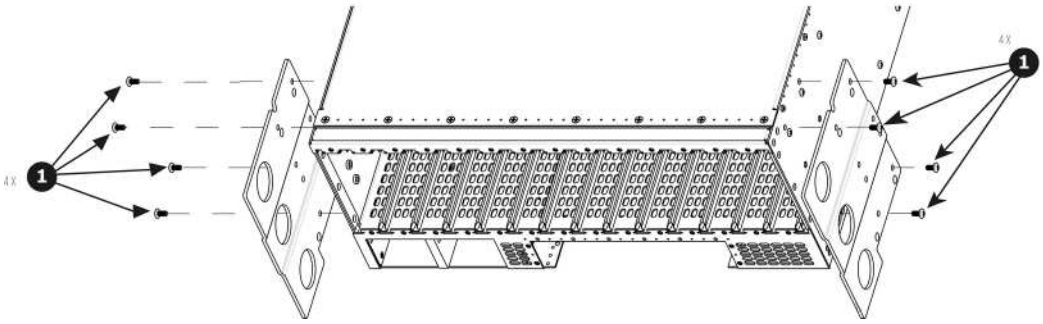

Image 14-94

How to install Rear Rack-Ears

To install the Rear Rack-Ears follow the same procedure in the reverse order.

When shipping an E2 in a Barco-supplied case, make sure that the rear connector protectors are installed to prevent damage.

14.33 Front Rack-Ears

Flow chart

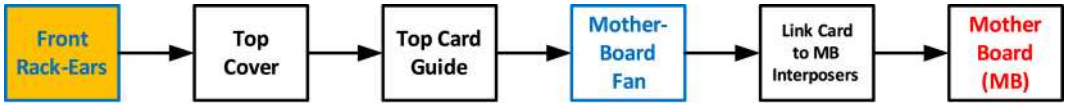

Image 14-95

Concerned parts

R767268K Rack Ears kit

Necessary tools

1 x Phillips Screwdriver #2

How to remove Side Rack-Ears

1. Loosening and removing the eight (four on each side) pan head screws that secure the brackets to the chassis sides.

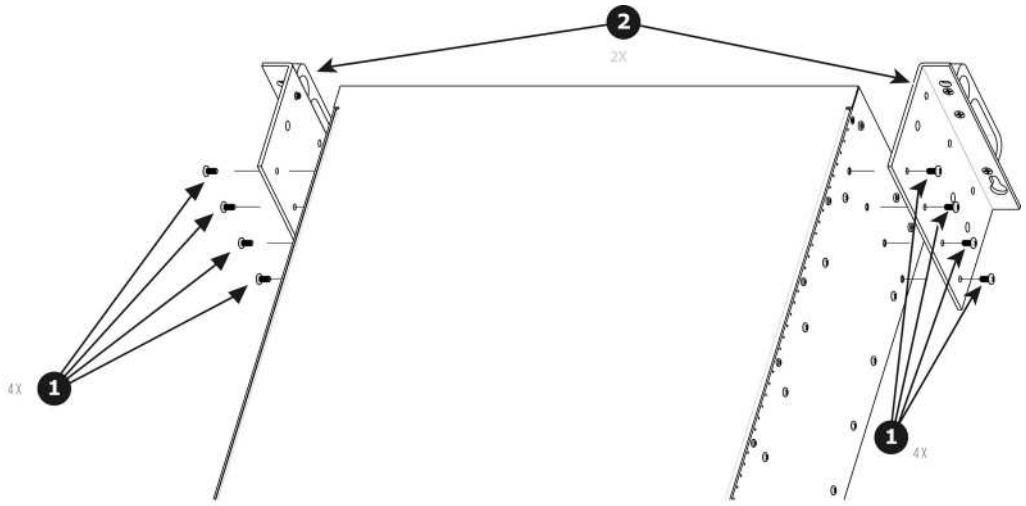

Image 14-96

2. Remove the Rack-Mount Brackets from the Chassis.

How to install Side Rack-Ears

To install the Side Rack-Ears follow the same procedure in the reverse order.

14.34 Top Cover

Flow chart

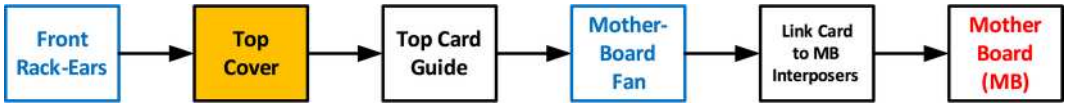

Image 14-97

Necessary tools

1 x Phillips Screwdriver #2

How to remove Top Cover

1. Remove the 12 screws from the two sides (6 in each side, 4-40x0.25) that are located towards the top side of the unit.
2. Remove the two (2) screws (4-40x0.25) located closer to the rear end of the unit. These are flat head screws.
3. Remove the 8 screws (6-32x0.25) located on the top at the back of the chassis.
4. Remove the cover by gently pulling it away from the E2

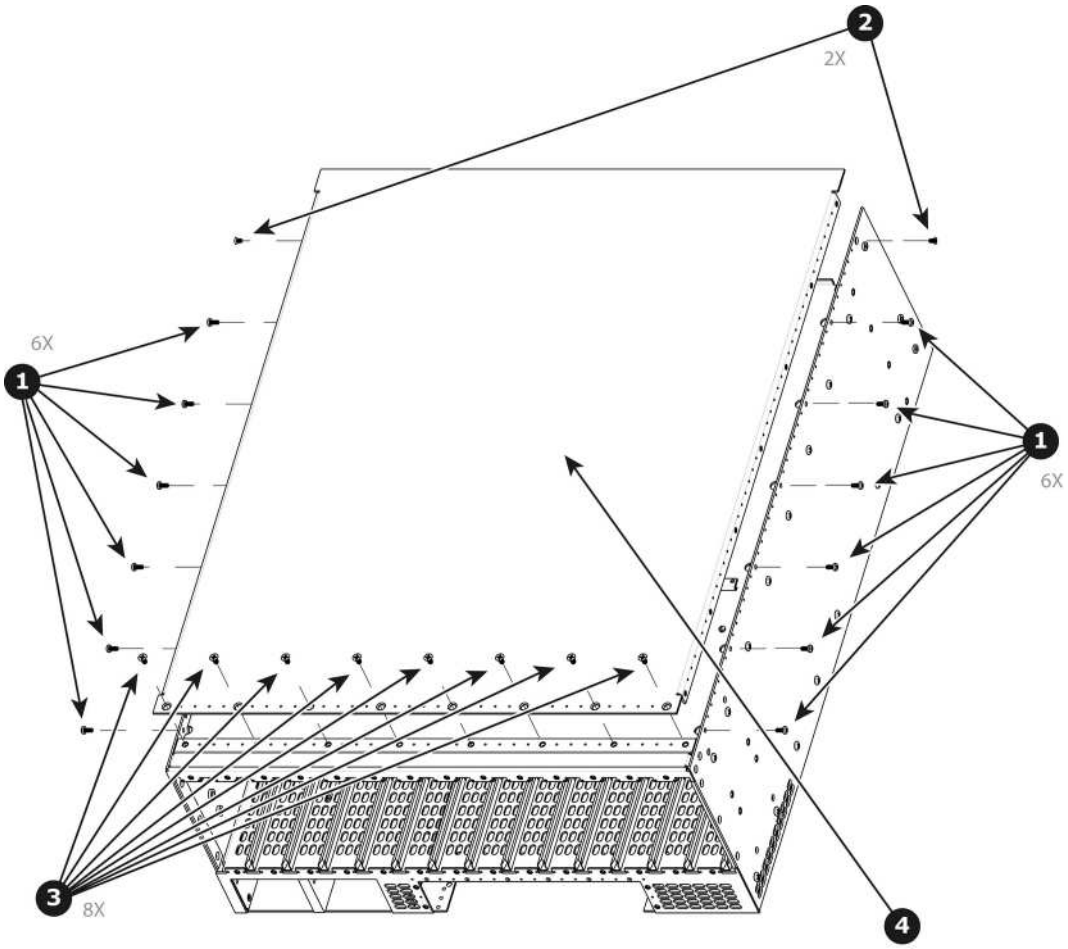

Image 14-98

How to install Top Cover

To install the Top Cover follow the same procedure in the reverse order.

14.35 Top Card Guide

Flow chart

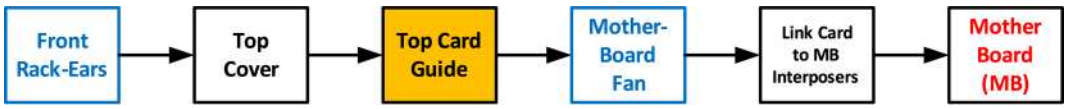

Image 14-99

Necessary tools

1 x Phillips Screwdriver #2

How to remove Top Card Guide

1. Remove the 18 screws from the two sides (8 in each side, 6-32x0.25) that are located towards the bottom of the unit.
2. Remove the card guide cover by gently pulling it away from the E2.

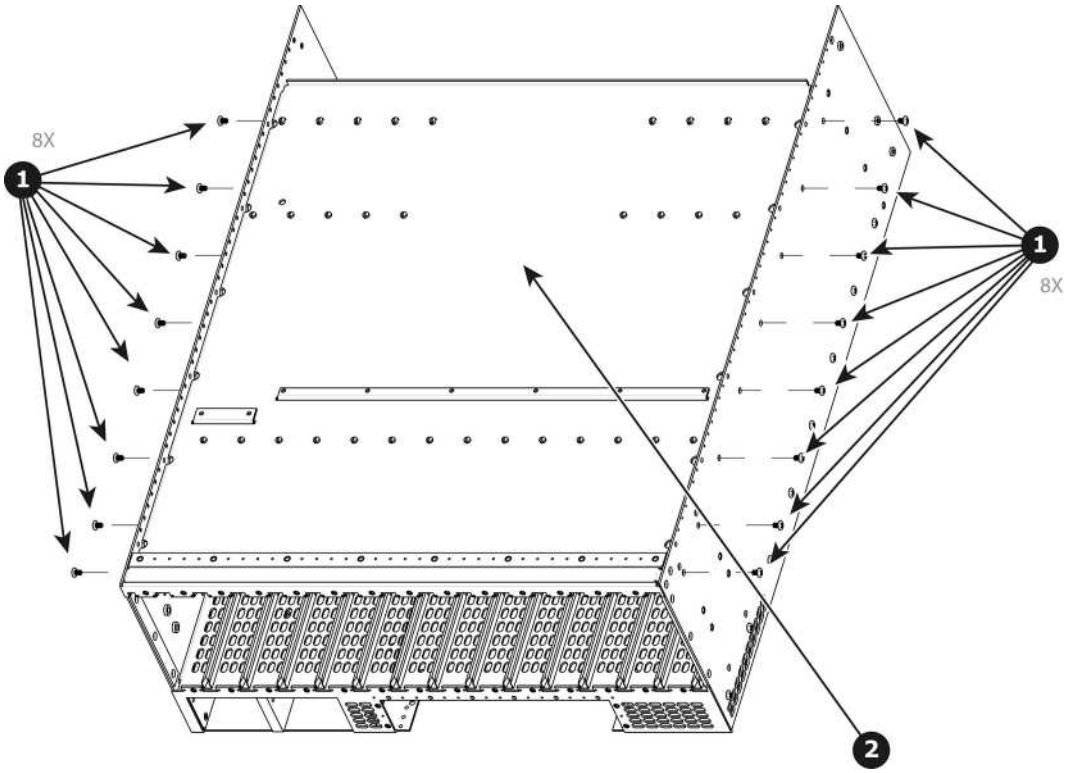

Image 14-100

How to install Top Card Guide

To install the Top Card Guide follow the same procedure in the reverse order.

When installing the guide make sure you have 2 cards from the rear and two cards from the front (VPUs) installed before tightening the screws.

Use Loctite 242 to the screws before installing.

14.36 Motherboard Fan

Flow chart

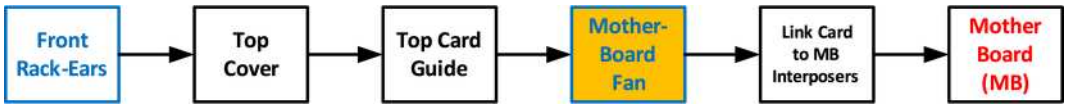

Image 14-101

Overview

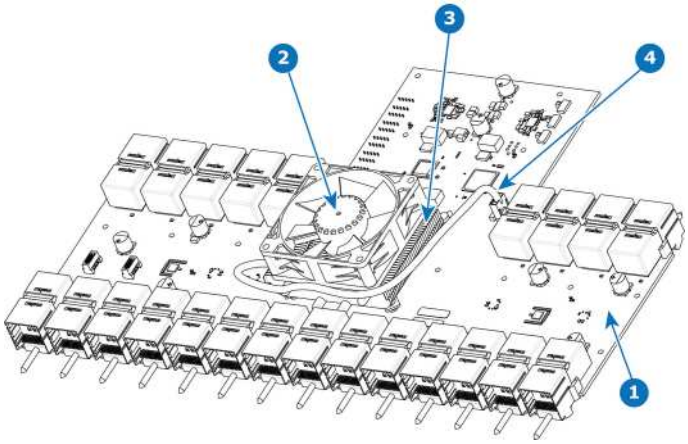

Image 14-102

1 Motherboard
2 Fan
3 Heatsink
4 Fan power cable

Concerned parts

R767265K	Motherboard Heatsink & Fan kit

Necessary tools

1 x Phillips Screwdriver #2

How to remove Motherboard Fan

1. Remove the cable that provides power to the heatsink fan.
2. Lift the two handles to release the fan from the heatsink.

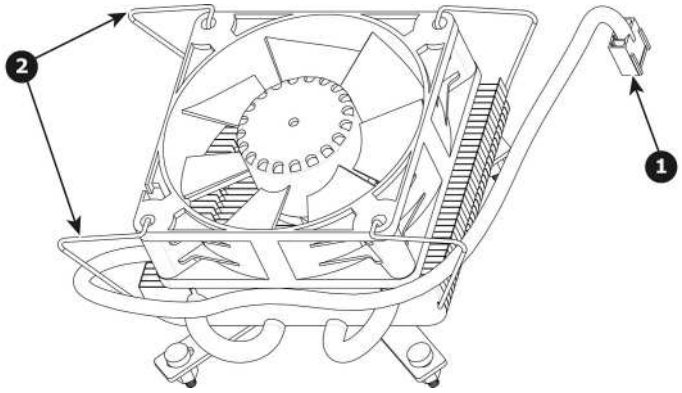

Image 14-103

3. Lift the fan away from the heatsink.

How to install Motherboard Fan

1. Remove the fan from the Heatsink/Fan spare kit.
2. Using the clips install the fan on the top of the heatsink that is on the motherboard.
3. Connect the fan power cable to header xxx located on the motherboard.

Disregard the heatsink from the spare kit.

15 S3 Maintenance

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About this chapter

This chapter describes how to service a S3 series Event Master Processor by replacing individual components.

Simple servicing

S3 series devices are based on a modular design that ensures easy serviceability. Users can swap most of the S3 components in the case of damage, without shipping the unit to a Barco service center.

Methodology

Most procedures in these chapters include multiple steps to gain access to the parts requiring service. A workflow flow chart is provided next indicating all of the procedures and their relationships. Please refer to the chart to familiarize yourself with the sequence of procedures.

ESD recommendations

The following precautions must be taken:

- Perform the Service procedures only at approved anti-static work station equipped with anti-static mat.
- At all times use a conductive wrist strap attached to a solid earth ground.
- Always discharge yourself by touching a grounded bare metal surface before coming in contact with ESD sensitive electronic.

WARNING: Always switch power off and unplug the cords from the device before performing any maintenance operations described in this chapter.

WARNING: The device can be damaged by electrostatic discharge (ESD). When handling the device and any of its components, caution must be taken so that damage does not occur. Damage due to inappropriate handling is not covered by the warranty.

15.1 S3 unit Overview

Orientation and main components

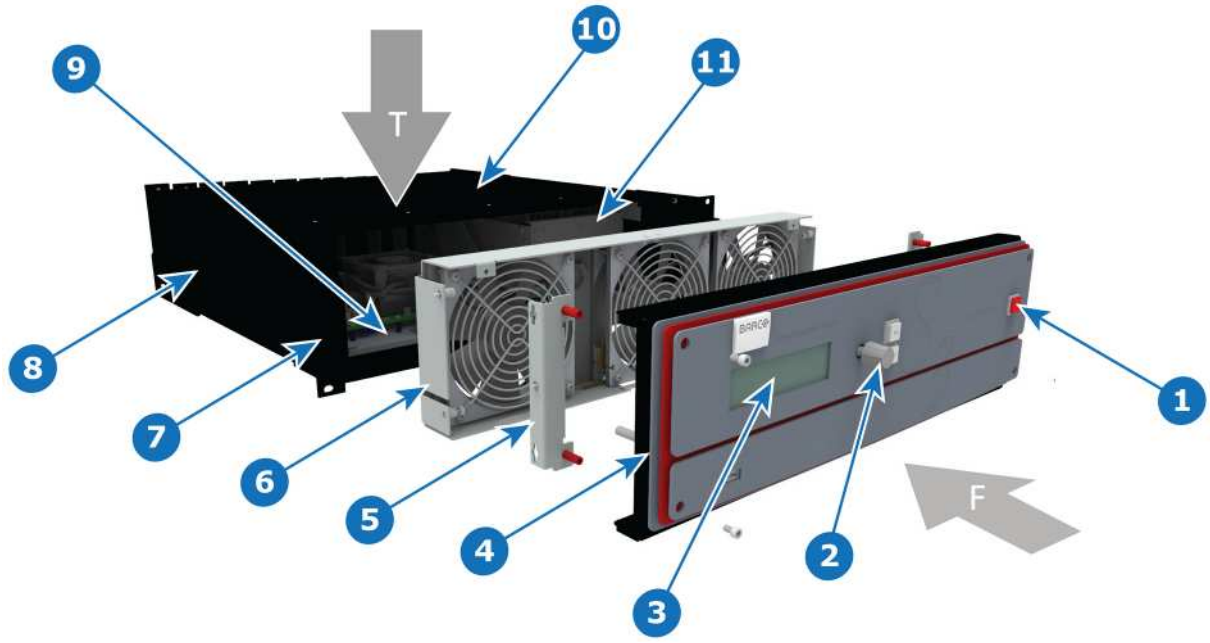

Image 15-1

T	Top	6	3RU Fan Tray
F	Front	7	Rack Ears
1	On/Off	8	Chassis
2	Front Panel Knob	9	Motherboard
3	VFD Display	10	Top Cover
4	Front Cover Assembly	11	Power Interposer Assembly
5	Front Brackets		

15.2 Process Overview

Flow chart

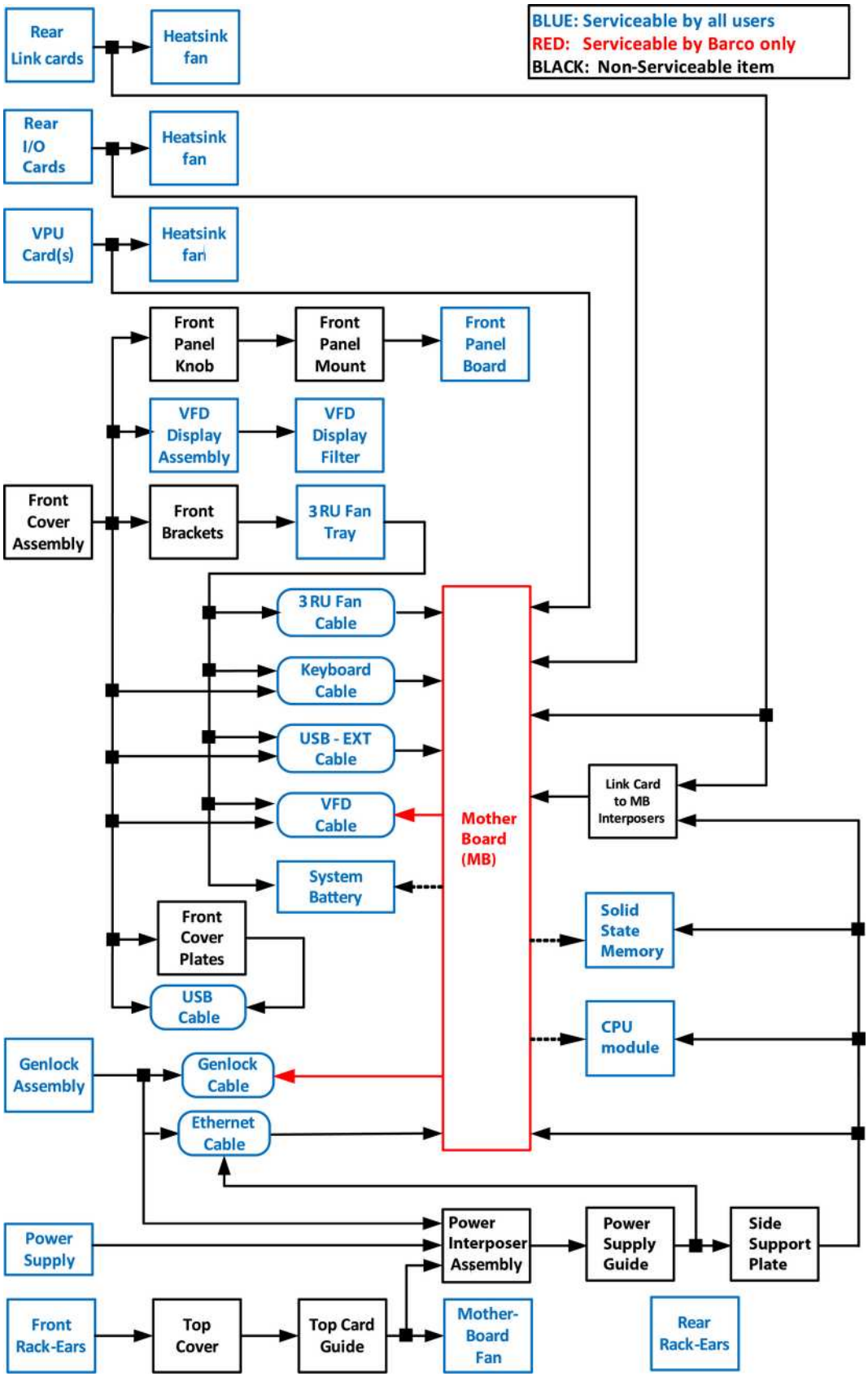

Image 15-2

15.3 Spare Parts Serviceable by All Users

S3 Spare Parts list

P/N	Description	Comments
R767241K *	VFD Display assembly	
R767246K *	VFD Filter	
R767260K *	Front Panel board	
R767263K *	Heatsink fan	One for each Input, Output, Link and VPU card
R767264K *	CPU module	
R767265K *	Motherboard Heatsink & Fan kit	
R767275K *	Solid-State Memory	
R767278K	MOTHERBOARD S3	
R767279K	POWER INTERPOSER S3	
R767280K *	3RU fan tray	The fans are not available separately — will replace R767271K
R767281K	FRONT RACK EARS S3	Includes hardware for both sides
R767282K	REAR CONNECTOR PROTECTOR S3	
R767283K	S3 Cable Kit	Kit contains: • 1x USB Extension cable • 1x Fan Tray-to-Motherboard cable • 1x RJ45-to-Motherboard CAT5 Ethernet cable • 1x Front Panel Keyboard-to-Motherboard flat cable • 1x Genlock-to-Motherboard flat cable • 1x VFD-to-Motherboard cable
R9004740 *	DVI Input Board	
R9004741 *	SDI Output Board	
R9004742 *	SDI Input Board	
R9004743 *	HDMI Output Board	
R9004744 *	DP/HDMI Input Board	
R9004745 *	DVI Output Board	
R9004746 *	Link Card Board	
R9004750 *	Link/CXP Cable	
R9004758	VPU CARD S3	
R9004759	GENLOCK S3	
R9004760	GENLOCK/S3D S3	
R9004765*	Quad DP 1.2 Output Board	
R9004769	Power supply (PS)	One PS only. System accepts two power supplies.
R9004785 *	Tri-Combo Input Board	
R9004786 *	Tri-Combo Output Board	
R9004791*	Quad HDMI Input Board	
R9004792*	Quad HDMI 2.0 Output Board	
R9004793*	Quad DP 1.2 Input Board	
R9801120*	Motherboard Battery Kit	

(*) common between E2 and S3.

Optional CXP Cables

P/N	Description	Comments
R9004753	CXP Fiber Cable	1x 30M Fiber cable
R9004754	CXP Fiber Cable	1x 100M Fiber cable
R9004761	CXP Cable	1x 3M cable

R9004762	CXP Cable	1x 5M cable
R9004763	CXP Cable	2x 3M cables
R9004764	CXP Cable	2x 5M cables

15.4 Rear I/O, Link and VPU Cards

Flow chart

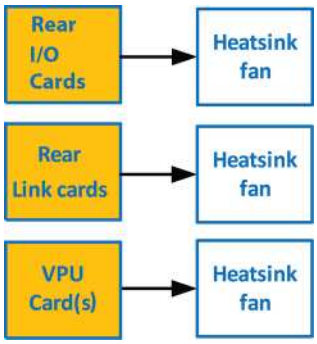

Image 15-3

Overview

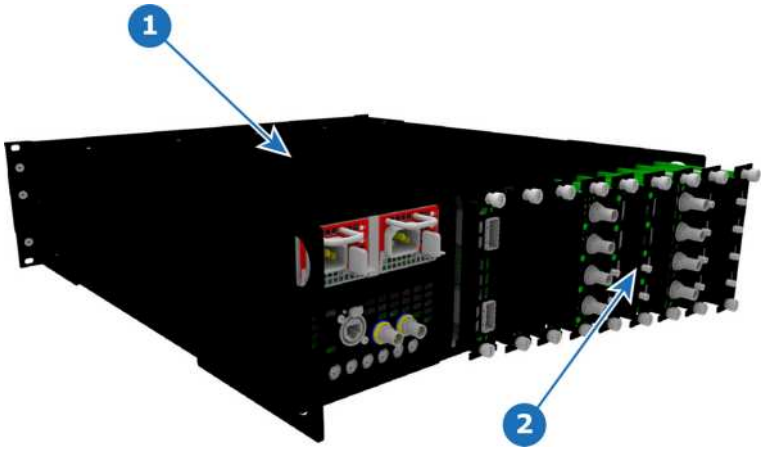

Image 15-4

1 Chassis
2 I/O, Link and VPU cards

Concerned parts

R9004740	DVI Input
R9004741	SDI Output
R9004742	SDI Input
R9004743	HDMI Output
R9004744	DP/HDMI Input
R9004745	DVI Output
R9004746	Link Card
R9004758	VPU card S3
R9004765	Quad DP 1.2 Output Board
R9004785	Tri-Combo Input
R9004786	Tri-Combo Output
R9004791	Quad HDMI Input Board

R9004792	Quad HDMI 2.0 Output Board
R9004793	Quad DP 1.2 Input Board

Necessary tools

Phillips Screwdriver #2.

How to remove a card

1. Locate the card you wish to replace.

   Note: There are 9 card slots. The first slot on the left is slot 1 and the last slot on the most right position is 9.

2. Loosen and unscrew the top and bottom thumbscrews that are holding the card to the chassis.
3. Gently pull the card out of its slot.

   Tip: You may need to wobble it a little bit up or down to loosen it from the card guides as you are pulling out.

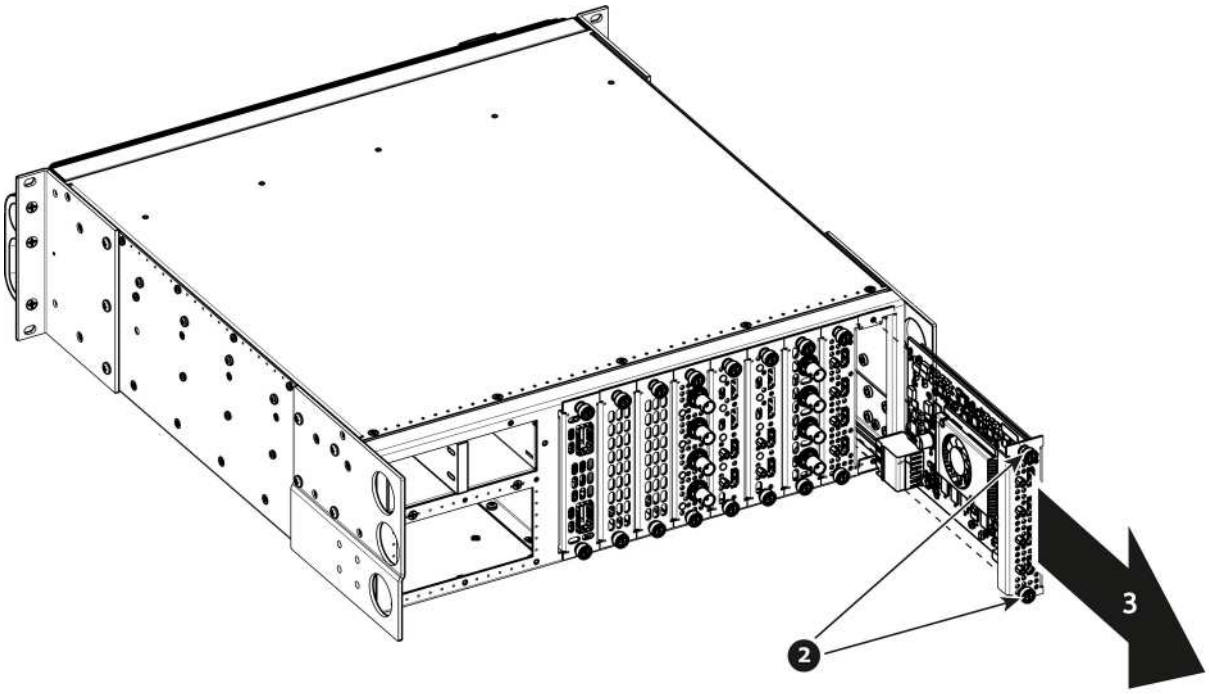

Image 15-5

How to install a card

To install a card follow the same procedure in the reverse order.

Apply a little pressure on the card until it is fully inserted in the back plane connector.

15.5 Rear I/O, VPU and Link card Heatsink Fan

Flow chart

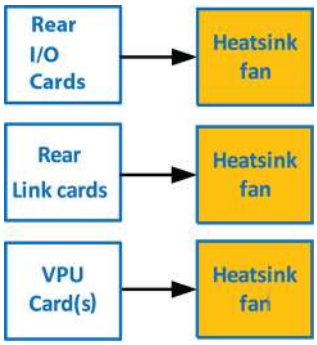

Image 15-6

Overview

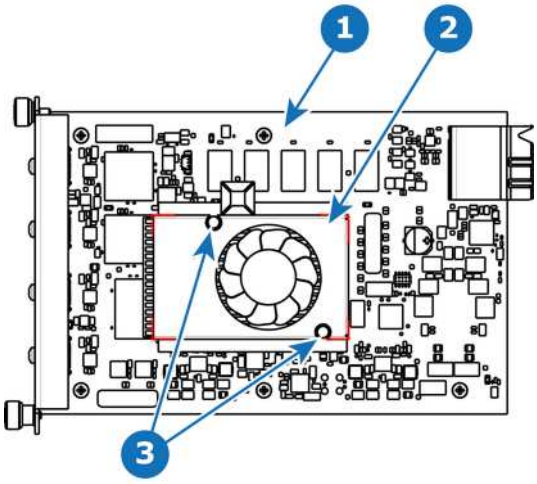

Image 15-7

1 I/O board
2 Heatsink Fan
3 Pins

Concerned parts

R767263K Heatsink Fan

Necessary tools

- 1 x Phillips Screwdriver #2.
- Small fine nose pliers.

How to remove the Rear I/O, VPU and Link card Heatsink Fan

1. After you remove the card from the chassis, unplug the heatsink fan power wire from the PCB connector.
2. Locate the two pins that are located on opposite corners of the Heatsink and secure the fan on to the board.
3. Turn the board over and with small fine nose pliers while bringing together the two sides of the pin push it through the hole.
4. After both pins are pushed through the holes, you can remove the heatsink from the card.

How to install the Rear I/O, VPU and Link card Heatsink Fan

1. Remove the heatsink with the fan from the package.
2. Remove the plastic cover from the bottom of the fan to expose the adhesive material.
3. Align the holes in the board with the pins of the Heatsink.
4. Press firmly the heatsink to the devices below.
5. Plug the heatsink fan power wire to the PCB connector.

15.6 Tri-Combo Input and Tri-Combo Output Card Disassembly and Assembly

TCI and TCO card disassembly and assembly

See “Tri-Combo Input and Tri-Combo Output Card Disassembly and Assembly”, page 391 for details.

15.7 Front Cover Assembly

Flow chart

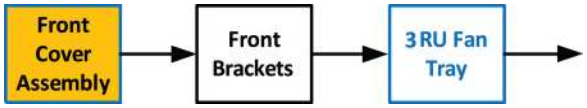

Image 15-8

Overview

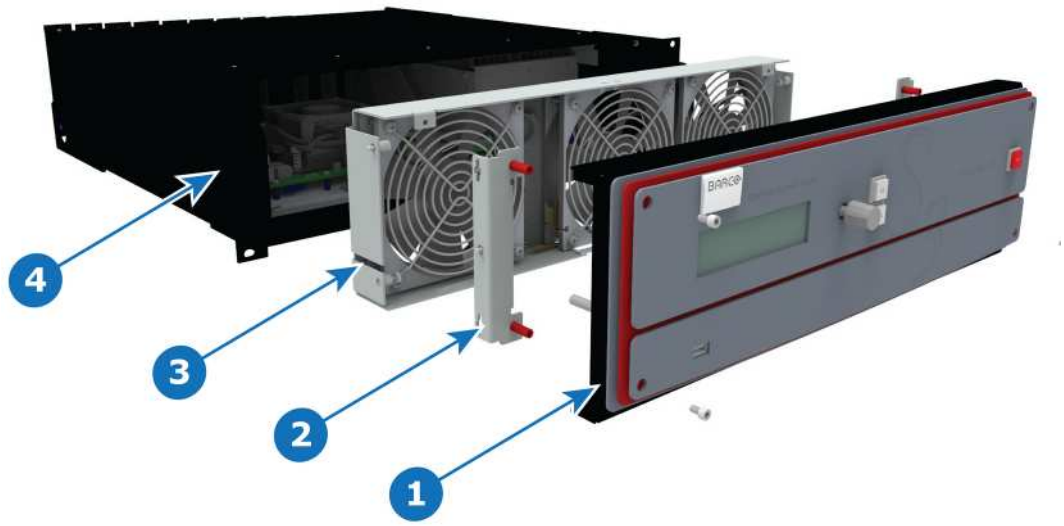

Image 15-9

1 Front Cover Assembly
2 Front Brackets
3 3RUFanTray
4 Event Master Unit

Necessary tools

1 x Screwdriver HEX 0.05" 7.05" (Provide by Barco in the original package).

Image 15-10

How to remove the Front Cover Assembly

1. Use the Hex screwdriver to remove the 4 screws (Hex 6-32x.25) that attach the front cover to the brackets located behind it.

   Note: the standoffs go through the holes in sheet metal to properly align the front enclosure.

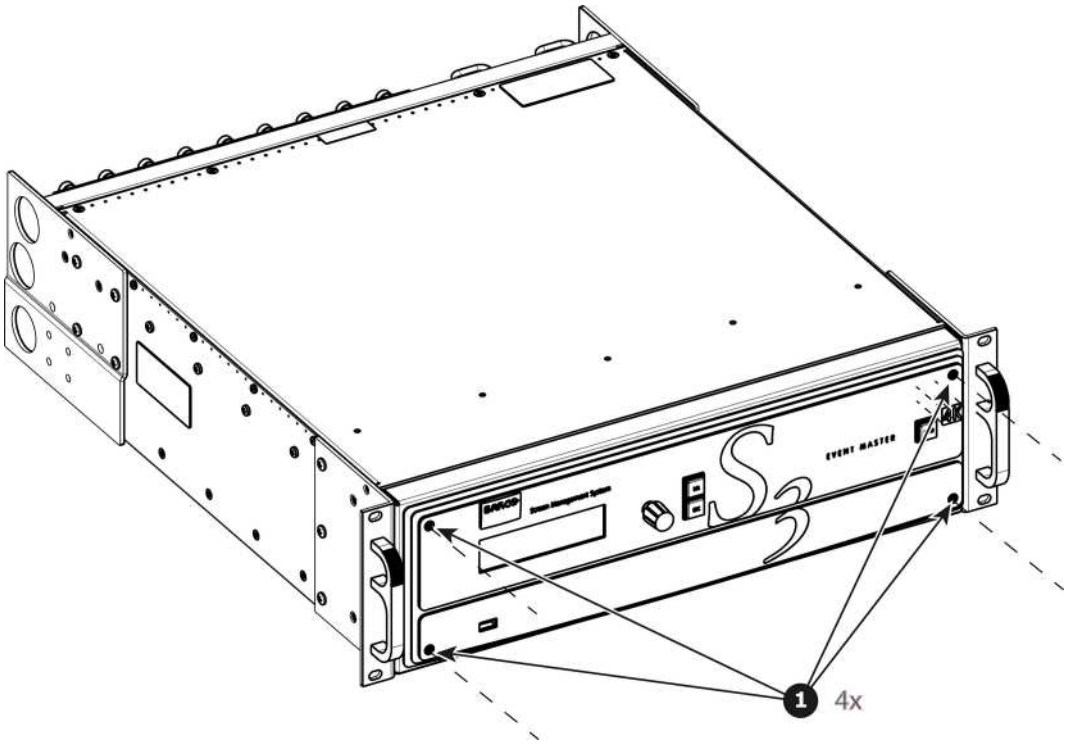

Image 15-11

2. Pull out the Front cover and lay it flat in front of the unit.

   At this point there are still 3 cables connecting the Front cover to the unit.

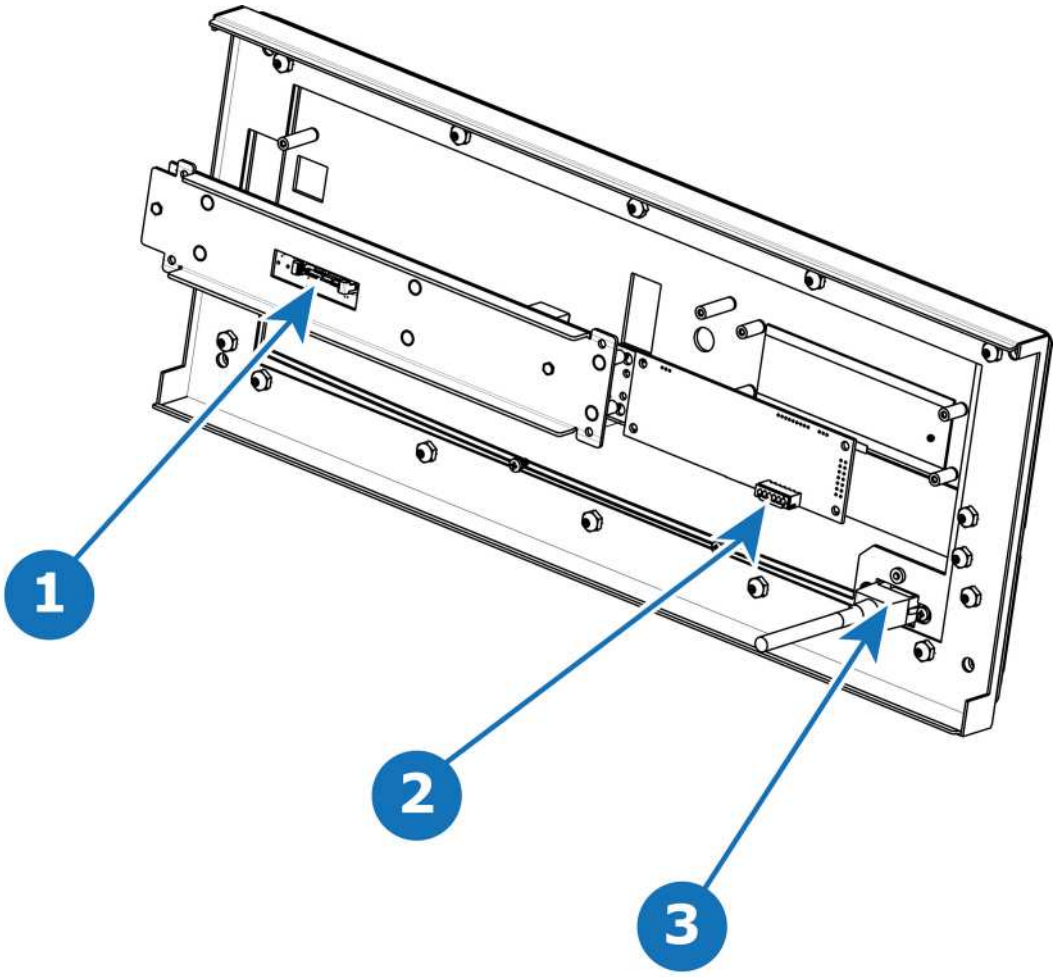

Image 15-12

1 Front Panel Connector
2 VFD Connector
3 USB Connector

3. Pull the latches away from connectors and gently pull the flat Front Panel away.
4. Remove cables as outlined in the related procedures (VFD, USB and Front Panel connectors).

How to install the Front Cover Assembly

To install the Front Cover Assembly follow the same procedure in the reverse order.

15.8 Front Brackets

Flow chart

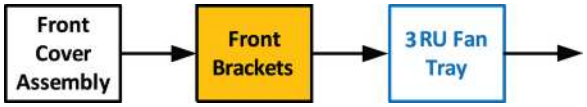

Image 15-13

Necessary tools

None.

How to remove the Front Brackets

1. Remove the two front brackets by lifting them up and then pulling them inwards and then out.

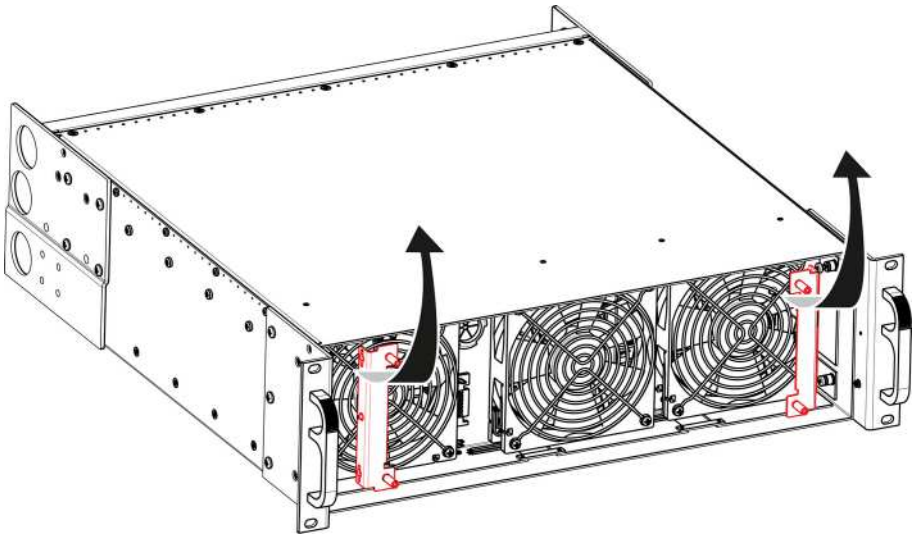

Image 15-14

How to install the Front Brackets

To install the front Brackets follow the same procedure in the reverse order.

15.9 3RU Fan Tray

Flow chart

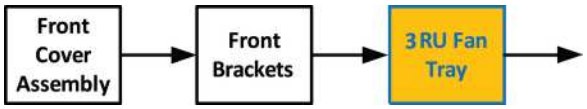

Image 15-15

Concerned parts

R767280K 3RU Fan Tray

Necessary tools

1 x Phillips Screwdriver #2 (optional).

How to remove the 3RU Fan Tray

1. Loosen and unscrew the 4 thumbscrews holding the 3RU fan tray to the chassis.

   Note: You may need a screwdriver if the thumbscrews are very tight.

2. Pull the tray out.

   Note: You need to tilt the tray and maneuver it to go around the dimples located on the side of the chassis.

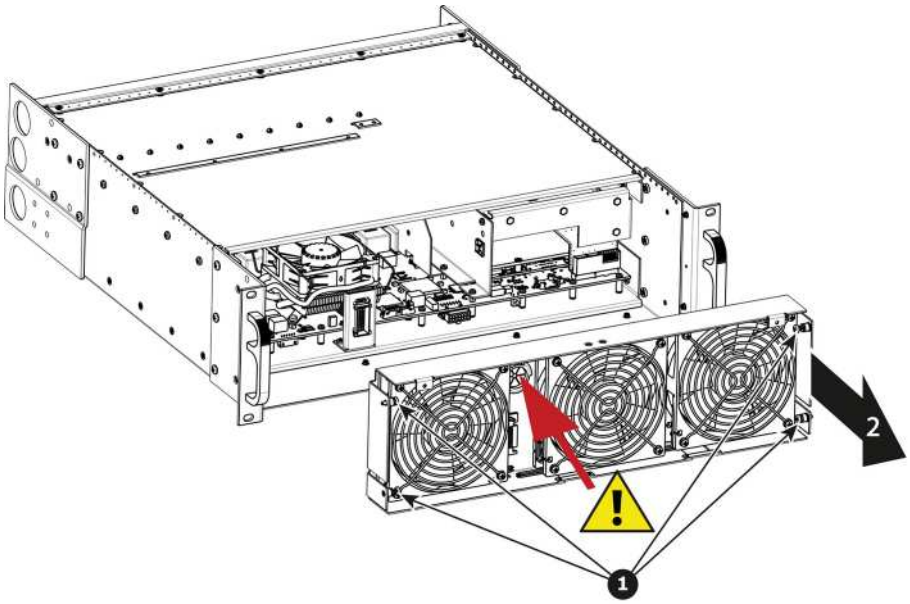

Image 15-16

Caution: Before you completely remove it from the unit carefully push the USB and Front panel cables through the grommet located between the two fans at left hand side.

How to install the 3RU Fan Tray

Follow the same procedure in the reverse order and in addition perform the following:

1. Pass the USB and VFD cable through the grommet.
2. Make sure that the front panel flat cable (keyboard cable) goes through the slot located on the bottom side.

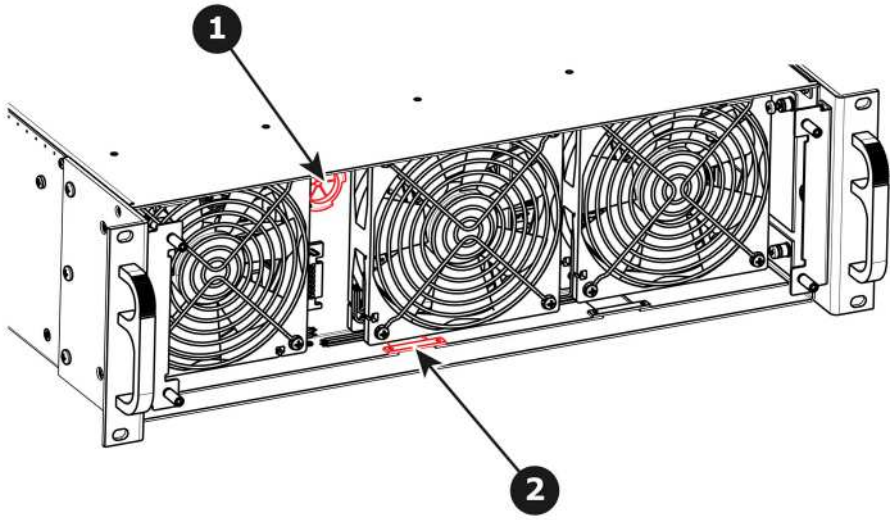

Image 15-17

3. Line up the connector behind the fan tray and the connector on the motherboard behind it and push so the two connectors mate.

15.10 Front Panel Knob

Flow chart

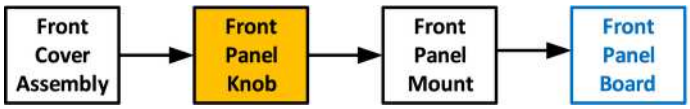

Image 15-18

Before you proceed removing the Front panel knob you need to remove the Front Cover Assembly as outlined in the related procedure.

Necessary tools

- Knob removal tool provided by Barco

Image 15-19

- Flat head screwdriver or a tool with a sharp edge

How to remove the Front Panel Knob

1. Remove the knob cover with a flat screw driver or a sharp object to expose the inside of the knob.

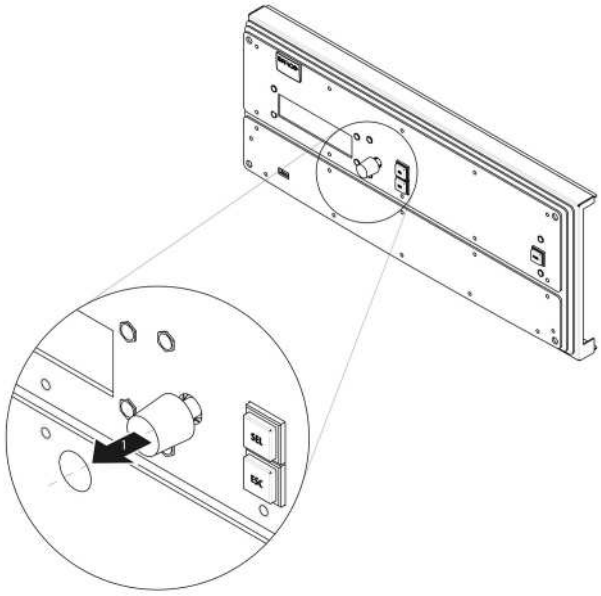

Image 15-20

2. Use the knob removal tool provided by Barco to take out the knob. Align the notches on the tool with the grooves in the knob as indicated below.

   Note: If the tool is not available use fine point needle nose pliers to squeeze at knob between the two grooves while pulling it out.

Image 15-21

How to install the Front Panel Knob

To install the Front Panel Knob follow the same procedure in the reverse order.

15.11 Front Panel Mount

Flow chart

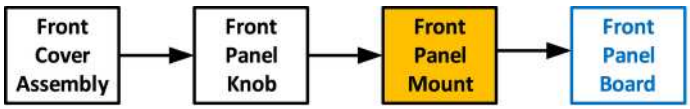

Image 15-22

Necessary tools

1 x Phillips Screwdriver #2

How to remove the Front Panel Mount

1. Turn the Front Cover over and remove the four screws (4-40X.25) that secure the control panel mount to the front panel.

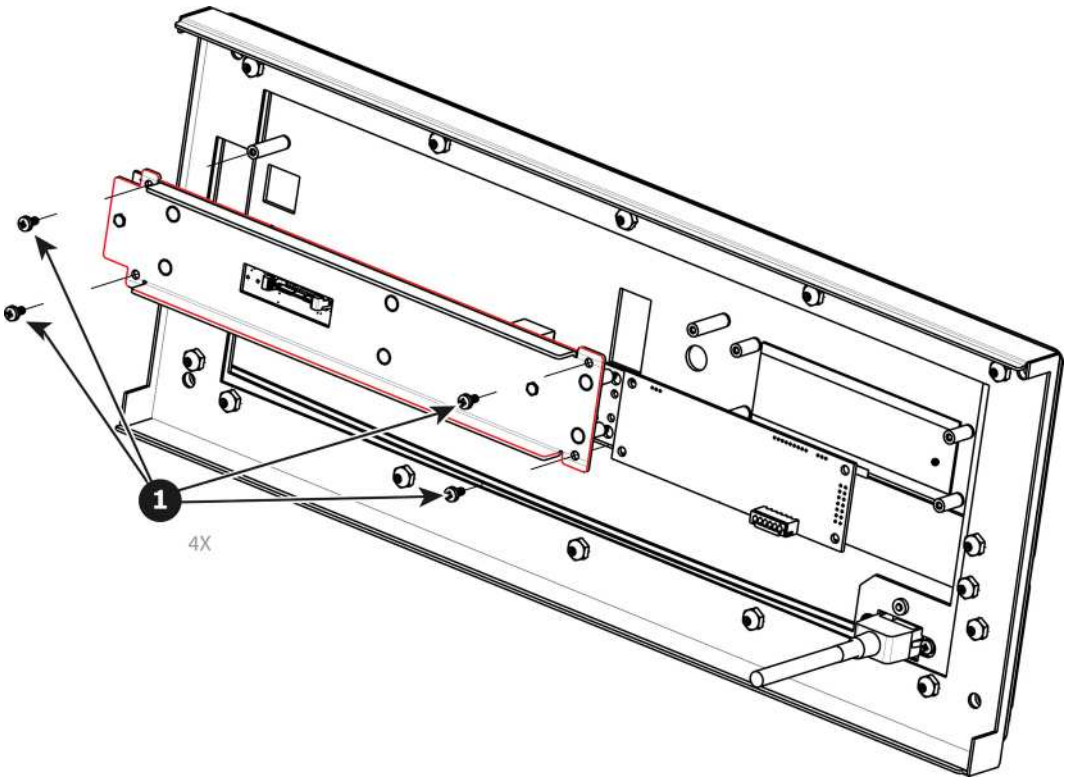

Image 15-23

How to install the Front Panel Mount

To install the Front Panel Mount follow the same procedure in the reverse order.

15.12 Front Panel Board

Flow chart

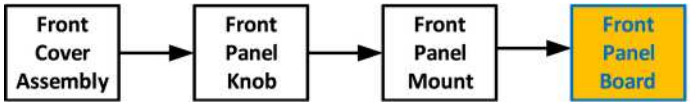

Image 15-24

Concerned parts

R767260K Front Panel Board

Necessary tools

1 x Phillips Screwdriver #2

How to remove the Front Panel Board

1. Remove the two screws (4-40X.25) that secure the PCB to the front mount.

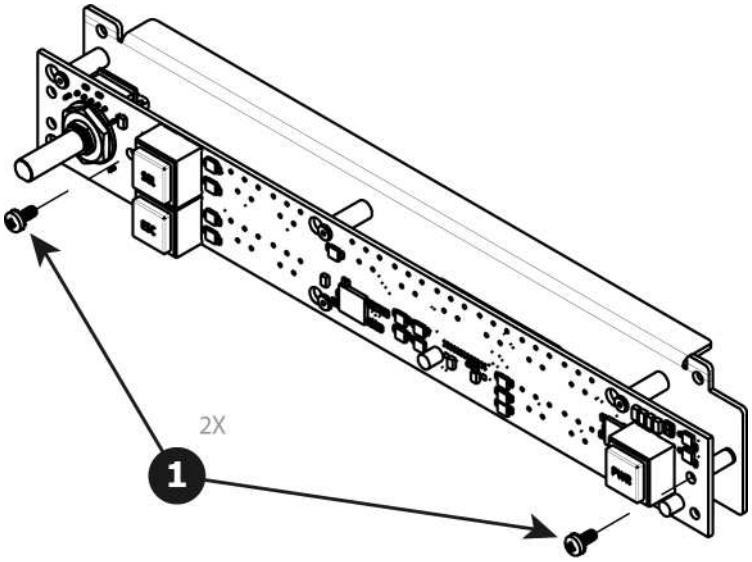

Image 15-25

2. Move the PCB to the right and then out to release it from the mount.

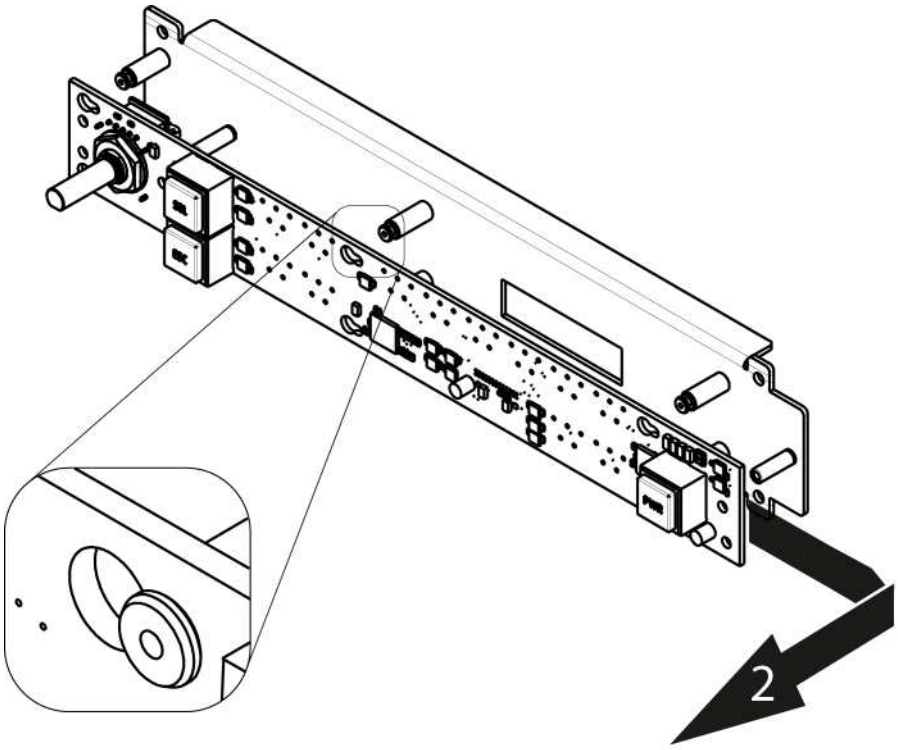

Image 15-26

How to install the Front Panel Board

To install the Front Panel Board follow the same procedure in the reverse order.

15.13 VFD Display Assembly

Flow chart

Image 15-27

Before you proceed removing the VFD Display mount you need to remove the Front Cover Assembly as outlined in the related procedure

Concerned parts

R767241K VFD Display Assembly

Necessary tools

1 x Phillips Screwdriver #2

How to remove the VFD Display Assembly

1. Turn the Front Cover over and remove the four screws (4-40X.25) that secure the VFD display assembly to the front panel mount.

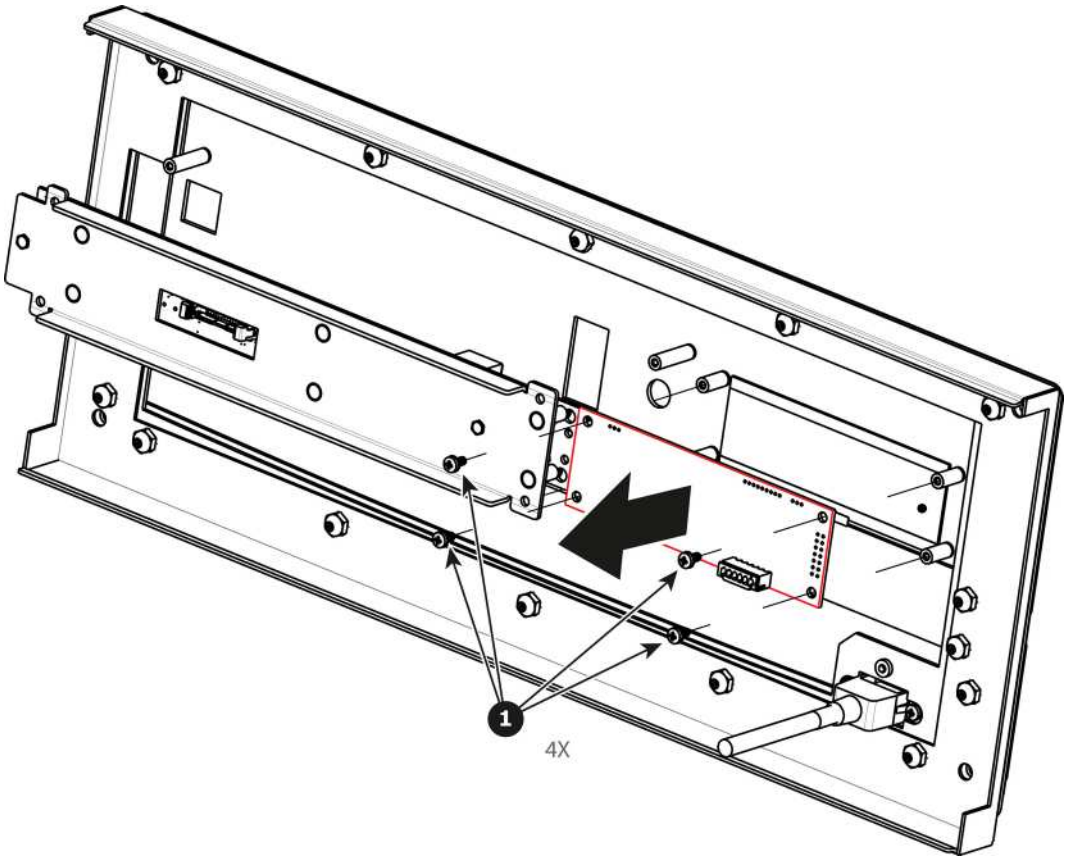

Image 15-28

How to install the VFD Display Assembly

To install the VFD Display Assembly follow the same procedure in the reverse order.

15.14 VFD Display Filter

Flow chart

Image 15-29

Concerned parts

R767246K VFD Display Filter

Necessary tools

None.

How to remove the VFD Display Filter

1. From the front of the unit push hard on the filter until it detaches from the unit.

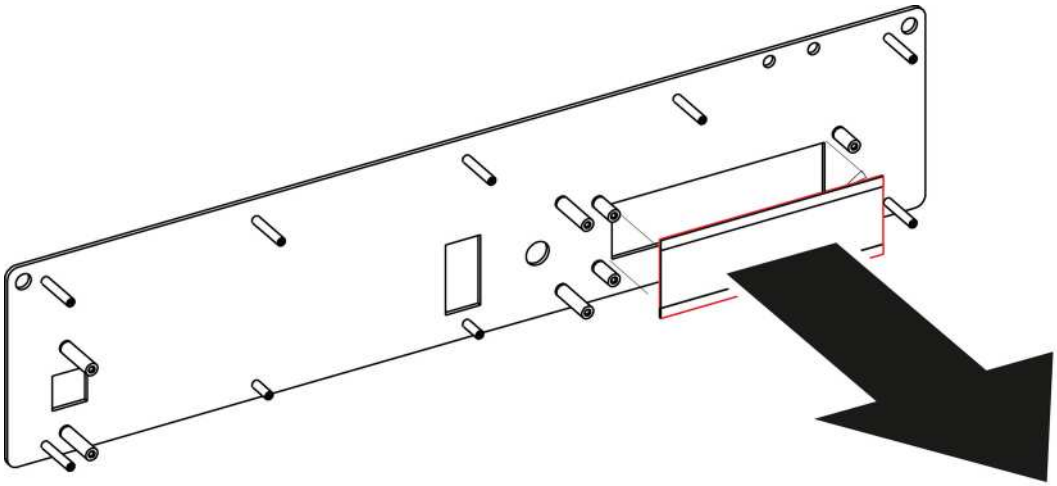

Image 15-30

2. Use alcohol to clean the adhesive residue that held the filter to the metal plate.

How to install the VFD Display Filter

1. Remove the protective film from the front of the filter and release the liner from the tape.
2. Press firmly the filter into the metal plate.

15.15 USB Cable

Flow chart

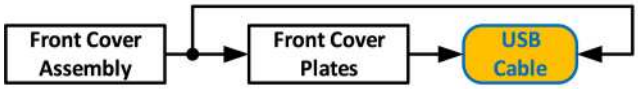

Image 15-31

The USB cable is connected to the USB extension cable (the cable that is connected to the Motherboard). This procedure provides instructions how to disconnect it from both sides of the cable.

Concerned parts

R767283K Cable Kit Set

Necessary tools

- 1 x Phillips Screwdriver #2
- Hex Screwdriver
- Nut socket.

How to remove the USB cable

1. Completely detach and pull the Front Cover assembly away from the unit (refer to the related procedure).
2. Disconnect the USB cable from the USB Extension cable (the other side of the cable is connected to the Motherboard).
3. Disconnect the VFD and Front Keyboard Panel cables from the VFD assembly and Front panel boards.
4. Place the Front panel enclosure face down on a flat area.
5. Use the nut socket to remove the 16 nuts (6-32) that attach the first plate to the assembly.

6. Remove and put aside the 16 spacers situated under the plate you just removed.

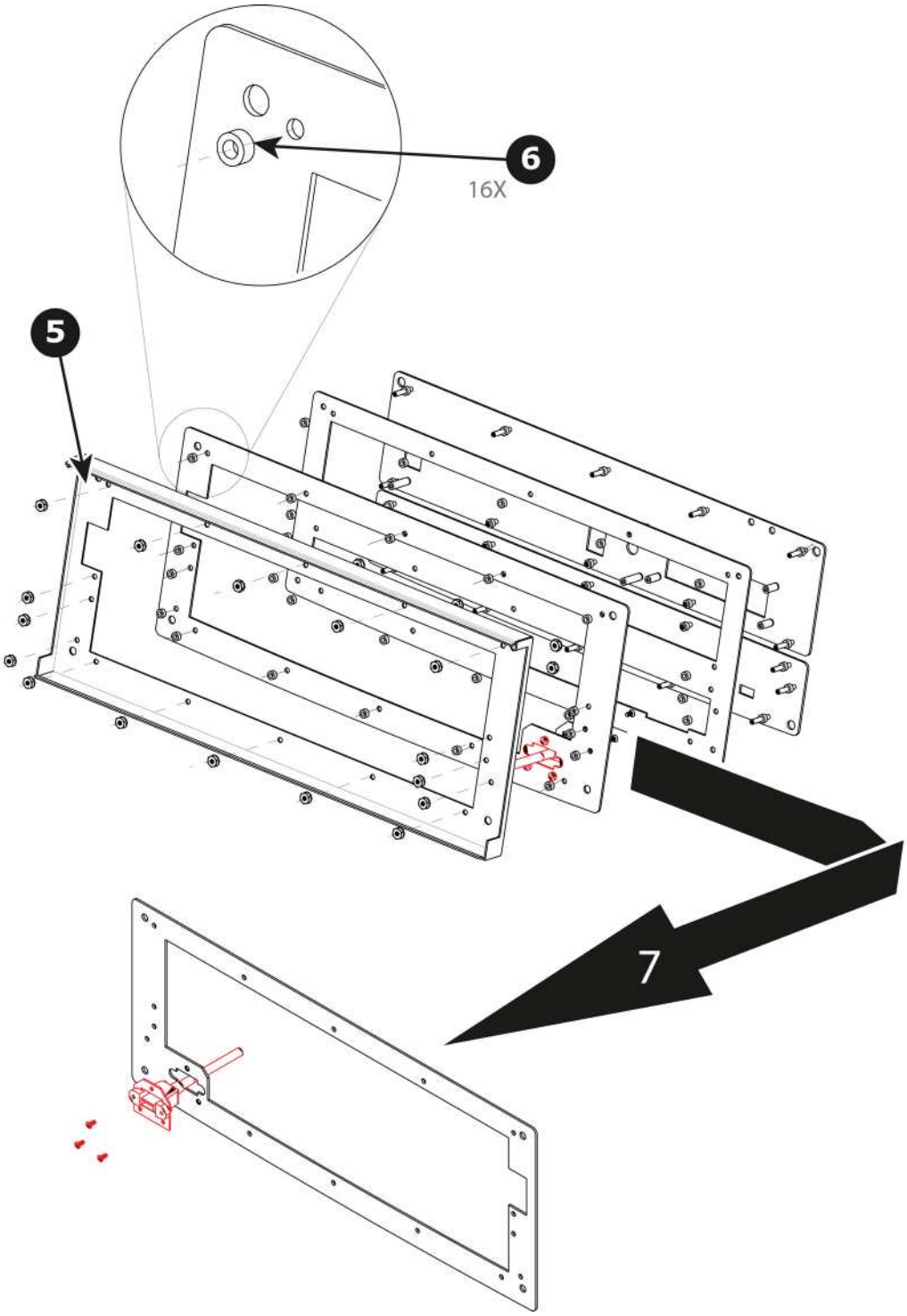

Image 15-32

7. Remove the plate that has been exposed after the nuts are removed.
8. Remove the three screws that hold the USB cable into the metal plate.

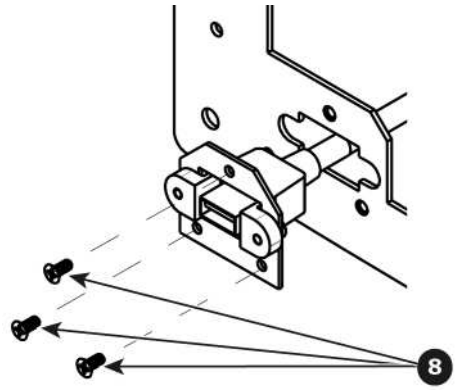

Image 15-33

9. Remove the USB cable.

How to install the USB cable

To install the USB cable follow the same procedure in the reverse order.

15.16 USB Extension Cable

Flow chart

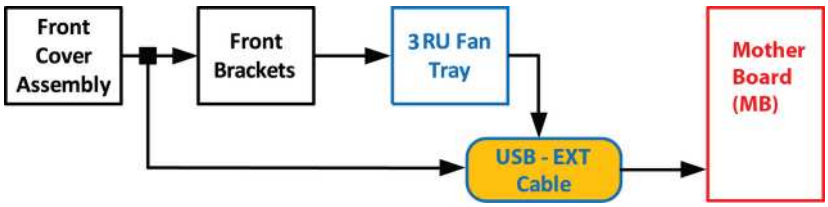

Image 15-34

The USB Extension cable connects the USB cable to the Motherboard. This procedure provides instructions on how to disconnect the cable on both sides.

Overview

Image 15-35: USB Ext Cable connected to the Motherboard

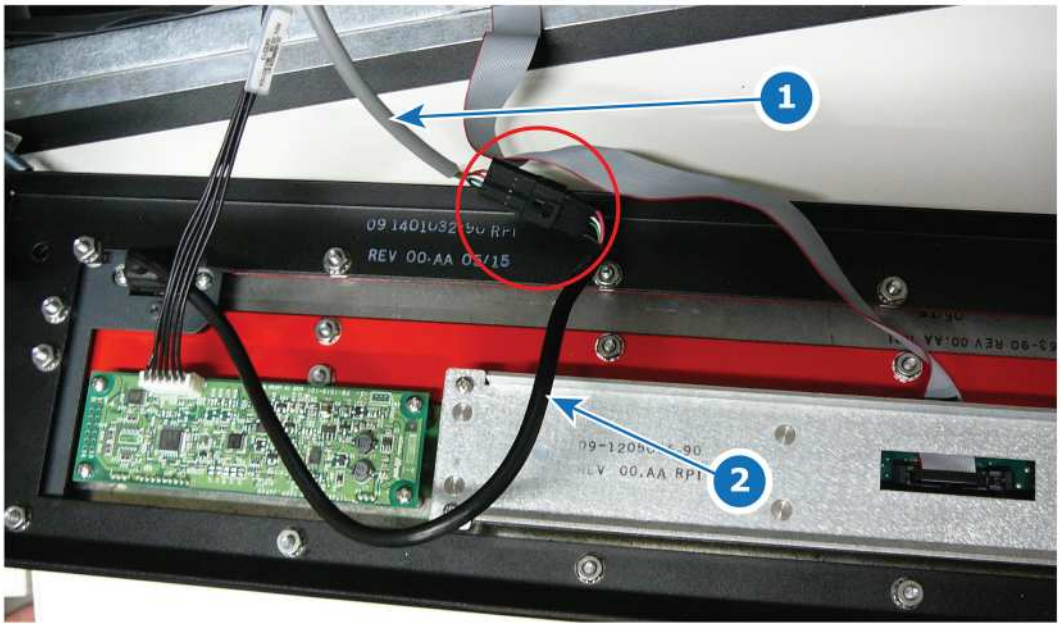

Image 15-36: USB Ext Cable connected to the USB Cable behind the front panel

1 USB Ext Cable
2 USB Cable

Concerned parts

R767283K Cable Kit Set

Necessary tools

1 x Phillips Screwdriver #2 (to remove the front panel assembly)

How to remove the USB Extension cable

1. Partially remove the front panel assembly and pull it away to expose the cables behind it (refer to the related procedure).
2. Disconnect the USB Extension cable from the USB cable.
3. Gently push the cable through the grommet located in the 3RU Fan tray.

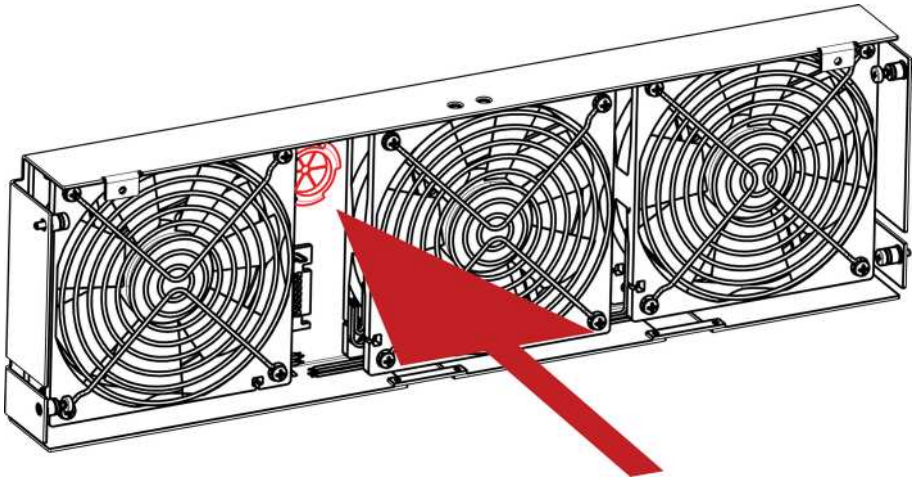

Image 15-37

4. Remove the 3RU Fan tray in order to access the motherboard (refer to the related procedure).

5. Locate the USB Extension cable that is plugged on the Motherboard.

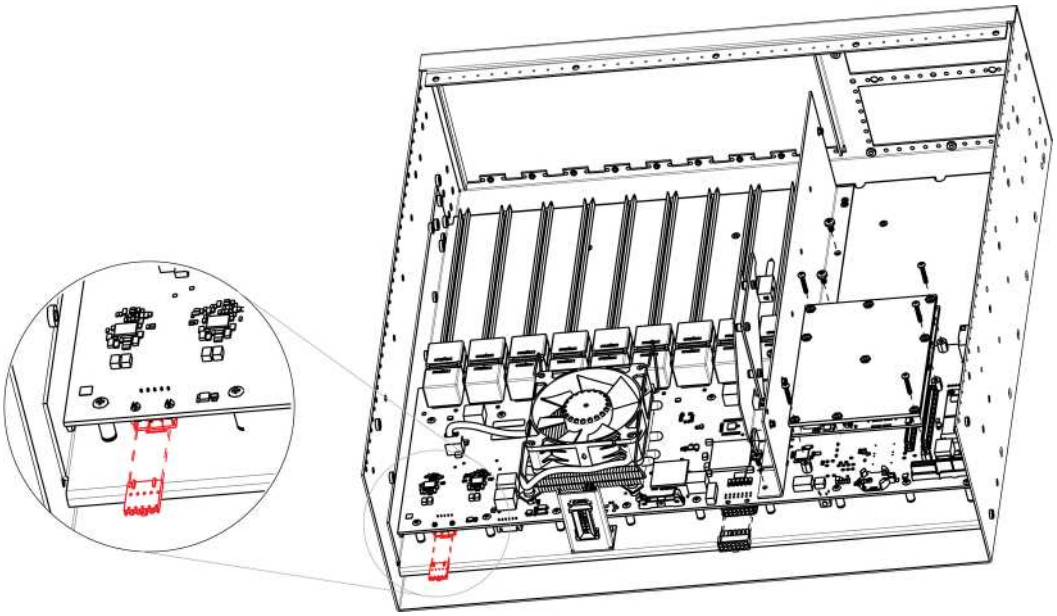

Image 15-38

6. Unplug the USB Extension cable by gently pushing it out.
7. Pull the cable out of the unit.

How to install the USB Extension cable

To install the USB Extension cable follow the same procedure in the reverse order.

15.17 Power Supply

Concerned parts

R9004769 Power Supply

Necessary tools

None.

How remove Power Supply

1. Push the latch towards the left.

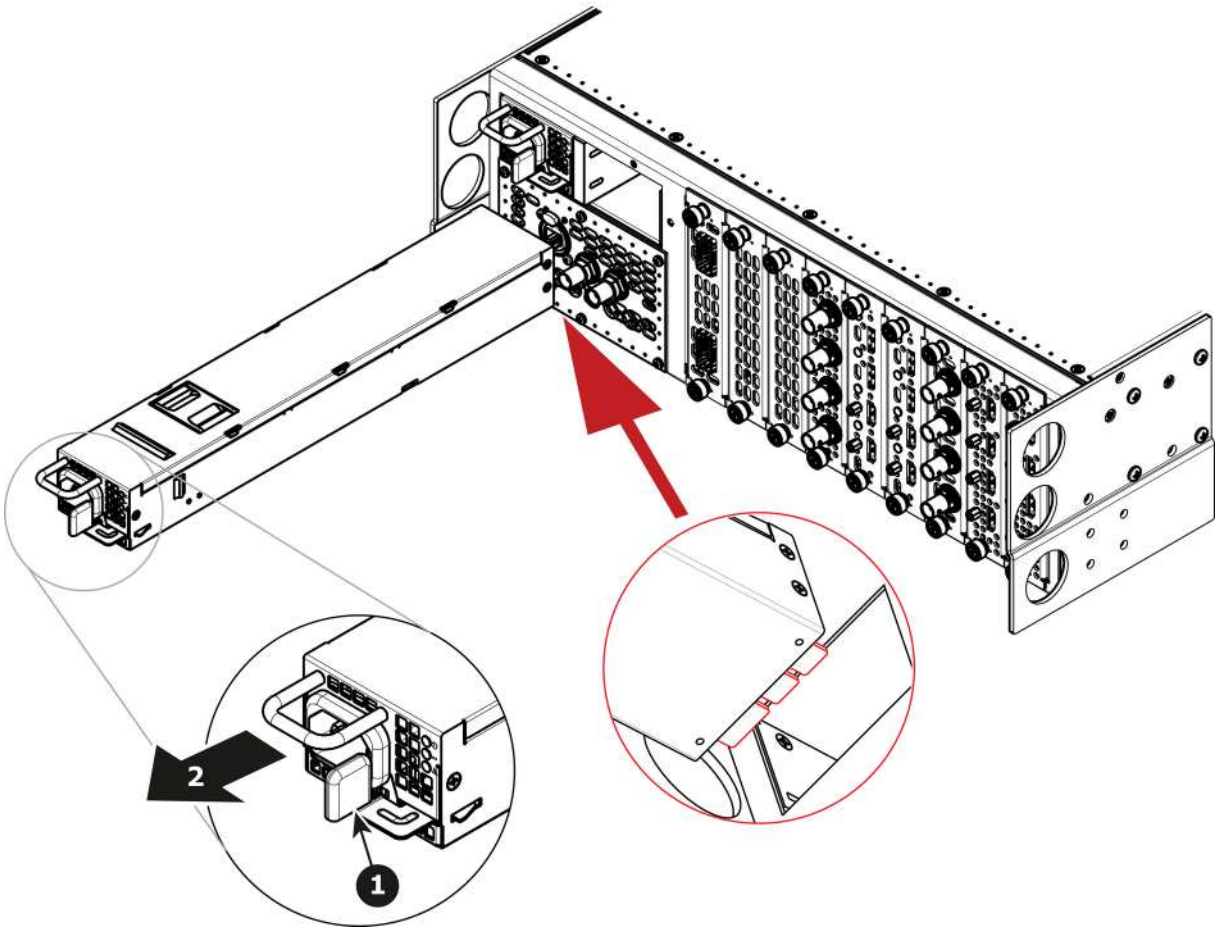

Image 15-39

2. Pull the Power supply out of its slot by pulling on the handle.

How to install Power Supply

1. Insert the Power Supply into the slot.

   Note: The card connector (back edge) should be at the bottom of the power supply as shown in the drawing.

2. Push the power supply completely inside the slot. Apply a little pressure by using the handle until the power supply is fully inserted.

15.18 Genlock Assembly

Flow chart

Image 15-40

Overview

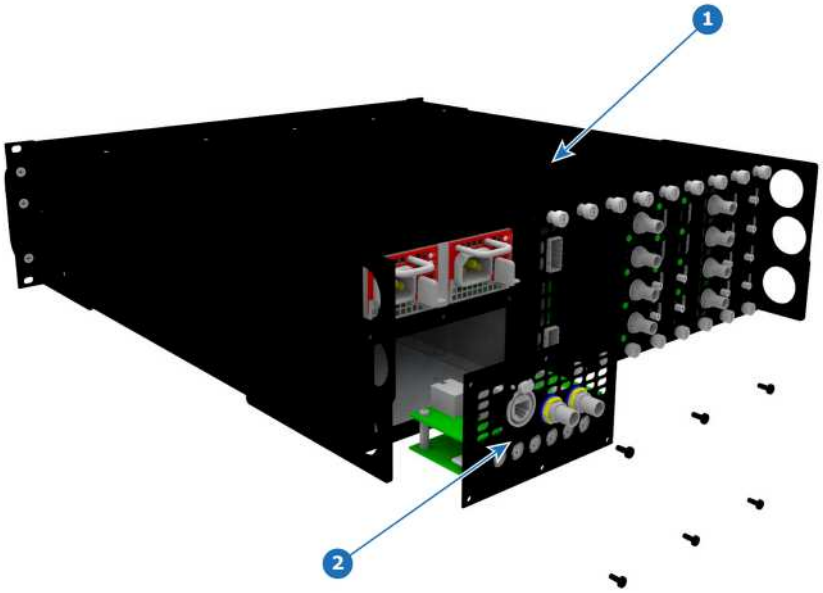

Image 15-41

1 Chassis
2 Genlock Assembly

Concerned parts

R9004760 GENLOCK/S3D S3

Necessary tools

1 x Phillips Screwdriver #2

How to remove the Genlock Assembly

1. Remove the six pan head screws (4-40 X .25) that attach the Genlock assembly to the rear of the chassis.

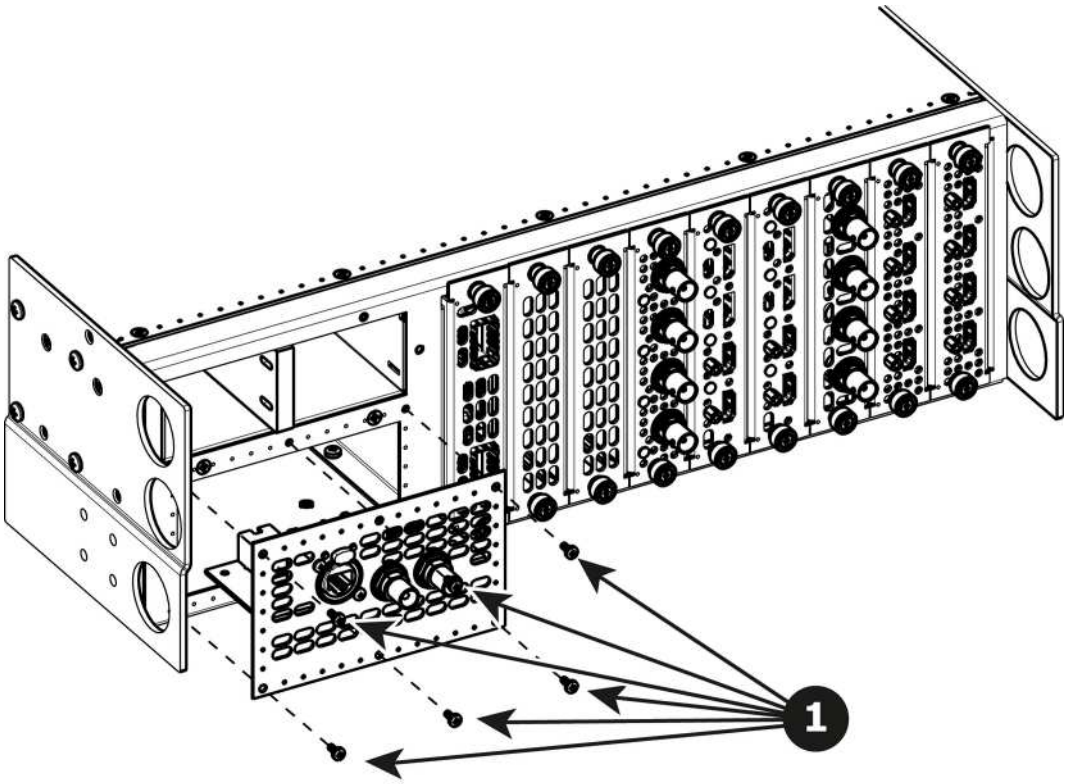

Image 15-42

2. Gently pull the Genlock assembly away from the unit . Don't pull the assembly too far back because there are still 2 cables attached.

   Note: At this point there are still 2 cables connecting the Genlock Assembly to the unit.

3. Unlatch the Genlock ribbon cable from the connector and pull it up and away from the Genlock board.

   Note: This cable connects the Genlock board to the Motherboard.

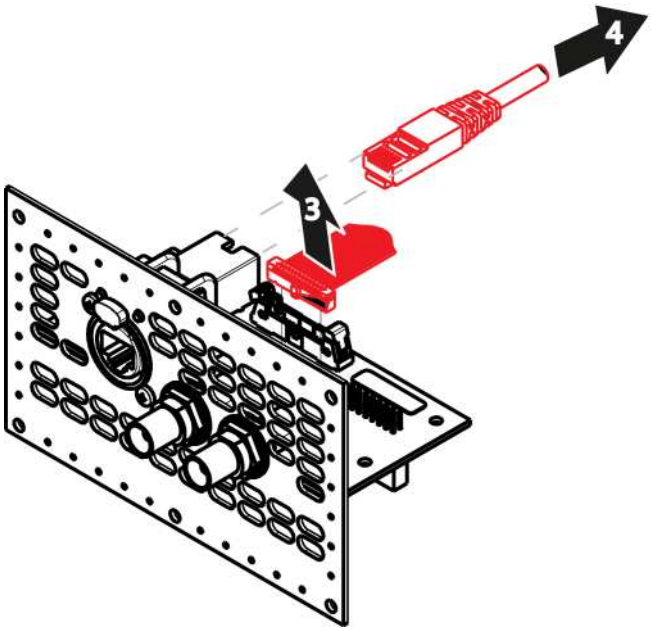

Image 15-43

4. Unlatch the Ethernet cable from the connector and pull back and away from the Genlock board.

Note: This cable connects the Genlock board to the Motherboard.

How to install the Genlock Assembly

To install the Genlock Assembly follow the same procedure in the reverse order.

15.19 Rear Rack Ears

Concerned parts

R767282K Rear Connector protector

Necessary tools

1 x Phillips Screwdriver #2

How to remove Rear Rack-Ears

1. Remove the eight pan head screws (8-32x.31), four from each side, to detach the rear rack ears and connector protectors from the unit.

Note: You don't need to remove the rear rack ears to access any other part of the unit.

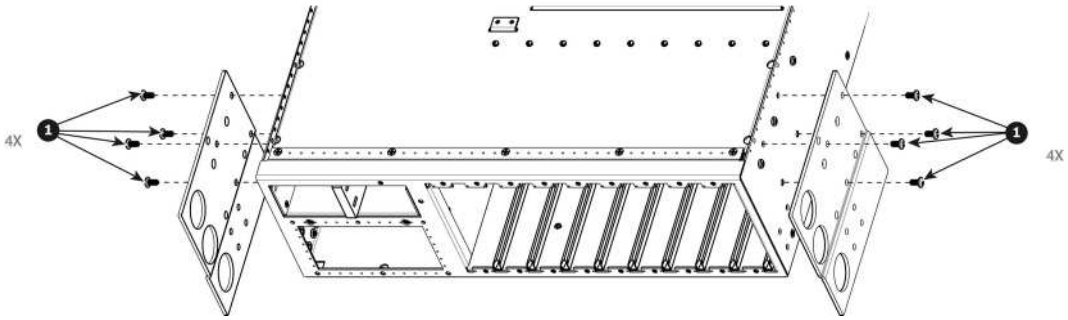

Image 15-44

How to install Rear Rack-Ears

To install the Rear Rack-Ears follow the same procedure in the reverse order.

15.20 Front Rack-Ears

Flow chart

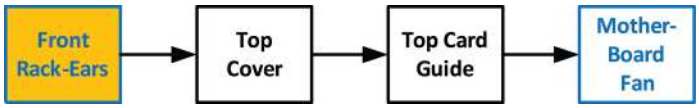

Image 15-45

Concerned parts

R767281K FRONT RACK EARS S3

Necessary tools

1 x Phillips Screwdriver #2

How to remove Side Rack-Ears

1. Loosening and removing the six (three on each side) pan head screws that secure the Rack Ears to the chassis sides.

Image 15-46

2. Remove the Rack Ears from the Chassis.

Note: If the front face and the front brackets were not removed before this step, the entire of these elements will be automatically detached from the chassis when you remove the Front Rack Ears. The front brackets are fixed on the Front Rack Ears, not on the chassis.

How to install Side Rack-Ears

To install the Side Rack-Ears follow the same procedure in the reverse order.

15.21 Top Cover

Flow chart

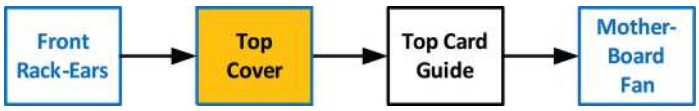

Image 15-47

Necessary tools

1 x Phillips Screwdriver #2

How to remove Top Cover

1. Remove the 12 screws from the two sides (6 in each side, 4-40x0.25) that are located towards the top side of the unit.

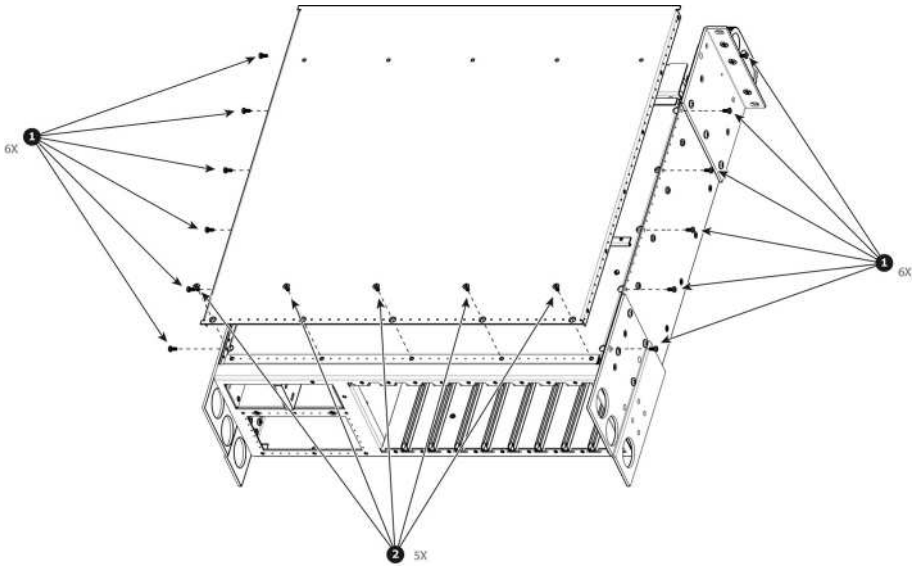

Image 15-48

2. Remove the 5 screws (6-32x0.25) located on the top at the back of the chassis.
3. Remove the cover by gently pulling it away from the unit.

How to install Top Cover

To install the Top Cover follow the same procedure in the reverse order.

15.22 Top Card Guide

Flow chart

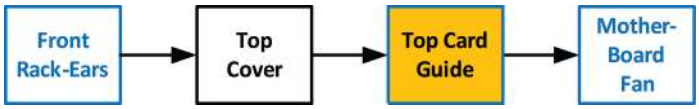

Image 15-49

Necessary tools

1 x Phillips Screwdriver #2

How to remove Top Card Guide

1. Remove the 12 screws from the two sides (6 in each side, 6-32x0.25) that are located towards the bottom of the unit.

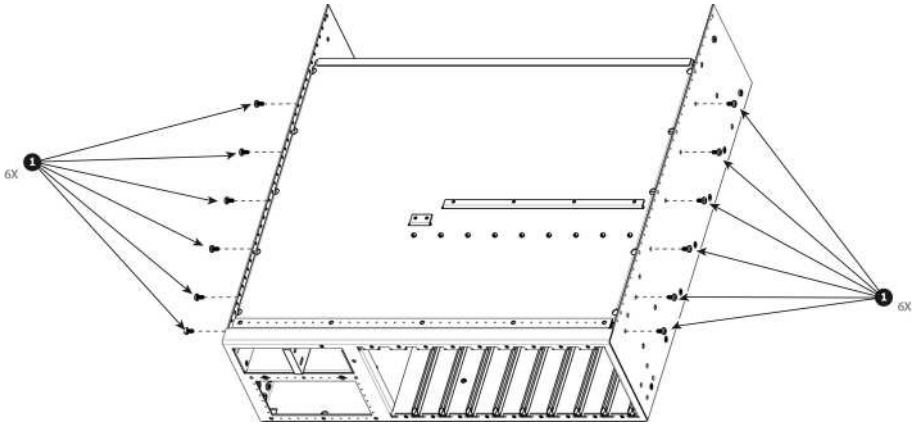

Image 15-50

2. Remove the card guide cover by gently pulling it away from the unit.

How to install Top Card Guide

To install the Top Card Guide follow the same procedure in the reverse order.

When installing the guide make sure you have 2 cards from the rear installed before tightening the screws.

Use Loctite 242 to the screws before installing.

15.23 Motherboard Fan

Flow chart

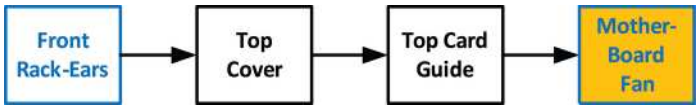

Image 15-51

Overview

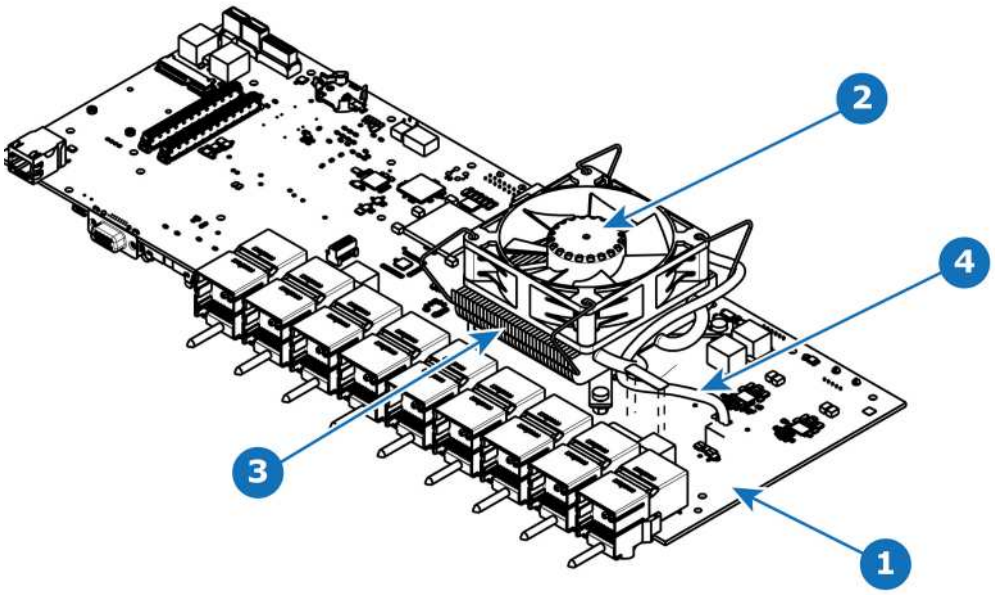

Image 15-52

1 Motherboard
2 Fan
3 Heatsink
4 Fan power cable

Concerned parts

R767265K	Motherboard Heatsink & Fan kit

Necessary tools

1 x Phillips Screwdriver #2

How to remove Motherboard Fan

1. Remove the cable that provides power to the heatsink fan.
2. Lift the two handles to release the fan from the heatsink.

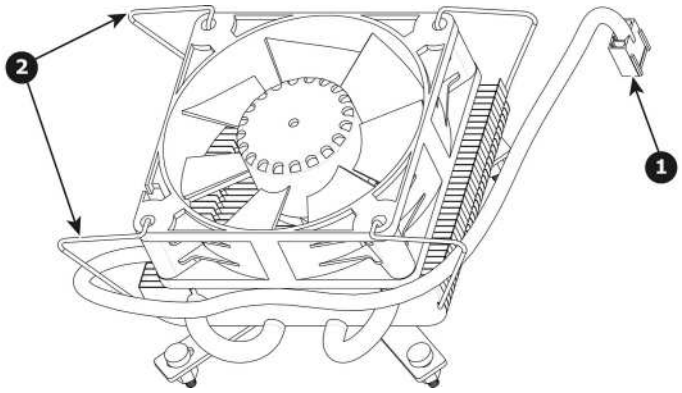

Image 15-53

3. Lift the fan away from the heatsink.

How to install Motherboard Fan

1. Remove the fan from the Heatsink/Fan spare kit.
2. Using the clips install the fan on the top of the heatsink that is on the motherboard.
3. Connect the fan power cable to header xxx located on the motherboard.

Disregard the heatsink from the spare kit.

15.24 Power Interposer Assembly

Flow chart

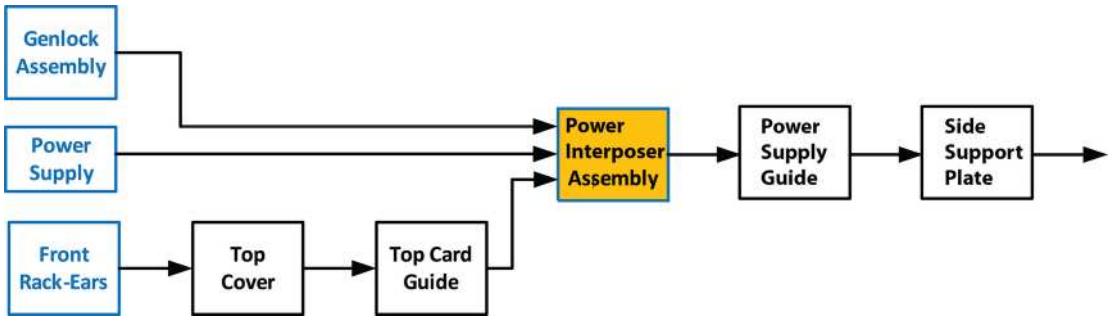

Image 15-54

Overview

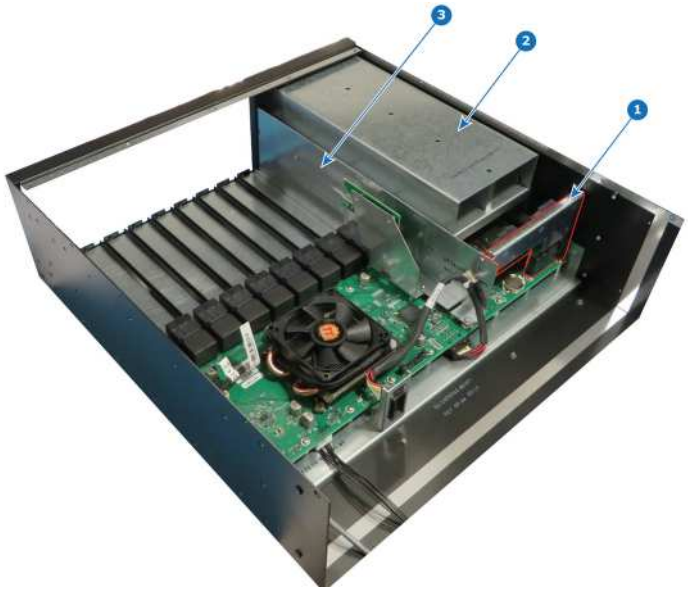

Image 15-55

1 Power Interposer
2 Power supply guide
3 Side Support Plate

Concerned parts

R767279K	POWER INTERPOSER ASSEMBLY

Necessary tools

1 x Phillips Screwdriver #2

How to remove Power Interposer Assembly

1. Remove the pan head screw (4-40x0.25 — black) that attach the Power Interposer Assembly to the side of the chassis.
2. Remove the pan head screw (4-40x0.25 — Stainless steel) that attach the Power Interposer Assembly to the side of the side support plate.
3. Gently pull the Power Interposer Assembly away from the unit.

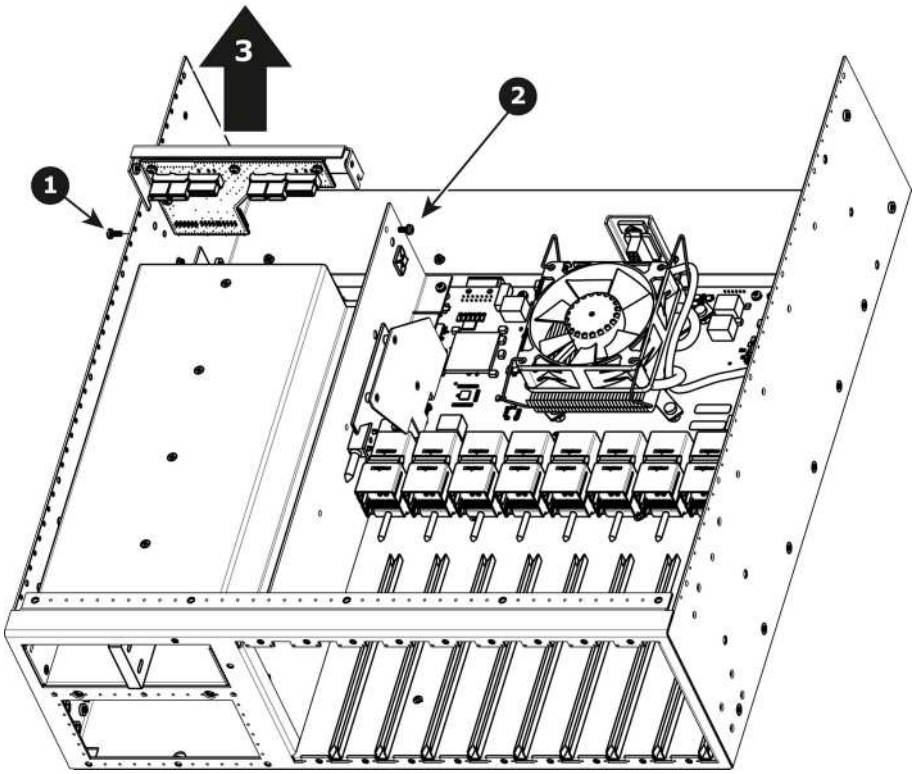

Image 15-56

How to install Power Interposer Assembly

1. Install the Power Interposer Assembly and guide onto keyhole features in the sheet metal.

   Note: Push the Power Interposer Assembly completely inside the connector onto the motherboard. Apply a little pressure until it is fully inserted.

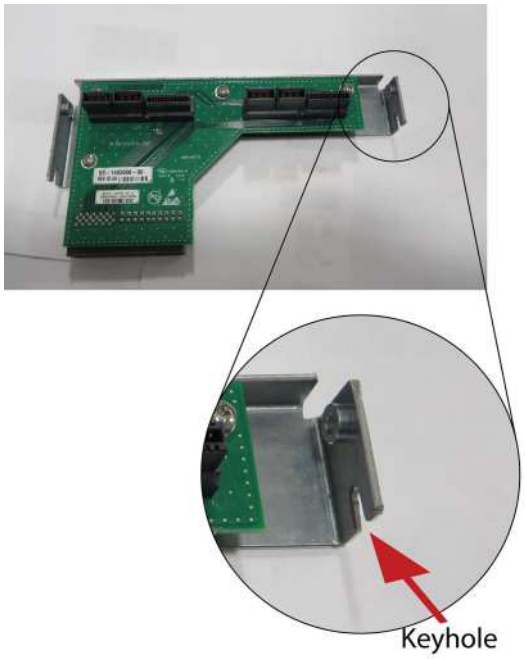

Image 15-57

2. Install the two screws.

15.25 Power Supply Guide

Flow chart

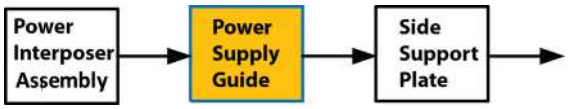

Image 15-58

Actually to remove the power supply guide, you must move the entire motherboard mount forward. The reason for this is there is not enough space to get the power supply guide out without moving everything towards the front of the chassis.

Overview

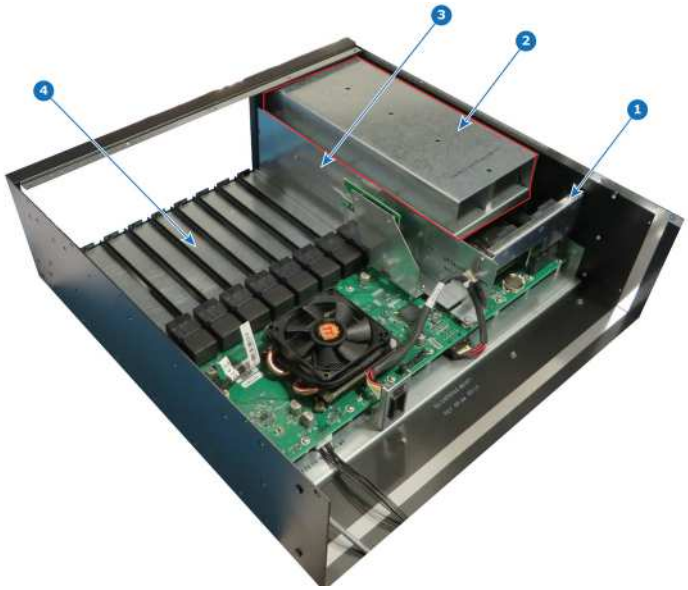

Image 15-59

1 Power Interposer
2 Power supply guide
3 Side Support Plate
4 Motherboard Mount

Necessary tools

1 x Phillips Screwdriver #2

To remove the power supply guide, the entire Motherboard Mount must be move forward.

How to remove Power Supply Guide

1. Turn the unit over to remove the nine flat head screws (4-40x0.25 — black) that attach the Motherboard Mount to the bottom of the chassis.

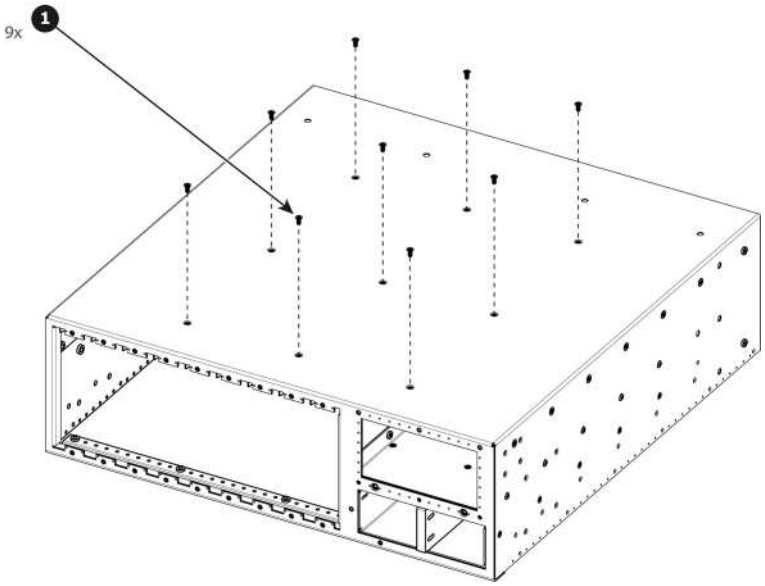

Image 15-60

2. Remove the five pan head screws (4-40x0.25 — black) that attach the Power supply guide to the side of the chassis.
3. Remove the twelve flat head screws (6-32x0.25 — black) that attach the Motherboard Mount to the side of the chassis.
4. Remove the five flat head screws (4-40x0.25 — black) that attach the Motherboard Mount to the side of the chassis.

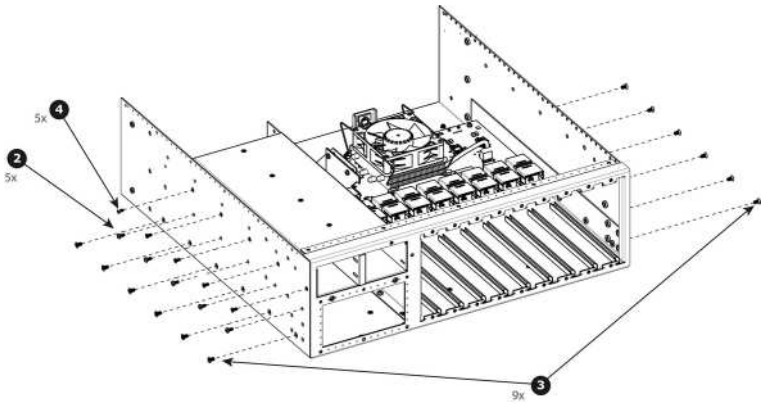

Image 15-61

5. Remove the three pan head screws (4-40x0.25 — Stainless steel) that attach the Power Supply Guide to the side of the side support plate.

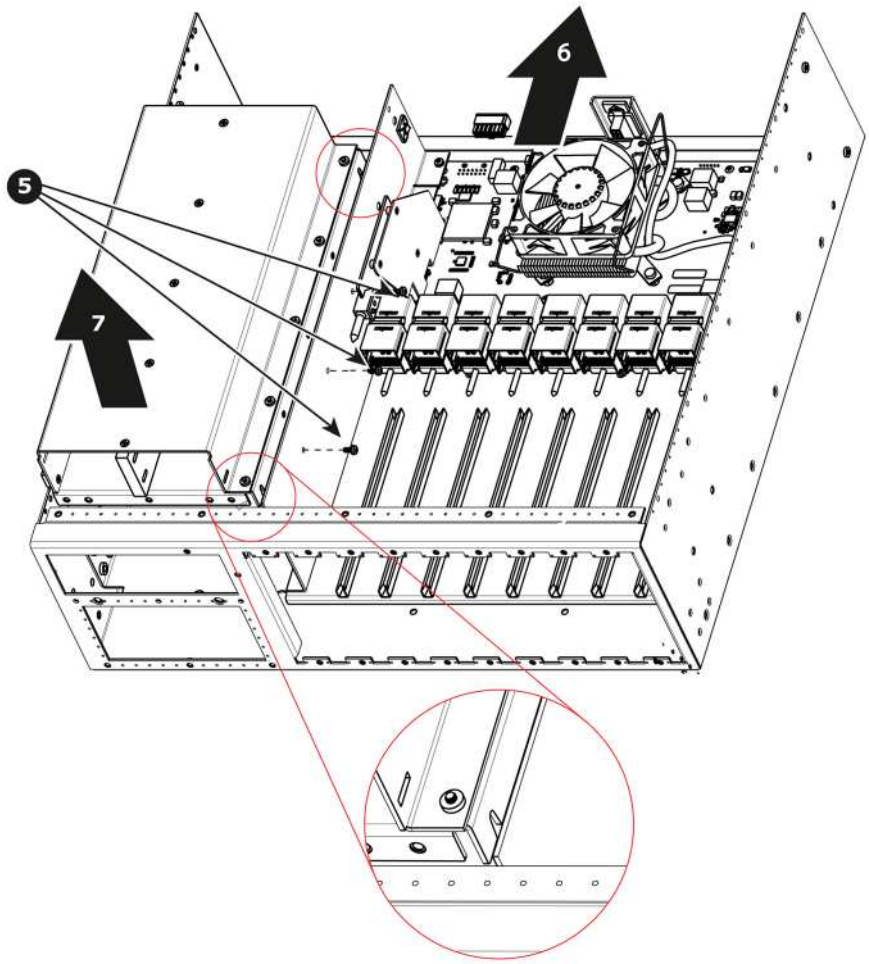

Image 15-62

6. Move the entire motherboard mount forward
7. Gently pull the Power Supply Guide away from the unit.

How to install Power Supply Guide

To install the Power Supply Guide follow the same procedure in the reverse order.

There are slots cut into the bottom which will make installation of the guide much easier. See detail on the previous drawing.

15.26 Side support plate

Flow chart

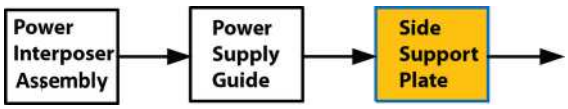

Image 15-63

Overview

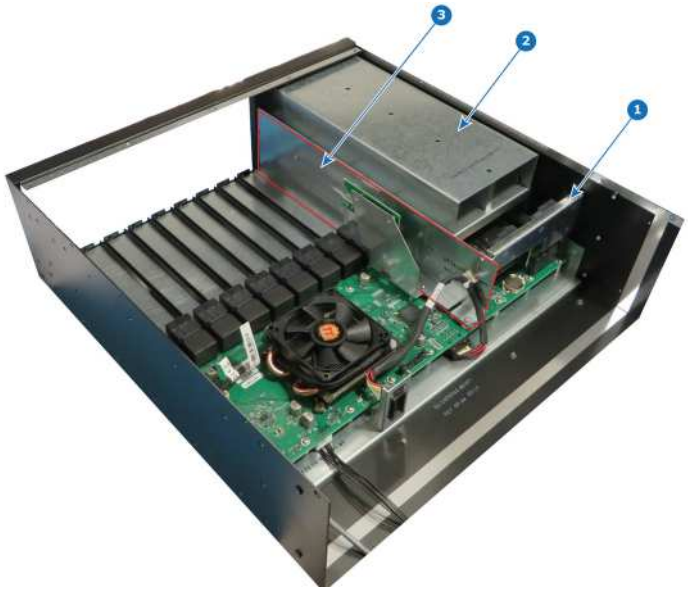

Image 15-64

1 Power Interposer
2 Power supply guide
3 Side Support Plate

Necessary tools

1 x Phillips Screwdriver #2

How to remove Side Support Plate

1. Remove the two pan head SEMS screws (6-32x0.25 — Stainless steel) that attach the Side Support Plate to the Motherboard Mount.
2. Remove the three pan head SEMS screws (4-40x0.25 — Stainless steel) that attach the Side Support Plate to the Motherboard Mount.
3. Move forward the Side Support Plate (this item is align with the Motherboard Mount via key holes), and gently pull the Side Support Plate away from the unit.

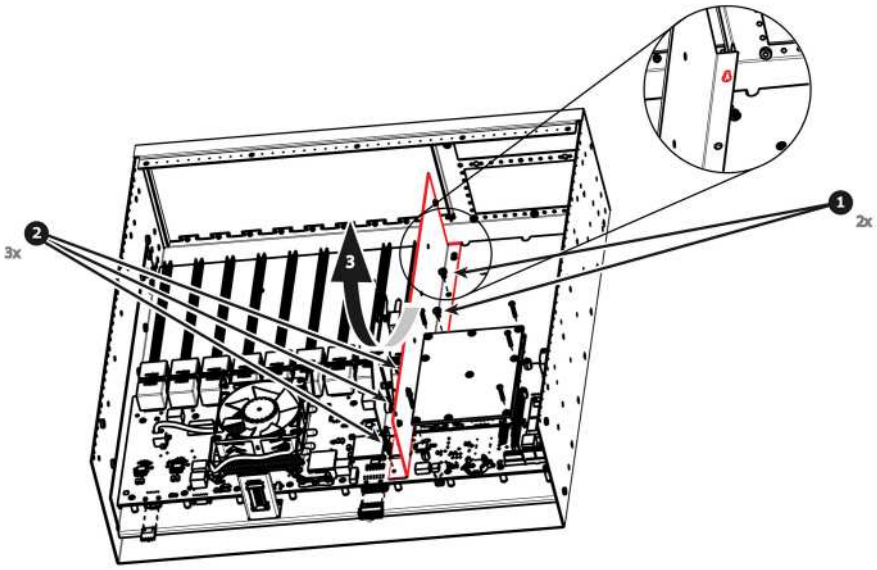

Image 15-65

Note: It could be necessary to release the cable tie that maintain the fan power cable in place.

How to install Side Support Plate

To install the Side Support Plate follow the same procedure in the reverse order.

There are key holes cut into the bottom of the Side Support Plate which will make installation much easier. See detail on the previous drawing.

15.27 Link Card Interposer

Flow chart

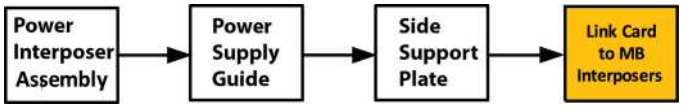

Image 15-66

Overview

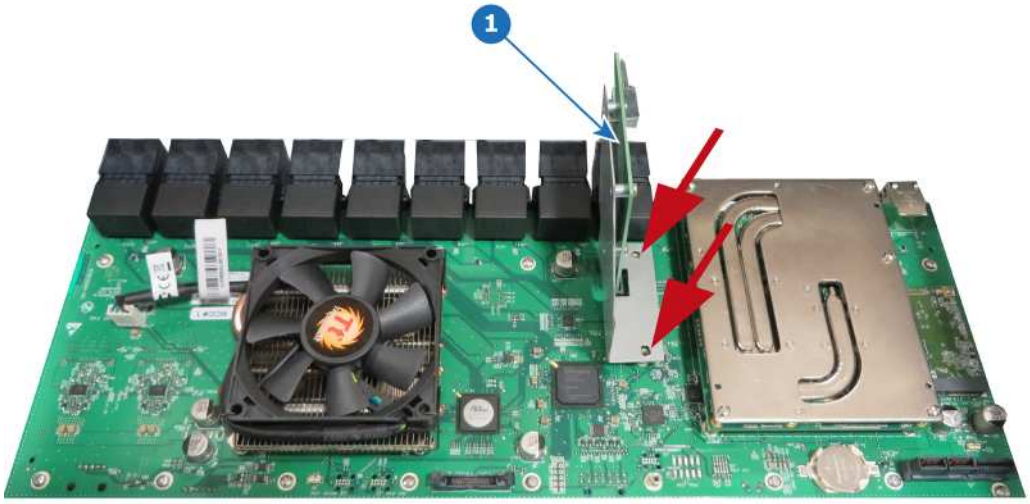

Image 15-67

1 Link Card Interposer

Necessary tools

none

How to remove Link Card Interposer

1. Remove the Link Card Interposer from the unit.

   Note: The screws that fix the Link Card Interposer were already removed during the Side Support Plate removing stage.

How to install Link Card Interposer

1. Install the Link Card Interposer into the unit.

   Note: The Link Card Interposer will be fixed during the Side Support Plate fixing stage.

15.28 CPU Module

Flow chart

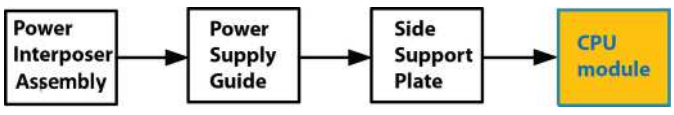

Image 15-68

Overview

Image 15-69

1 CPU module
2 Motherboard

Concerned parts

R767264K CPU module

Necessary tools

1 x Phillips Screwdriver #2

How to remove CPU Module

1. Remove the five screws that attach CPU module to the system card.
2. Carefully remove the CPU module by lifting it up.

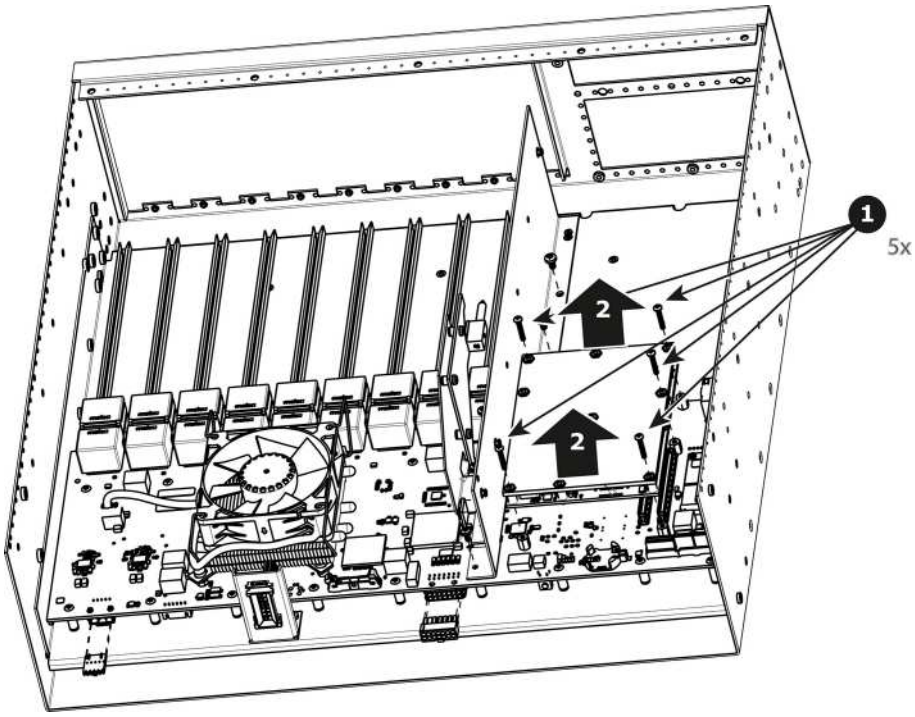

Image 15-70

How to install the CPU module

To install the CPU module follow the same procedure in the reverse order.

Install the CPU Module by rocking left and right while applying pressure on the connectors.

15.29 Solid-State Memory

Flow chart

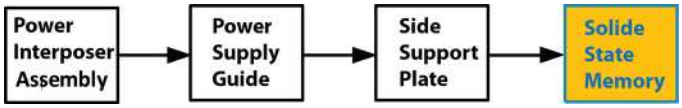

Image 15-71

Overview

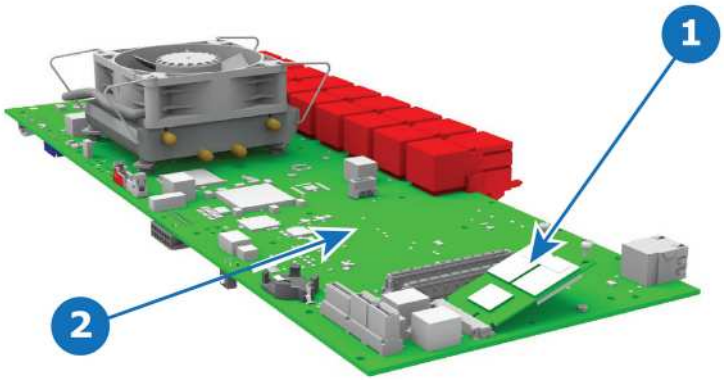

Image 15-72

1 Solid State Memory card
2 MotherBoard

Concerned parts

R767275K Solid State Memory

Necessary tools

1 x Phillips Screwdriver #2

How to remove the Solid State Memory

1. Remove the 2 screws that hold the memory card.
2. Carefully remove the memory card from the socket.

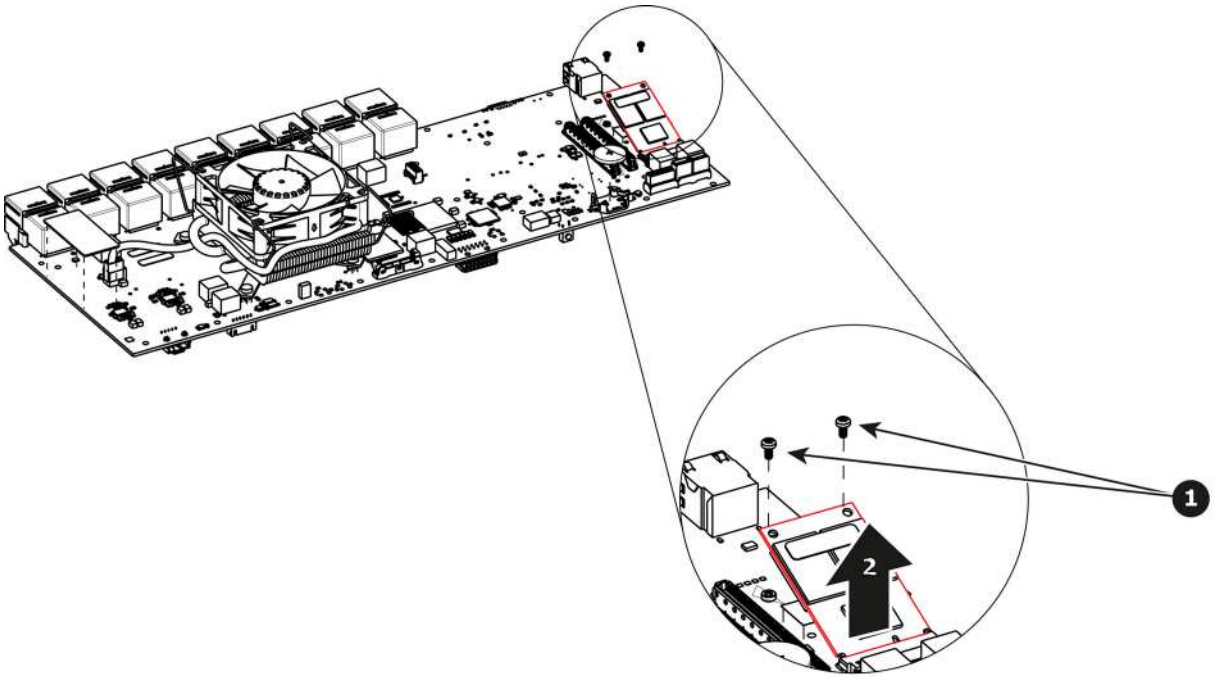

Image 15-73

How to install the Solid State Memory

To install the Solid State Memory follow the same procedure in the reverse order.

15.30 System Battery

Flow chart

Image 15-74

Overview

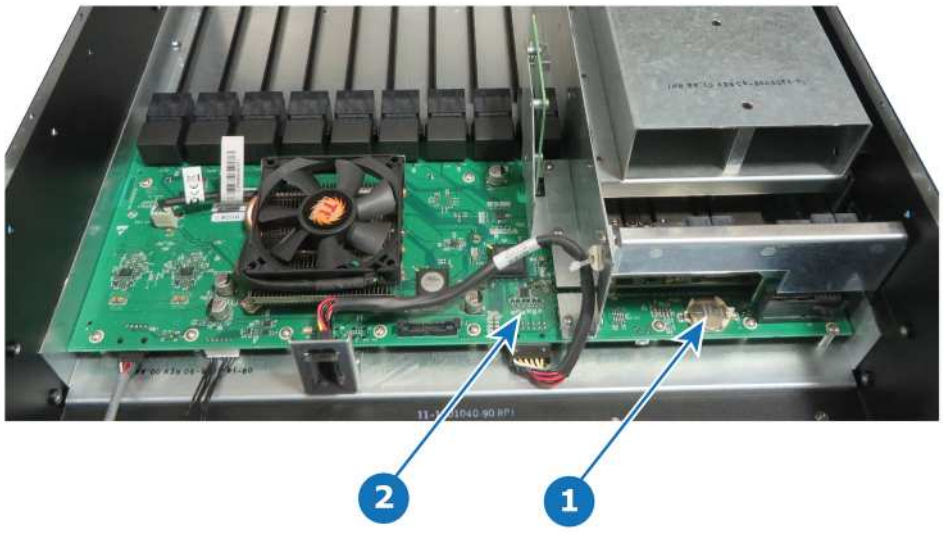

Image 15-75

Concerned parts

R9801120 Motherboard Battery Kit

Necessary tools

None.

How to remove the System battery

1. Carefully remove the battery from its socket.

How to install the System battery

To install the System battery follow the same procedure in the reverse order.

When a new battery is installed, the user need to place a sticker on the motherboard mount that indicates when the battery was last replaced. The absence of sticker means the battery has never been replaced. In this case the S/N sticker can be used for the reference date.

Image 15-76: e.g. E2 S/N sticker — Manufacturing date

15.31 VFD Cable

Flow chart

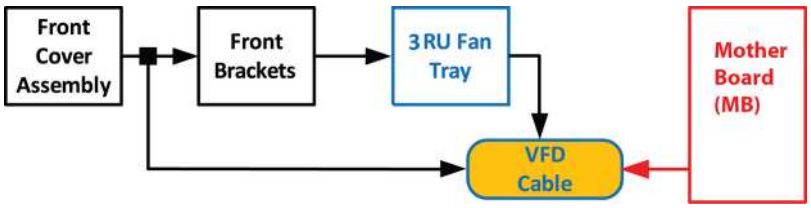

Image 15-77

The flat ribbon VFD cable connects the VFD assembly (front face) to the Motherboard.

One end of the flat ribbon VFD cable is clamped between the Motherboard and the Motherboard mount. Remove this cable requires to separate these parts.

Concerned parts

R767283K S3 Cable Kit Set

Necessary tools

- 1 x Phillips Screwdriver #2
- Hex Screwdriver

How to remove the VFD Cable

1. Remove the front panel assembly and pull it away to expose the cables behind it (refer to the related procedure).

2. Push out the side latches on VFD connector to release the VFD cable.

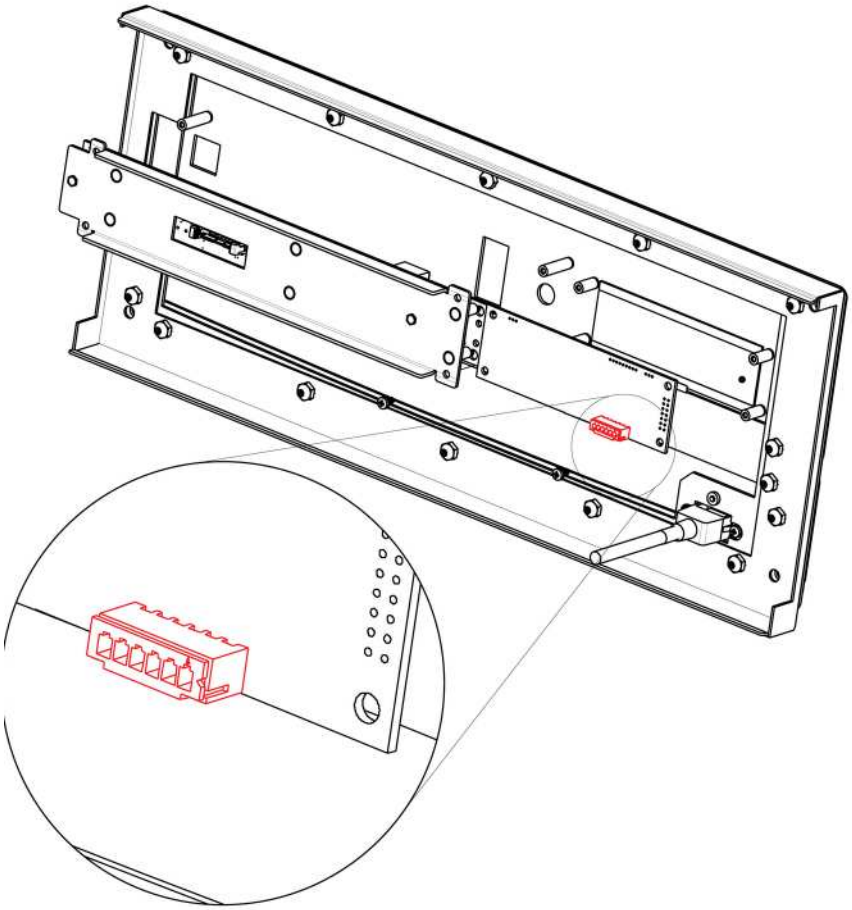

Image 15-78

3. Remove the front bracket and the 3RU Fan tray in order to access inside of the unit (refer to the related procedures).
4. Gently push the cable through the grommet located in the 3RU Fan tray.

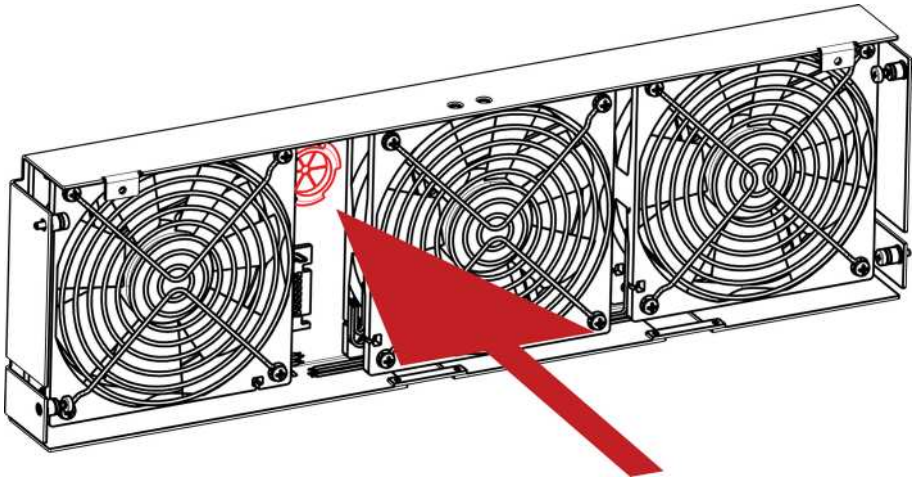

Image 15-79

Note: From this step, only the other end of the VFD cable stays connected to the motherboard. Unfortunately it is necessary to remove the motherboard from the motherboard mount to unplug it. (refer to the “Process Overview”, page 448).

5. Remove the following parts to access the motherboard :
   - Rear cards (VPU, Link, I/O)
   - CPU module.
   - Link card interposer.

   Note: Refer to the related procedures to remove these parts. Remove these parts requires removing lot of parts from the unit (Power supply, Power interposer, Power supply guide, Side Support Plate ...)

   Note: It is not necessary to remove the solid state memory, the system battery and the other cables to give access to the motherboard fixing screws.

6. Remove the Motherboard from the Motherboard mount.
   1. Remove the three m/f standoffs (4-40 X 3/16” .25”) that attach the Motherboard to the Motherboard mount.
   2. Remove the five m/f standoffs (m2.5 X 8mm) that attach the Motherboard to the Motherboard mount.
   3. Remove the sixteen long pan head SEMS screws (4-40x.31” — SEMS refers to an integrate lock washer) that attach the Motherboard to the Motherboard mount.

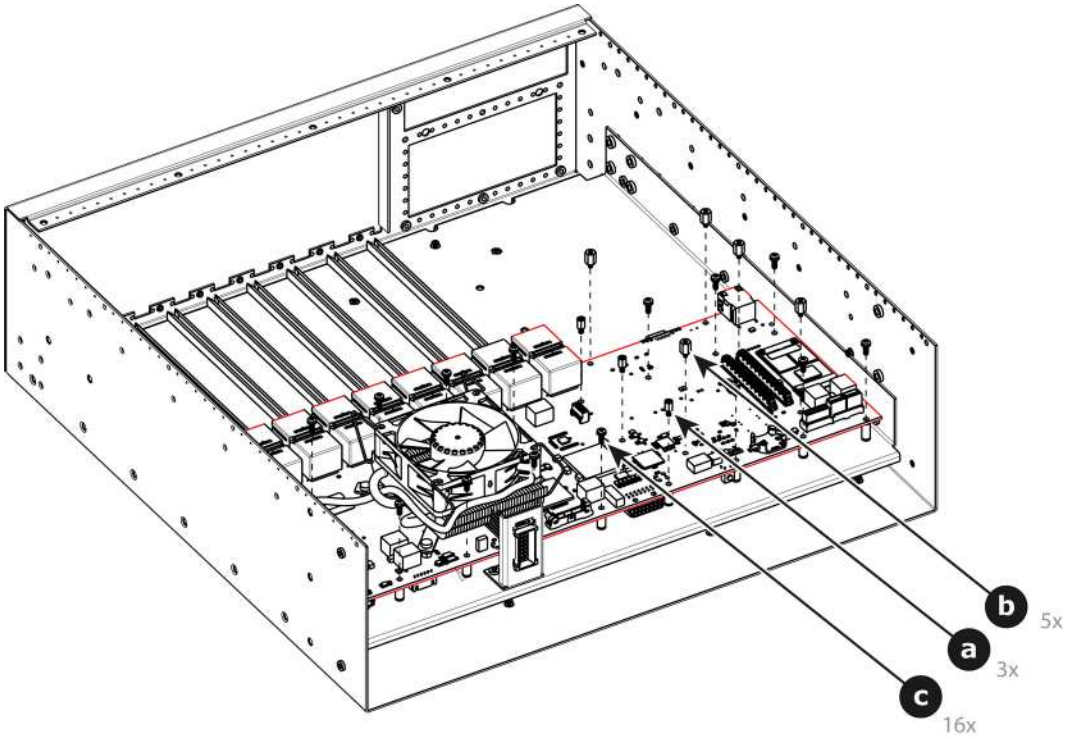

Image 15-80

7. Locate the VFD cable that is plugged on the Motherboard.

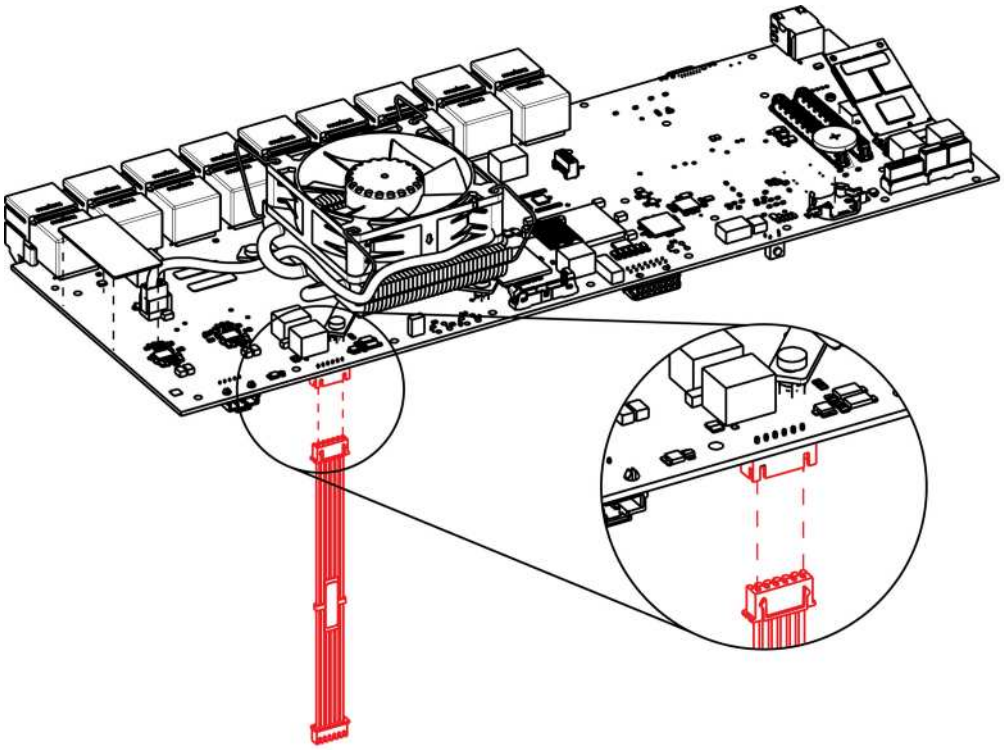

Image 15-81

8. Unplug the VFD cable.
9. Pull the cable out of the unit .

How to install the VFD Cable

To install the VFD Cable follow the same procedure in the reverse order.

15.32 Keyboard Cable

Flow chart

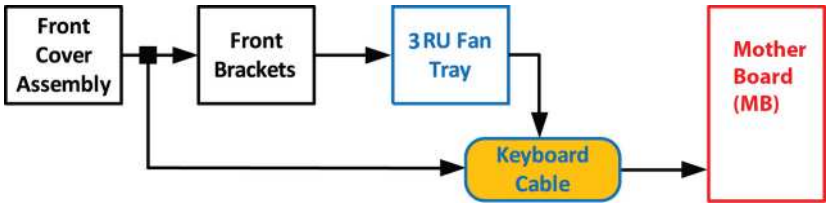

Image 15-82

The flat ribbon keyboard cable connects the Front panel board to the Motherboard. This procedure provides instructions on how to disconnect the cable on both sides.

Overview

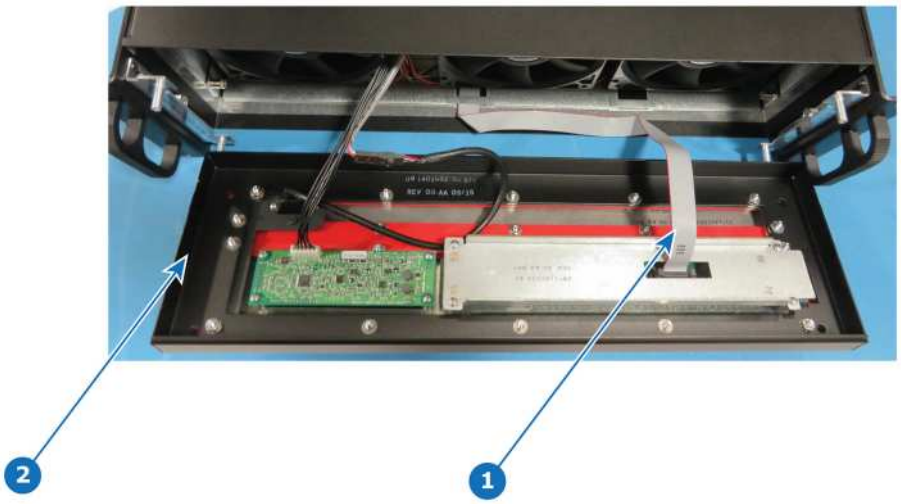

Image 15-83

1 Keyboard cable
2 Front face

Concerned parts

R767283K S3 Cable Kit Set

Necessary tools

- 1 x Phillips Screwdriver #2
- Hex Screwdriver

How to remove the Keyboard cable

1. In order to access the motherboard, follow the steps detailed in the other procedures to remove the Front Cover Assembly, Front brackets and 3RU Fan Tray. Make sure that the Keyboard Cable is disconnected from the Front Panel board.
2. Locate the keyboard connector and push the latches out to release the cable.

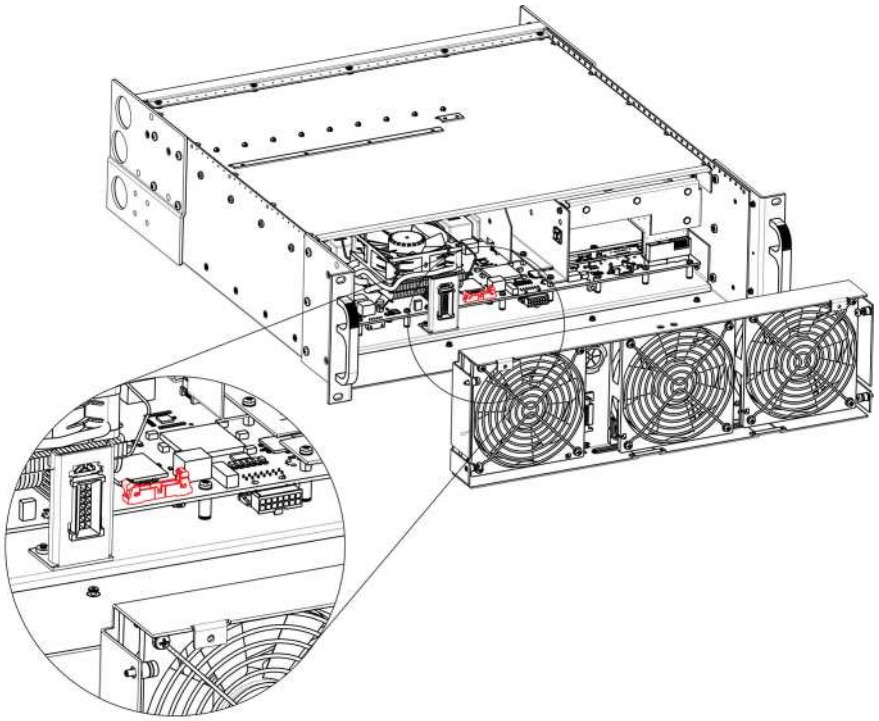

Image 15-84

3. Pull the cable out of the unit .

How to install the Keyboard Cable

To install the Keyboard Cable follow the same procedure in the reverse order.

There is a key on the connector to prevent incorrect insertion of the cable.

During assembly, make sure that the keyboard cable goes through the slot located on the bottom side of the 3RU Fan tray.

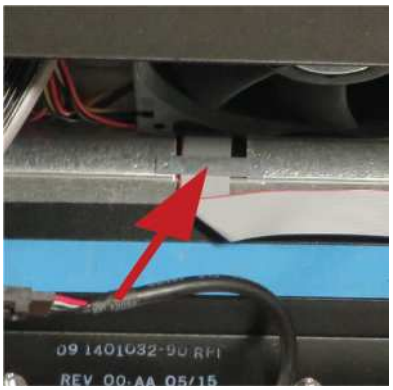

Image 15-85

15.33 3RU Fan Cable

Flow chart

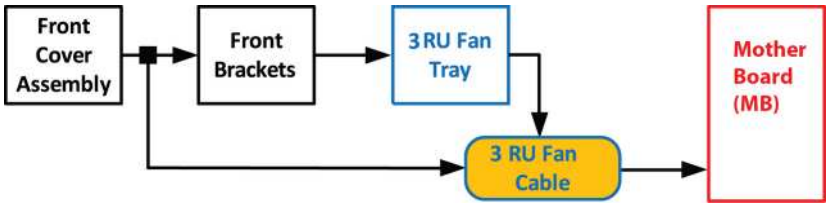

Image 15-86

The 3RU cable assembly provides power to the 3RU fans from the Motherboard.

One side of the cable is attached to a metal bracket that is accessible after the 3RU fan tray is removed. The other side of the cable assembly connects to the Motherboard.

Overview

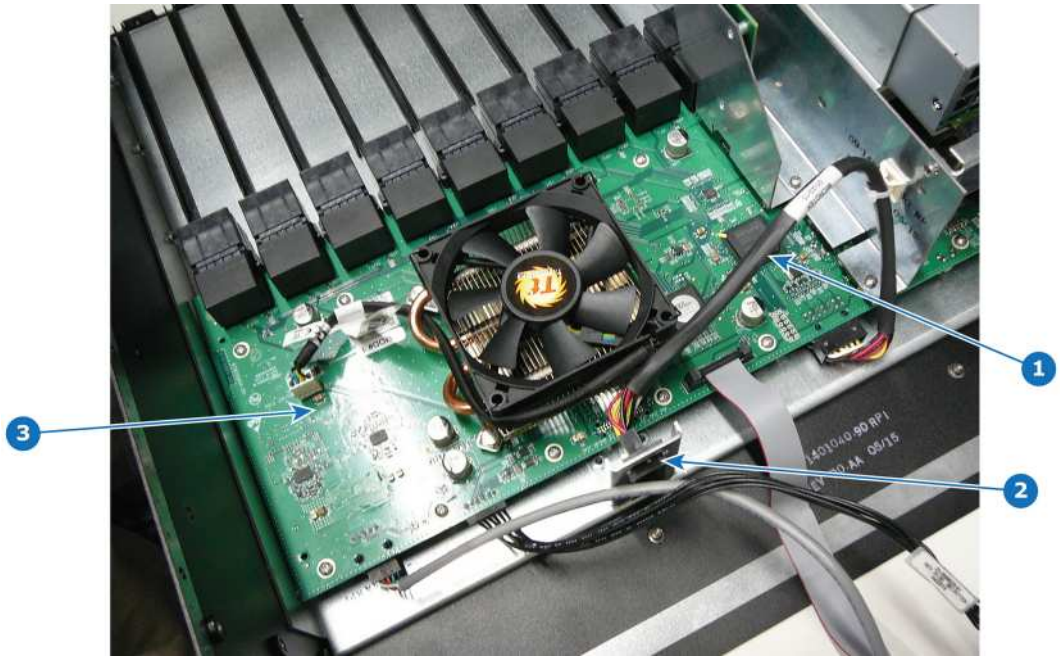

Image 15-87

1 3RU Fan cable
2 3RU Fan connector
3 Motherboard

Concerned parts

R767283K S3 Cable Kit Set

Necessary tools

- 1 x Phillips Screwdriver #2
- Hex Screwdriver

How to remove the 3RU Fan cable

1. In order to access the motherboard, follow the steps detailed in the other procedures to remove the Front Cover Assembly, Front brackets and 3RU Fan Tray.

2. Locate the 3RU cable connector that is exposed after the 3RU fan tray is removed. The connector is attached on a metal bracket that is vertically mounted in the chassis.

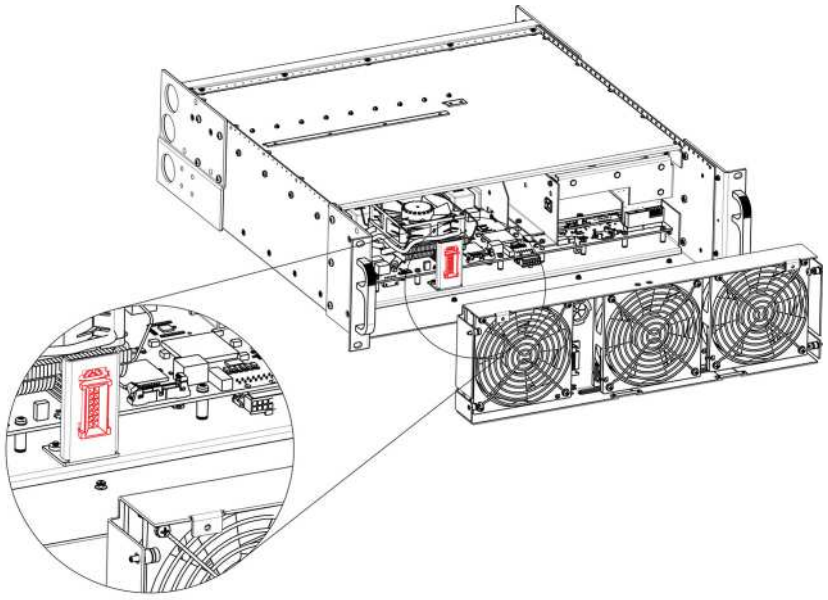

Image 15-88

3. Locate the snap lock on the top of the connector and push it back to release the connector from the bracket.

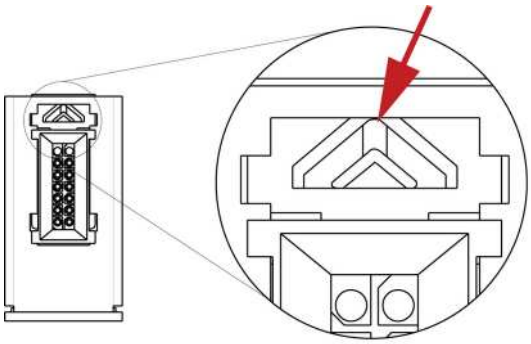

Image 15-89

4. Push the connector up until the slots in the metal bracket align with the flanges on the connectors.

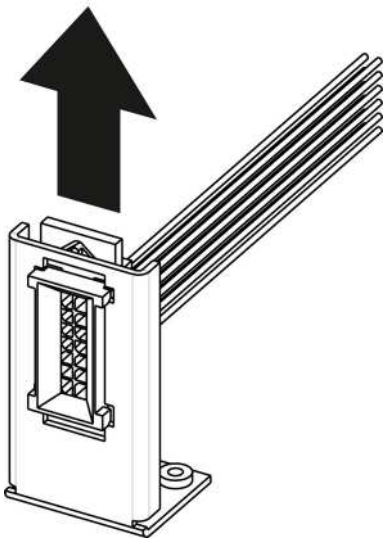

Image 15-90

5. Gently pull the 3RU cable assembly away from the bracket.

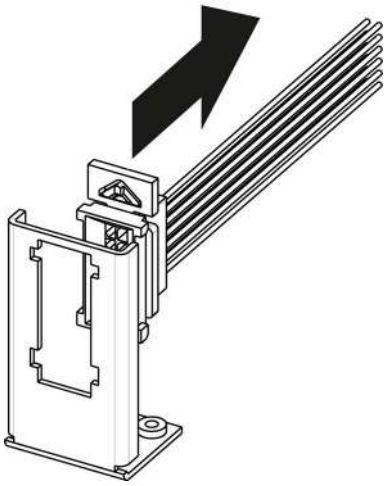

Image 15-91

6. Locate the 3RU cable that is plugged on the Motherboard.

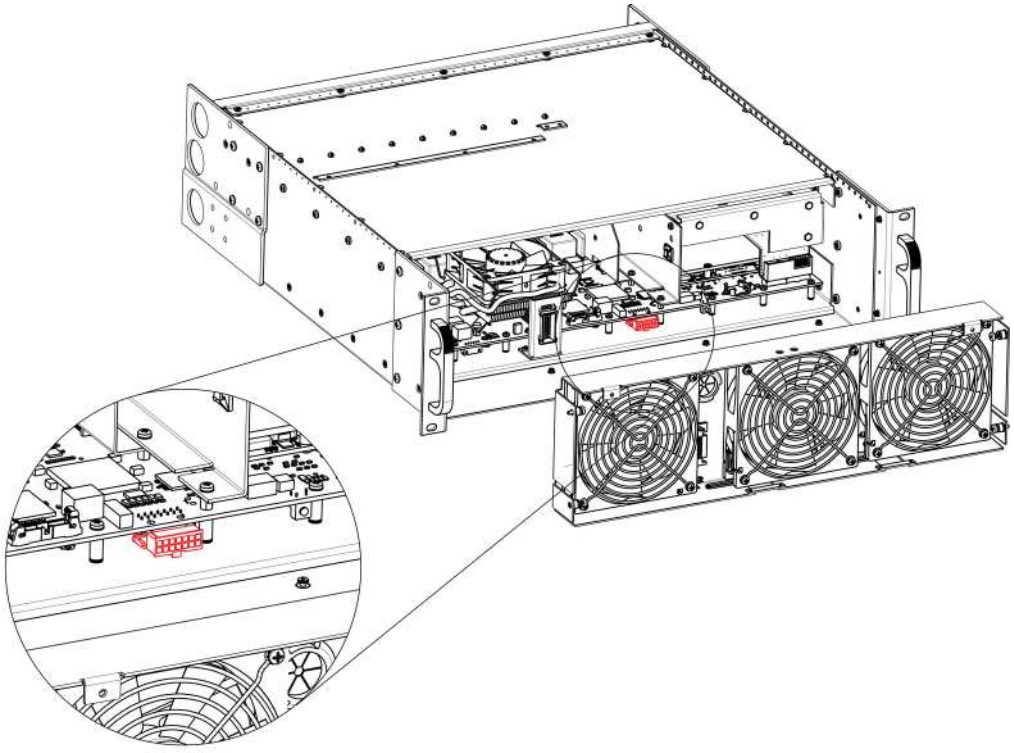

Image 15-92

7. Remove the 3RU cable by gently pushing it out.

Note: It could be necessary to release the cable tie that maintain the cable in place on the side Support Plate.

How to install the 3RU Fan Cable

To install the 3RU Fan Cable follow the same procedure in the reverse order.

15.34 Ethernet Cable

Flow chart

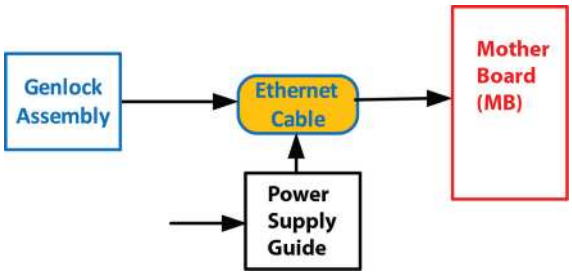

Image 15-93

The Ethernet cable connects the Genlock board to the Motherboard. This procedure provides instructions on how to remove the cable from both sides.

This procedure requires to remove the Power supply Guide to unplug the cable from the motherboard.

Overview

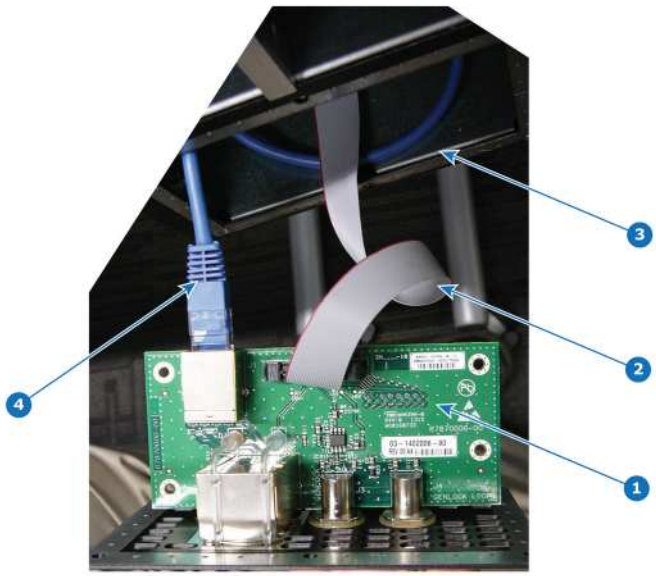

Image 15-94

1 Genlock card
2 Genlock cable
3 Chassis
4 Ethernet cable

Concerned parts

R767283K S3 Cable Kit Set

Necessary tools

1 x Phillips Screwdriver #2

How to remove the Ethernet cable

1. Remove the Genlock assembly and pull it away to expose the cables behind it (refer to the related procedure).

2. Locate the Ethernet connector on the Genlock assembly and push the locking clip on the Ethernet cable so it can be released from the socket.

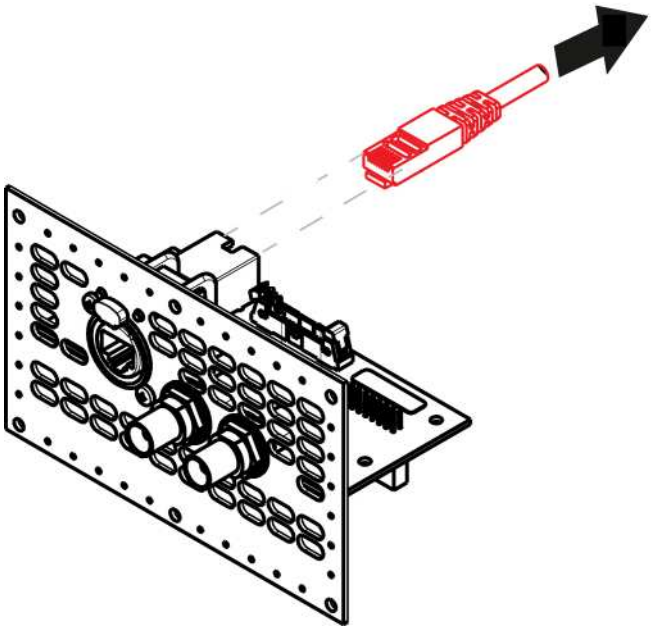

Image 15-95

Note: From this step, only the other end of the Ethernet cable stays connected to the motherboard. Unfortunately it is necessary to remove the Power supply Guide to unplug it. (refer to the “Process Overview”, page 448).

3. Follow the steps detailed in other procedures to remove Power supply Guide.

4. Locate the Ethernet cable that is plugged on the Motherboard and push the locking clip on the Ethernet cable so it can be released from the socket.

Image 15-96

5. Pull the cable out of the unit .

How to install the Ethernet Cable

To install the Ethernet Cable follow the same procedure in the reverse order.

15.35 Genlock Cable

Flow chart

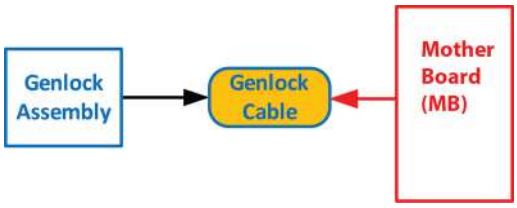

Image 15-97

The Genlock cable connects the Genlock board to the Motherboard. This procedure provides instructions on how to remove the cable from both sides.

One end of the Genlock cable is clamped between the Motherboard and the Motherboard mount. Remove this cable requires to separate these parts.

Overview

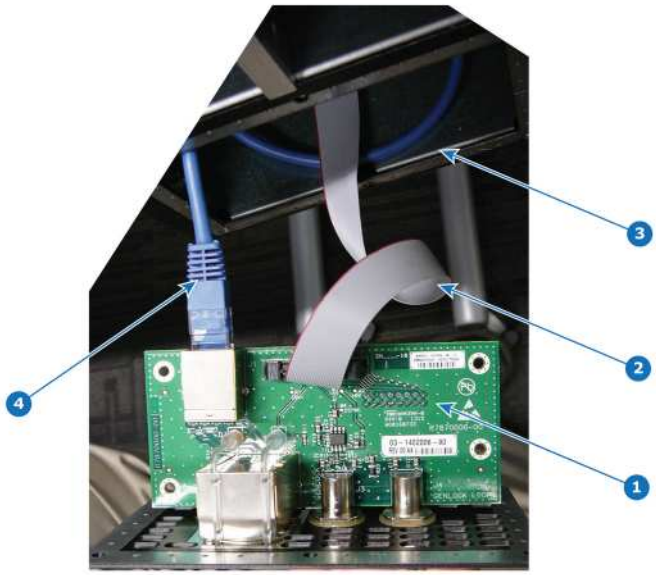

Image 15-98

1 Genlock card
2 Genlock cable
3 Chassis
4 Ethernet cable

Concerned parts

R767283K S3 Cable Kit Set

Necessary tools

1 x Phillips Screwdriver #2

How to remove the Ethernet cable

1. Remove the Genlock assembly and pull it away to expose the cables behind it (refer to the related procedure).
2. Locate the Genlock connector on the Genlock assembly and unlatch the ribbon cable from the connector and pull it up and away from the Genlock board.

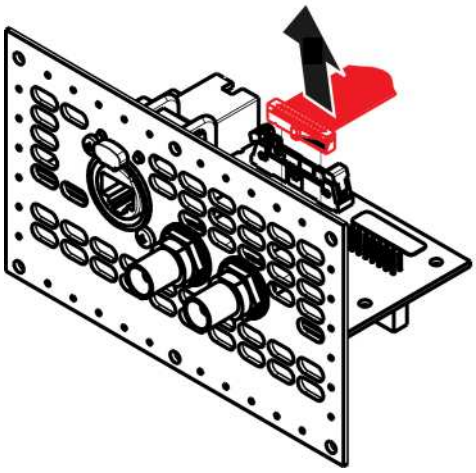

Image 15-99

Note: From this step, only the other end of the Genlock cable stays connected to the motherboard. Unfortunately it is necessary to remove the motherboard from the motherboard mount to unplug it. (refer to the “Process Overview”, page 448).

3. Remove the following parts to access the motherboard :
   - Rear cards (VPU, Link, I/O)
   - CPU module.
   - Link card interposer.

   Note: Refer to the related procedures to remove these parts. Remove these parts requires removing lot of parts from the unit (Power supply, Power interposer, Power supply guide, Side Support Plate ...)

   Note: It is not necessary to remove the solid state memory, the system battery and the other cables to give access to the motherboard fixing screws.

4. Remove the Motherboard from the Motherboard mount.
   1. Remove the three m/f standoffs (4-40 X 3/16” .25”) that attach the Motherboard to the Motherboard mount.
   2. Remove the five m/f standoffs (m2.5 X 8mm) that attach the Motherboard to the Motherboard mount.
   3. Remove the sixteen long pan head SEMS screws (4-40x.31” — SEMS refers to an integrate lock washer) that attach the Motherboard to the Motherboard mount.

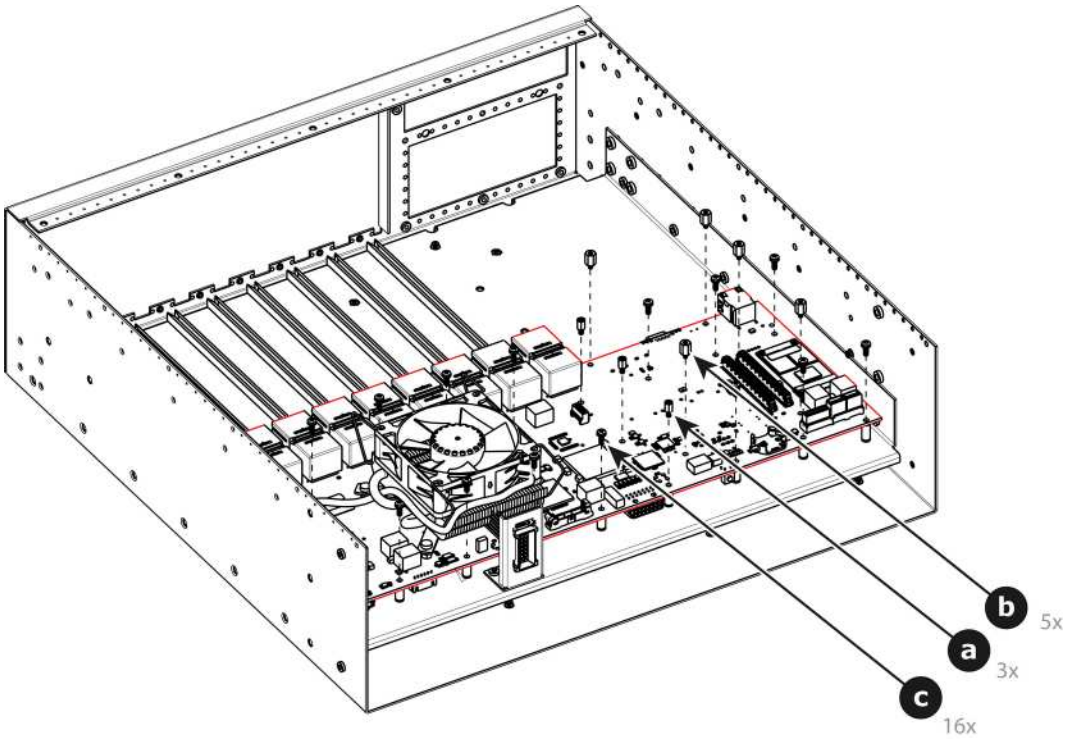

Image 15-100

5. Locate the Genlock cable that is plugged on the Motherboard.

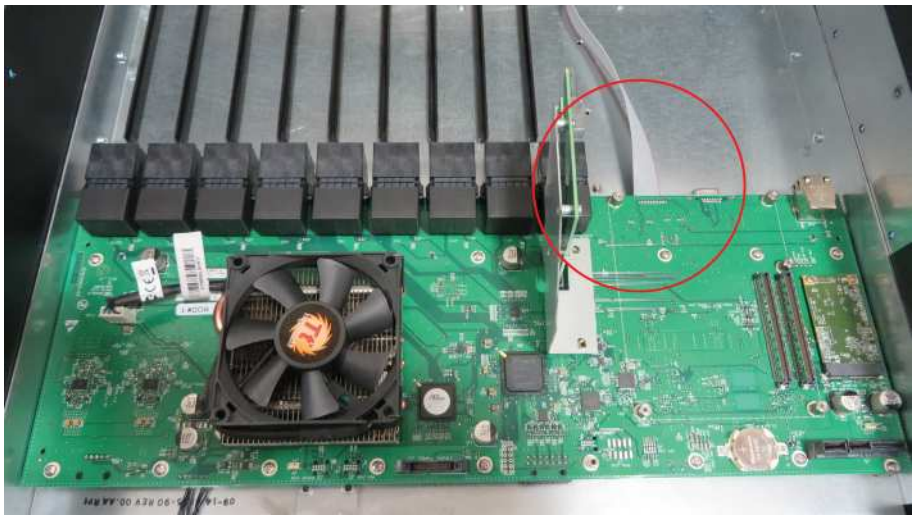

Image 15-101

6. Unplug the Genlock cable.
7. Pull the cable out of the unit .

How to install the Ethernet Cable

To install the Ethernet Cable follow the same procedure in the reverse order.

16 EX Maintenance

16.1 EX unit Overview 503
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16.11 Motherboard Fansink 516

About this chapter

This chapter describes how to service the EX expansion box by replacing individual components.

Simple servicing

The EX expansion box is based on a modular design that ensures easy serviceability. Users can swap most of the EX components in the case of damage, without shipping the unit to a Barco service center.

Methodology

Most procedures in these chapters include multiple steps to gain access to the parts requiring service. A workflow flow chart is provided indicating all of the procedures and their relationships. Please refer to the chart to familiarize yourself with the sequence of procedures.

ESD recommendations

The following precautions must be taken:

- Perform the service procedures only at approved anti-static work station equipped with anti-static mat.
- At all times use a conductive wrist strap attached to a solid earth ground.
- Always discharge yourself by touching a grounded bare metal surface before coming in contact with ESD sensitive electronic.

WARNING: Always switch power off and unplug the cords from the device before performing any maintenance operations described in this chapter.

WARNING: The device can be damaged by electrostatic discharge (ESD). When handling the device and any of its components, caution must be taken so that damage does not occur. Damage due to inappropriate handling is not covered by the warranty.

16.1 EX unit Overview

Orientation and main components

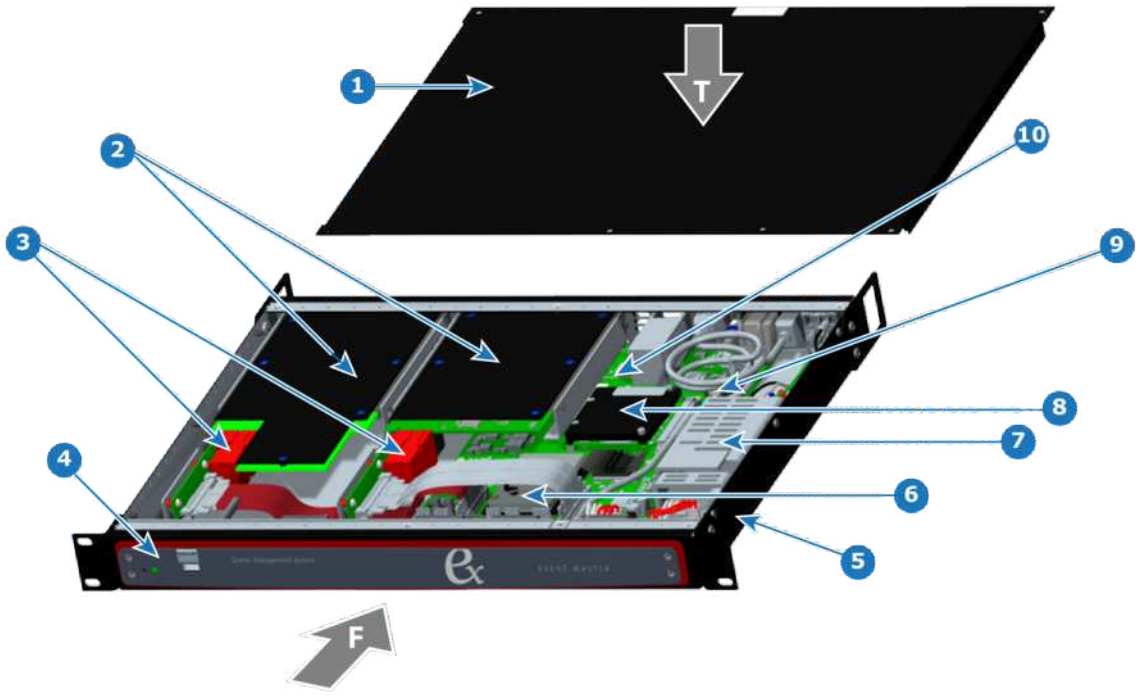

Image 16-1: Orientation and main components

T	Top	5	Chassis
F	Front	6	Motherboard Fan
1	Top Cover	7	Power Supply
2	Event Master Cards	8	CPU Module
3	Interposers	9	System Battery
4	Front Panel	10	Motherboard

16.2 Process Overview

Flow chart

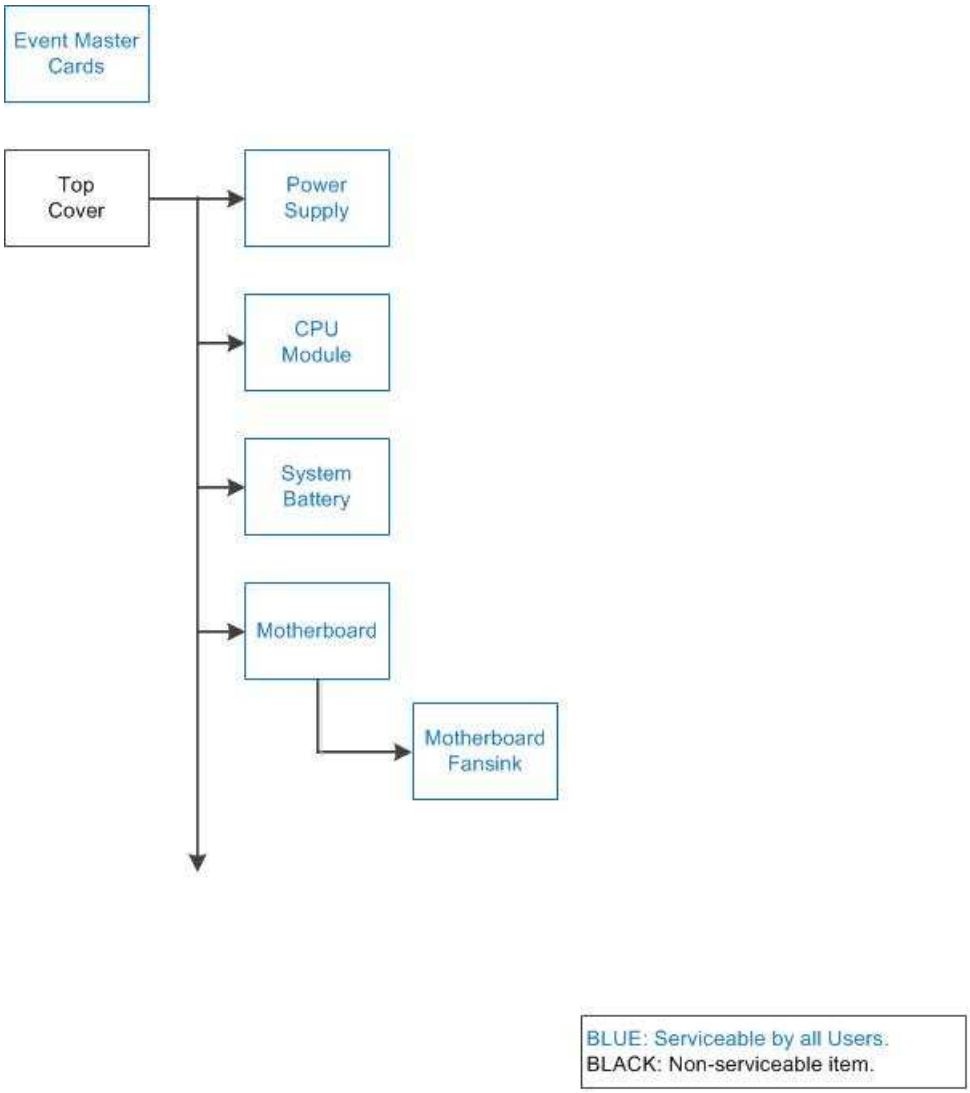

Image 16-2: EX service process overview flowchart

16.3 Spare Parts Serviceable by All Users

EX Spare Parts List

P/N	Description	Comments
R767210K	Power Supply, 132W, 12V Output	
R767263K	Kit, Fansink E2	Used on EX motherboard
R767287K	Kit, Motherboard EX	
R767288K	Kit, CPU Programmed ASM EX	
R767292K	Kit, Front Bezel EX	
R9004740	EM DVI Input Board	
R9004741	EM SDI Output Board	
R9004742	EM SDI Input Board	
R9004743	EM HDMI Output Board	

P/N	Description	Comments
R9004744	EM HDMI-DP Input Board	
R9004745	EM DVI Output Board	
R9004758	S3 VPU Board	
R9004765	Quad DP 1.2 Output Board	
R9004785	Tri-Combo Input Board	
R9004786	Tri-Combo Output Board	
R9004791	Quad HDMI Input Board	
R9004792	Quad HDMI 2.0 Output Board	
R9004793	Quad DP 1.2 Input Board	
R9871179	Rear rackmount support kit	
R9801120	Motherboard Battery Kit	

16.4 Event Master Cards

Flow chart

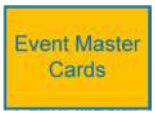

Image 16-3: Event Master cards

Overview

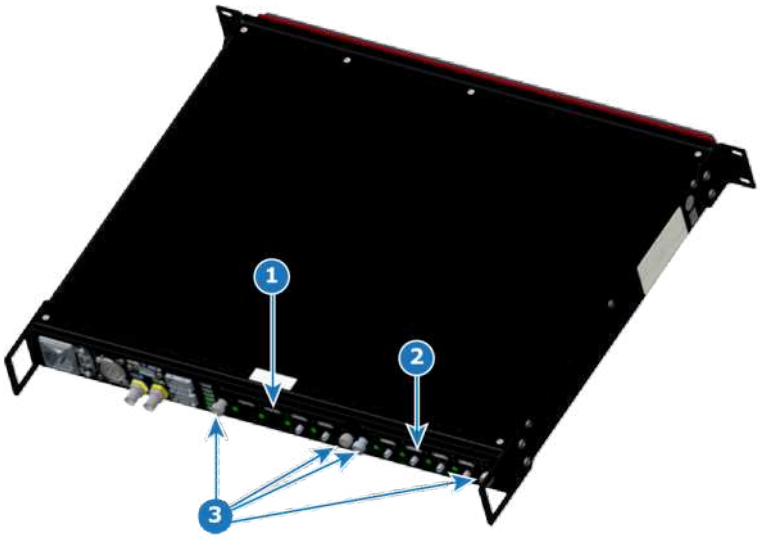

Image 16-4: EX chassis: Event Master card location

1 Card slot #1
2 Card slot #2
3 Card thumbscrews

Concerned parts

Spare Part Kit	Description
R9004740	DVI Input
R9004741	SDI Output
R9004742	SDI Input
R9004743	HDMI Output
R9004744	DP/HDMI Input

Spare Part Kit	Description
R9004745	DVI Output
R9004758	VPU card
R9004765	Quad DP 1.2 Output Board
R9004785	Tri-Combo Input
R9004786	Tri-Combo Output
R9004791	Quad HDMI Input
R9004792	Quad HDMI 2.0 Output
R9004793	Quad DP 1.2 Input

Necessary tools

None.

How to remove a card

1. Locate the card that you wish to replace.
2. Loosen the left and right thumbscrews that hold the card in the chassis.
3. Grasp the thumbscrews, and gently pull the card out of the slot.

You may need to wobble the card a bit to loosen it from the mating connector as you pull it out.

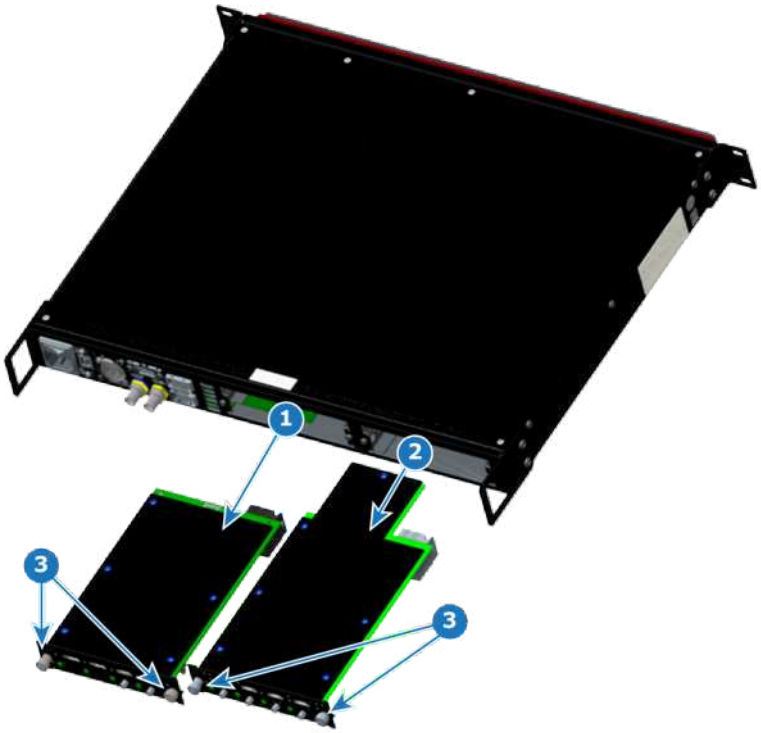

Image 16-5: EX chassis: with Event Master cards removed

1 Card from slot #1
2 Card from slot #2
3 Card thumbscrews

How to install a card

To install an Event Master input or output card, follow the steps of the removal procedure in reverse order.

Apply a little pressure on the card, until it is fully inserted in the back plane connector. At this point the sheet metal of the card should contact the sheet metal of the chassis.

16.5 Tri-Combo Input and Tri-Combo Output Card Disassembly and Assembly

TCI and TCO card disassembly and assembly

See “Tri-Combo Input and Tri-Combo Output Card Disassembly and Assembly”, page 391 for details.

16.6 Top Cover

Flow chart

Image 16-6: Top cover

Overview

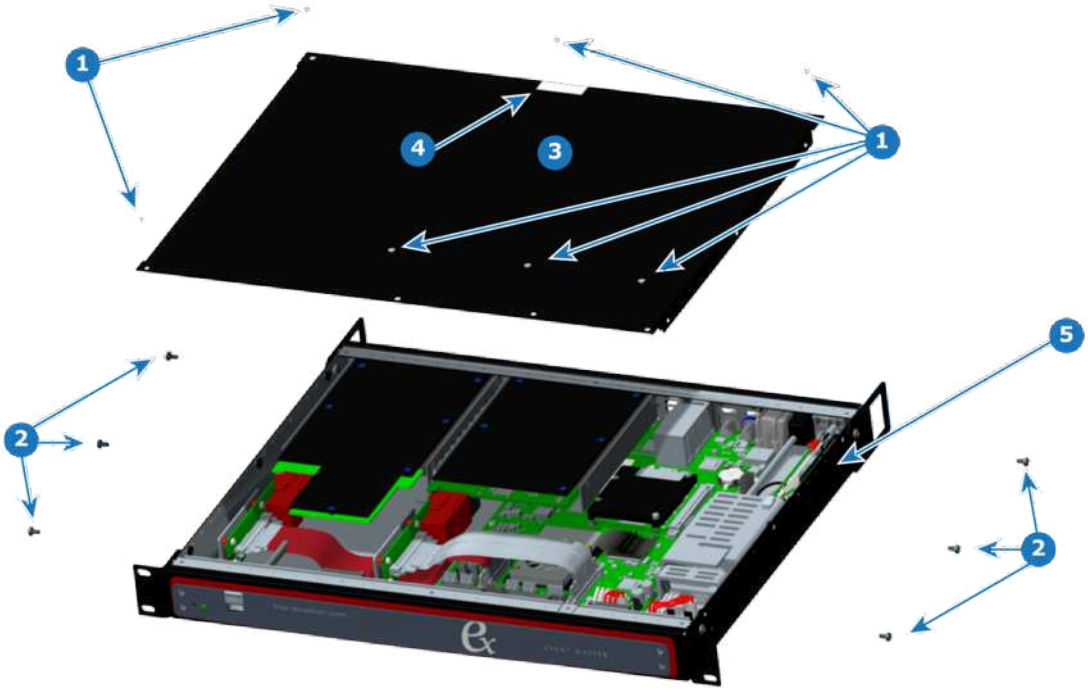

Image 16-7: Removal of EX top cover

1 Flat Head, 82° UC, 4-40 Screws
2 Pan Head, 6-32 Screws
3 Top cover
4 Tamper-evident label
5 Chassis

Concerned parts

Part Number	Description
02-1502002-90	EX Chassis
09-1502016-90	EX Chassis Cover
13-9850011-00	Tamper-evident Label
13-0280606-90	Flat Head, 82° UC, 4-40 Screw
13-0210808-90	Pan Head, 6-32 Screw

Necessary tools

- 1x Phillips Screwdriver #1
- 1x Phillips Screwdriver #2

How to remove the top cover

1. Remove the seven flat head, 4-40 screws from the top of the unit.
   The middle screw along the rear edge of the top cover is under the tamper-evident label. Removing the screw may be easier, if you first remove the label.
2. Remove the six pan head, 6-32 screws from the sides of the unit.
3. Lift the top cover from the unit.

How to install the top cover

To install the top cover on the EX chassis, follow the steps of the removal procedure in reverse order.

Apply Loctite 242 (or equivalent) thread-locker to the screws that attach the top cover to the chassis. Tighten the 4-40 flat-head screws to 5 in-lbs. Tighten the 6-32 pan-head screws to 8 in-lbs.

16.7 Power Supply

Flow chart

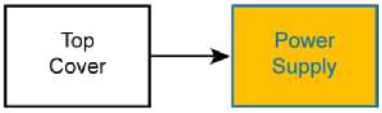

Image 16-8: Power supply

Overview

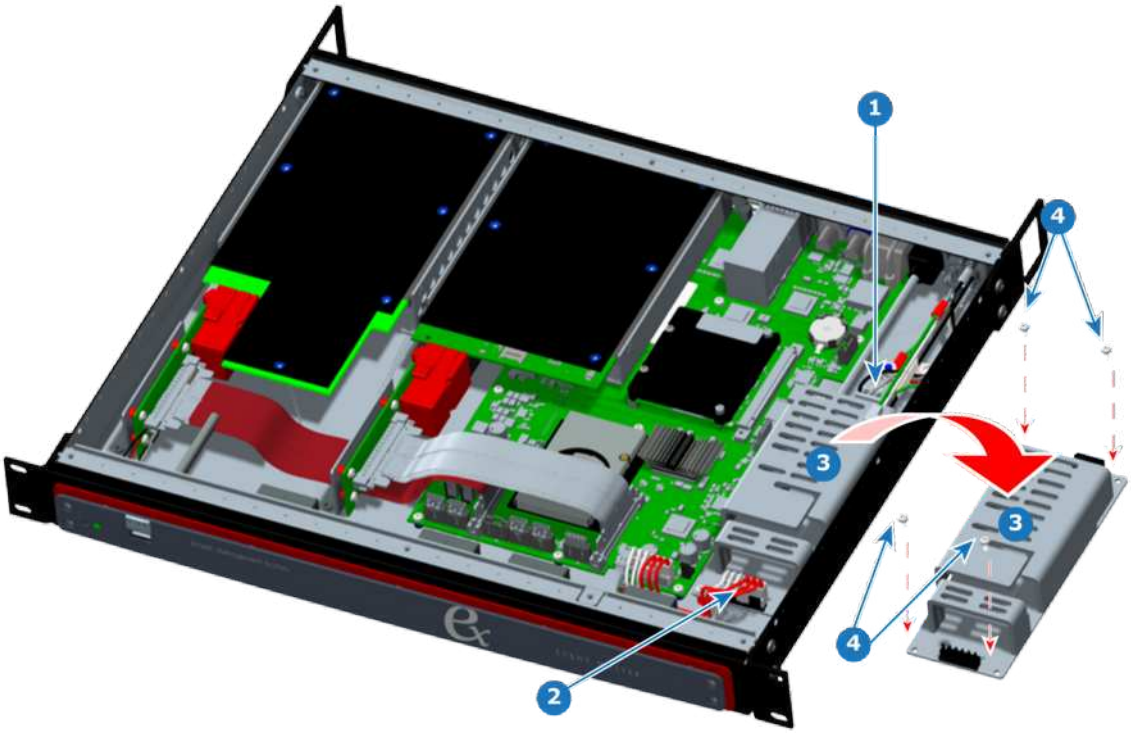

Image 16-9: Removal of power supply

1 AC Entry Cable Assembly
2 DC Power Cable Assembly
3 Power Supply
4 4-40 x25 SEMS Screws

Concerned parts

Part Number	Description
14-9500030-90	132W, 12V Power Supply
20-1502050-90	DC Power Cable Assembly
20-1502051-90	AC Entry Cable Assembly
13-0080608-90	4-40 x25 SEMS Screws (x4)

Necessary tools

- 1x Phillips Screwdriver #1
- 1x Phillips Screwdriver #2

How to remove the power supply

1. Remove the top cover.
2. Disconnect the DC power cable from the rear of the power supply.
3. Disconnect the AC entry cable from the front of the power supply.
4. Remove the four 4-40 x25, SEMS screws that fasten the power supply to the chassis.
5. Remove the power supply from the chassis.

How to install the power supply

To install the power supply in the EX chassis, follow the steps of the removal procedure in reverse order.

Make sure that the three rubber bumpons are on the bottom of the power supply before installing the power supply in the chassis. See Image 16-10.

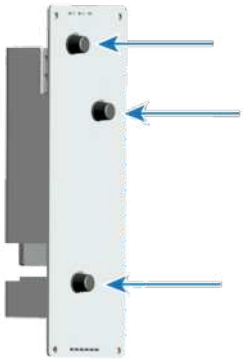

Image 16-10: Power supply bumpons

16.8 CPU Module

Flow chart

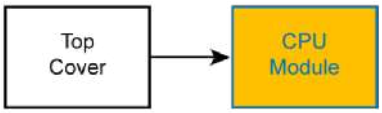

Image 16-11: CPU module

Overview

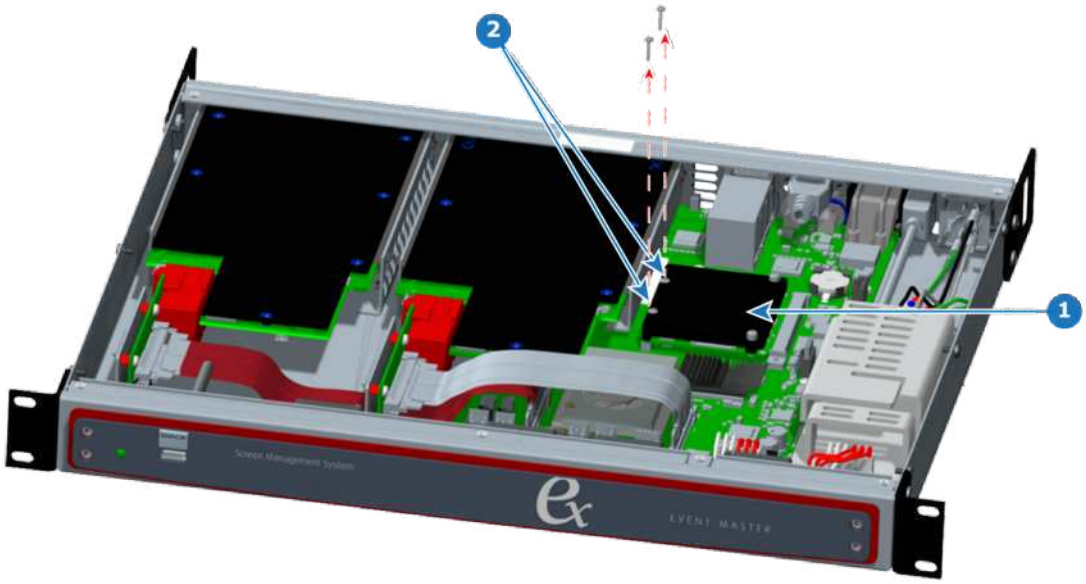

Image 16-12: CPU module components

1 CPU module
2 CPU module screws

Concerned parts

Part Number	Description
B3248009D	Motherboard fansink

Necessary tools

1x Phillips Screwdriver #1

How to remove the CPU module

1. Remove the top cover.
2. Remove the two screws from the side of the CPU module that is closest to the Event Master card slots.

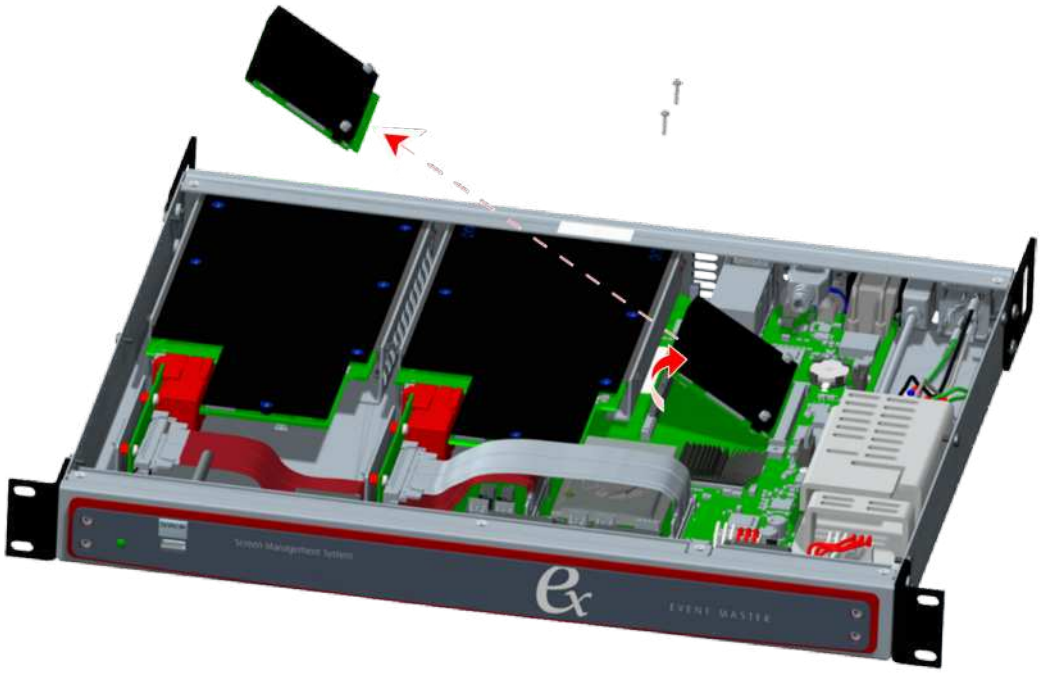

Image 16-13

3. Lift the freed edge of the CPU module, and pull it gently from the CPU-module connector on the motherboard.
4. Remove the CPU module from the chassis.

How to install the CPU module

To install the CPU module in the EX chassis, follow the steps of the removal procedure in reverse order.

16.9 System Battery

Flow chart

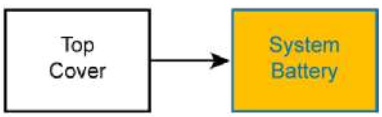

Image 16-14: System battery

Overview

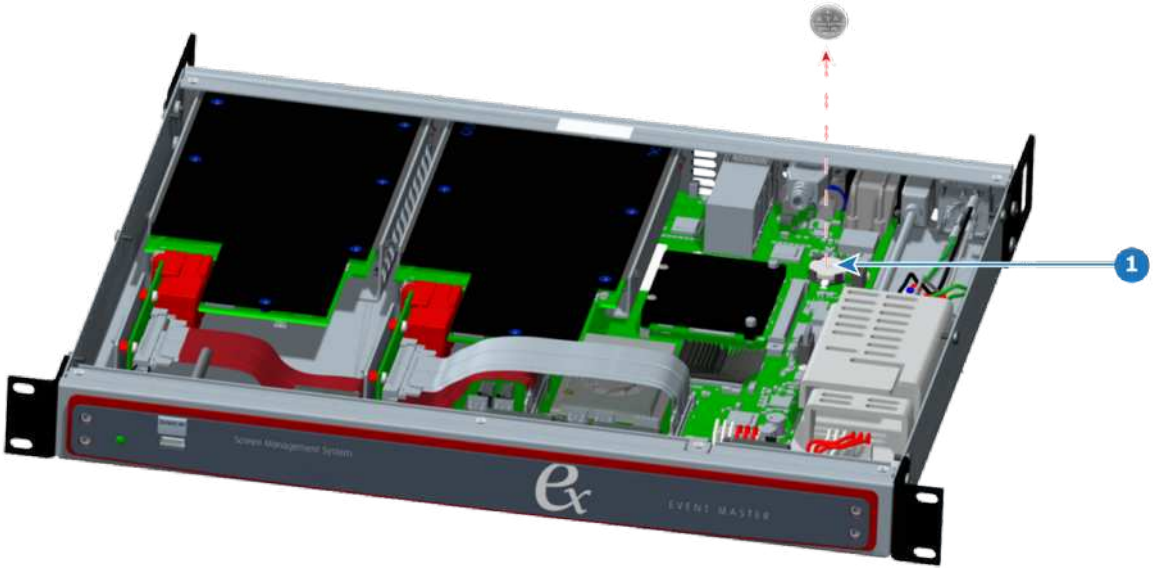

Image 16-15: System battery removal

1 System battery

Concerned parts

Part Number	Description
R9801120	Motherboard Battery Kit

Necessary tools

None.

How to remove the system battery

1. Remove the top cover
2. Lift the system battery from its cradle, and remove it from the chassis.

How to install the system battery

To install the system battery in the EX chassis, follow the steps of the removal procedure in reverse order.

The + sign, indicating the positive pole of the battery, should face up.

16.10 Motherboard

Flow chart

Image 16-16: Motherboard

Overview

Several items must be removed from the chassis, before the motherboard may be removed. These items fall into two groups: rear-panel elements and chassis elements. Once these items have been removed, you may remove the motherboard.

Concerned parts

Part Number	Description
*	Event Master Series card
13-6200003-90	BNC Hex Nuts (x2)
13-6200004-90	BNC Toothed Washers (x2)
13-6200013-90	BNC Insulating Bushing (x1)
B1959987	Slot #1 Edge-card Ribbon Cable
02-1502006-90	EX Interposer (Slot #1)
B1959986	Slot #2 Edge-card Ribbon Cable
20-1502050-90	DC Power Cable
02-1502020-90	Edge-card Guide
B1959991	USB Type B Cable
B1959992	DisplayPort Cable
03-1502005-90	EX Motherboard
B3248009D	Fansink

* – Any Event Master series card fits Slot #1 and Slot #2.

Necessary tools

- 1x Phillips Screwdriver #1
- 1x Phillips Screwdriver #2

Rear-panel elements

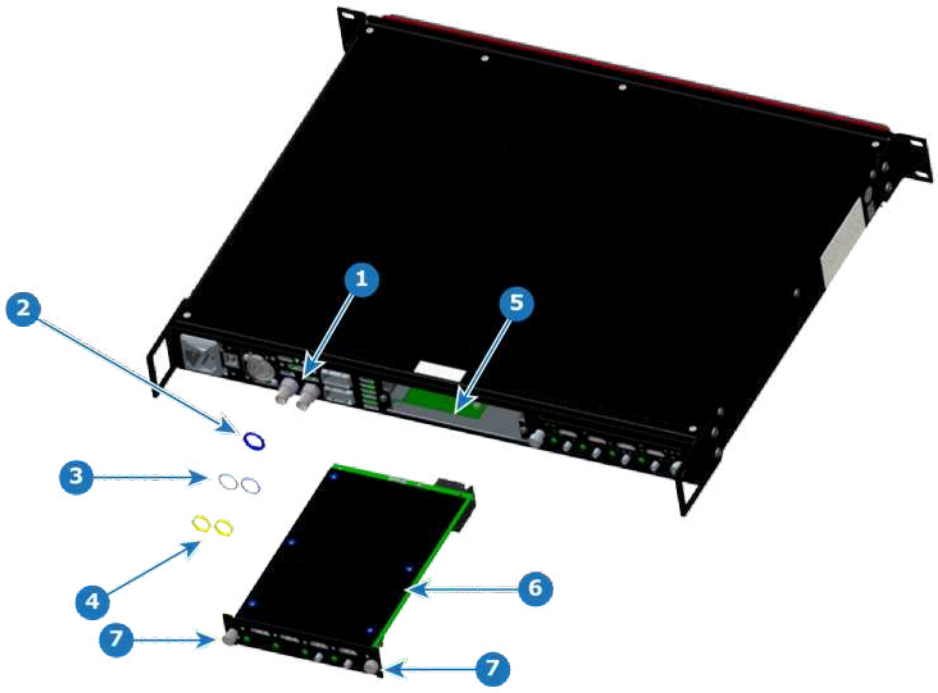

Image 16-17: Motherboard removal – rear-panel elements

1 Genlock (BNC) connectors
2 BNC insulating bushing
3 BNC toothed washers
4 BNC hex nuts
5 Slot #1
6 Event Master series card
7 Thumbscrews

1. Remove the hex nuts and the toothed washers from both Genlock BNC connectors, and remove the insulating bushing from the Genlock In BNC connector.
   Note: Do not forget to install the insulating bushing on the Genlock In BNC connector during re-installation.
2. Loosen the thumbscrews on the Event Master series card in Slot #1, and remove the card from the slot.

Chassis elements

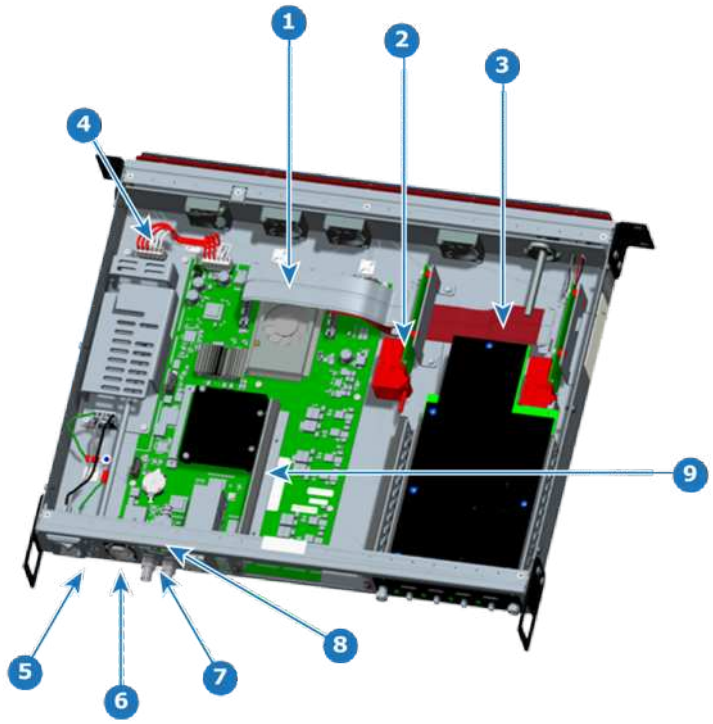

Image 16-18: Motherboard removal – chassis elements

1 Slot #1 edge-card ribbon cable
2 Slot #1 interposer
3 Slot #2 edge-card ribbon cable
4 DC power cable
5 USB Type B cable
6 RJ45 (Ethernet) connector
7 Genlock (BNC) connectors
8 DisplayPort cable
9 Event Master series card guide

1. Remove the top cover.
2. Snip the zip ties on the rear USB cable and the DisplayPort connector cable.
   CAUTION: Not snipping the zip ties around the cables to be moved or removed may result in damage to the zip-tie mounts and the surfaces to which they are attached.
3. Disconnect the Slot #1 edge-card ribbon cable first from the motherboard, then from the Slot #1 interposer, and remove the ribbon cable from the chassis.
4. Remove the two screws that fasten the Slot #1 interposer to the floor of the chassis, and remove the interposer from the chassis.
   These are located on the bottom of the chassis near the front and close to the center of the chassis when looking from left to right.
5. Disconnect the Slot #2 edge-card ribbon cable first from the motherboard, then from the Slot #2 interposer, and remove the ribbon cable from the chassis.
6. Disconnect the DC power cable from the motherboard.
7. Disconnect the rear USB Type B connector cable from the rear-panel USB header on the motherboard.
8. Remove the screws above and below the rear-panel USB Type B connector, and remove the connector and its cable from the chassis.
9. Remove the two screws that fasten the RJ45 (Ethernet) mounting plate to the rear panel of the chassis.
   These screws are below and to the left, and above and to the right of the RJ45 mounting plate. Do not remove the screws on the mounting plate itself. The mounting plate should remain attached to the RJ45 connector on the motherboard.
10. Disconnect the DisplayPort cable from the motherboard.
11. Remove the two screws (just above the Genlock connectors) that fasten the DisplayPort cable to the rear panel, and remove the DisplayPort cable from the chassis.
12. Remove the two screws that fasten the Slot #1 card guide to the motherboard, and remove the card guide from the chassis.
13. Unscrew and remove the card-guide standoffs from the chassis.
    These go through slots in the motherboard, but the motherboard cannot be removed without first removing the standoffs.

The chassis elements are shown removed from the chassis in Image 16-19.

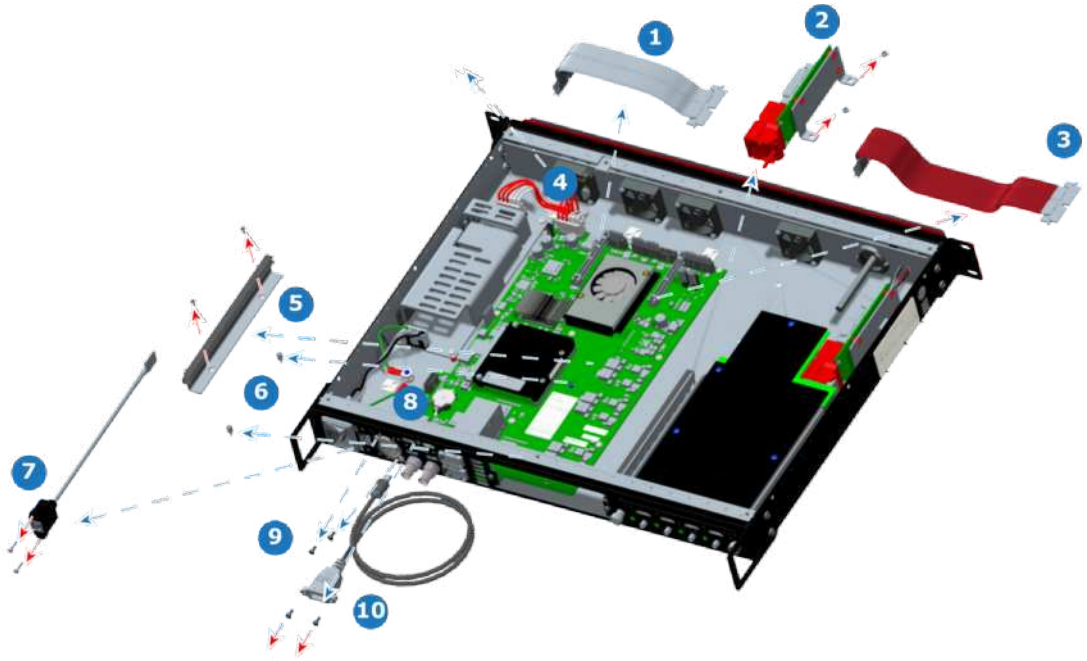

Image 16-19: Motherboard removal – chassis elements removed

1 Slot #1 edge-card ribbon cable
2 Slot #1 interposer
3 Slot #2 edge-card ribbon cable
4 DC power cable
5 Event Master series card guide
6 Card guide standoffs
7 USB Type B connector and cable
8 Rear-panel USB header
9 RJ45 rear-panel mounting screws
10 DisplayPort connector and cable

The motherboard

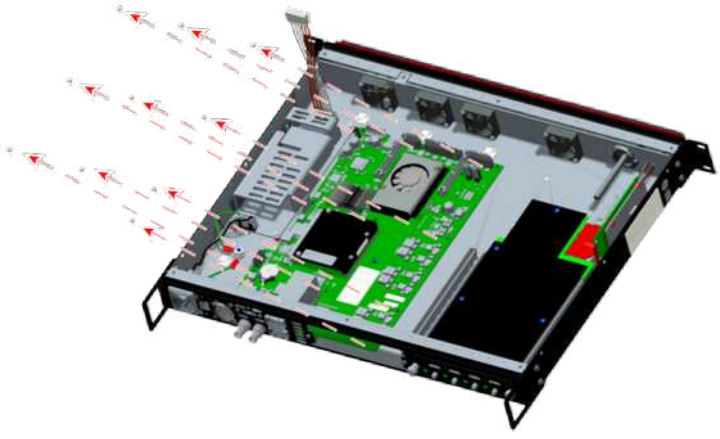

Image 16-20: Motherboard removal –motherboard screws

1. Remove the 11 screws that fasten the motherboard to the chassis.
2. Lift the front end of the motherboard, and rotate the motherboard up.

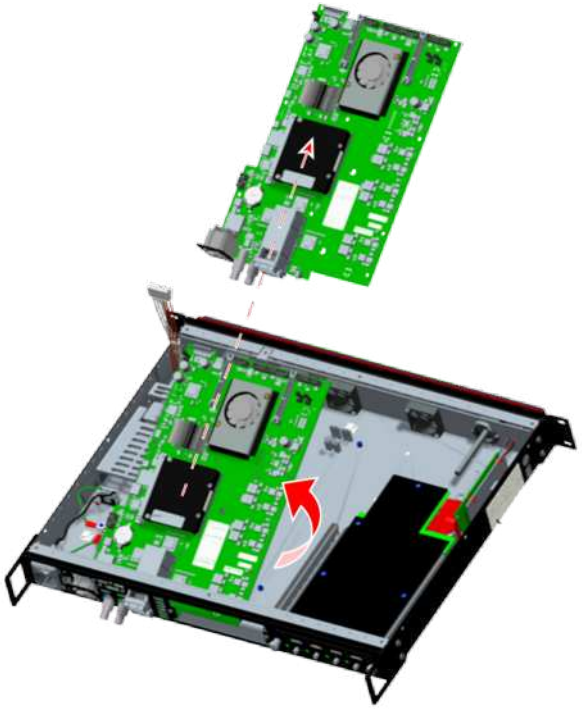

Image 16-21: Motherboard removal – removing the motherboard

3. Remove the motherboard from the chassis.
   Note: There is one BNC insulator on the Genlock input connector. Make sure you put this to the side, so you can re-install it when re-installing the motherboard.

How to install the motherboard

To install the motherboard in the EX chassis, follow the steps of the removal procedure in reverse order.

1. Place the motherboard in the chassis.
2. Install the chassis elements.
3. Install the rear-panel elements.
   Note: Do not forget to install the insulating bushing on the Genlock In BNC connector—both internal to the chassis and external—before installing the toothed washers and hex nuts.

16.11 Motherboard Fansink

Flow chart

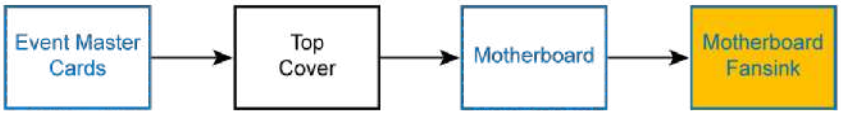

Image 16-22: Motherboard fansink

Overview

Because the fansink pins must be removed from the underside of the motherboard, the motherboard must be removed from the chassis before the fansink can be removed or replaced.

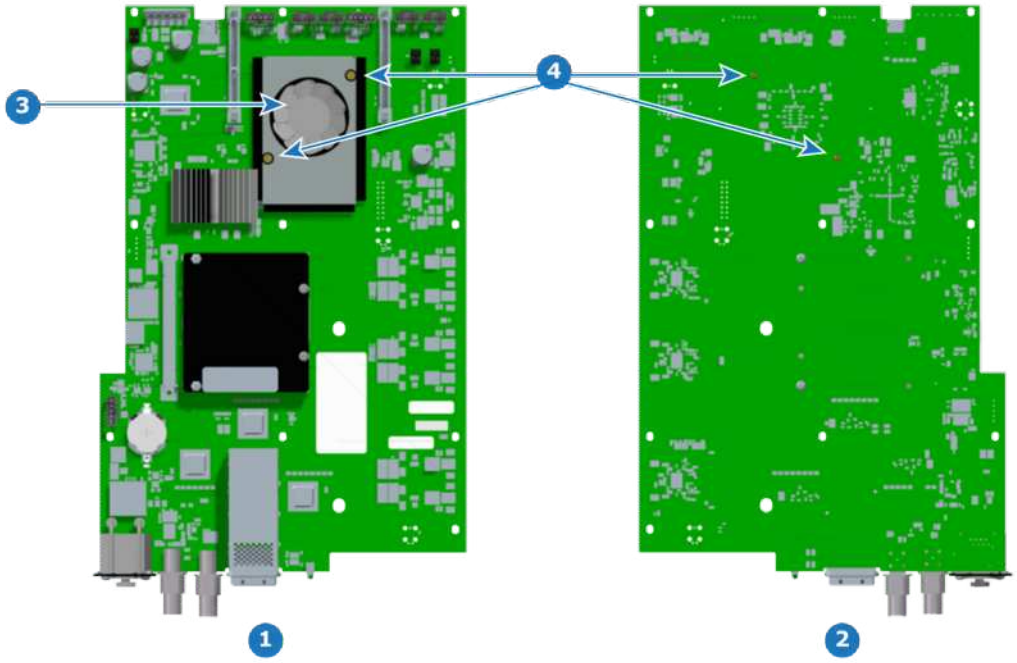

Image 16-23: Motherboard fansink components

1 Motherboard—topside view
2 Motherboard—underside view
3 Motherboard fansink
4 Fansink pins

Concerned parts

Part Number	Description
B3248009D	Motherboard fansink
R767263K	Fansink kit
02-1502005-90	EX motherboard

Necessary tools

None.

How to remove the motherboard fansink

1. Remove the top cover.
2. Remove the EX motherboard.
3. Turn the motherboard underside up.
4. Push the fansink pins in, so that they pass through the motherboard but do not separate from the fansink.
5. Turn the motherboard topside up, and remove the motherboard fansink, together with the fansink pins.

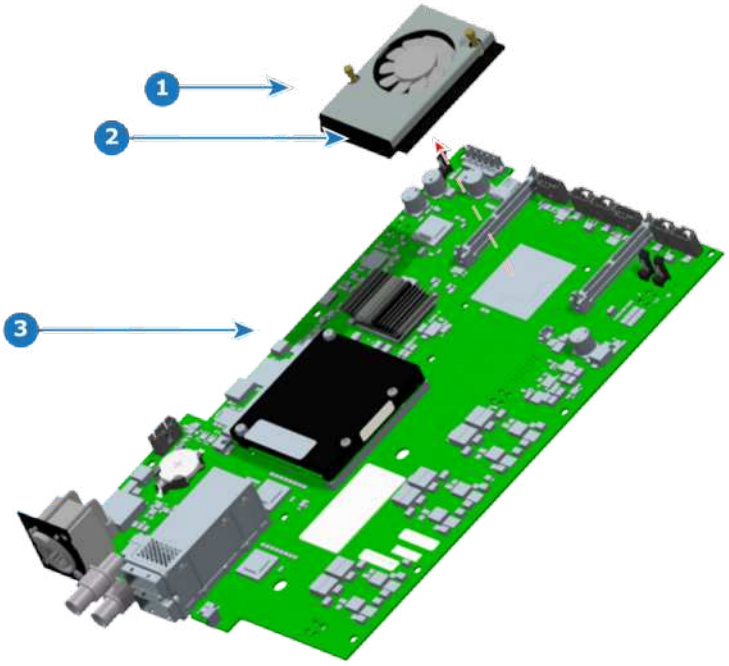

Image 16-24: Removal of motherboard fan

1 Motherboard fansink and pins
2 Open fins on the fansink
3 Motherboard

How to install the motherboard fansink

CAUTION: Do not reuse a fansink, once it has been removed from the motherboard. The thermal compound will no longer be properly located, and the compression of the pins during removal will prevent them from fastening properly to the motherboard. Use the fansink replacement kit R767263K.

To install a replacement fansink on the EX motherboard, follow these steps.

1. Align the fansink pins over the pin holes in the motherboard.
2. Place the replacement fansink on the EX motherboard.
   Note: The open fins on the fan sink should point toward the CPU section as shown.
3. Push the fansink pins in, so that the tops of the pins are flush with the top of the fansink.

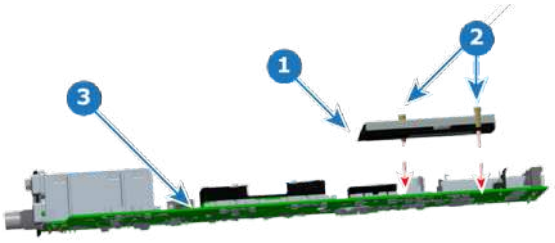

Image 16-25: Motherboard fansink pins

1 Fansink
2 Fansink pins
3 Motherboard

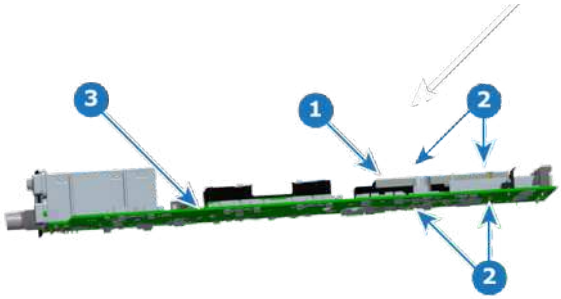

Image 16-26: Motherboard fansink installed

1 Fansink
2 Fansink pins
3 Motherboard

EC-30 Maintenance 17

17.1 Servicing 520

About this chapter

This chapter describes how to service the EC-30 controller.

17.1 Servicing

General

The EC-30 controller has no user-serviceable parts.

In the unlikely event your EC series controller requires service, please refer to the Return Material Authorization section in this manual prior to sending the unit back to the Barco Service Department.

EC-30 Overview

Orientation and main components

Front:

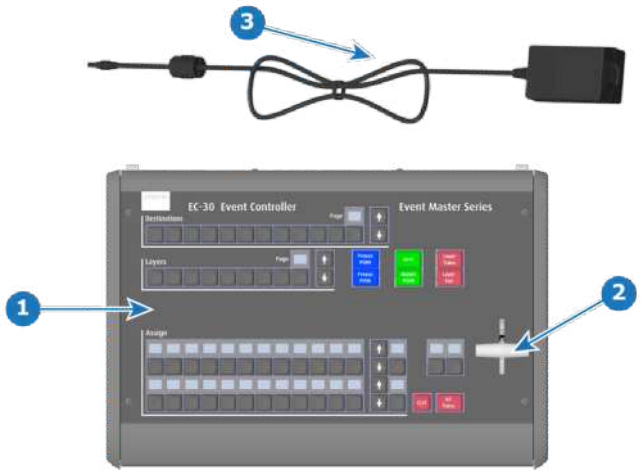

Image 17-1: EC-30 controller (Front view)

1 Keyboard
2 T-bar
3 25W, 12V power supply brick

Rear:

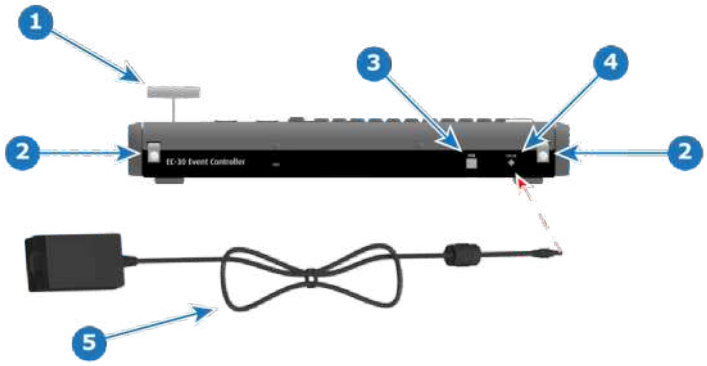

Image 17-2: EC-30 controller (Rear view)

1 T-bar
2 Strain-relief tabs
3 USB B to Host
4 DC power
5 25W, 12V power supply brick

18 EC-50 Maintenance

18.1 Servicing 522

About this chapter

This chapter describes how to service the EC-50 controller.

18.1 Servicing

General

Given the low failure rate experienced on this device, it is extremely rare to have to change parts on the EC-50 controller.

> In the unlikely event your EC series controller requires service, please refer to the Return Material Authorization section in this manual prior to sending the unit back to the Barco Service Department.

The only parts that the user may have to change by itself is the work light and power fuse. The work light is a spare part provided by Barco (see spare parts list bellow). The fuse is not provided by Barco.

EC-50 Overview

Orientation and main components.

Front:

Image 18-1: EC-50 controller (Front view)

1 work light connector
2 Touch screen
3 Buttons of presentation the presentation video controller
4 T-bar

Rear:

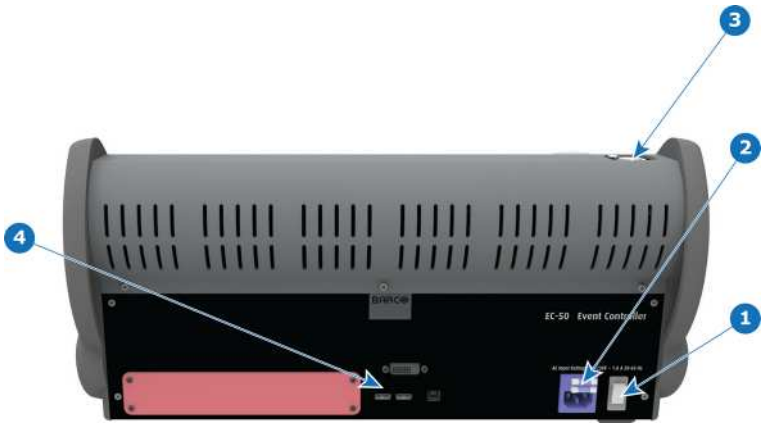

Image 18-2: EC-50 controller (Rear view)

1 Power switch
2 Power connector + fuse
3 work light connector
4 Communication connectors

EC-50 Spare Parts list

P/N	Description	Comments
R767327K	KIT DESKLIGHT EC-50	1x work light (flexible support with XLR connection)

Fuse

Specifications:

Size	5x20mm
Amp Rating	5A
Voltage Rating	250V

Location:

The fuse compartment is located above the power supply connector.

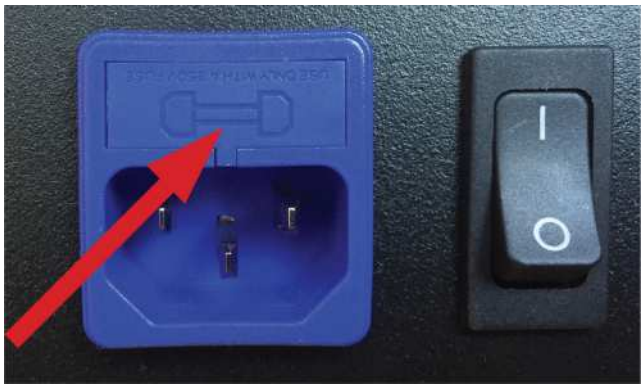

Image 18-3

Spare fuse location:

A spare fuse is available in the fuse compartment.

Image 18-4

It is strongly recommended to quickly buy a new fuse when the spare fuse is used.

How to change power supply fuse:

1. Note the open slot under the fuse compartment.

Image 18-5

2. Use a small flat blade screwdriver to open the fuse compartment.

Image 18-6

3. Change the fuse. Fuse should be installed in the fuse holder as shown:

Image 18-7

4. Replace the fuse compartment in its location.

EC-200/EC-210 Maintenance

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19.1 Servicing 526

About this chapter

This chapter describes how to service the EC-200/EC-210 controller.

19.1 Servicing

General

Given the low failure rate experienced on this device, it is extremely rare to have to change parts on the EC-200/EC-210 controller.

In the unlikely event your EC series controller requires service, please refer to the Return Material Authorization section in this manual prior to sending the unit back to the Barco Service Department.

The only part that the user may have to change by himself is the work light . The work light is a spare part provided by Barco (see spare parts list below).

EC-200/EC-210 Overview

Orientation and main components.

The images in this chapter show the EC-200, but they apply, as well, to the EC-210. The EC-200 and EC-210 are basically the same product.

Front:

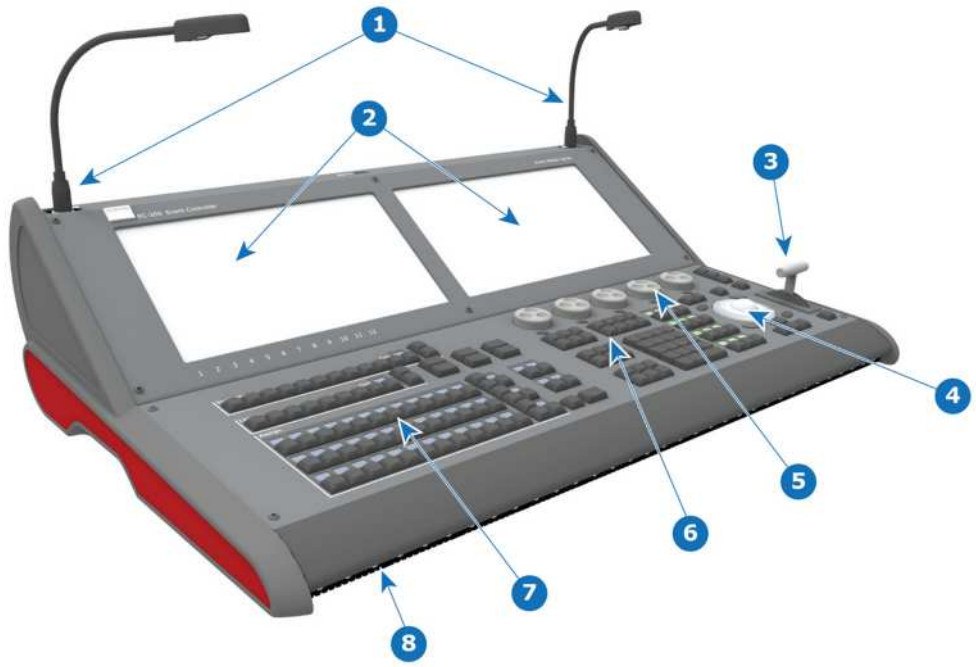

Image 19-1: EC-200/EC-210 controller (Front view)

1 Work lights
2 Touch screens
3 T-bar
4 Mouse + arrow buttons
5 Rotary knobs
6 Function buttons, Top Functions and Numpad
7 Buttons of presentation (Destinations, Layers,...)
8 Front LED Lights

Rear:

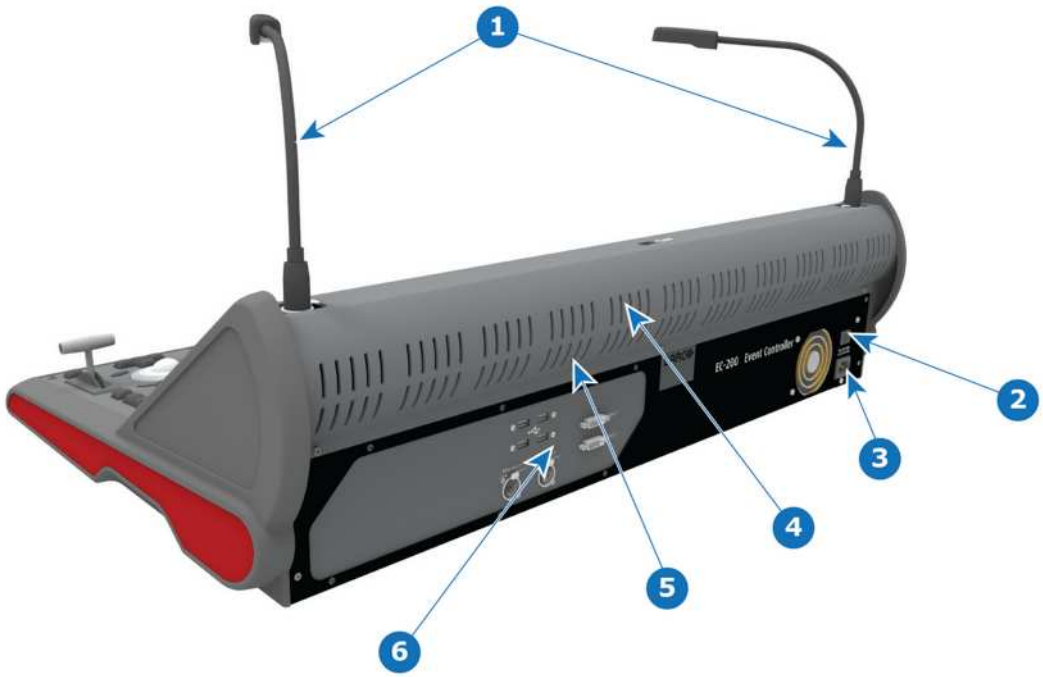

Image 19-2: EC-200/EC-210 controller (Rear view)

1 Work lights
2 Power switch
3 Power connector
4 Rear Fan (Located behind rear vent holes)
5 Rear LED Lights (Located behind rear vent holes)
6 Communication connectors

EC-200/EC-210 Spare Parts list

P/N	Description	Comments
R767327K	KIT DESKLIGHT EC-50	1x work light (flexible support with XLR connection)

Environmental information

20

20.1 Disposal information 530
20.2 RoHS compliance 530
20.3 Contact information 531

20.1 Disposal information

Disposal Information

Waste Electrical and Electronic Equipment

This symbol on the product indicates that, under the European Directive 2012/19/EU governing waste from electrical and electronic equipment, this product must not be disposed of with other municipal waste. Please dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.

For more information about recycling of this product, please contact your local city office or your municipal waste disposal service.

For details, please visit the Barco website at: *http://www.barco.com/AboutBarco/weee*

Disposal of batteries in the product

This product contains batteries covered by the Directive 2006/66/EC which must be collected and disposed of separately from municipal waste.

If the battery contains more than the specified values of lead (Pb), mercury (Hg) or cadmium (Cd), these chemical symbols will appear below the crossed-out wheeled bin symbol.

By participating in separate collection of batteries, you will help to ensure proper disposal and to prevent potential negative effects on the environment and human health.

20.2 RoHS compliance

中国大陆 RoHS (Chinese Mainland RoHS)

根据中国大陆《电器电子产品有害物质限制使用管理办法》（也称为中国大陆RoHS），以下部分列出了Barco产品中可能包含的有毒和/或有害物质的名称和含量。中国大陆RoHS指令包含在中国信息产业部MCV标准："电子信息产品中有毒物质的限量要求"中。

According to the "Management Methods for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products" (Also called RoHS of Chinese Mainland), the table below lists the names and contents of toxic and/or hazardous substances that Barco's product may contain. The RoHS of Chinese Mainland is included in the MCV standard of the Ministry of Information Industry of China, in the section "Limit Requirements of toxic substances in Electronic Information Products".

零件项目(名称) Component Name	有毒有害物质或元素 Hazardous Substances or Elements					
	铅 Pb	汞 Hg	镉 Cd	六价铬 Cr6+	多溴联苯 PBB	多溴二苯醚 PBDE
印制电路配件 Printed Circuit Assemblies	X	O	O	O	O	O
外接电(线)缆 External Cables	X	O	O	O	O	O
散热片(器) Heatsinks	O	O	O	O	O	O
底架	O	O	O	O	O	O

零件项目(名称) Component Name	有毒有害物质或元素 Hazardous Substances or Elements					
	铅 Pb	汞 Hg	镉 Cd	六价铬 Cr6+	多溴联苯 PBB	多溴二苯醚 PBDE
Chassis						
电源供应器 Power Supply Unit	X	O	O	O	O	O
风扇 Fan	X	O	O	O	O	O
电池(组) Batteries	X	O	O	O	O	O
螺帽,螺钉(栓),螺旋(钉),垫圈, 紧固件 Nuts, bolts, screws, washers, Fasteners	O	O	O	O	O	O

本表格依据SJ/T 11364的规定编制

This table is prepared in accordance with the provisions of SJ/T 11364.

O: 表示该有毒有害物质在该部件所有均质材料中的含量均在 GB/T 26572 标准规定的限量要求以下.

O: Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in GB/T 26572.

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 标准规定的限量要求.

X: Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in GB/T 26572.

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All Electronic Information Products (EIP) that are sold within Chinese Mainland must comply with the “Marking for the restriction of the use of hazardous substances in electrical and electronic product” of Chinese Mainland, marked with the Environmental Friendly Use Period (EFUP) logo. The number inside the EFUP logo that Barco uses (please refer to the photo) is based on the “General guidelines of environment-friendly use period of electronic information products” of Chinese Mainland.

Turkey RoHS compliance

Türkiye Cumhuriyeti: AEEE Yönetmeliğine Uygundur.

[Republic of Turkey: In conformity with the WEEE Regulation]

20.3 Contact information

Sales and importers

To find your local Barco Sales representative or your local importer, contact Barco directly, or contact one of Barco's regional offices via the contact information given on the Barco web site, www.barco.com.

Factories

Barco Inc.
3000 Technology Road
Angleton, TX 77515
USA

Production date

The month and year of production is indicated on the product ID label on the product itself.

Specifications

A

About this annex

This chapter gives an overview of the specifications of the Event Master devices.

A.1 Specifications of E2

R9004799 – E2 Specifications

Model	NGS-4U
Live effects canvas	• Up to 20 Megapixels PVW/PGM • 40 Megapixels PGM only • 80 Megapixels @30p and PGM only
Video inputs	32 inputs via 8 input cards (Event Master Series 1 cards) • Up to 8 x 4K inputs - each input card supports up to 1 x 4K@60p • 12 x SD/HD/3G SDI • 10 x HDMI 1.4a (297 Mpix/sec max) • 10 x DisplayPort 1.1 (300 Mpix/sec max)
Video outputs	14 outputs via 4 output cards (Event Master Series 1 cards) • Up to 3 x 4K outputs - each output card supports up to 1 x 4K@60 p • 4 x SD/HD/3G SDI • 8 x HDMI 1.4a (297 Mpix/sec max) • 2 x HDMI 1.4a for Multiviewer (297 Mpix/sec max)
Genlock	Analog reference input/loop on BNC connectors; bi-level and blackburst at SD and tri-level at HD S3D Sync: 4x input Din connector, 2x output Din connector
Program output	Up to 16 program outputs configurable as single screens or tiled/blended widescreens (preview and Multi-Viewer not available in all configurations) • Configurable for up to 16x 2048X1200@60 or up to 4x 4096x2400@60 • Independent edge blending/feathering control for all four sides
Program scaling (PiP/Key) layers	• Native resolution background mixer per output screen • Independent layer transitions or full Preview/Program transition • Flexible layer allocation – 16 mixable or 32 single scalable PIP/key layers assignable to any Program output screen
Scaled Aux outputs	• User definable for up to 16 x 2048x1200@60 or up to 4 x 4K@60 • All outputs can be defined as Aux destinations for a total of 16 Aux outputs • Output color correction (Preview and Multiviewer not available in all configurations.)
Still stores	Up to 100 HD or 25 UHD, depending on the import file size.
Layer effects	• Borders (hard, soft, halo) and drop shadows • Color effects • Strobe, H&V flip • Luma, chroma and Cut/Fill keys (not all modes support keying) • PIP moves via Keyframes
Multiviewer	• Flexible user-definable layouts • Monitor all Inputs and Outputs, including Preview and Aux • Two outputs
Expandability	• Easily expandable for larger display applications via non-proprietary links • Link units to increase available Inputs and Outputs for larger tiled/ blended widescreen applications • Expansion via simple linking – up to 8 chassis • E2 ships with the ability to link 8 chassis for expansion.
HDCP	HDCP compliance determined by installed cards.

Control	• Event Master screen management software for PC or MAC • Event Master controllers • WebUI • Ethernet RJ-45, 1000/100/10 Mbps autosense
Serviceability	• Field-serviceable I/O and processing cards (not hot-swappable) • Hot-swappable dual-redundant power supplies
Noise level	Max 52.9 dB avg. Fans at 100%. Fan speed is software-managed based on operating temperature. Reference ISO 7779.
Dimensions	• Height: 17.8 cm (7.0 in) – 4 RU rackmount • Width: 43.2 cm (17 in) without chassis handles, 48.3 cm (19 in) with chassis handles attached • Depth: 56.9 cm (22.4 in) from front panel to rear panel, 62.2 cm (24.5 in) overall
Weight	31 kg / 68 lbs
Power	• Input power: 100–240 VAC 50/60Hz 826W • Ships with dual-redundant, hot-swappable power supplies
Warranty	3 years parts and labor
Environmental temperature	0–40° C / 32–104° F
Environmental humidity	0–95% non-condensing

A.2 Specifications of E2 Jr.

R9004777 – E2 Jr. Specifications

Model	NGS-4U
Live effects canvas	• Up to 10 Megapixels PVW/PGM • 20 Megapixels PGM only • 40 Megapixels @30p and PGM only
Video inputs	16 inputs via 4 input cards (Event Master Series 1 cards) • Up to 4 x 4K inputs - each input card supports up to 1 x 4K@60p • 4 x SD/HD/3G SDI • 6 x HDMI 1.4a (297 Mpix/sec max) • 6 x DisplayPort 1.1 (300 Mpix/sec max)
Video outputs	10 outputs via 3 output cards (Event Master Series 1 cards) • Up to 2 x 4K outputs - each output card supports up to 1 x 4K@60 p • 4 x SD/HD/3G SDI • 4 x HDMI 1.4a (297 Mpix/sec max) • 2 x HDMI 1.4a for Multiviewer (297 Mpix/sec max)
Genlock	Analog reference input/loop on BNC connectors; bi-level and blackburst at SD and tri-level at HD S3D Sync: 4x input Din connector, 2x output Din connector
Program output	Up to 8 program outputs configurable as single screens or tiled/blended widescreens (preview and Multi-Viewer not available in all configurations) • Configurable for up to 8x 2048X1200@60 or up to 2x 4096x2400@60 • Independent edge blending/feathering control for all four sides
Program scaling (PiP/Key) layers	• Native resolution background mixer per output screen • Independent layer transitions or full Preview/Program transition

	• Flexible layer allocation – up to 8 mixable or 16 single scalable PIP/key layers assignable to Program output screens
Scaled Aux outputs	• User definable for up to 4 x 2048x1200@60 or up to 1 x 4K@60 • All outputs can be defined as Aux destinations for a total of 8 Aux outputs • Output color correction (Preview and Multiviewer not available in all configurations.)
Still stores	Up to 100 HD depending on the import file size.
Layer effects	• Borders (hard, soft, halo) and drop shadows • Color effects • Strobe, H&V flip • Luma key • PIP moves via Keyframes
Multiviewer	• Flexible user-definable layouts • Monitor all Inputs and Outputs, including Preview and Aux • Two outputs • Dedicated hardware, same as E2 Event Master processors
Expandability	Linking is available as an upgrade option.
HDCP	HDCP compliance determined by installed cards.
Control	• Event Master screen management software for PC or MAC • Ethernet RJ-45, 1000/100/10 Mbps autosense • Field-Serviceable I/O and processing cards (not hot-swappable) • Hot-swappable dual-redundant power supplies
Serviceability	• Field-serviceable I/O and processing cards (not hot-swappable) • Hot-swappable dual-redundant power supplies
Noise level	Max 52.9 dB avg. Fans at 100%. Fan speed is software-managed based on operating temperature. Reference ISO 7779.
Dimensions	• Height: 17.8 cm (7.0 in) – 4 RU rackmount • Width: 43.2 cm (17 in) without chassis handles, 48.3 cm (19 in) with chassis handles attached • Depth: 56.9 cm (22.4 in) from front panel to rear panel, 62.2 cm (24.5 in) overall
Weight	27.8 kg / 61 lbs
Power	• Input power: 100–240 VAC 50/60Hz 700W • Ships with dual-redundant, hot-swappable power supplies
Warranty	3 years parts and labor
Environmental temperature	0–40° C / 32–104° F
Environmental humidity	0–95% non-condensing

A.3 Specifications of E2 Gen 2

R9009203 – E2 Gen 2 Specifications

Model	NGS-4U-V2
Live effects canvas	• Up to 20 Megapixels PVW/PGM • 40 Megapixels PGM only • 80 Megapixels @30p and PGM only

Video inputs	40 inputs via 8 input cards (Event Master Series 2 cards) • Up to 16 x 4K inputs or up to 40 HD inputs – each input card supports up to 2 x 4K@60p • 16 x SD/HD/3G/6G/12G SDI connectors • 12 x HDMI 2.0 (600 MHz max) • 12 x DisplayPort 1.2 (660 MHz max)
Video outputs	18 output connectors among 4 output cards (Event Master series 2 cards) • Up to 8 x 4K outputs (depending on configuration) – each output card supports up to 2 x 4K@60p • 4 x SDI (SD/HD/3G/6G/12G) • 13 x HDMI 2.0 (up to 600 MHz) • 1 x DisplayPort 1.2 (up to 660 MHz) **NO MVR:** Up to 8 x 4K60p outputs **WITH MVR:** Up to 6x 4K60p outputs and either 4x HDMI for FHD Multiviewers (1920x1200 max) OR 1x HDMI for UHD/4K60p Multi-viewer
Genlock	Analog reference input/loop on BNC connectors; bi-level and blackburst at SD and tri-level at HD S3D Sync: 4x input Din connector, 2x output Din connector
Program output	Up to 16 program outputs configurable as single screens or tiled/blended widescreens (preview and Multiviewer not available in all configurations) • Configurable for up to 16 x 2048X1200@60 or up to 8 x 4096x2400@60 • Independent edge blending/feathering control for all four sides
Program scaling (PiP/Key) layers	• Native resolution background mixer per output screen • Independent layer transitions or full Preview/Program transition • Flexible layer allocation – 16 mixable or 32 single scalable PIP/key layers assignable to any Program output screen
Scaled Aux outputs	• User definable for up to 18 x 2048x1200@60 or up to 8 x 4K@60 • All outputs can be defined as Aux destinations for a total of 18 Aux outputs • Output color correction (Preview and Multiviewer not available in all configurations.)
Still stores	Up to 100 HD or 25 UHD, depending on the import file size.
Layer effects	• Borders (hard, soft, halo) and drop shadows • Color effects • Strobe, H&V flip • Luma, chroma and Cut/Fill keys (not all modes support keying) • PIP moves via Keyframes
Multiviewer	• Flexible user-definable layouts • Monitor all Inputs and Outputs, including Preview and Aux • Two outputs • Dedicated hardware same as E2 Event Master processors
Expandability	• Easily expandable for larger display applications via non-proprietary links • Link units to increase available Inputs and Outputs for larger tiled/blended widescreen applications • Expansion via simple linking – up to 8 chassis • E2 ships with the ability to link 8 chassis for expansion.
HDCP	HDCP compliance determined by installed cards.
Control	• Event Master screen management software for PC or MAC • Event Master controllers

	• WebUI • Ethernet RJ-45, 1000/100/10 Mbps autosense
Serviceability	• Field-serviceable I/O and processing cards (not hot-swappable) • Hot-swappable dual-redundant power supplies
Noise level	Max 52.9 dB avg. Fans at 100%. Fan speed is software-managed based on operating temperature. Reference ISO 7779.
Dimensions	• Height: 17.8 cm (7.0 in) – 4 RU rackmount • Width: 43.2 cm (17 in) without chassis handles, 48.3 cm (19 in) with chassis handles attached • Depth: 56.9 cm (22.4 in) from front panel to rear panel, 62.2 cm (24.5 in) overall
Weight	31 kg / 68 lbs
Power	• Input power: 100–240 VAC 50/60Hz 826W • Ships with dual-redundant, hot-swappable power supplies
Warranty	3 years parts and labor
Environmental temperature	0–40° C / 32–104° F
Environmental humidity	0–95% non-condensing

A.4 Specifications of S3–4K

R9004757 – S3–4K Specifications

Model	NGS-3U / NGS-3U BTO
Live effects canvas	• Up to 20 Megapixels PVW/PGM • 40 Megapixels PGM only
Video inputs	12 HD inputs via 3 input cards (Event Master Series 1 cards) • Up to 3 x 4K inputs – each input card supports up to 1 x 4K@60p • 4 x SD/HD/3G SDI • 4 x HDMI 1.4a (297 Mpix/sec max) • 4 x DisplayPort 1.1 (300 Mpix/sec max)
Video outputs	12 HD outputs via 3 output cards (Event Master Series 1 cards) • Up to 3 x 4K outputs – each output card supports up to 1 x 4K@60p • 4 x SD/HD/3G SDI – 4 x HDMI 1.4a (297 Mpix/sec max) • 4 x HDMI 1.4a (297 Mpix/sec max) • 2 x HDMI 1.4a for Multiviewer (297 Mpix/sec max) (4 x HDMI 1.4a when used as standard output card)
Genlock	Analog reference input/loop on BNC connectors; bi-level and blackburst at SD and tri-level at HD S3D Sync: 4x input Din connector, 2x output Din connector
Program output	8 program outputs configurable as single screens or tiled/blended widescreens • Configurable from 8 x 2048X1200@60 max to 2 x 4096x2400@60 max • Independent edge blending/feathering control for all four sides
Program scaling (PiP/Key) layers	• Native resolution background mixer per output screen • Independent layer transitions or full Preview/Program transition • Flexible layer allocation – 4 mixable or 8 single scalable PIP/key layers assignable to any Program output screen
Scaled Aux outputs	• User definable from 8 x 2048x1200@60 to 2 x 4K@60

	• Output color correction
Still stores	Up to 100 HD or 25 UHD, depending on the import file size.
Layer effects	• Borders (hard, soft, halo) and drop shadows • Color effects • Strobe, H&V flip • Luma, chroma and Cut/Fill keys (not all modes support keying) • PIP moves via Keyframes
Multiviewer	• Flexible user-definable layouts • Monitor all Inputs and Outputs, including Preview and Aux • Two outputs • Dedicated hardware same as E2 Event Master processors
Expandability	• Easily expandable for larger display applications via non-proprietary links • Link units to increase available Inputs and Outputs for larger tiled/ blended widescreen applications • Expansion via simple linking – up to 8 chassis
HDCP	HDCP compliance determined by installed cards.
Control	• Event Master screen management software for PC or MAC • Event Master controllers • WebUI • Ethernet RJ-45, 1000/100/10 Mbps autosense
Serviceability	• Field-serviceable I/O and processing cards (not hot-swappable) • Hot-swappable dual-redundant power supplies
Noise level	Max 51.3 dB avg. Fans at 100%. Fan speed is software-managed based on operating temperature. Reference ISO 7779.
Dimensions	• Height: 13.26 cm (5.22 in) – 3 RU rackmount • Width: 43.2 cm (17 in) without chassis handles, 48.3 cm (19 in) with chassis handles attached • Depth: 54 cm (21.33 in) overall
Weight	21.3 kg / 47 lbs
Power	• Input power: 100–240 VAC 50/60Hz 826W • Ships with single power supply. Optional Dual-redundant, hot-swappable power supplies available as upgrade.
Warranty	3 years parts and labor
Environmental temperature	0–40° C / 32–104° F
Environmental humidity	0–95% non-condensing

A.5 Specifications of S3–4K Jr.

R9004778 – S3–4K Jr. Specifications

Model	NGS-3U
Live effects canvas	• Up to 10 Megapixels PVW/PGM • 20 Megapixels PGM only
Video inputs	8 HD inputs via 2 input cards (Event Master Series 1 cards) • Up to 2 x 4K inputs – each input card supports up to 1 x 4K@60p • 4 x SD/HD/3G SDI

	• 2 x HDMI 1.4a (297 Mpix/sec max) • 2 x DisplayPort 1.1 (300 Mpix/sec max)
Video outputs	8 HD outputs via 2 output cards (Event Master Series 1 cards) • Up to 1 x 4K outputs – each output card supports up to 1 x 4K@60p • 4 x HDMI 1.4a (297 Mpix/sec max) • 2 x HDMI 1.4a for Multiviewer (297 Mpix/sec max) (4 x HDMI 1.4a when used as standard output card)
Genlock	Analog reference input/loop on BNC connectors; bi-level and blackburst at SD and tri-level at HD S3D Sync: 4x input Din connector, 2x output Din connector
Program output	4 program outputs configurable as single screens or tiled/blended widescreens • Configurable from 4 x 2048X1200@60 max to 1 x 4096x2400@60 max • Independent edge blending/feathering control for all four sides
Program scaling (PiP/Key) layers	• Native resolution background mixer per output screen • Independent layer transitions or full Preview/Program transition • Flexible layer allocation – 2 mixable or 4 single scalable PIP/key layers assignable to any Program output screen
Scaled Aux outputs	• User-definable from 4 x 2048x1200@60 to 1 x 4K@60 • All outputs can be defined as Aux destinations for a total of 8 Aux outputs • Output color correction
Still stores	Up to 100 HD or 25 UHD, depending on the import file size.
Layer effects	• Borders (hard, soft, halo) and drop shadows • Color effects • Strobe, H&V flip • Luma, chroma and Cut/Fill keys (not all modes support keying) • PIP moves via Keyframes
Multiviewer	• Flexible user-definable layouts • Monitor all Inputs and Outputs, including Preview and Aux • Two outputs • Dedicated hardware same as E2 Event Master processors
Expandability	Linking is available as an upgrade option.
HDCP	HDCP compliance determined by installed cards.
Control	• Event Master screen management software for PC or MAC • Event Master controllers • WebUI • Ethernet RJ-45, 1000/100/10 Mbps autosense
Serviceability	• Field-serviceable I/O and processing cards (not hot-swappable) • Hot-swappable dual-redundant power supplies (optional)
Noise level	Max 51.3 dB avg. Fans at 100%. Fan speed is software-managed based on operating temperature. Reference ISO 7779.
Dimensions	• Height: 13.26 cm (5.22 in) – 3 RU rackmount • Width: 43.2 cm (17 in) without chassis handles, 48.3 cm (19 in) with chassis handles attached • Depth: 54 cm (21.33 in) overall
Weight	21.3 kg / 47 lbs
Power	• Input power: 100–240 VAC 50/60Hz 700W

	• Ships with single power supply. Optional Dual-redundant, hot-swappable power supplies available as upgrade.
Warranty	3 years parts and labor
Environmental temperature	0–40° C / 32–104° F
Environmental humidity	0–95% non-condensing

A.6 Specifications of EX

R9004776 – EX Specifications

Model	NGS-1U
Live effects canvas	When linked to an E2 or S3 and VPU cards are installed, supports up 20 Megapixels PVW/PGM or 40 megapixels PGM only, in addition to master processor.
Video inputs	Two card slots which can be either input or output: • Up to 8 inputs using any of the Event Master input cards • Inputs can be distributed to other processors via the link cable or to a locally installed output card.
Video outputs	Two card slots which can be either input or output: • Up to 8 outputs using any of the Event Master output cards • Sources for the outputs can be from remote systems via the link connection or from a locally installed input card.
Genlock	Analog reference input on BNC connectors; Blackburst and Bi-level at SD, and Tri-level at HD. Reference output is provided by an internal sync generator capable of Bilevel and Tri-level sync signals.
Program output	Up to 8 program outputs for destinations created in a linked E2 or S3-4K processor.
Program scaling (PiP/Key) layers	When linked to an E2 or S3 and VPU cards are installed, supports up to 4 x HD mixers, 8 x HD pips, 1 x 4K mixer, or 2 x 4K pips.
Scaled Aux outputs	• User-definable up to 8 x 2048x1200@60 or 2 x 4K@60 • Output color correction
Still stores	Up to 100 HD or 25 UHD, depending on the import file size.
Layer effects	Determined by Master processor.
Multiviewer	N/A
Expandability	• Easily expandable for larger display applications via non-proprietary links • Link units to increase available inputs and outputs for larger tiled/ blended widescreen applications • Two Ex chassis can be linked for standalone operation • S3-4K supports up to 4 Ex chassis linked (16 inputs and 16 outputs of HD video) • E2 supports up to 8 Ex chassis that are linked. (32 inputs and 32 outputs of HD video)
HDCP	HDCP compliance determined by installed cards.
Control	• Event Master screen management software for PC or MAC • Event Master controllers • WebUI • Ethernet RJ-45, 1000/100/10 Mbps autosense

Serviceability	Field-serviceable I/O and processing cards (not hot-swappable)
Noise level	37 dBA Nominal / 45 dBA Max Fan speed is software managed based on operating temperature. Reference ISO 7779.
Dimensions	• Height: 4.37 cm (1.72 in) 1 RU rackmount • Width: 48.41 cm (19.06 in), including rackmount • Depth: 40.41 cm (15.91 in)
Weight	5.53 kg / 12.2 lbs
Power	Input power: 100–240 VAC 50/60Hz 125W
Warranty	3 years parts and labor
Environmental temperature	0–40° C / 32–104° F
Environmental humidity	0–95% non-condensing

A.7 Specifications of EC-30

R9004783 – EC-30 Specifications

Connectivity	USB connection from Event Master Toolset host computer (OSX or Windows 7 and higher)
Dimensions (HxWxD)	105.4 x 465.6 x 321 mm (4.15 x 18.33 x 12.63 inches)
Weight	3.18 kg (7 lbs)

A.8 Specifications of EC-50

R9004772 – EC-50 Specifications

Connectivity	USB connection from Event Master Toolset, from a control computer DVI input for touchscreen monitor
Dimensions (HxWxD)	244.34 x 511.56 x 610.05 mm (9.62 x 20.14 x 24.02 inches)
Weight	12.33 kg (27.2 lbs)

A.9 Specifications of EC-200

R9004771 – EC-200 Specifications

Features	• Robust Linux version of Event Master Toolset – same user interface used on Mac and PC • Onboard PC running Linux to support a purpose-built version of Event Master toolset, enabling stand-alone usage • Full control over the Event Master Series switchers • Simultaneous connection of multiple controllers, GUI interfaces, and processors supported on same network. (Redundant backups of control) • 2 x internal 15.6-inch wide screen full HD (1,920x1,080) touchscreens with 10 point multi touch • 2 x external monitors or touchscreens supported* • High-resolution T-Bar for manual transitions • 36 user-assignable buttons with customizable LCD labels • Dedicated Background layer button • 8 dedicated Layer selection buttons with multi-page functionality (shift pages for destinations with 9 or more layers) • 12 user-definable Destination buttons with multi-page functionality (easily supports all the available destinations) • Dedicated buttons for transition, live switching, modifying program, transitions, etc. • 5 rotary encoders with wheels for ergonomic pip control and rapid placement of resources • 12 LCD Contextual Display Buttons to support the Syntax Programmer • Tri-axis backlit trackball (based on function), with a very smooth rotary encoder for the third axis and 4 buttons for cursor and position control • 2 separate gigabit Ethernet network interface connections, one for Primary system control, and one for supplemental network control (additional IP address range and mode) • Internal Solid State Hard drive • 5 USB ports for additional accessories such as external touchscreens, mouse, keyboard, thumbdrive, etc. • Script lights, feedback LEDs, and integrated work lights – all dimmable • Dust cover included • Custom road case included
Connectivity	• Controls multiple Event Master Series systems, including E2 and S3–4K • Allows for an external control system to interact over a separate network interface • Two additional DVI outputs for monitors to increase workspace • Auto-ranging mains input (90-250VAC) • External pointing device and Keyboards supported over USB
Dimensions (HxWxD)	244.34 x 901.19 x 575.36 mm (9.62 x 35.49 x 22.65 inches)
Weight	20.41 kg (45 lbs)
Temperature	0–35° C / 32–95° F
Humidity	0–95% non-condensing
***Note**	The EC-200 DVI-D monitor connections do not support analog output. Digital displays or digital to analog converters are required.

A.10 Specifications of EC-210

R9004790 – EC-210 Specifications

Features	• Robust version of Event Master Toolset – same user interface used on Mac and PC • Onboard processing section that is purpose-built to run Event Master toolset, enabling stand-alone usage. EC-210 processing section has been upgraded; the EC-200 is upgradeable to the EC-210 processor. (Users will experience faster performance with most tasks.) • Full control over the Event Master Series processors • Simultaneous connection of multiple controllers, GUI interfaces, and processors supported on same network. (Redundant backups of control) • 2x internal 15.6-inch wide screen full HD (1,920x1,080) touchscreens with multi touch interface • 1x external HDMI output supporting up to 2560x1080 • External input for the left side internal screen. External HDMI video signals up to HD resolution. (Typical sources are Multi-viewer or Aux output from Event Master.) • High-resolution T-Bar for manual transitions • 36 user-assignable instant selection buttons with customizable LCD labels and multiple pages of assignments. (3 buses assignable as presets, cues, sources, backgrounds, or user keys) • Dedicated Background layer button and 8 dedicated Layer selection buttons with multi-page selection. (Change pages for destinations with 9 or more layers) • Dedicated layer transition and function buttons. (Trans, Cut, Freeze, etc.) • 12 user-definable Destination buttons with multiple pages of assignments (easily supports all the available destinations) • Dedicated buttons for transitioning all selected destinations, live switching, modifying program, etc. • Play/Pause and Stop button for Cues • 5 rotary encoders with wheels for ergonomic pip control and rapid placement of resources • 12 LCD Contextual Display Buttons to support the Syntax Programmer • Tri-axis backlit trackball (based on function), with a very smooth rotary encoder for the third axis and 4 buttons for cursor and position control (future software release) • Internal, board mounted M2 SSD • 5 USB ports for additional accessories such as mouse, keyboard, thumbdrive, etc. • Script lights, feedback LEDs, and integrated work lights – with user controlled dimming • Power button for soft shutdown and restart of the system • Back up and restore of system via USB or WebUI • Integrated WebUI for software upgrades • Dust cover included • Custom road case included
Connectivity	• Controls multiple Event Master Series systems, including E2, S3-4K, and EX • Additional HDMI output to increase workspace • HDMI input for external video sources • Auto-ranging mains input (90–250VAC) • External pointing device and keyboards supported over USB

	• 2 separate gigabit Ethernet network interface connections, one for primary system control, and one for supplemental network (additional IP address range and mode)
Dimensions (HxWxD)	244.34 x 901.19 x 575.36 mm (9.62 x 35.49 x 22.65 inches)
Weight	20.41 kg (45 lbs)
Temperature	0–35° C / 32–95° F
Humidity	0–95% non-condensing
***Note**	The EC-210 HDMI monitor connections do not support analog output. Digital displays or active digital to analog converters are required.

A.11 Specifications of the CXP I/O card

R9004797 – CXP I/O card specifications

Connectors	1x CXP (120G)

A.12 Specifications of the Expansion Link card

R9004746 – Expansion Link card specifications

Connectivity	• Used for linking Event Master processors for expansion • Uses CXP cable for connections • Can be converted to MTP fiber optic cable to 300 m

A.13 Specifications of the S3 VPU card

R9004758 – S3 VPU card specifications

No specifications found.

A.14 Specifications of the SDI input card (Gen 1)

R9004742 – SDI input card specifications

HDCP	HDCP mode is not applicable to SDI inputs or outputs.
Capacity	Supports up to 4x 1080p@60 or 1x 4K@60p (4 quadrant or 2Si formats) per card.
Input	Each connector supports up to SMPTE 2K (2048x1080p60), 4:2:2, 10 bit.

A.15 Specifications of the SDI output card (Gen 1)

R9004741 – SDI output card specifications

HDCP	HDCP mode is not applicable to SDI inputs or outputs.
Capacity	Supports up to 4x 1080p@60 or 1x 4K@60p (4 quadrant or 2Si formats) per card.
Output	Each connector supports up to SMPTE 2K (2048x1080p60), 4:2:2, 10 bit.

A.16 Specifications of the DP/HDMI input card (Gen 1)

R9004744 – DP/HDMI input card specifications

HDCP	DisplayPort 1.1 supports HDCP version 1.3. HDMI 1.4 supports HDCP version 1.4.
Capacity	DP 1.1 input and HDMI 1.4 input support up to 4x 1200p@60, or 1x 4K@60p/ UHD per card (dual cable).
DisplayPort Input	Up to RGB, 4:4:4, 12 bit; or YCbCr, 4:4:4, 12 bit; (up to 300 Mpix/s)
HDMI Input	Up to RGB, 4:4:4, 12 bit; or YCbCr, 4:4:4, 12 bit; (up to 297 Mpix/s)

A.17 Specifications of the HDMI output card (Gen 1)

R9004743 – HDMI output card specifications

HDCP	HDMI 1.4 supports HDCP version 1.4.
Capacity	Supports up to 4x 1200p@60 4:4:4, 2x 4K/UHD@30 4:4:4, or 1x 4K@60p/ UHD 4:4:4 per card (dual cable).
HDMI Output	Up to RGB, 4:4:4, 12 bit; or YCbCr, 4:4:4, 12 bit; (up to 297 Mpix/s)

A.18 Specifications of the HDMI 2.0 quad input card (Gen 2)

R9004791 – HDMI 2.0 quad input card specifications

HDCP	Supports HDCP 2.2 content Type 0 and Type 1 when a 2.2 compliant output is available (backwards-compatible with HDCP 1.x).
Capacity	2x UHD@60p (HDMI 2.0) or 4x WQXGA@60p (HDMI1.4a) inputs per card (when used in a dual capacity input slot)
Input	UHD@60p 8-bit 4:4:4 or UHD@60p 10-bit 4:2:2 – up to 600 Mpix/s

A.19 Specifications of the HDMI 2.0 quad output card (Gen 2)

R9004792 – HDMI 2.0 quad output card specifications

HDCP	Supports HDCP 2.2 content when an HDCP 2.2 compliant signal chain is present (backwards-compatible with HDCP 1.x).
Capacity	2x UHD@60p or 4x high-speed (Dual Link Type) outputs per card
Output	• Supports up to UHD@60p 12-bit 4:2:2 per card. • Supports 4x 1200p@60 4:4:4, 4x 4K/UHD@30 4:4:4, or 2x 4K@60p/ UHD 4:4:4 per card. • Up to 600 Mpix/s

A.20 Specifications of the Quad DP 1.2 input card (Gen 2)

R9004793 – Quad DP 1.2 input card specifications

HDCP	Supports HDCP version 1.3 on all input connectors.
Capacity	Supports 4x 1200p@60 4:4:4, 4x 4K/UHD@30 4:4:4, or 2x 4K@60p/UHD 4:4:4 per card (single cable) in '8L' slot.
Input	DP1.2 input supports up to UHD@60p, 4:4:4, 10 bit, (up to 660 Mpix/s).

A.21 Specifications of the Quad DP 1.2 output card (Gen 2)

R9004765 – Quad DP 1.2 output card specifications

HDCP	Supports HDCP version 1.3 on on connectors 1 and 2.
Capacity	Supports 4x 1200p@60 4:4:4, 4x 4K/UHD@30 4:4:4, or 2x 4K@60p/UHD 4:4:4 per card (single cable).
Output	DP 1.2 output supports up to UHD@60p, 4:4:4, 10 bit, (up to 660 Mpix/s)

A.22 Specifications of the 4K60 Tri-Combo input card (Gen 2)

R9004785 – 4K60 Tri-Combo input card specifications

HDCP	DP1.2 supports HDCP 1.3; HDMI 2.0 supports HDCP 1.4 and HDCP 2.2.
Capacity	1x 4K@60p, 2x high-speed (dual link type), or 4x HD outputs per card
SDI Input	• 12G-SDI supports up to UHD@60p, 4:2:2, 10 bit. • Quad SDI 4K/UHD and 2SI (2 sample interleave) 4K/UHD formats
DisplayPort Input	DP1.2 input supports up to UHD@60p, 4:4:4, 10 bit, (up to 660 Mpix/s).
HDMI Input	HDMI 2.0 input supports up to UHD@60p, 4:4:4, 8 bit (up to 600 Mpix/s).

A.23 Specifications of the 4K60 Tri-Combo output card (Gen 2)

R9004786 – 4K60 Tri-Combo output card specifications

HDCP	DP1.2 supports HDCP 1.3; HDMI 2.0 supports HDCP 1.4 and HDCP 2.2.
Capacity	1x 4K@60p, 2x high-speed (dual link type), or 4x HD outputs per card
SDI Output	• 12G-SDI supports UHD@60p, 4:2:2, 10 bit. • Quad SDI 4K/UHD and 2SI (2 sample interleave) 4K/UHD formats
DisplayPort Output	DP 1.2 output supports up to UHD@60p, 4:4:4, 10 bit, (up to 660 Mpix/s).
HDMI Output	HDMI 2.0 output supports up to UHD@60p, 4:4:4, 8 bit, (up to 600 Mpix/s).

A.24 Specifications of standard connections

Standard connection specifications

DisplayPort (DP)	• Per DP 1.1a specification • On DP connector • Formats up to 2,560 × 1,600 at 60 Hz and 3,840 × 1,200 at 60 Hz (30 bits) • 4K/UHD supported: - 3,840 × 2,160/23.98/24/25/29.97/30 via 1x DP, 2x DP (L and R half), or 4x DP (quadrants) - 3,840 × 2,160/50/59.94/60 via 2x DP (L and R half) or 4x DP (quadrants) - 4,096 × 2,160/23.98/24/25/29.97/30 via 1x DP, 2x DP (L and R half) or 4x DP (quadrants) - 4,096 × 2,160/50/59.94/60 via 2x DP (L and R half) or 4x DP (quadrants) - 4,096 × 2,400/23.98/24/25/29.97/30/50/59.94/60 via 2x DP (L and R half) or 4x DP (quadrants) • EDID version 1.3 compatible • HDCP version 1.4 compatible
DVI	• Per DVI 1.0 specification • DVI Digital video on DVI-I connector • All single-link DVI formats up to 165 MHz • All dual-link DVI formats up to 330 MHz • Maximum H Active: 4,096; Maximum V Active: 3,072 • 4K/UHD Supported: - 3,840 × 2,160/23.98/24/25/29.97/30 input via 1x DVI-DL, 2x DVI-SL (L and R half) or 4x DVI-SL (quadrants) - 3,840 × 2,160/50/59.94/60 input via 2x DVI-DL (L and R half) or 4x DVI-SL (quadrants) - 4,096 × 2,160/23.98/24/25/29.97/30 input via 2x DVI-SL (L and R half) or 4x DVI-SL (quadrants) - 4,096 × 2,160/50/59.94/60 input via 2x DVI-DL (L and R half) or 4x DVI-SL (quadrants) - 4,096 × 2,400/23.98/24/25/29.97/30 input via 2x DVI-SL (L and R half) or 4x DVI-SL (quadrants) - 4,096 × 2,400/50/59.94/60 input via 2x DVI-DL (L & R half) or 4x DVI-SL (quadrants) • EDID version 1.3 compatible • HDCP version 1.4 compatible

HDMI	• Per HDMI 1.4a specification • On HDMI connector (Type A) • Formats up to 2,560 × 1,600 at 60 Hz and 3,840 × 1,200 at 60 Hz (30 bits) • 4K/UHD Supported: - 3,840 × 2,160/23.98/24/25/29.97/30 input via 1x HDMI, 2x HDMI (L and R half) or 4x HDMI (quadrants) - 3,840 × 2,160/50/59.94/60 input via 2x HDMI (L and R half) or 4x HDMI (quadrants) - 4,096 × 2,160/23.98/24/25/29.97/30 input via 1x HDMI, 2x HDMI (L and R half) or 4x HDMI (quadrants) - 4,096 × 2,160/50/59.94/60 input via 2x HDMI (L and R half) or 4x HDMI (quadrants) • EDID version 1.3 compatible • HDCP version 1.4 compatible
SDI	• SD/HD/3G SDI on BNC connector • Formats: - SD Formats: SD-SDI per SMPTE 259M-C (NTSC/PAL resolution) - HD Formats: HD-SDI per SMPTE 274M, 296M, 2048 - 3G Formats: 3G-SDI per SMPTE 424M, Barcolink • 4K/UHD Supported: - 3,840 × 2,160/23.98/24/25/29.97/30 input via 4x HD-SDI (quadrants) - 3,840 × 2,160/50/59.94/60 input via 4x 3G-SDI (quadrants) - 4,096 × 2,160/23.98/24/25/29.97/30 input via 4x HD-SDI (quadrants) - 4,096 × 2,160/50/59.94/60 input via 4x 3G-SDI (quadrants)

A.25 Standard connector pinouts

DisplayPort connector pinouts

The following figure illustrates the DisplayPort connector.

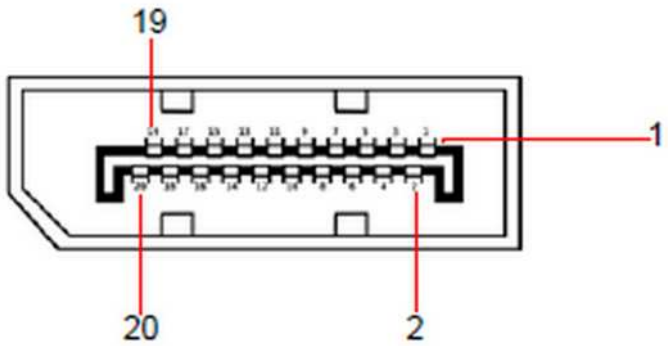

Image A-1: DisplayPort connector

The following table lists the DisplayPort connector pinouts.

DisplayPort connector			
Pin	**Signal**	**Pin**	**Signal**
1	ML_Lane 0 (p)	11	GND
2	GND	12	ML-Lane 3 (n)
3	ML_Lane 0 (n)	13	CONFIG1 (connected to Ground)
4	ML-Lane 1 (p)	14	Config2 (connected to Ground)

DisplayPort connector			
Pin	**Signal**	**Pin**	**Signal**
5	GND	15	AUX CH (p)
6	ML_Lane 1 (n)	16	GND
7	ML-Lane 2 (p)	17	AUX CH (n)
8	GND	18	Hot Plug Detect
9	ML_Lane 2 (n)	19	Return (return for power)
10	ML_Lane 3 (p)	20	DP_PWR Power for connector (3.3 V, 500 mA)

DVI connector pinouts

The following figure illustrates the DVI connector.

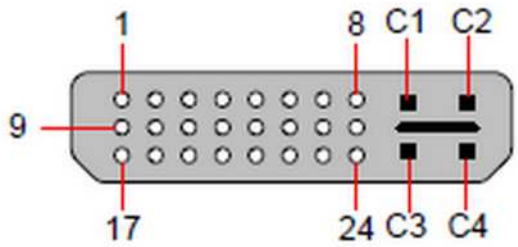

Image A-2: DVI connector

The following tables lists DVI Connector pinouts. Please note:

- T.M.D.S = Transition Minimized Differential Signal
- DDC = Display Data Channel

DVI connector			
Pin	**Signal**		
1	T.M.D.S. Data 2-	13	T.M.D.S. Data 3+
2	T.M.D.S. Data 2+	14	+5V Power
3	T.M.D.S. Data 2/4 Shield	15	ground (for +5V)
4	T.M.D.S. Data 4-	16	Hot Plug Detect
5	T.M.D.S. Data 4+	17	T.M.D.S. Data 0-
6	DDC Clock	18	T.M.D.S. Data 0+
7	DDC Data	19	T.M.D.S. Data 0/5 Shield
8	Analog Vertical Sync	20	T.M.D.S. Data 5-
9	T.M.D.S. Data 1-	21	T.M.D.S. Data 5+
10	T.M.D.S. Data 1+	22	T.M.D.S. Clock Shield
11	T.M.D.S. Data 1/3 Shield	23	T.M.D.S. Clock +
12	T.M.D.S. Data 3-	24	T.M.D.S. Clock -

MicroCross Pins			
Pin	**Signal**	**Pin**	**Signal**
C1	Analog Red Video	C4	Analog Horizontal Sync
C2	Analog Green Video	C5	Analog Common Ground Return
C3	Analog Blue Video		

Ethernet connector pinouts

The following figure illustrates the Ethernet connector.

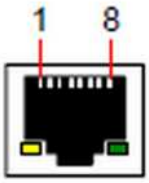

Image A-3: Ethernet connector

The following table lists Ethernet connector pinouts.

			10/100 Base-T — RJ45 port	1000 Base-T — RJ45 port
Pin	**Pair**	**Color**	**Description**	**Description**
1	3	white/green	TXD+	TX0+
2	3	green	TXD-	TX0-
3	2	white/orange	RXD+	RX0+
4	1	blue	—	TX1+
5	1	white/blue	—	TX1-
6	2	orange	RXD-	RX0-
7	4	white/brown	—	Rx1+
8	4	brown	—	RX1-

HDMIconnector pinouts

The following figure illustrates the HDMI connector.

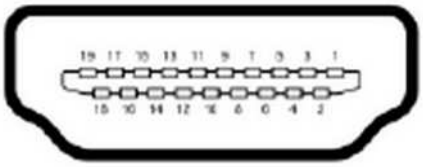

Image A-4: HDMI connector

The following table lists HDMI connector pinouts.

HDMI connector			
Pin	**Signal**	**Pin**	**Signal**
1	TMDS Data2+	11	TMDS Clock Shield
2	TMDS Data2 Shield	12	TMDS Clock-
3	TMDS Data2-	13	CEC
4	TMDS Data1+	14	
5	TMDS Data1 Shield	15	SCL
6	TMDS Data1-	16	SDA
7	TMDS Data0+	17	DDC/CEC/HEC Ground
8	TMDS Data0 Shield	18	+5 v Power (max 50 mA)
9	TMDS Data0-	19	Hot Plug Detect (All Versions) and HEC Data+
10	TMDS Clock+		

Remote Control Protocol

B

About this annex

This chapter lists and provides details for the Event Master series processor remote control commands.

B.1 Event Master series processor ASCII remote control

General

The user can remotely control the Event Master series processor via a telnet connection to the unit's IP address.

How to access the Event Master series processor remotely

To access the Event Master series processor remote commands, use the following procedure:

1. In a command prompt window, type a telnet command in the following format:

   `> telnet nnn.nnn.nnn.nnn 9878`

   where the n's represent the unit IP address and 9878 is the port.

2. Press **Enter**

   The command prompt appears.

3. At the command prompt, type a specific Event Master series processor remote control command and press Enter.

ASCII remote commands

This section lists the Event Master series processor remote commands, sorted by name.

ATRN

- Description: Performs an Auto Transition on the currently active destinations. The currently selected Effect type, rate and edge width will be used to transition preview to program.
- Command Format: ATRN <transTime>
- Parameters:
  <transTime> (optional)
  Used to specify a transition time (duration of the transition) in frames. Value ranges from 0 to 1999. A 0 specify a cut transition. Any non-zero value (within range) will override the transition time in the controller. If this argument is not specified, the current transition time known by the controller will be used.
- Examples:
  `> ATRN 200`
  (Transition Preview to Program on currently active destinations in 200 frames)
  `> ATRN 0`
  (Transition Preview to Program immediately. This is a CUT.)
  `> ATRN`
  (Transition Preview to Program using the transition time set in the controller)
- Query Format: N/A
- Query Response: N/A

PRESET

- Description: Preset Settings. For parameter details, see below.
- Command Format: PRESET
- Parameters:
  -s (save preset, 1-1000)
  -r (recall preset, 1-1000)
  -a (recall preset and auto transition, 1-1000)
- Examples:
  `> PRESET -s 1`
  (Save currently selected destinations to preset 1)
  `> PRESET -r 10`
  (Recall preset 10)

`PRESET -a 10`
(Recall preset 10 and auto transition)
- Query Format: N/A
- Query Response: N/A

B.2 Event Master series processor JSON RPC remote control

General

JSON (JavaScript Object Notation) is a lightweight format that is used for interchanging data. It is based on a subset of JavaScript language: the way objects are built in JavaScript.

Introduction to JSON

JSON is built on two structures:

- A collection of name/value pairs: In various languages, this is realized as an object, record, struct, dictionary, hash table, keyed list, or associative array.
- An ordered list of values: In most languages, this is realized as an array, vector, list, or sequence.

Here is an example of JSON data:

```
{
      "firstName": "John",
      "lastName": "Smith",
      "address": {
          "streetAddress": "21 2nd Street",
          "city": "New York",
          "state": "NY",
          "postalCode": 10021
      },
      "phoneNumbers": [
          "212 555-1234",
          "646 555-4567"
      ]
 }
```

How JSON interacts with Event Master processors

JSON uses JSON RPC (REST based) to interact with the Event Master processors such as E2, S3–4K, and EX. JSON-RPC is a remote procedure call protocol encoded in JSON.

JSON-RPC works by sending a request to a server implementing this protocol. The client in that case is typically software intending to call a single method of a remote system. Multiple input parameters can be passed to the remote method as an array or object, whereas the method itself can return multiple output data as well.

There are JSON RPCs defined to perform tasks on the Event Master processor. User needs to send JSON request through their application or open source application like Postman.

These applications should send request on IP where the Event Master processor is running and fixed port 9999 (Webserver of Event Master processor is running on port 9999).

Use JSON from the web application

To use the JSON APIs from the web application, select the **Settings icon** on the Menu navigation bar, and select **JSONRPC API** from the web app dashboard.

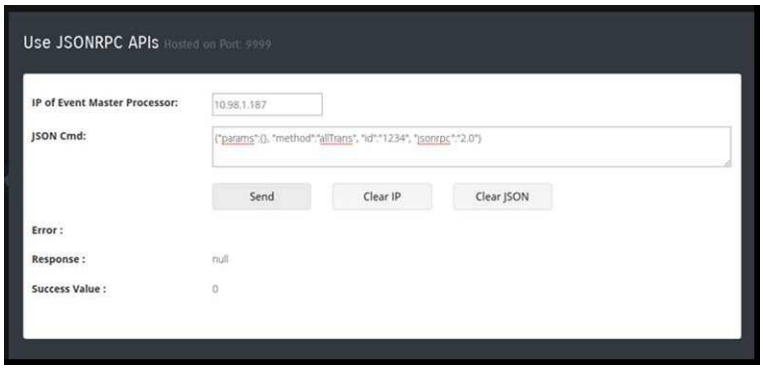

Image B-1: Use JSON from the web application

JSON APIs

Here are some of the JSON APIs defined for controlling the Event Master processor. If you have a master / slave Event Master setup, JSON must be sent to the master unit. For all the requests, this section explains the parameter passed or used in the RPC calls. If the params object is blank that means that API doesn't require a parameter.

Requests are case sensitive.

allTrans

- Definition:
  - It executes the "allTrans" command.
- Request:
  - params: `{}` - It doesn't require any parameter.
- Response:
  - response: null
  - success: (0=success, anything else is an error)
- Example:
  - `{"params":{}, "method":"allTrans", "id":"1234", "jsonrpc":"2.0"}`

cut

- Definition:
  - It executes the "Cut" command.
- Request:
  - params: `{}` - It doesn't require any parameter.
- Response:
  - response: null
  - success: (0=success, anything else is an error)
- Example:
  - `{"params":{}, "method":"cut", "id":"1234", "jsonrpc":"2.0"}`

resetFrameSettings

- Definition:
  - Expose ALL reset types on Event Master processor with different options.
- Request:
  - params: `{"reset":x}`,
    "x" can be 0 – 5
    - 0: Soft reset.
    - 1: Factory reset.
    - 2: Factory reset (save IP).
    - 3: Factory reset (save IP/EDID).

    - 4: Factory reset (save VPID).
    - 5: Power down.
- Response:
  - response: null
  - success: (0=success, anything else is an error)
- Example:
  - `{"params":{"reset": 0}, "method":"resetFrameSettings", "id":"1234", "jsonrpc":"2.0"}`

powerStatus

- Definition:
  - This queries the power plug status of the Event Master processor. (There can be 1 or 2 power slots in Event Master processor).
- Request:
  - params: `{}` - It doesn't require any parameter.
- Response:
  - response: `{FrameId1 :{ PwrStatus1, PwrStatus2},{FrameId2 :{ PwrStatus1, PwrStatus2}`
    - PwrStatus1 gives the power status of the 1st slot in Event Master processor with frame id FrameId1, FrameId2.
    - PwrStatus2 gives the power status of the 2nd slot in Event Master processor with frame id FrameId1, FrameId2.
      - 0: Power supply module is not present.
      - 1: Power supply module is present, but there is no power cable.
      - 2: Power supply module is present, and the cable is plugged in, but there is no DC current.
      - 3: Power supply module is present, and everything is OK.
  - success: (0=success, anything else is an error)
- Example:
  - `{"params":{}, "method":"powerStatus", "id":"1234", "jsonrpc":"2.0"}`

listPresets

- Definition:
  - This queries the list of Presets on a particular destination or on the system.
- Request:
  - params: `{"ScreenDest":x , "AuxDest":x},`
    "x" can be:
    - –2: Do not include any destinations of this type. (Has priority over particular id, if passed as a parameter.)
    - –1: Do not care (All presets). (Has priority over particular id, if passed as a parameter.)
    - 0–999: want to see the presets with the destination this particular id in it or array of ids. Eg. "ScreenDestination":[{"id": 2}, {"id": 3}]
- Response:
  - response: Array of: `[{"id": 0, "Name": "Preset3.00", "LockMode": 0, "presetSno": 3.00}, {"id": 1, "Name": "Preset4.00", "LockMode": 0, "presetSno": 4.00}]`
    - Response contains the array of presets. Above response contains id, name, lock mode preset serial number of the all the presets.
  - success: (0=success, anything else is an error)
- Example:
  - `{"params":{"ScreenDest": 0}, "method":"listPresets", "id":"1234", "jsonrpc":"2.0"}`

listDestinationsForPreset

- Definition:
  - Lists the content of a Preset.

- Request:
  - params: `{"id":x},`
    "x" can be:
    - –1: List all Presets.
    - 0–999: list only that specific Preset.
- Response:
  - response: Array of: `[{"id": 0, "Name": "Preset3.00", "LockMode": 0, "presetSno": 3.00, "ScreenDest":[{"id": 0}, {"id": 3}],"AuxDest":[{"id": 0}, {"id": 1}]}]`
    - Response contains the array of Presets.
  - success: (0=success, anything else is an error)
- Example:
  - `{ "params":{"id": 0}, "method":"listDestinationsForPreset", "id":"1234", "jsonrpc":"2.0"}`

savePreset

- Definition:
  - Creates a Preset on the Event Master processor.
- Request:
  - params: `{"presetName": "NewPreset", "ScreenDestination":[{"id": 2}, {"id": 3}], "AuxDestination":[{"id": 1}, {"id": 2}]}`
    - "presetName"—Name of the Preset to save.
    - ScreenDestinations—ScreenDest id for the Preset to be created.
    - AuxDestinations—AuxDest id for the Preset to be created.
    - ScreenDestination, AuxDestinations are optional parameters. If user didn't provide it, Preset will be saved for selected destinations.
- Response:
  - response: null
  - success: (0=success, anything else is an error)
- Example:
  - `{"params": {"presetName": "NewPreset"}, "method":"savePreset", "id":"1234", "jsonrpc":"2.0"}`
  - `{"params": {"presetName": "NewPreset", "ScreenDestination": {"id": 0},"AuxDestination":{"id": 0}}, "method":"savePreset", "id":"1234", "jsonrpc":"2.0"}`

  Key points regarding Preset, which are same for rename, activate, and delete:
  - "id"—id of the preset.
  - "presetSno"—preset serial number. User can provide floating point number if required. Eg. "presetSno": 1.01, "presetSno": 1.00, "presetSno": 1, "presetSno": 1.1, "presetSno": 1.10.
    Kindly note that 1.1 and 1.10 or 1.00 and 1 are same.
  - "presetName"—Name of the preset.

renamePreset

- Definition:
  - Rename a Preset on the Event Master processor. User can rename Preset with id, Preset serial number, or Preset name.
  - Send any one of the parameters to rename Preset.
- Request params:
  - params: `{"id": x, "newPresetName": "NewPresetName"}`
  - params: `{"presetSno": x.y, "newPresetName": "NewPresetName"}`
  - params: `{"presetName": "OldPresetName", "newPresetName": "NewPresetName"}`
    - "newPresetName"—New Preset name to set.
- Response:
  - response: null

  - success: (0=success, anything else is an error)
- Example:
  - {"params": {"id": 0, "newPresetName": " newPresetName "},
    `"method":"renamePreset", "id":"1234", "jsonrpc":"2.0"}`
  - {"params": {"presetName": "NewPreset", "newPresetName": "NewPresetName"},
    `"method":"renamePreset", "id":"1234", "jsonrpc":"2.0"}`
  - {"params": {"presetSno": 1.00, "newPresetName": " newPresetName "},
    `"method":"renamePreset", "id":"1234", "jsonrpc":"2.0"}`

activatePreset

- Definition:
  - Recall a Preset on the Event Master processor. User can recall Preset with id, Preset serial number, or Preset name.
  - Send any one of the parameters to recall Preset.
- Request params:
  - params: `{"id": x, "type": x}`
  - params: `{"presetSno": x.y, "type": x}`
  - params: `{"presetName": "PresetName"}`
    - “type”—0 to recall in preview (default), 1 to recall in program.
      This is not a mandatory parameter but should be given when the user wants to recall a Preset in program.
- Response:
  - response: null
  - success: (0=success, anything else is an error)
- Example:
  - `{"params": {"id": 0, "type": 0}, "method":"activatePreset", "id":"1234", "jsonrpc":"2.0"} //Recall in preview with id 0.`
  - `{"params": {"presetName": "abc" }, "method":"activatePreset", "id":"1234", "jsonrpc":"2.0"} //Recall in preview with preset name "abc".`
  - `{"params": {"presetSno": 1.00, "type": 1}, "method":"activatePreset", "id":"1234", "jsonrpc":"2.0"} //Recall in program with presetSno 1.`

recallNextPreset

- Definition:
  - Recall the next Preset on the Event Master processor.
    No parameter is required.
  - Make sure that the user has at least recalled one Preset. Web app recalls the next Preset from the last Preset recalled.
- Request:
  - params: `{}`
- Response:
  - response: null
  - success: (0=success, anything else is an error)
  - An error is shown if there was no last recalled Preset or if there is no next Preset in the list.
- Example:
  - `{"params": {}, "method":"recallNextPreset", "id":"1234", "jsonrpc":"2.0"}`

deletePreset

- Definition:
  - Delete a Preset on the Event Master processor.
    User can delete Preset with id, Preset serial number, or Preset name.
  - Send any one of the parameters to delete Preset.

- Request:
  - params: `{"id": x}`
  - params: `{"presetSno": x.y}`
  - params: `{"presetName": "PresetName"}`
- Response:
  - response: null
  - success: (0=success, anything else is an error)
- Example:
  - `{"params": {"id": 1}, "method":"deletePreset", "id":"1234", "jsonrpc":"2.0"}`
  - `{"params": {"presetSno": 1.00}, "method":"deletePreset", "id":"1234", "jsonrpc":"2.0"}`
  - `{"params": {"presetName": "Preset 5.00"}, "method":"deletePreset", "id":"1234", "jsonrpc":"2.0"}`

listDestinations

- Definition:
  - This API lists all the destinations with properties such as layers, outputs, id, size, and name.
- Request:
  - params: `{"type": x}`
    - 0—Show all the destinations.
      0 is the default value for the type parameter.
    - 1—Only screen destinations.
    - 2—Only aux destinations.
- Response:
  - response: Array of : `{"ScreenDestination":[{"id": 0, "Name": "Dest1", "HSize": 3840, "VSize": 1080, "Layers": 1,"DestOutMapColl":[{"id": 0"DestOutMap":[{"id": 0, "Name": "Out1", "HPos": 0, "VPos": 0, "HSize": 1920, "VSize":1080, "Freeze": 0},{"id": 1, "Name": "Out2", "HPos": 1920, "VPos": 0, "HSize": 1920, "VSize":1080, "Freeze": 1}]}]}],"AuxDestination": [{"id": 0, "AuxStreamMode": 4}, {"id": 1, "AuxStreamMode": 4}]}"`
  - success: (0=success, anything else is an error)
- Example:
  - `{"params": {"type": 0}, "method":"listDestinations", "id":"1234", "jsonrpc":"2.0"}`

listSources

- Definition:
  - This API lists all the input sources with properties.
- Request:
  - params: `{"type": x}`
    - 0—Show all the input sources.
      0 is the default value for the type parameter.
    - 1—Only background sources.
- Response:
  - response: Array of : `{"id": 0, "Name": "InSource1", "HSize": 3840, "VSize": 1080, "SrcType": 0, "InputCfgIndex": -1, "StillIndex": 0, "DestIndex": -1, "UserKeyIndex": -1, "Mode3D": 0, "Freeze": 1, "Capacity": 2, "InputCfgVideoStatus": 4}`
    - SrcType: 0 = Input, 1 = StillStore
    - InputCfgVideoStatus: Input video status
      - 0 = Invalid; there is sync, but cannot acquire / lock
      - 1 = Valid; Video is OK
      - 2 = MismatchFormat; Format mismatch between input cfg and connector(s)
      - 3 = OutOfRange; connector capacity is too low to acquire format

    - 4 = NoSync; no video
  - success: (0=success, anything else is an error)
- Example:
  - `{"params": {"type": 0}, "method":"listSources", "id":"1234", "jsonrpc":"2.0"}`

listContent

- Definition:
  - This API shows the content of a screen destination.
- Request:
  - params: `{"id": x}`
    - “id”—Screen destination index.
- Response:
  - response: `{ "id": 0, "Name": "ScreenDest1""BGLyr":[{"id": 0, "LastBGSourceIndex": 0, "BGShowMatte":0, "BGColor":[{"id":0, "Red":0, "Green":0, "Blue":0}]}, {"id": 1, "LastBGSourceIndex": 0, "BGShowMatte":0, "BGColor":[{"id":0, "Red":0, "Green":0, "Blue":0}]}],` (0 = PGM Background, 1 = PVW Background) `"Layers":[{"id": 0, "LastSrcIdx": 0, "HPos": 0, "VPos": 0, "HSize": 400, "VSize": 300, "PvwMode": 0, "PgmMode": 0, "Freeze": 0, "FlexZOrder": 0,"LayerTrans":[{"id": 0, "TransTime": 30, "TransPos": 0}, {"id": 1, "TransTime": 30, "TransPos": 0}] , "3D": "Yes", "Freeze": 0, "Capacity": 2}]}]}`
    - id—index of screen destination.
    - Name—Name of ScreenDestination.
    - BGLyr—Background layer index, Last source index of background. “id”:0 affects the Background in Program. “id”:1 affects the Background in Preview.
    - LastBGSoureIndex—This is –1 if no background is dropped, else this is index of last background dropped on screen destination.
    - BGShowMatte—This is if BG to be matte or not.
    - BGColor—This is background color.
    - Layers—Lists layers on screen destination with its properties.
    - Transition—This property of screen destination contains the transition time (from time to move from preview to program).
  - success: (0=success, anything else is an error)
- Example:
  - `{"params": {"id": 0}, "method":"listContent", "id":"1234", "jsonrpc":"2.0"}`

activateCue

- Definition:
  - This API provides the option to play/pause/stop a cue.
  - User can recall cue with id, serial number, or name.
- Request:
  - params: `{"id": 1, "type": x}, "method":"activateCue", "id":"1234", "jsonrpc":"2.0"}`
    - id – Index of the cue
    - type – (Default is play). x" can be : 0 — Play. 0 is the default value for the type parameter. 1 — Pause, 2 – Stop
  - params: `{"cueName": "Cue1", "type": x}, "method":"activateCue", "id":"1234", "jsonrpc":"2.0"}`
  - params: `{"cueSerialNo": 1.00, "type": x}, "method":"activateCue", "id":"1234", "jsonrpc":"2.0"}`
- Response:
  - response: null
  - success: (0=success, anything else is an error)

- Example:
  - `{"params": {"id": 1}, "method":"activateCue", "id":"1234", "jsonrpc":"2.0"}`
    `//Play – no parame or type 0`
  - `{"params": {"type": 1}, "method":"activateCue", "id":"1234", "jsonrpc":"2.0"}`
    `//Pause – type 1`
  - `{"params": {"type": 2}, "method":"activateCue", "id":"1234", "jsonrpc":"2.0"}`
    `//Stop – type 2`

activateDestGroup

- Definition:
  - Recall a DestGroup on the Event Master processor. User can recall DestGroup with id, DestGroup serial number, or DestGroup name.
  - Send any one of the parameters to recall DestGroup.
- Request:
  - params: `{"id": x}`
  - params: `{"destGrpSno": x.y}`
  - params: `{"destGrName": "GroupName"}`
- Response:
  - response: null
  - success: (0=success, anything else is an error)
- Example:
  - `{"params": {"id": 0}, "method":"activateDestGroup", "id":"1234", "jsonrpc":"2.0"}`
  - `{"params": {"destGrpName": "abc" }, "method":"activateDestGroup", "id":"1234", "jsonrpc":"2.0"}`
  - `{"params": {"destGrpSno": 1.00}, "method":"activateDestGroup", "id":"1234", "jsonrpc":"2.0"}`

listCues

- Definition:
  - This API lists all the cues.
- Request:
  - params: `{}, "method":"listCues", "id":"1234", "jsonrpc":"2.0"}`
- Response:
  - response: Array of cue objects.
  - success: (0=success, anything else is an error)
- Example:
  - `{"params": {}, "method":"listCues", "id":"1234", "jsonrpc":"2.0"}`

3dControl

- Definition:
  - This API provides the option to modify 3d Controls.
- Request:
  - params: `{"id" : id, "type": x, "syncSource": y, "syncInvert": z}`
    - id – Index of the input config.
    - type – "x" can be: 0 – Type Off. 0 is the default value for the type parameter. 1 – Type Sequentia.
    - syncSource – "y" can be: 1 – mini-Din 1, 2 – mini-Din 2, 3 – mini-Din 3, 4 – mini-Din 4. Default value is 1.
    - syncInvert – "z" can be: 0 – Type Off. 0 is the default value for the syncInvert. 1 – Type Invert.
    - To reset, do not provide any parameter except "id".
- Response:
  - response: `{"id": 0, "Name": "InSource1", "HSize": 3840, "VSize": 1080, "Src-Type": 0, "InputCfgIndex": -1, "StillIndex": 0, "DestIndex": -1, "UserKeyIndex": -1, "Mode3D": 0, "Freeze": 1, "Capacity": 2, "InputCfgVideoStatus": 4}`
  - success: (0=success, anything else is an error)
- Example:
  - `{"params": {"id": 1, "type": 0, "syncSource": 1, "syncInvert": 0},`

```
"method":"3dControl", "id":"1234", "jsonrpc":"2.0"}
```

changeContent

- Definition:
  - This API changes the content of a screen destination by putting background and layers in it.
- Request:
  - params: `{"id":0,"BGLyr":[{"id":0,"LastBGSourceIndex":0,"BGShowMatte":0, "BGColor":[{"id":0,"Red":0,"Green":0,"Blue":0}]},{"id":1, "LastBGSourceIndex":0,"BGShowMatte":0,"BGColor": [{"id":0,"Red":0,"Green":0,"Blue":0}]}],"Layers": [{"id":0,"LastSrcIdx":0,"Window": {"HPos":0,"VPos":0,"HSize":400,"VSize":300}, "Source":{"HPos":0,"VPos":0,"HSize":1920,"VSize":1080}, "Mask": { "Left":0.01, "Right":10.1, "Top":0.0,"Bottom":0.0},"PvwMode":1,"PgmMode":0, "Freeze":0,"PgmZOrder":0,"PvwZOrder":0}]}`
    - id—Screen destination index.
    - BGLyr—Background layer index, Last source index of background. “id”:0 affects the Background in Program. “id”:1 affects the Background in Preview.
    - Layers—Layer information.
    - Window—Layer window size.
    - Source—Source info and size.
    - Mask—Crop the visible part of the layer.
    - PvwMode—Set 1 if you want the content in preview. (Default)
    - PgmMode—Set 1 if you want the content in program.
- Response:
  - response: null
  - success: (0=success, anything else is an error)
- Example:
  - `{"params":{"id":0,"BGLyr":[{"id":0,"LastBGSourceIndex":0,"BGShowMatte":0, "BGColor":[{"id":0,"Red":0,"Green":0,"Blue":0}]},{"id":1, "LastBGSourceIndex":0,"BGShowMatte":0,"BGColor":[{"id":0,"Red":0, "Green":0,"Blue":0}]}],"Layers":[{"id":0,"LastSrcIdx":0, "Window":{"HPos":0,"VPos":0,"HSize":400,"VSize":300}, "Source":{"HPos":0,"VPos":0,"HSize":1920,"VSize":1080}, "Mask":{ "Left":0.01, "Right":10.1, "Top":0.0,"Bottom":0.0}, "PvwMode":1,"PgmMode":0,"Freeze":0,"PgmZOrder":0,"PvwZOrder":0}]}, "method":"changeContent", "id":"1234", "jsonrpc":"2.0"}.`
  - `{"params":{"id":0, "TestPattern" :5 }, "method":"changeContent", "id":"1234", "jsonrpc":"2.0"}`

freezeDestSource

- Definition:
  - This API Freezes/Unfreezes the sources.
- Request:
  - params: `{"type": x, "id": y, "screengroup": z ,"mode": 0/1}`
    - type—type of source.
      - 0—Input source.
      - 1—Background source.
      - 2—ScreenDestination.
      - 3—AuxDestination.
    - id—Index of the source.
  - Screengroup—For future use. Always set to 0.
  - Mode—0 : UnFreeze, 1 : Freeze.

- Response:
  - response: null
  - success: (0=success, anything else is an error)
- Example:
  - `{"params": {"type": 0, "id": 0, "screengroup": 0 ,"mode": 1}, "method":"freezeDestSource", "id":"1234", "jsonrpc":"2.0"}`

listStill

- Definition:
  - This API lists all the stills with properties such as id, Name, H/V size, LockMode, StillState, PngState, File size.
- Request:
  - params: `{}`
- Response:
  - response: Array of : `[{"id":0,"Name":"StillStore1", "LockMode":0,"HSize":{"Min":0,"Max":99999,"$t":1920},"VSize":{"Min":0, "Max":99999,"$t":1080},"StillState":{"Min":0,"Max":4,"$t":3},"PngState": {"Min":0,"Max":2,"$t":0},"FileSize":{"Min":0,"Max":100000,"$t":9331.2}}]`
    - id—Index of still store.
    - Name—Name of still store.
    - LockMode—For future use. Always set to 0.
    - H/V size—Horizontal and vertical size, Min, max and current value. It shows the current value.
    - StillState—This tells user if the still is currently being captured or not, or if it is getting deleted.
    - PngState—The “PNG” for stills are for the thumbnails we capture for the stills.
    - FileSize—Size of the file created in KBs.
  - success: (0=success, anything else is an error)
- Example:
  - `{"params": {}, "method":"listStill", "id":"1234", "jsonrpc":"2.0"}`

deleteStill

- Definition:
  - This API deletes a still.
- Request:
  - params: `{"id": x}`
    - id—Index of still.
- Response:
  - response: null
  - success: (0=success, anything else is an error)
- Example:
  - `{"params":{"id": 0}, "method":"deleteStill", "id":"1234", "jsonrpc":"2.0"}`

takeStill

- Definition:
  - This API creates/overwrites a still.
- Request:
  - params: `{ "type": x, "id": y, "file": z}`
    - type—0 for input source, 1 for BG source.
    - Id—Index of the source. If the source id of the destination is provided, no still is created and an error is shown.
    - File—still file id. If you pass “file” : 5, this creates StillStore6.
- Response:
  - response: null
  - success: (0=success, anything else is an error)

- Example:
  - {"params":{"type":0 , "id": 1, "file": 5}, "method":"takeStill", "id":"1234", "jsonrpc":"2.0"}
    - This creates a still from input source id 1 as StillStore6.

getFrameSettings

- Definition:
  - This API shows system information, including all the frames information.
- Request:
  - params: {}
- Response:
  - {"System":{"id":0,"Name":"System1","FrameCollection":{"id":0,"Frame":{"id":"00:0c:29:0e:86:d4","Name":"E2","Contact":"","Version":"4.2.30738","OSVersion":"NA","FrameType":0,"FrameTypeName":"E2","Enet":{"DhcpMode":0,"DhcpModeName":"Static","IP":"10.98.0.165","StaticIP":"192.168.000.175","MacAddress":"00:0c:29:0e:86:d4","StaticMask":"255.255.255.000","StaticGateway":"192.168.000.001"},"SysCard":{"SlotState":2,"CardStatusID":2,"CardStatusLabel":"Ready","CardTypeID":80,"CardTypeLabel":"System","CardID":0},"Slot":[{"Card":{"CardStatusID":2,"CardStatusLabel":"Ready","CardTypeID":70,"CardTypeLabel":"Expansion","CardID":"thisissometextforid0"}},{"Card":{"CardStatusID":2,"CardStatusLabel":"Ready","CardTypeID":70,"CardTypeLabel":"Expansion","CardID":"thisissometextforid1"}},{"Card":{"CardStatusID":0,"CardStatusLabel":"Not Installed","CardTypeID":255,"CardTypeLabel":"Unknown","CardID":"Undefined"}},{"Card":{"CardStatusID":2,"CardStatusLabel":"Ready","CardTypeID":1,"CardTypeLabel":"SDI Input","CardID":"thisissometextforid211"}},{"Card":{"CardStatusID":2,"CardStatusLabel":"Ready","CardTypeID":3,"CardID":"thisissometextforid2"}},{"Card":{"CardStatusID":2,"CardStatusLabel":"Ready","CardTypeID":0,"CardTypeLabel":"DVI Input","CardID":"thisissometextforid4"}},{"Card":{"CardStatusID":2,"CardStatusLabel":"Ready","CardTypeID":2,"CardTypeLabel":"HDMI/DP Input","CardID":"thisissometextforid5"}},{"Card":{"CardStatusID":2,"CardStatusLabel":"Ready","CardTypeID":2,"CardTypeLabel":"HDMI/DP Input","CardID":"thisissometextforid7"}},{"Card":{"CardStatusID":2,"CardStatusLabel":"Ready","CardTypeID":2,"CardTypeLabel":"HDMI/DP Input","CardID":"thisissometextforid8"}},{"Card":{"CardStatusID":2,"CardStatusLabel":"Ready","CardTypeID":2,"CardTypeLabel":"HDMI/DP Input","CardID":"thisissometextforid9"}},{"Card":{"CardStatusID":2,"CardStatusLabel":"Ready","CardTypeID":22,"CardTypeLabel":"HDMI Output","CardID":"CardID3"}},{"Card":{"CardStatusID":2,"CardStatusLabel":"Ready","CardTypeID":22,"CardTypeLabel":"HDMI Output","CardID":"CardID4"}},{"Card":{"CardStatusID":2,"CardStatusLabel":"Ready","CardTypeID":21,"CardTypeLabel":"SDI Output","CardID":"CardID415"}},{"Card":{"CardStatusID":2,"CardStatusLabel":"Ready","CardTypeID":40,"CardTypeLabel":"MVR","CardID":"CardID15"}},{"Card":{"CardStatusID":2,"CardStatusLabel":"Ready","CardTypeID":50,"CardTypeLabel":"VPU Scaler","CardID":"thisissometextforid501"}},{"Card":{"CardStatusID":2,"CardStatusLabel":"Ready","CardTypeID":50,"CardTypeLabel":"VPU Scaler","CardID":"thisissometextforid502"}},{"Card":{"CardStatusID":2,"CardStatusLabel":"Ready","CardTypeID":50,"CardTypeLabel":"VPU Scaler","CardID":"thisissometextforid503"}},{"Card":{"CardStatusID":2,

```
"CardStatusLabel":"Ready","CardTypeID":50,"CardTypeLabel":"VPU Scaler",
"CardID":"thisissometextforid504"}},{"Card":{"CardStatusID":0,
"CardStatusLabel":"Not Installed","CardTypeID":255,"CardTypeLabel":
"Unknown","CardID":"Undefined"}},{"Card":
{"CardStatusID":2,"CardStatusLabel":
"Ready","CardTypeID":50,"CardTypeLabel":"VPU Scaler","CardID":
"thisissometextforid505"}},{"Card":
{"CardStatusID":2,"CardStatusLabel":"Ready",
"CardTypeID":50,"CardTypeLabel":"VPU Scaler","CardID":
"thisissometextforid506"}},{"Card":
{"CardStatusID":2,"CardStatusLabel":"Ready",
"CardTypeID":50,"CardTypeLabel":"VPU Scaler","CardID":
"thisissometextforid507"}},{"Card":
{"CardStatusID":2,"CardStatusLabel":"Ready",
"CardTypeID":50,"CardTypeLabel":"VPU Scaler","CardID":
"thisissometextforid508"}}]}}}}}
```


    - System—System name and index.
    - FrameCollection—Collection of frames in a system containing frame information.
    - Frame—Contains frame information.
    - Id—Mac Id of the frame.
    - Name—Name of the frame.
    - Contact—Contact information.
    - Version—Current version of the software installed on the frame.
    - OSVersion—Current OS version installed on the frame.
    - FrameType—0: E2, 1:S3, 2: Ex.
    - FrameTypeName—Type of the frame: E2/S3/Ex.
    - Enet—Ethernet settings.
    - SysCard—System card information.
    - Slot—List of Input/Output/Expansion card information.
  - success: (0=success, anything else is an error)
- Example:
  - `{"params":{}, "method":"getFrameSettings", "id":"1234", "jsonrpc":"2.0"}`

listAuxContent

- Definition:
  - This API shows Aux destination information.
- Request:
  - params: `{"id" : x}`
    - id—Index of the Aux destination.
- Response:
  - response: `{"id":0,"Name":"AuxDest1","PvwLastSrcIndex":0,"PgmLastSrcIndex":0}`
    - id—Index of Aux destination.
    - Name—Name of Aux destination.
    - PvwLastSrcIndex—Input/Background source index in the preview area.
    - PgmLastSrcIndex—Input/Background source index in the program area.
  - success: (0=success, anything else is an error)
- Example:
  - `{"params": {"id": 0}, "method":"listAuxContent", "id":"1234", "jsonrpc":"2.0"}`

changeAuxContent

- Definition:
  - This API changes the source in the Aux destinations.

- Request:
  - params: `{"id":x , "Name": "AuxDest1" , "PvwLastSrcIndex": y , "PgmLastSrcIndex": z}`
    - id—Index of the Aux destination.
    - Name—Name of Aux destination. (Optional paramter)
    - PvwLastSrcIndex—Input/Background source index to set in Aux destination in the preview area.
    - PgmLastSrcIndex—Input/Background source index to set in Aux destination in the program area.
- Response:
  - response: null
  - success: (0=success, anything else is an error)
- Example:
  - `{"params": {"id":0 , "Name": "AuxDest1" , "PvwLastSrcIndex": 6 , "PgmLastSrcIndex": 1}, "method":"changeAuxContent", "id":"1234", "jsonrpc":"2.0"}`
  - `{"params":{"id":0, "TestPattern" :3 }, "method":"changeAuxContent", "id":"1234", "jsonrpc":"2.0"}`

Subscription and Un-Subscription

When a subscription is done from a JSON-based application, a notification is sent to the ip port where the application is running when there is change for which the user has subscribed.

Actual notification is sent asynchronously as an HTTP Post, with the following structure: `{result: {method:`

`"notification",notificationType: "ScreenDestChanged",change: { add: [2],`

`remove: [], update: [0, 1, 2] }}}.`

The change field contains the XmlId(s) of the screens that were added/removed or updated.

All subscriptions are lost once the Event Master processor is restarted, and they must be subscribed again if required.

subscribe

- Definition:
  - User can use this API to subscribe to change events in the Event Master processor.
  - Once subscribed, the API sends a notification in the form of an HTTP Post to the Url: http://hostname: port/.
- Request:
  - params: `{"hostname": hostname, "port": port, "notification" : notificationType []}`
    - hostname—Hostname or IP Address to which the notifications are sent.
    - port—TCP port to which the notification are posted.
    - notificationTypes—an array of notifications to which a user wants to subscribe.
      - ScreenDestChanged
      - AUXDestChanged
      - FrameChanged
      - NativeRateChanged
      - InputCfgChanged
      - SourceChanged
      - BGSourceChanged
      - PresetChanged
      - StillChanged
      - OutputCfgChanged
      - CueChanged
- Response:
  - response: `{"method": "subscribe"}`
  - success: (0=success, anything else is an error)

- Example:
  - {"params":{"hostname":"192.168.247.131","port":"3000","notification":["ScreenDestChanged","AUXDestChanged"]},"method":"subscribe","id":"1234","jsonrpc":"2.0"}

unsubscribe

- Definition:
  - User can use this API to remove the subscription for the given hostname, port, and notificationType.
- Request:
  - params: {"hostname":hostname,"port":port,"notification":notificationType[]}
    - hostname—Hostname or IP Address from which the subscription is to be removed.
    - port—TCP port.
    - notificationTypes—an array of notifications to which a user wants to subscribe.
      - ScreenDestChanged
      - AUXDestChanged
      - FrameChanged
      - NativeRateChanged
      - InputCfgChanged
      - SourceChanged
      - BGSourceChanged
      - PresetChanged
      - StillChanged
      - OutputCfgChanged
      - CueChanged
- Response:
  - response: {"method":"unsubscribe"}
  - success: (0=success, anything else is an error)
- Example:
  - {"params":{"hostname":"192.168.247.131","port":"3000","notification":["ScreenDestChanged","AUXDestChanged"]},"method":"unsubscribe","id":"1234","jsonrpc":"2.0"}

Troubleshooting

C

C.1 Troubleshooting List

Problem solving

Problem	Possible cause	Remedy
Event Master unit doesn't start	The Power supplies are not connected to a valid power source	Make sure that at least one power supply is connected to a valid power source.
		Make sure that the supplies are well inserted in their slots. Remove the power cord and apply a little pressure by using the handle until both supplies are fully inserted.
	Corrupt configuration data is in the system.	Press and hold the **SEL** and **ESC** keys while applying power to the unit. Release these keys when a menu appears asking to Factory Reset the unit. Perform the Factory Reset and the unit will boot normally.
One of the Power Supplies is not coming on	If the input AC power LED on the Power supply is off, then the supply is not receiving a valid AC power	Check the AC power cable and ensure that the unit is connected to a valid power source.
	If the input AC power LED is green but the output DC power LED is off or if the status LED is amber, then the supply is not producing valid DC output power	If the other Power supply is functioning normally, swap it with the supply that doesn't work. If the problem follows the power supply, then the you need to replace the power supply. If the problem stays with the slot, then the fault possibly lies with the System Power card. Contact your local Barco customer service support for further assistance.
All or most images are unstable or/ and noisy	Temperature issue	Operating ambient temperature must be higher than 0°C (32°F) and lower than 40°C (104°F) (lower than 35° C (95° F) for EC-200/EC-210).
		Run the board diagnostics in order to detect errors.
		Leave sufficient front and rear clearance to ensure that airflow through the Event Master unit is not restricted.
		Clean the EMI filter, if an EMI filter is present.
A specific image is unstable or/and noisy	Bad Input, output, VPU or motherboard card	Run the board diagnostics in order to detect errors. If the board diagnostics doesn’t detect any errors proceed to the next step.
		From the GUI change the output card from which the image is derived. If the problem persists, then the issue is not with the output card. Continue by switching the input source to a different input card. If the issue persists then the issue is not with input card. If the input and output cards have been ruled out, then the issue is either

Problem	Possible cause	Remedy
		with a VPU card or with the motherboard. In this case, contact your Barco customer service support for further assistance.
The Event Master unit and the PC running the GUI don't communicate	Cabling/network switch issue	Check all of the Ethernet cables and verify that they are plugged in. If you are using a network switch verify that is on and is operating properly.
	Wrong IP address	IP address is not within your LAN range.
		Conflict between network addresses: Check if the Event Master unit network address is not already in use by another device on the local network.
		DHCP is not enabled.
When the PC running Event Master Toolset Software is connected directly with an Event Master unit, the dynamic configuration (DHCP) doesn't work.	There is no DHCP server in this configuration	You need to disable the DHCP option and enter a static network address compatible with the PC running the Event Master control software (range, Subnet mask,..).
Event Master unit constantly reboots after a software upgrade	Invalid upgrade (deployment or defective installation)	Press and hold the **SEL** and **ESC** keys simultaneously until the front panel shows the choice of performing a factory reset or continuing. Performing a factory reset will allow the Event Master unit to boot normally. If the problem persists, contact you local Barco customer service support for further assistance.
Can't read or write to or from the USB drive	Incorrect USB format or bad USB	Ensure that your flash drive is formatted to use the FAT32 file system. If you can't access the USB from a PC, then you have a faulty USB drive.
The front panel display screen is too dark	display brightness	Use the "VFD brightness" sub-menu in the System menu to adjust the intensity of the front panel vacuum fluorescent display (VFD) screen.
The unit is not responding to any front panel button presses.	Front panel is locked	To unlock the front panel, press and hold the **SEL** and **ESC** buttons simultaneously for 3 seconds. When the panel is unlocked, the display screen displays the Status menu.
After factory reset, the IP address is lost	Wrong mode of the factory reset command was used	Use the "Factory Reset, Save IP" choice in the "factory reset" sub-menu when you perform a factory reset.
Unable to perform web upgrade	Unable to perform web upgrade	Make sure Event Master unit connection with the LAN is available.
		Make sure there is an internet access in the LAN

Third Party Software Acknowledgements

D

D.1 Third Party Software list 574

About this annex

This chapter lists the third-party software components. The third-party software components are reusable software components developed to be either freely distributed or sold by an entity other than the original vendor of the development platform.

D.1 Third Party Software list

List and short description

The products and software applications described in this manual make use of one or more of the following third party software items:

- **Boost**: Boost software is distributed under the Boost Software License, Version 1.0, http://www.boost.org/LICENSE_1_0.txt
- **Qt**: The Qt GUI Toolkit is Copyright (C) 2015 Digia Plc and/or its subsidiary(-ies).
  Contact: Digia Plc (http://www.qt.io/about-us/).
  Qt is available under the LGPL version 2.1 (GNU Lesser General Public License version 2.1).
- **XFree86**: is a trademark of The XFree86 Project, Inc.
- **X11(TM) and X Window System(TM)**: is a trademark of The XFree86 Project, Inc.
- **Xorg**: Xorg is copyright software, provided under licenses that permit modification and redistribution in source and binary form without fee. Xorg is copyright by numerous authors and contributors from around the world. Licensing information can be found at http://www.x.org. Refer to the source code for specific copyright notices.
- **dfu-util**: Licensed under the GNU General Public License, Version 2
  http://www.gnu.org/licenses/old-licenses/gpl-2.0.html
  Source available from http://dfu-util.gnumonks.org/
- **lib-usb-1.0.dll**: Licensed under the GNU GPL Public License Version 2
  A component of MinGW whose license can be found here: http://www.mingw.org/license
- **LPCScrypt and image_manager executables**: are copyright software, provided under license by NXP SEMICONDUCTORS USA, INC. that permit redistribution in binary form without fee as part of supporting software for products using devices manufactured by NXP.
  The source code for the components of the Software and Separate Files are available from NXP and can be obtained from http://www.lpcware.com/lpcxpresso/downloads/source.

Warranty

E

About this annex

This chapter gives an overview of Warranty and conditions of RMA concerning the Event Master devices.

E.1 About Warranty and RMA

Warranty

All video products are designed and tested to the highest quality standards and are backed by a full 3-year parts and labor warranty. Warranties are effective upon delivery date to customer and are non-transferable. Barco warranties are only valid to the original purchaser/owner. Warranty related repairs include parts and labor, but do not include faults resulting from user negligence, special modifications, lightning strikes, abuse (drop/crush), and/or other unusual damages.

The customer shall pay shipping charges when unit is returned for repair. Barco will cover shipping charges for return shipments to customers.

Return Material Authorization (RMA)

RMA Conditions are listed below:

1. Prior to returning any item, you must receive a Return Merchandise Authorization (RMA) number.
2. All RMA numbers must appear on their return-shipping label.
3. RMA numbers are valid for ten (10) days from issue date.
4. All shipping and insurance charges on all RMAs must be prepaid by the customer.

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Barco Inc, Image Processing | 3078 Prospect Park Drive, Rancho Cordova, CA , 95670, USA
Registered office: Barco NV | President Kennedypark 35, 8500 Kortrijk, Belgium
www.barco.com