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A **BELDEN** BRAND

KMX-4911

SCALABLE KALEIDO MULTIVIEWER FOR GV NODE

Hardware Description & Installation Manual

M3033-9902-100

2017-02-01

SDHC™

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Title	KMX-4911 Hardware Description & Installation Manual
Part Number	M3033-9902-100
Revision	2017-02-01, 15:47

Electrostatic Discharge (ESD) Protection

⚠ Electrostatic discharge occurs when electronic components are improperly handled and can result in intermittent failure or complete damage adversely affecting an electrical circuit. When you remove and replace any card from a frame always follow ESD-prevention procedures:

- Ensure that the frame is electrically connected to earth ground through the power cord or any other means if available.

- Wear an ESD wrist strap ensuring that it makes good skin contact. Connect the grounding clip to an *unpainted surface* of the chassis frame to safely ground unwanted ESD voltages. If no wrist strap is available, ground yourself by touching the *unpainted* metal part of the chassis.

- For safety, periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohms.

- When temporarily storing a card make sure it is placed in an ESD bag.

- Cards in an earth grounded metal frame or casing do not require any special ESD protection.

Protection contre les décharges électrostatiques (DES)

⚠ Une décharge électrostatique peut se produire lorsque des composants électroniques ne sont pas manipulés de manière adéquate, ce qui peut entraîner des défaillances intermittentes ou endommager irrémédiablement un circuit électrique. Au moment de remplacer une carte dans un châssis, prenez toujours les mesures de protection antistatique appropriées :

- Assurez-vous que le châssis est relié électriquement à la terre par le cordon d'alimentation ou tout autre moyen disponible.

- Portez un bracelet antistatique et assurez-vous qu'il est bien en contact avec la peau. Connectez la pince de masse à une *surface non peinte* du châssis pour détourner à la terre toute tension électrostatique indésirable. En l'absence de bracelet antistatique, déchargez l'électricité statique de votre corps en touchant une surface métallique *non peinte* du châssis.

- Pour plus de sécurité, vérifiez périodiquement la valeur de résistance du bracelet antistatique. Elle doit se situer entre 1 et 10 mégohms.

- Si vous devez mettre une carte de côté, assurez-vous de la ranger dans un sac protecteur antistatique.

- Les cartes qui sont reliées à un châssis ou boîtier métallique mis à la terre ne nécessitent pas de protection antistatique spéciale.

Recycling

Visit www.grassvalley.com for recycling information.

Certification and Compliance

Safety of Laser Modules

This equipment may incorporate modules containing Class 1 lasers. These modules are certified by the manufacturer to comply with:

– IEC/EN 60825-1:2014 Safety of laser products

Electromagnetic Compatibility

This equipment has been tested for verification of compliance with FCC Code of Federal Regulations, Title 47, Part 15 (47 CFR 15), Subpart B, Class A, Digital Devices, Unintentional Radiators.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This equipment has been tested and found to comply with the requirements of the EMC directive 2014/30/EU:

- EN 55022:2010 Class A radiated and conducted emissions
- EN 61000-3-2:2014 Limits for harmonic current emissions
- EN 61000-3-3:2013 Limitation of voltage changes, voltage fluctuations and flicker
- EN 61000-4-2:2009 Electrostatic discharge immunity
- EN 61000-4-3:2006+A1:2008+A2:2010 Radiated, radio-frequency, electromagnetic field immunity
- EN 61000-4-4:2004+A1:2010 Electrical fast transient/burst immunity
- EN 61000-4-5:2006 Surge transient immunity
- EN 61000-4-6:2009 Conducted disturbances immunity
- EN 61000-4-8:2010 Power frequency magnetic field immunity
- EN 61000-4-11:2004 Voltage dips, short interruptions and voltage variations immunity

Environmental Compliance

部件名称 Part name	有毒有害物质或元素 (Toxic or hazardous substances and elements)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr6)	多溴联苯 (PBB)	多溴二苯 (PBDE)
电缆及电缆组件 Cables and cable assemblies	X	O	O	O	O	O
电路模块 Circuit modules	X	O	O	O	O	O
组装风扇 Fan assemblies	X	O	O	O	O	O

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 26572–2011 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 26572-2011.

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 26572–2011 规定的限量要求。

X: Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials for this part is above the limit requirement in GB/T 26572-2011.

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Technical explanations: This statement is based on the information provided by our suppliers of components and collected through our Grass Valley's environmental management system. Grass Valley believes this environmental information to be correct but cannot guarantee its completeness or accuracy as it is based on data received from sources outside our company. All specifications are subject to change without notice.

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1 Installation

The KMX-4911 is a flexible and scalable 4K- and IP-ready multiviewer for TV production optimized for the space, power and weight considerations found in studios and outside broadcast trucks. The KMX-4911 multiviewer modules are part of the GV Node IP aggregation, processing, and edge routing platform, designed for live broadcast production.

This section provides information about system requirements, the items shipped with your KMX-4911 cards, and installation and maintenance procedures.

Introduction

KMX-4911cards are installed in a GV Node frame with a corresponding back panel that is installed at the rear of the GV Node frame. Each KMX-4911 card can display up to nine SMPTE ST 2022-6, 3Gbps, HD, or SD video inputs in up to nine video windows across one or two high-resolution mosaic outputs. Combine up to four KMX-4911 cards, to configure a dual- or quad-mosaic output system in the following sizes: 9×1, 9×2, 18×2, 18×4, 27×2, 27×4, 36×2 and 36×4. According to the number of KMX-4911 cards chosen for an installation, a correspondingly sized rear panel is used to interconnect the cards.

KMX-4911 inputs are sourced from the GV Node's fabric module, and thus from any SDI input or IP input available to the GV Node. KMX-4911 mosaic outputs are made available to the GV Node's fabric module where they can be routed within the frame as any other signal for IP distribution and these mosaic outputs are also optionally available on the rear panel of the GV Node through one or two SFP output modules for connection to a display.

A single 4 RU GV Node frame can hold up to 16 KMX-4911 multiviewer cards, which can be combined into anything from 16 separate 9×2 multiviewer systems, to 4 expanded 36×4 multiviewers. The KMX-4911 is ideal for production monitoring in trucks. It integrates tightly with other Densité signal processing cards, routers and production switchers.

At the heart of every multiviewer system is the **Kaleido-X software**, which includes the following client applications:

- **XAdmin** is a Web client that your system administrator will use to manage the multiviewer system.
- **XEdit** is a client application used to create layouts for the monitor wall, and to configure the multiviewer, from your PC or laptop.
- The **Router Control** Software Single Bus and Matrix View applications (also part of the iRouter Router Control Software packaged with iControl Application Servers) can be used to control your multiviewer's logical sources and monitor wall destinations, via the *KX Router* logical router, or to control other logical routers configured within your multiviewer system.
- **Signal Path Viewer** opens as a standalone panel, updated in real time, showing assignment information between router sources and multiviewer inputs. Signal Path

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Viewer is available for all multiviewer models, except Kaleido-IP (for which it is not relevant).

Housed in a GV Node frame, a KMX-4911 multiviewer system in its default configuration includes a number of layout presets. The default mosaic output head resolution is 1920×1080i @ 60 Hz.

Features

KMX-4911 features

Space-efficient modular design	Modular design offers wide range of input/output configurations, for streamlined, cost-saving cabling and optimization of space usage. Standard GV Node frame housings enable *mix-and-match* capability of multiviewers with signal processing modules, URS frame reference, and GPI I/O via GPI-1501 cards.
Unmatched image quality	Unmatched multiviewer picture quality, and superior on-screen graphics. HDMI or SDI mosaic outputs at full 1080p 50/60Hz resolution on up to four multiviewer displays. Input signal processing up to 3 Gb/s signal formats. Capable of handling 4K UHD quad-link sources seamlessly recombining them into a pixel perfect image.
Robust and serviceable design	Hot swappable cards with unique auto-recovery feature, which provides fast automated recovery after a *cold* spare is inserted. 4 RU GV Node frame housings, with redundant power supplies, and quiet cooling.
Multi-room, multi-user oriented	A single KMX-4911 multiviewer can be used to share sources across multiple rooms or operator positions, with fully independent displays, audio monitoring and control panels dedicated to each operator.
Seamless control across multiple multiviewers	Kaleido multiviewers can be *mixed and matched* to create a seamless monitoring system across a facility. Choice of control options such as the standalone Kaleido-RCP2 or RCP-200 panels, integrated with router control systems and panels, iControl, and third-party control systems.
Scalable for the largest systems	Virtually limitless multiviewer system expansion with upstream COTS IP switches.

Related Documentation

The KMX-4911 multiviewer is installed in a GV Node frame. As such, the GV Node frame must be networked and powered, and configured for use.

Document Number	Title
M6103-9800	GV Node IP Aggregation, Processing and Edge Routing Platform User Manual
M770-2800	Kaleido-X User's Manual
M3033-9905	KMX-4911 Quick Start Guide

Intended Audience

This document is intended to be used by system planners, and by hardware installation and system configuration technicians.

Current Limitations

The KMX-4911 multiviewer supports a subset of the features offered by other Kaleido-X series models. The KMX-4911 currently does not support the following Kaleido-X features:

- Loudness measurement
- Sending alarms via SNMP
- Layout, and video display:
    - Duplicated/repeated video
    - Overlapping video monitors
    - Cropping, and zooming (underscan/overscan)
    - Automatic aspect ratio adjustment based on decoded AFD/WSS information
    - Video monitors larger than 1920×1080 pixels
    - Display rotation
    - Custom display resolutions

System Requirements for a Client PC

A client PC or laptop meeting the following requirements is required to access the XAdmin Web client, and the other Kaleido-X client applications.

| Operating system	Windows 10, Windows 8.1, Windows 8, or Windows 7
Processor	Core 2 Duo at 2 GHz, or better
Memory	At least 2 GB of RAM
Disk space	At least 2 GB free

KMX-4911 Models and Related Hardware

The following components when added to a GV Node Frame creates multiviewer.

- KMX-4911 Multiviewer Cards
- KMX-4911 Rear Panel
- Optional SFP Module(s)

KMX-4911 Multiviewer Cards

The KMX-4911 is available in a number of models shown in the table below.

| KMX-4911 module selection	Description
KMX-4911-9X1	9x1 Kaleido multiviewer card for GV Node (SD/HD/3G SDI).
KMX-4911-9X2	9x2 Kaleido multiviewer card for GV Node (SD/HD/3G SDI).
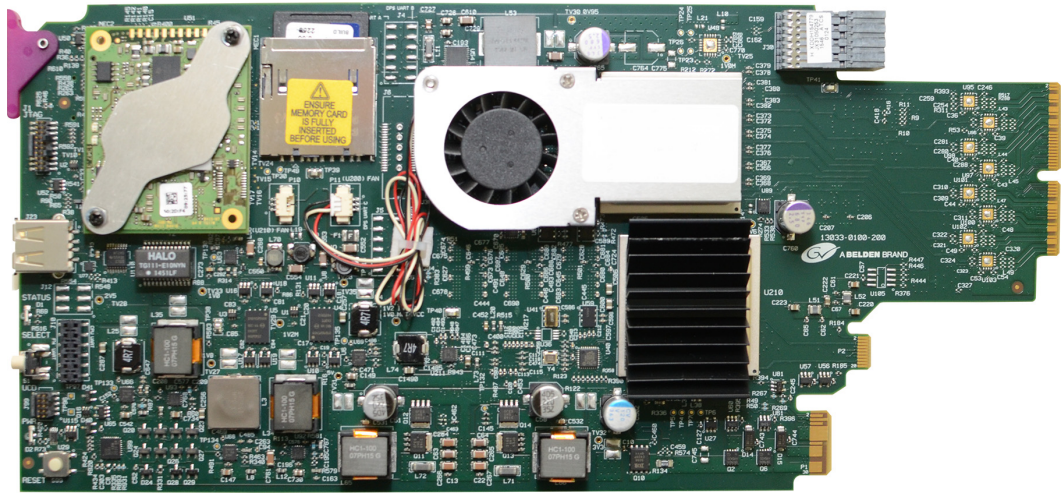
KMX-4911 Rear Panels

The KMX-4911 rear panels provide SFP slots for optional rear panel connection for up to four displays. Rear panels that support between two and four cards also serve to also

interconnect the KMX-4911 cards. These rear panels are available in a number of models shown in the table below.

KMX-4911 rear panel selection	Description
KMX-4911-9X2-4SRP	Single rear panel with a single SFP slot for one KMX-4911 card.
KMX-4911-18X4-4DRP	Double rear panel with dual SFP slots for two KMX-4911 cards.
KMX-4911-27X4-4TRP	Triple rear panel with dual SFP slots for three KMX-4911 cards.
KMX-4911-36X4-4QRP	Quadruple rear panel with dual SFP slots for four KMX-4911 cards.

KMX-4911-9x2-4SRP   KMX-4911-18x4-4DRP   KMX-4911-27x4-4TRP   KMX-4911-36x4-4QRP
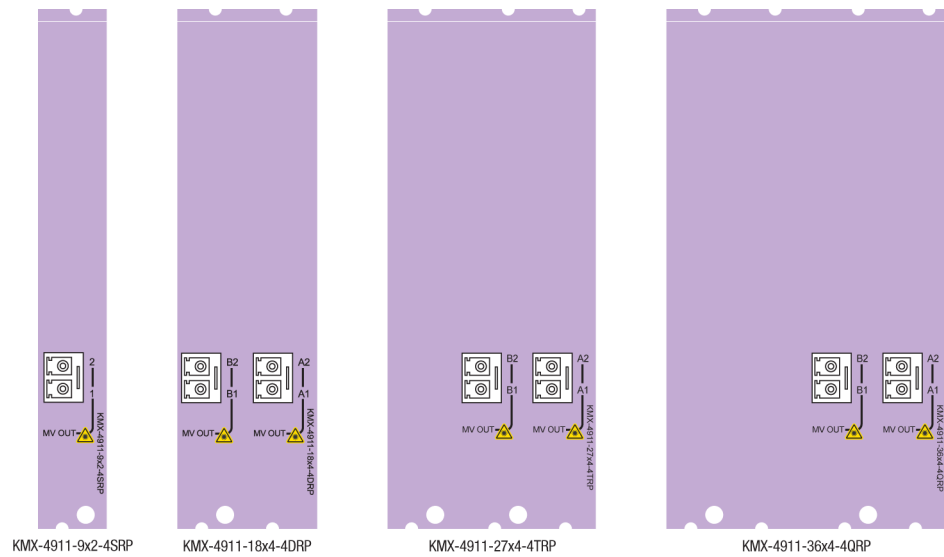
Multiviewer Scaling

The multiviewer is scaled by selecting an appropriate KMX-4911 rear panel model for your solution with the corresponding number of KMX-4911 cards to be used with that rear panel as shown below.

KMX-4911-9X2-4SRP Rear Panel

Multiviewer Capacity	Required Multiviewer Cards	SFP Module Requirements
9 × 1	1 × KMX-4911-9X1	One single Tx SFP module is required to support this capacity when displays are directly connected to the multiviewer's rear panel.
9 × 2	1 × KMX-4911-9X2	One dual Tx SFP module is required to support this capacity when displays are directly connected to the multiviewer's rear panel.

KMX-4911-18X4-4DRP Rear Panel

Multiviewer Capacity	Required Multiviewer Cards	SFP Module Requirements
18 × 1	2 × KMX-4911-9X1	One single Tx SFP module is required to support this capacity when displays are directly connected to the multiviewer's rear panel.
18 × 2	2 × KMX-4911-9X2	Two single Tx SFP modules or one dual Tx SFP module is required to support this capacity when displays are directly connected to the multiviewer's rear panel.
18 × 4	2 × KMX-4911-9X2	Two dual Tx SFP modules are required to support this capacity when displays are directly connected to the multiviewer's rear panel.

KMX-4911-27X4-4TRP Rear Panel

Multiviewer Capacity	Required Multiviewer Cards	SFP Module Requirements
27 × 1	3 × KMX-4911-9X1	One single Tx SFP module is required to support this capacity when displays are directly connected to the multiviewer's rear panel.
27 × 2	3 × KMX-4911-9X2	Two single Tx SFP modules or one dual Tx SFP module is required to support this capacity when displays are directly connected to the multiviewer's rear panel.
27 × 4	3 × KMX-4911-9X2	Two dual Tx SFP modules are required to support this capacity when displays are directly connected to the multiviewer's rear panel.

KMX-4911-36X4-4QRP Rear Panel

Multiviewer Capacity	Required Multiviewer Cards	SFP Module Requirements
36 × 1	4 × KMX-4911-9X1	One single Tx SFP module is required to support this capacity when displays are directly connected to the multiviewer's rear panel.
36 × 2	4 × KMX-4911-9X2	Two single Tx SFP modules or one dual Tx SFP module is required to support this capacity when displays are directly connected to the multiviewer's rear panel.
36 × 4	4 × KMX-4911-9X2	Two dual Tx SFP modules are required to support this capacity when displays are directly connected to the multiviewer's rear panel.

Compatible SFP Modules

When display(s) are directly connected to the multiviewer's rear panel, the appropriate SFP module(s) for SDI, HDMI or fiber outputs must also be ordered.

SFP module selection	Description
SFP-3G-2OUT-L	Dual output HD/3G SDI long-reach coaxial SFP with DIN 1.0/2.3 connectors.
SFP-HDMI-OUT	Single output HDMI type D SFP with retention lock, cable not included (see below).
SFP-T-S13-LC	Single Tx Fiber Module at 1310nm with LC Connector.
SFP-TT-S13S13-LC	Dual Fiber Tx (output) cartridge at 1310nm with LC/PC Connector.

For more SFP fiber options refer to http://www.grassvalley.com/products/sfp_optical_plug-in_cartridges. See also Grass Valley's DXF-300 Optical AV Media Extender.

Cable for SFP Modules

| Cable for SFP module selection	Description
HDMI-D-A-2	HDMI type D to A cable (2m) with retention lock.

Quad-Link 3G to HDMI 2.0 Converter

For 18 × 4, 27 × 4, 36 × 4 multiviewers, a 2160p output is available through an optional external quad-link 3G to HDMI 2.0 converter.

Quad-Link converter selection	Description
KMX-4K-QL-TO-HDMI	4K quad-link square division to HDMI 2.0 converter

Overview of the KMX-4911 System

Between one to four KMX-4911 modules are interconnected through their rear panels according to your application's sizing as shown below.

Multiviewer Inputs	Multiviewer Outputs
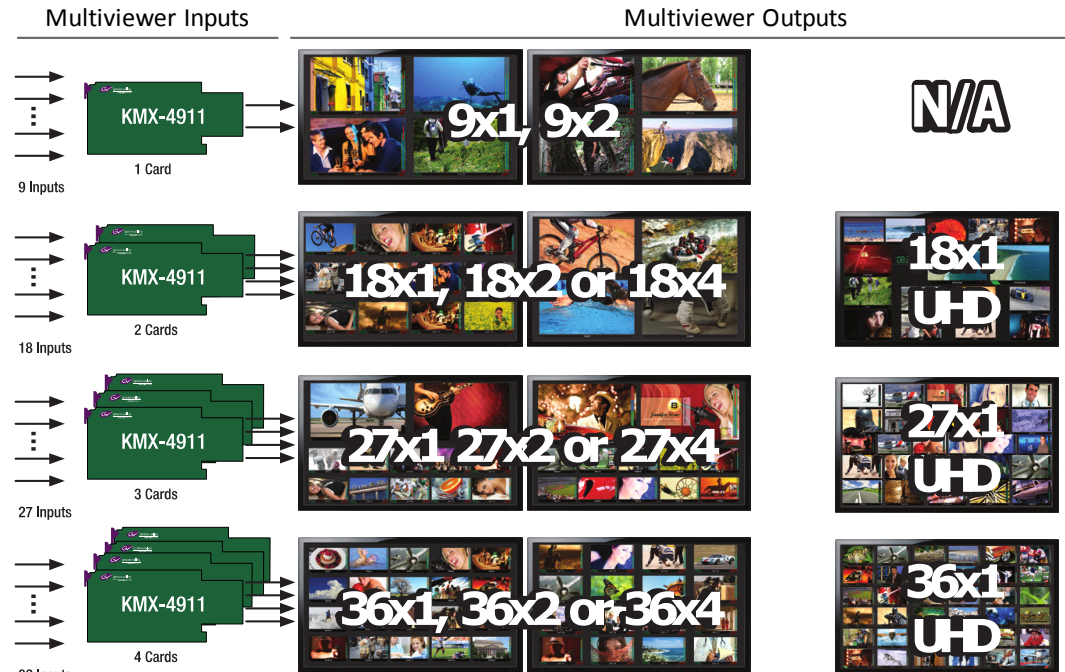
*Scalable input and mosaic output capability using the same KMX-4911 building block*
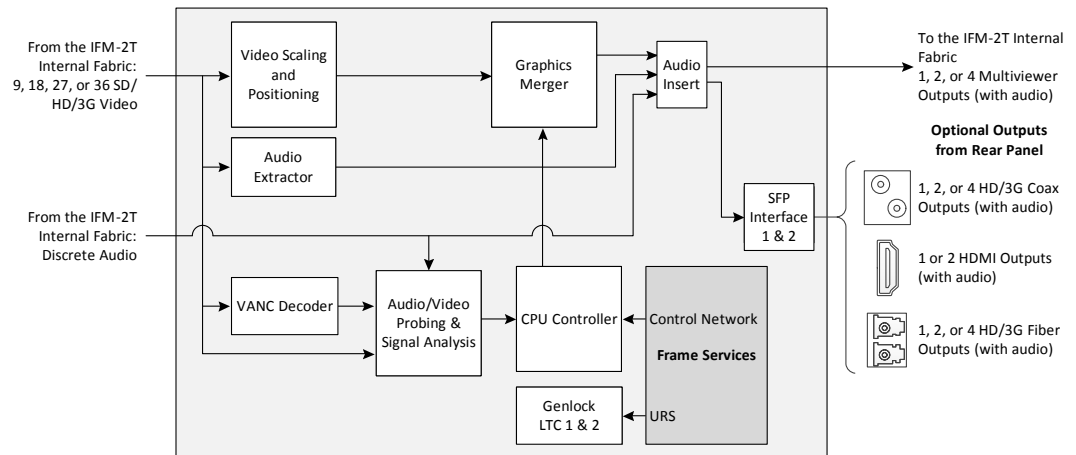
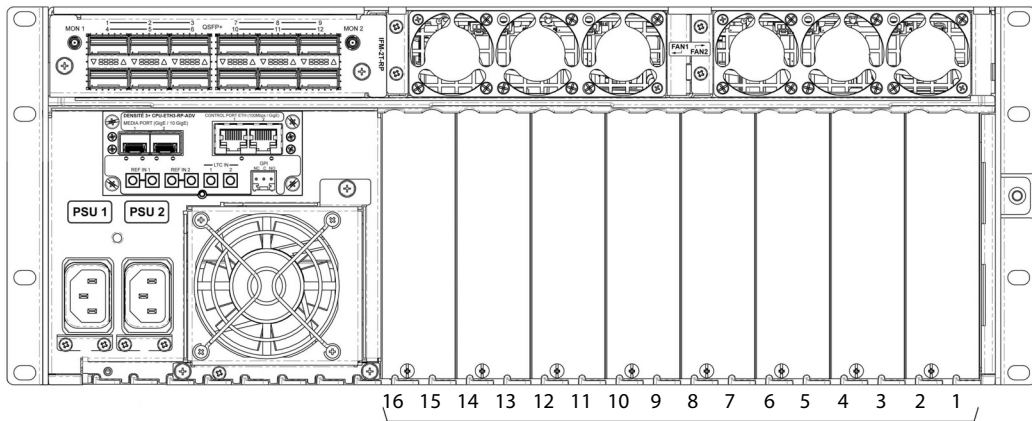

KMX-4911 functional block diagram

Physical Interface

GV Node frame interface

The KMX-4911 cards are installed in up to four consecutive modular card slots in the GV Node frame. When the frame door is closed, the status LEDs on each of the cards in the frame is visible through the door.
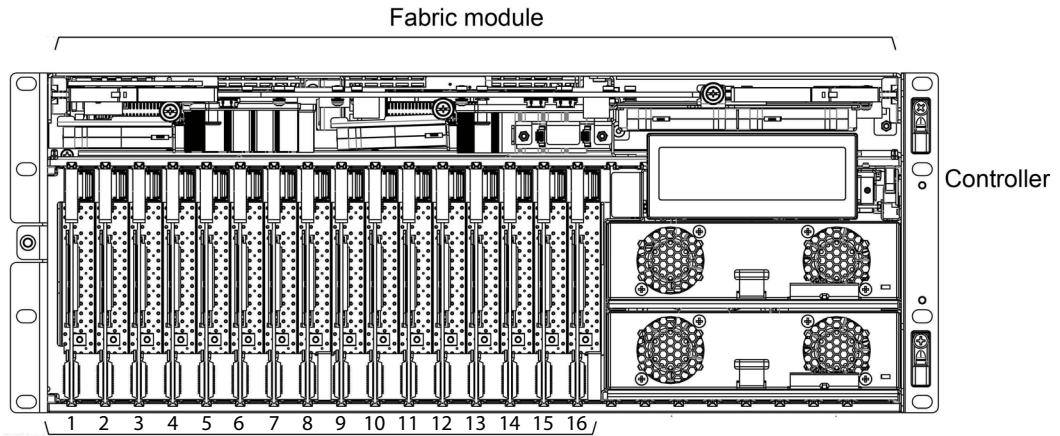
Front of GV Node frame (door removed) with modular card slot numbers labelled 1 to 16

The rear panel for the KMX-4911 card(s) are installed at the rear of the GV Node frame. The rear panel must be installed on the same modular card slots used by the KMX-4911 card(s).

Rear of GV Node frame with modular card slot numbers labelled 1 to 16

Mechanical Installation

Required Tools

Use a field-supplied Phillips #2 screwdriver to remove and install rear panels.

Unpacking

Make sure the following items have been shipped with your KMX-4911 order. If any of these are missing, contact your distributor or Grass Valley (see Contact Us, on page 72).

Your KMX-4911 package includes the following:

- KMX-4911 cards (front and rear modules), as per order
- SFP modules, as per order, with adapter cables if required
- KMX-4911 Quick Start Guide

In addition to the above, you will need the following (not supplied):

- Up to 4 displays
- Client PC
- Display cables (to connect your multiviewer to displays)
- At least one GV Node housing frame with available modular card slots
- Ethernet network connectivity
- Phillips #2 screwdriver to remove and install rear panels

How to Open and Close the Front Door

The front door of the GV Node frame is hinged on the right-hand side, and latched by a captive thumbscrew on the left-hand side. There are no electrical connections to the door.

- Turn the thumbscrew counterclockwise until it releases, and pull the door open.

Close the front door as follows:

- Swing the door shut and turn the thumbscrew clockwise until the door is secured shut.

Installation of the KMX-4911 in the GV Node Frame

Installation overview

The KMX-4911 cards are installed in a GV Node frame along with the associated rear panel. The rear panel must be installed in the GV Node frame before the card can be inserted into the frame. If the KMX-4911 card is to directly support a video wall mosaic output, one or two SFP module(s) must installed in the rear panel. See KMX-4911 Models and Related Hardware, on page 11 for a summary of the hardware that can be installed. See also the GV Node Quick Start Guide for information about how to install, power up, and configure a GV Node frame.

Multiviewer with a KMX-4911-9x2-4SRP Rear Panel

The one KMX-4911 cards are installed in a GV Node Frame slot that the KMX-4911-9x2-4SRP rear panel occupies.

KMX-4911 Modular Card

KMX-4911-9x2-4SRP Rear Panel

SFP Output
Module
(Optional)

GV Node Frame (Partial View)
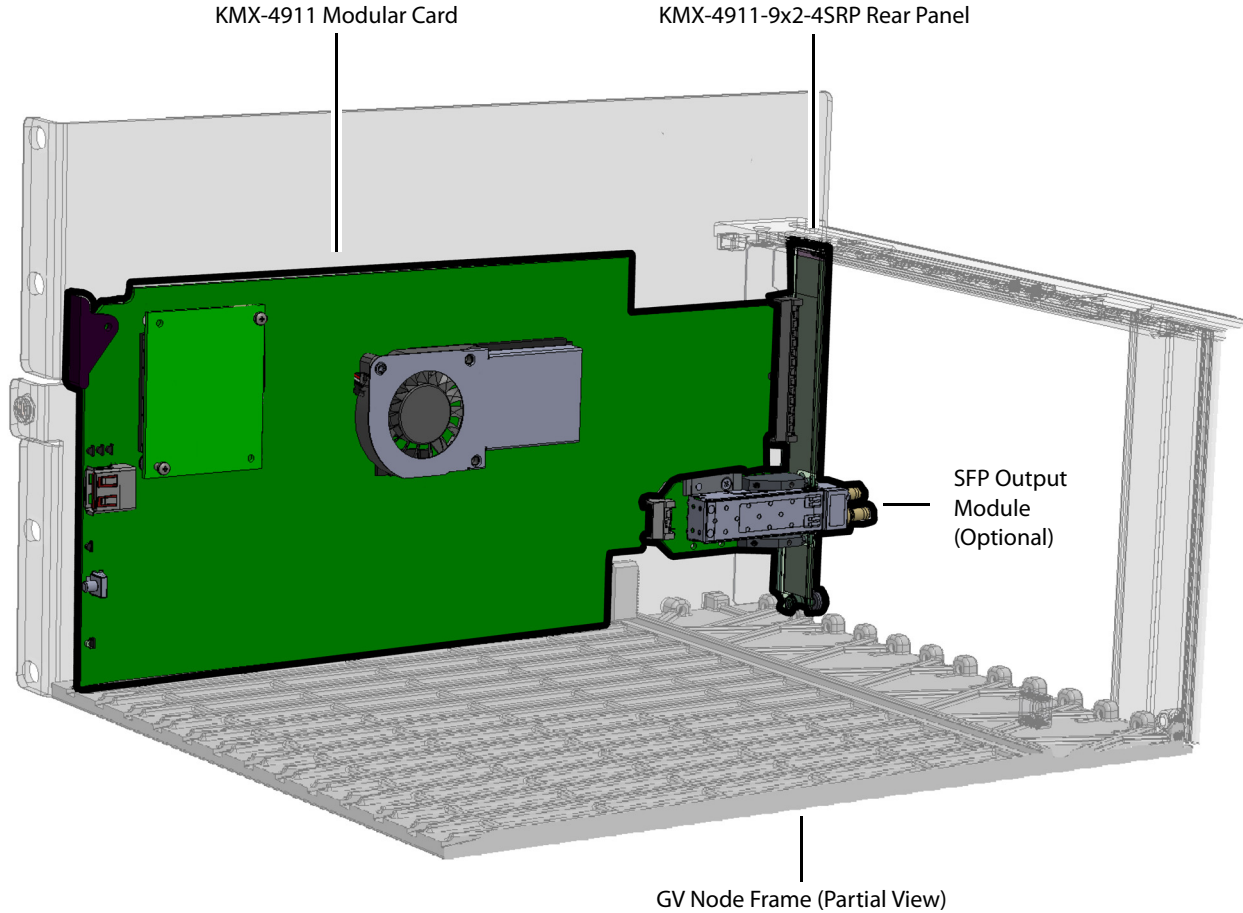
A KMX-4911 Card shown Assembled with a KMX-4911-9x2-4SRP Rear Panel in a GV Node Frame

This KMX-4911 card accepts up to 9 video inputs from the GV Node frame's fabric and can source up to 2 mosaic returns to the GV Node frame's fabric. It can also accept up to 64 discrete and 144 embedded audio channels from the GV Node frame's fabric.

The slot a given KMX-4911 card is installed in determines the input range / mosaic return range the card will use to communicate with the GV Node frame's fabric. See Routing Inputs and Mosaic Returns between the Multiviewer and the GV Node's Fabric, on page 60.

Multiviewer with a KMX-4911-18X4-4DRP Rear Panel

The two KMX-4911 cards are installed in two consecutive GV Node Frame slots that the KMX-4911-18X4-4DRP rear panel occupies.

2 × KMX-4911 Modular Cards   KMX-4911-18X4-4DRP Rear Panel

SFP Output Module (Optional)

A B

GV Node Frame (Partial View)
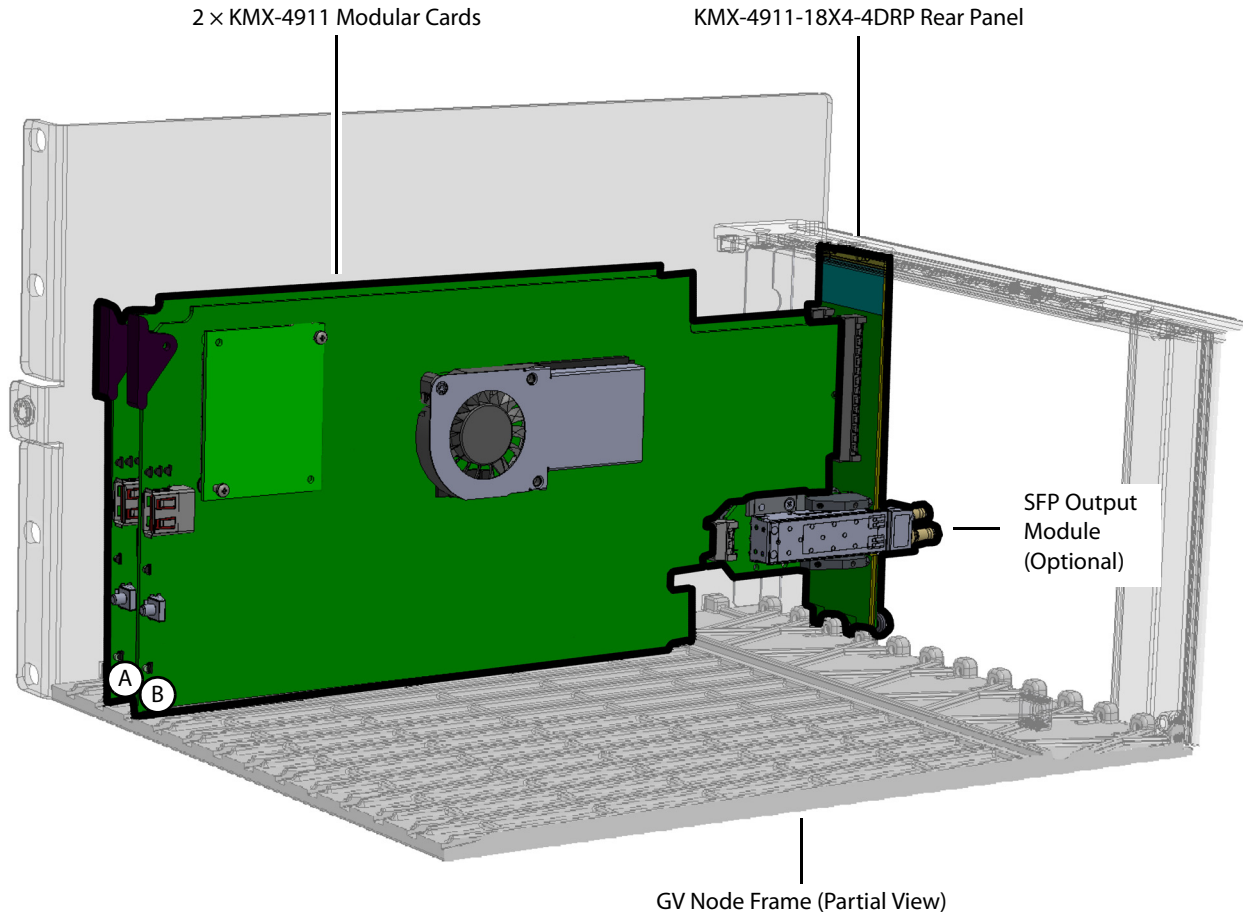
Two KMX-4911 Cards shown Assembled with a KMX-4911-18X4-4DRP Rear Panel in a GV Node Frame

In the above diagram, the cards are identified with letters. How individual cards communicate with the GV Node's fabric is explained in the table below.

Identification Letter	Inputs from GV Node frame's fabric	Mosaic returns to GV Node frame's fabric
A & B	Up to 9 video inputs per KMX-4911 card. Up to 18 video inputs total. Up to 64 discrete and 144 embedded audio channels for each KMX-4911 card in these slots. Up to 128 discrete and 288 embedded audio channels total.	Up to 2 mosaic returns per KMX-4911 card. Up to 4 mosaic returns total.

The slot a given KMX-4911 card is installed in determines the input range / mosaic return range the card will use to communicate with the GV Node frame's fabric. See Routing Inputs and Mosaic Returns between the Multiviewer and the GV Node's Fabric, on page 60.

Multiviewer with a KMX-4911-27X4-4TRP Rear Panel

The three KMX-4911 cards are installed in three consecutive GV Node Frame slots that the KMX-4911-27X4-4TRP rear panel occupies.

3 × KMX-4911 Modular Cards   KMX-4911-27X4-4TRP Rear Panel

SFP Output
Module
(Optional)

A   B   C

GV Node Frame (Partial View)
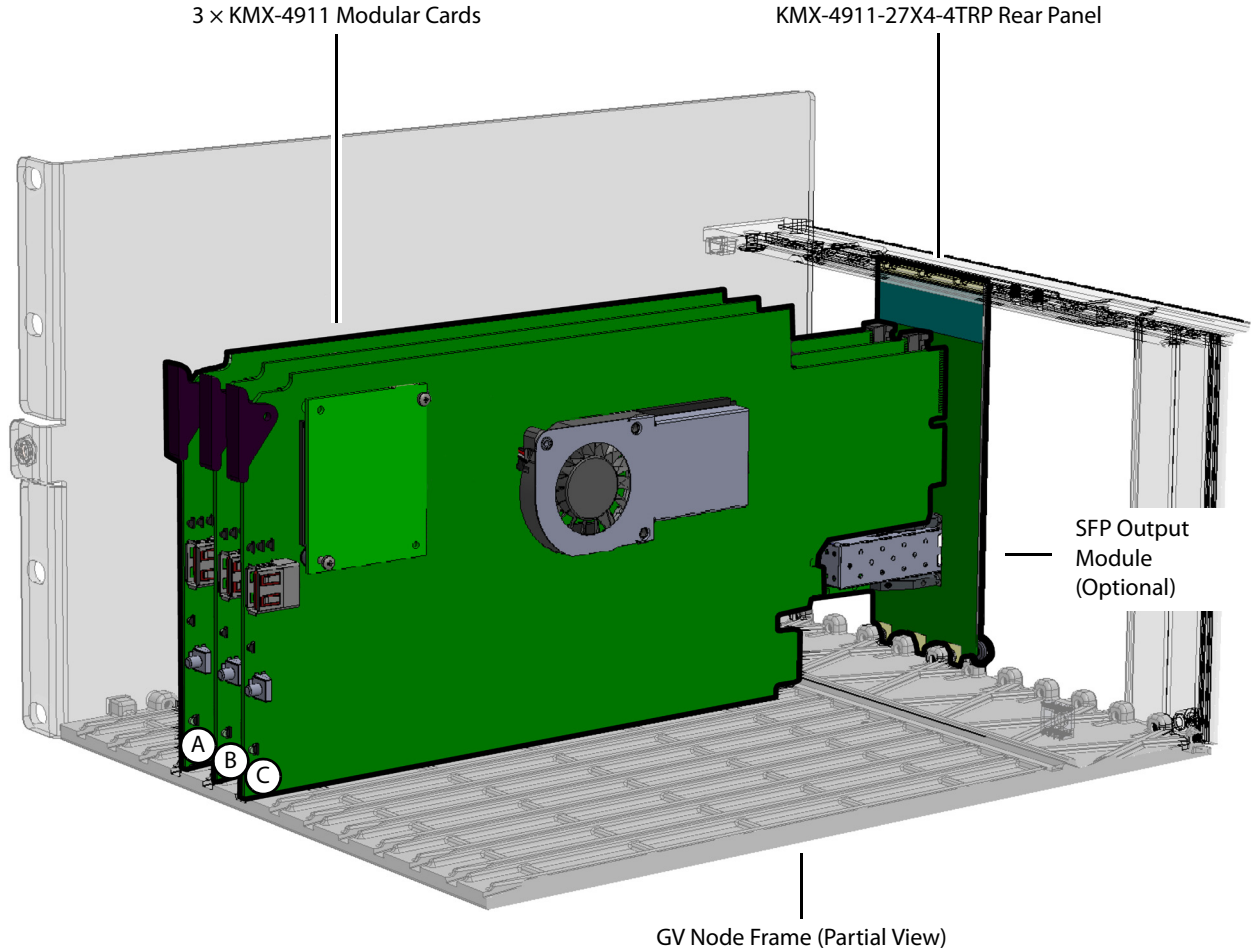
Three KMX-4911 Cards shown Assembled with a KMX-4911-27X4-4TRP Rear Panel in a GV Node Frame

In the above diagram, the cards are identified with letters. How individual cards communicate with the GV Node's fabric is explained in the table below.

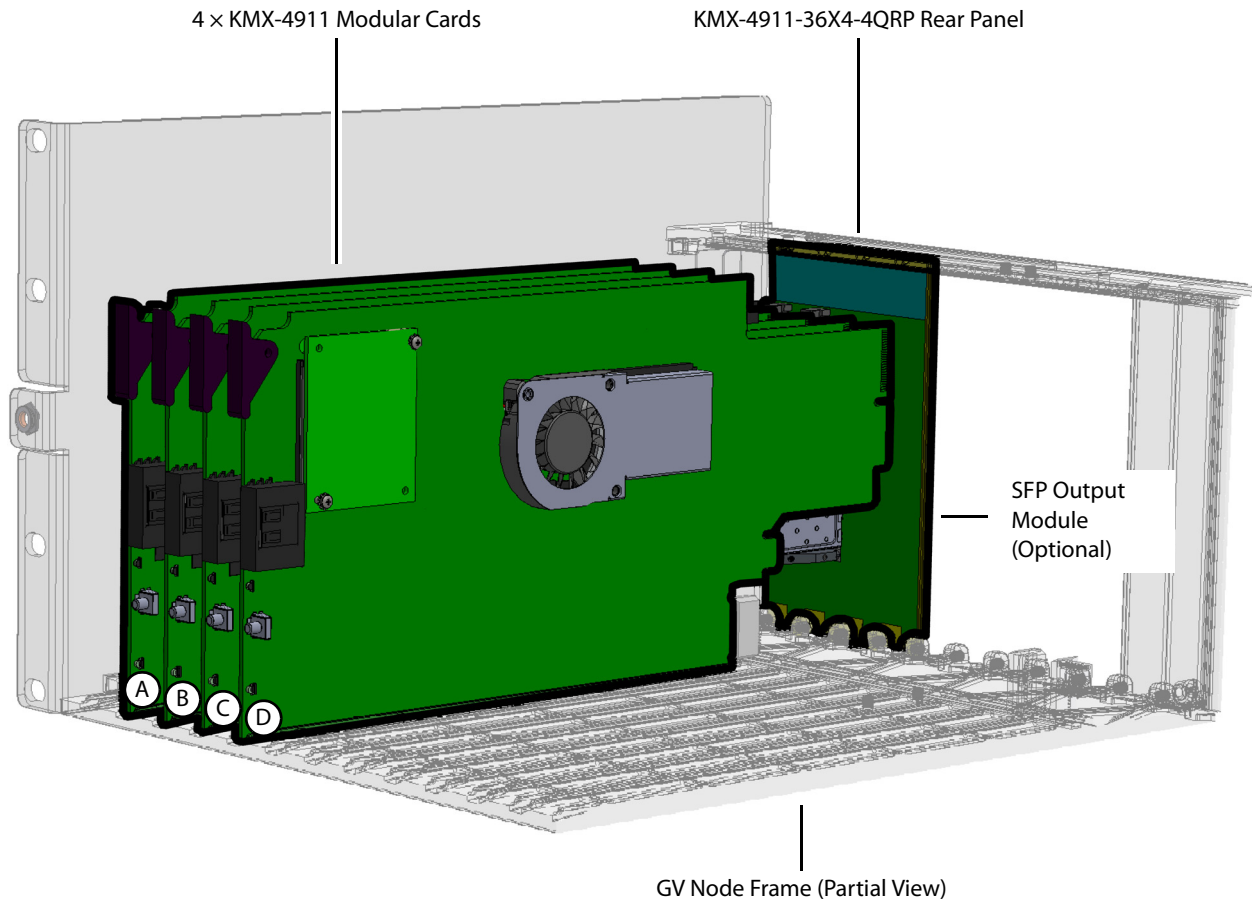| Identification Letter	Inputs from GV Node frame's fabric	Mosaic returns to GV Node frame's fabric
A & B	Up to 9 video inputs per KMX-4911 card. Up to 64 discrete and 144 embedded audio channel for each KMX-4911 card in these slots.	Up to 2 mosaic returns per KMX-4911 card.
C	Up to 9 video inputs and 144 embedded audio channels for the KMX-4911 card in this slot.	0
Total for A, B, & C	Up to 27 video inputs total. Up to 128 discrete and 432 embedded audio channels total.	Up to 4 mosaic returns total.

The slot a given KMX-4911 card is installed in determines the input range / mosaic return range the card will use to communicate with the GV Node frame's fabric. See Routing Inputs and Mosaic Returns between the Multiviewer and the GV Node's Fabric, on page 60.

Multiviewer with a KMX-4911-36X4-4QRP Rear Panel

The four KMX-4911 cards are installed in four consecutive GV Node Frame slots that the KMX-4911-36X4-4QRP rear panel occupies.

4 × KMX-4911 Modular Cards   KMX-4911-36X4-4QRP Rear Panel

SFP Output Module (Optional)

A B C D

GV Node Frame (Partial View)

Four KMX-4911 Cards shown Assembled with a KMX-4911-36X4-4QRP Rear Panel in a GV Node Frame

In the above diagram, the cards are identified with letters. How individual cards communicate with the GV Node's fabric is explained in the table below.

Identification Letter	Inputs from GV Node frame's fabric	Mosaic returns to GV Node frame's fabric
A & B	Up to 9 video inputs per KMX-4911 card. Up to 64 discrete and 144 embedded audio channel for each KMX-4911 card in these slots.	Up to 2 mosaic returns per KMX-4911 card.

Identification Letter	Inputs from GV Node frame's fabric	Mosaic returns to GV Node frame's fabric
C & D	Up to 9 video inputs and 144 embedded audio channels for each KMX-4911 card in these slots.	0
Total for A, B, C, & D	Up to 36 video inputs total. Up to 128 discrete and 576 embedded audio channels total.	Up to 4 mosaic returns total.

The slot a given KMX-4911 card is installed in determines the input range / mosaic return range the card will use to communicate with the GV Node frame's fabric. See Routing Inputs and Mosaic Returns between the Multiviewer and the GV Node's Fabric, on page 60.

Where to locate the KMX-4911 card(s) in the GV Node frame

The GV Node frame has space for 16 modular card slots. Identify the space in the GV Node frame the multiviewer is to be located. A single KMX-4911 card can be installed in any one of the 16 modular card slots with its corresponding rear panel. When there are between two and four KMX-4911 cards to be installed, they must be installed together side-by-side in a series and use the same common rear panel to form a multiviewer system. More than one multiviewer system can be installed in one GV Node frame, however, each multiviewer system will be functionally independent of each other.

Installation requirements

It is not necessary to switch off the frame's power when installing or removing a card.

Install the KMX-4911 Rear Panel

Each card has connectors which plug into a mid-frame mother board for distribution of power and for connection to the controller card, and a second connector which for certain cards plug directly into the rear panel for mosaic SFP output connections to the display(s).

First remove cards in any modular card slot where the rear panel is going to be installed.

- To remove an existing card from the modular card slot, lift up the swivel handle on the front of the card to lever the connectors apart, then use the handle to pull the card straight out of the modular card slot.

Card's Swivel Handle   KMX-4911 Card(s)   Rear Panel

GV Node Frame (Partial View)   Captive Screw
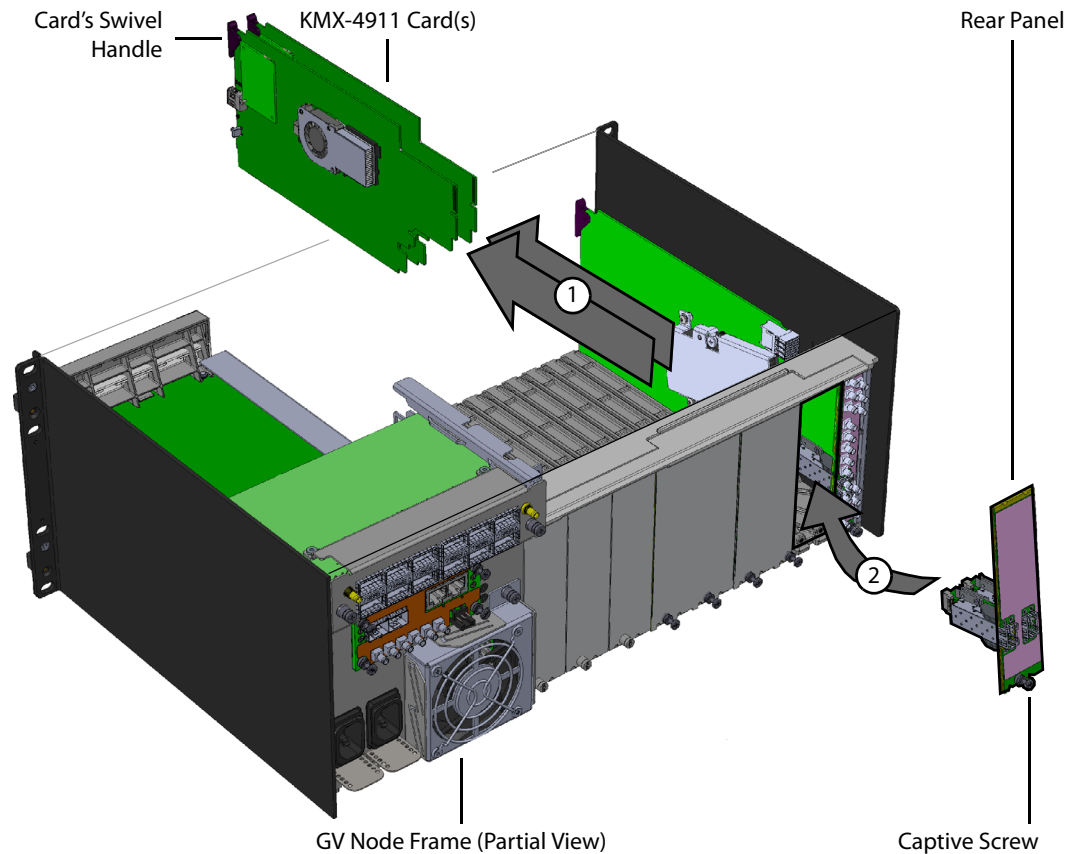
Example installation of a KMX-4911-18X4-4DRP Rear Panel in slots 2 and 3 in a GV Node Frame

For example, when installing a KMX-4911-18X4-4DRP rear panel in slots 2 and 3, first remove any cards located in modular card slots 2 and 3 as shown above.

To install the rear panel

1 If a card is installed in the modular card slot whose rear panel is being changed, remove it as described above.

2 Remove the existing rear panel (either blank or belonging to an existing card that is being changed out) by releasing the captive screw(s) at the bottom.

3 Slide the top edge of the new rear panel under the lip at the top of the empty space and secure the panel in place with the captive screw(s) on the bottom.

Install the KMX-4911 Modular Card(s)

The rear panel occupies between 1 and 4 modular card slots in the frame. One KMX-4911 card must be installed in each modular card slot covered by the rear panel. Once the rear panel has been installed, install the KMX-4911 card(s) as follows:

1 Open the frame's front door. See How to Open and Close the Front Door, on page 18.

2 Orient the card such that the card is up right with the swivel handle located at the top edge of the card.

3 While holding the card by its swivel handle, slide the KMX-4911 card into the slot and gently push on the swivel handle to seat the connectors.

4 Insert any remaining cards into the frame in the same manner.

5 Close the frame's front door. See How to Open and Close the Front Door, on page 18.

Install the Optional SFP Module(s)

If the KMX-4911 card is to directly support a video wall mosaic output, install the SFP module(s) into the Rear Panel. See Installing the SFP Output Module, on page 69.

Maintenance

Required Tools

Use a field-supplied Phillips #2 screwdriver to remove and install rear panels.

Field Replaceable Units

The following components are field replaceable units. The repair procedure is to swap in a new (known good) component to restore system operation.

- KMX-4911 Multiviewer Cards
- KMX-4911 Rear Panel
- Optional SFP Module(s)

There are no user-serviceable parts within these components except for the KMX-4911 multiviewer card in which the heatsink cooling fans can be replaced. See Cooling Fan Replacement, on page 27.

Replacing Cards

All cards and rear panels can be installed with the frame power on.

Each card has connectors which plug into a mid-frame mother board for distribution of power and for connection to the controller card, and a second connector which for certain cards plug directly into the rear panel for mosaic output connections to the display(s).

IMPORTANT
The rear panel must be installed before the KMX-4911 card is inserted into the frame.
The KMX-4911 card must be removed from the frame before the rear panel can be removed.

Replacing a rear panel

To replace a rear panel in a GV Node frame

1 If a card is already installed in a modular card slot served by the rear panel you are changing, remove it first (see Removing a card, on page 26).

2 Remove the existing rear panel (either blank or belonging to an existing card) by releasing the captive screws at the bottom.

    There may be several captive screws, depending on the card type.

3 Position the new panel and secure it in place with the captive screw(s) at the bottom.
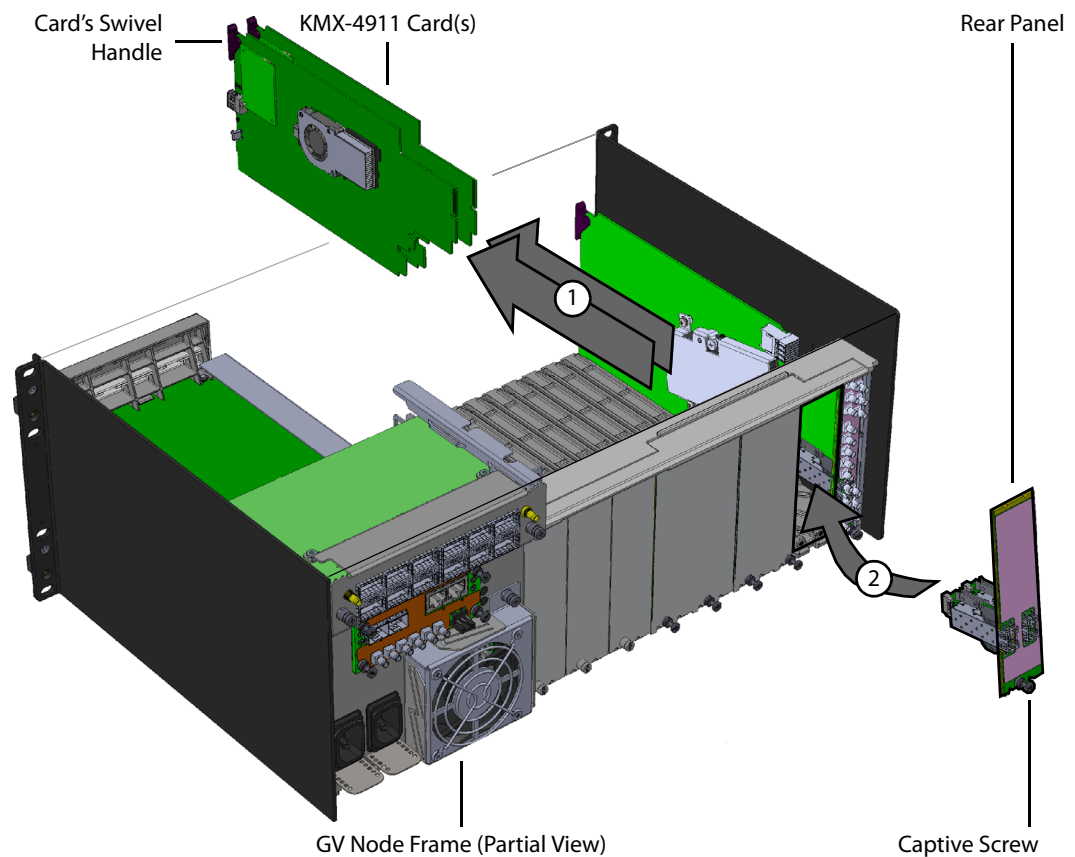
Example installation of a KMX-4911-18X4-4DRP Rear Panel in slots 2 and 3 in a GV Node Frame (partial view)

Removing a card

To remove a card

1 Open the front door of the frame (see How to Open and Close the Front Door, on page 18).

2 Lift up the swivel handle on the front of the card you want to remove, to lever the connectors apart, and then use the handle to pull the card straight out of the modular card slot.

3 Close the front door of the frame (see How to Open and Close the Front Door, on page 18).

Installing a Card

Note: The rear panel must be installed before the card. See Replacing a rear panel on page 26.

To install a card

The rear panel occupies between 1 and 4 modular card slots in the frame. One KMX-4911 card must be installed in each modular card slot covered by the rear panel.

1 Open the frame's front door. See How to Open and Close the Front Door, on page 18.

2 Orient the card such that the card is up right with the swivel handle located at the top edge of the card.

3 While holding the card by its swivel handle, slide the KMX-4911 card into the slot and gently push on the swivel handle to seat the connectors.

4 Insert any remaining cards into the frame in the same manner.

5 Close the frame's front door. See How to Open and Close the Front Door, on page 18.

Cooling Fan Replacement

Some diagnostic procedures may interrupt normal system operation. Changing a card's cooling fan will interrupt normal system operation. Down time can be minimized by swapping in a new (known good) card to restore system operation quickly. Schedule these maintenance operations during off hours when the system is not in use.

Diagnostics

The KMX-4911 card's electronic circuitry generates heat that must be shed by forcing air to move across heat-generating components. Reduced air flow or high ambient temperature results in heat build-up within temperature-sensitive components on the card. This can cause unexpected behavior such as glitches or even a system freeze or shutdown. The KMX-4911 card self-diagnoses high temperature conditions by raising overheat and fan alarms.

Overheat and fan alarms are reported through the following mechanisms:

• The alarm status in XAdmin and in the iControl service's GSM is called *Harware Failure*.

• The fan and overheat alarms are reported in iControl in the Alarms Configuration panel. See Alarm Configuration Panel, on page 54 for more information.

• A KMX-4911 card's front Status LED blinks due to this condition (note that the Status LED can also blink due to other conditions). This cannot be stopped by a service panel action.

• A *Hardware Failure* message is displayed in the dashboard.

The fan alarm is raised when the fan is not running fast enough to provide enough cooling. A fan alarm must be addressed right away. An overheat alarm can be ignored if it is accompanied by a fan alarm as the root cause is the fan not running fast enough. Otherwise (if the fan is running properly according to the alarm) then these steps should be taken.

Overheat Alarm Corrective Actions

If the fan alarm is inactive and the overheat alarm is active, then undertake the following diagnostic steps in the following order:

1 Confirm that the room temperature is within GV Node's operating temperature range specification. If necessary, take corrective actions by, for example, increasing the amount of air conditioning made available to the GV Node frame.

2 Confirm that air flow around the GV Node's frame is not obstructed. If necessary, take corrective actions by, for example, removing obstructions or rerouting cables around and away from the GV Node frame.

3 When the previous corrective actions do not eliminate an overheat alarm, verify that the KMX-4911's onboard fan is working correctly. See Fan Noise below.

Fan Noise

Over time, a fan's performance (operating speed) can degrade which may raise overheat and fan alarms. Under this circumstance, a fan may emit a rough-sounding lower pitched sound as compared to the sound that other healthier fans emit. To confirm that the card has an abnormally-sounding fan, during off hours when the system is not in use, eject the card from the GV Node frame to verify that the distinctive sound stops and take corrective actions (see below).

Or there may be no sound at all if the fan's rotation is completely blocked. While the card is in the frame, make a visual inspection with a flashlight to confirm fan rotation. If the fan does not rotate, then corrective actions must be taken.

Fan Alarm Corrective Actions

When a fan alarm is raised, it must be addressed right away. During off hours when the system is not in use, eject the card from the GV Node frame and inspect the card's fan assembly: remove any accumulated dust and dirt from the card with compressed air and remove any obstruction to the fan's ability to freely rotate.

Reinsert the card into the frame and restore system operation to see if the fan alarm becomes inactive. The KMX-4911 card monitors the fan motor's rotational speed to diagnose that the fan is rotating fast enough to provide enough cooling; it raises a fan alarm when the card's fan is not rotating fast enough.

When the card's fan is not rotating fast enough or is making abnormal noises, the fan is worn out and it must be replaced with a new one.

Fan Replacement Kit

The replacement fan kit is available by ordering part number 1933-2000-101.

Required Tools

The following field-supplied material is required:

• Compressed air to remove dust from the card.
• Flashlight to perform a visual inspection to confirm fan rotation.
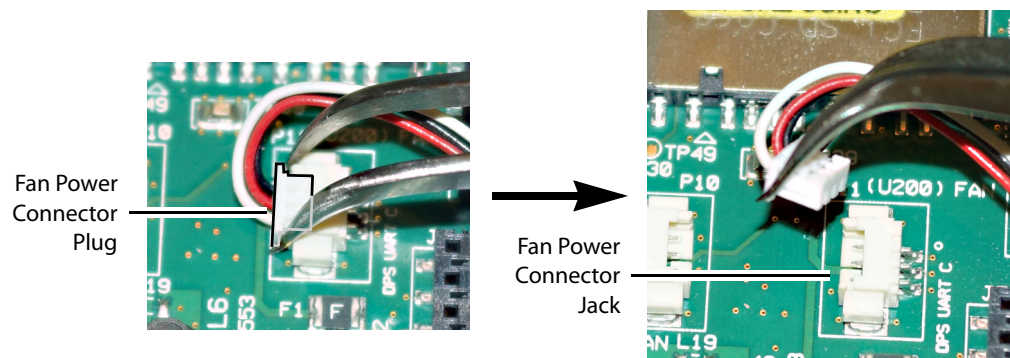• Phillips screwdrivers:

- #1 jeweler's screwdriver with a miniature shaft to remove the fan from the fan cover assembly and install the replacement fan back onto the fan cover assembly.
- #2 screwdriver to remove and install the fan cover assembly.
- Curved tweezers to disconnect the fan's power connector from the KMX-4911 card.
- Anti-static bag or anti-static work surface to reduce the possibility of electrostatic discharge damage to the card.
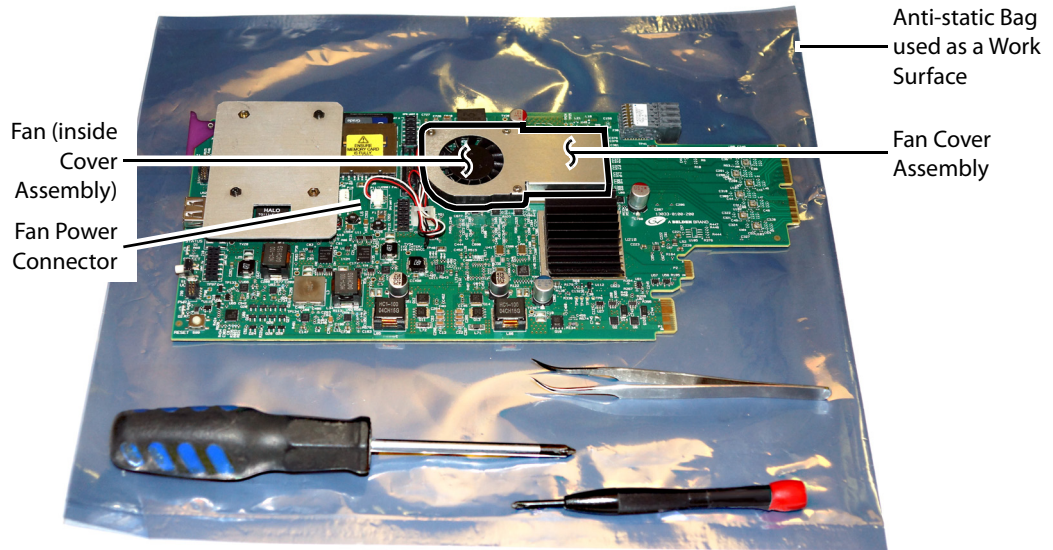
Typical card with onboard fan, screwdrivers, tweezers, and anti-static bag

To replace a fan

1 During off hours when the system is not in use, eject the card from the GV Node frame. See Removing a card, on page 26.

2 Place the card on an anti-static bag or anti-static work surface.

3 Using curved tweezers, disconnect the fan power connector plug, very carefully. Gently wiggle the connector plug from the socket (jack). Do not pull on the wires. If the wires are routed through wire holders, remove the wires from the holders first, before disconnecting.

4 Free up the fan cover assembly by removing the 2 screws in the middle.

Once the 2 screws are removed, remove the fan cover assembly.
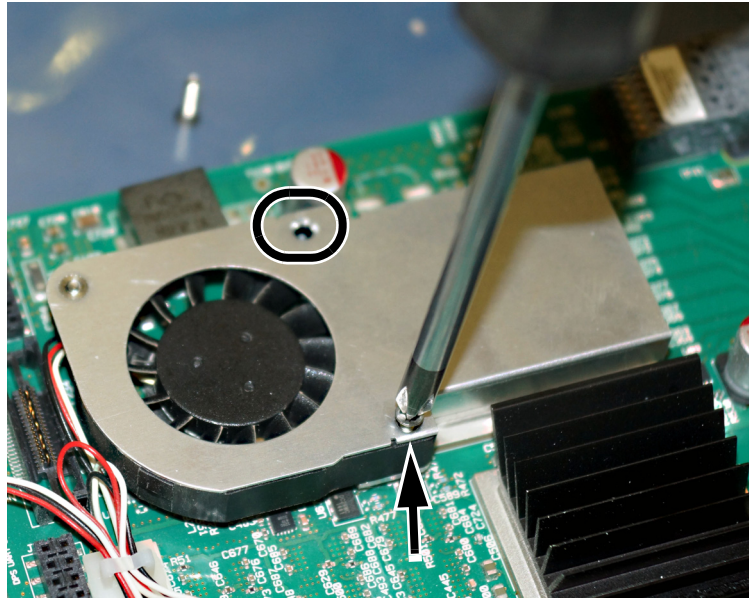
5 Flip the cover over, and remove the last screw holding the fan with the #1 Phillips screwdriver.
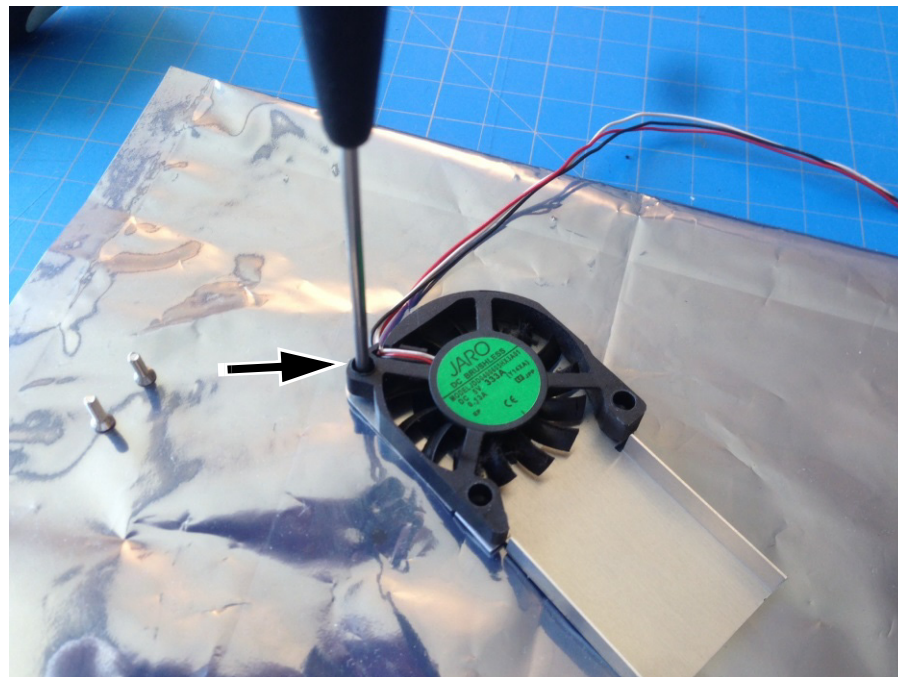
6 Remove any accumulated dust from the card with compressed air.

7 Replace the fan with the new one, and replace all screws, in the reverse order.

8 Route the fan's power wires through the wire holders, and make the connection to the card's fan power connector.

9 Restore system operation by inserting the card back into the GV Node frame. See Installing a Card, on page 27.

Put the multiviewer into operation and confirm that the overheat and fan alarms remain inactive.
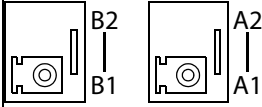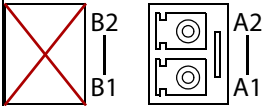
Cabling Diagrams
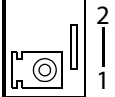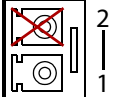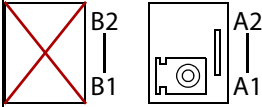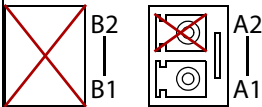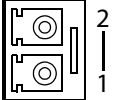
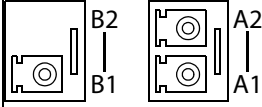The following diagram shows a typical cable connections to the GV Node frame and to the multiviewer.
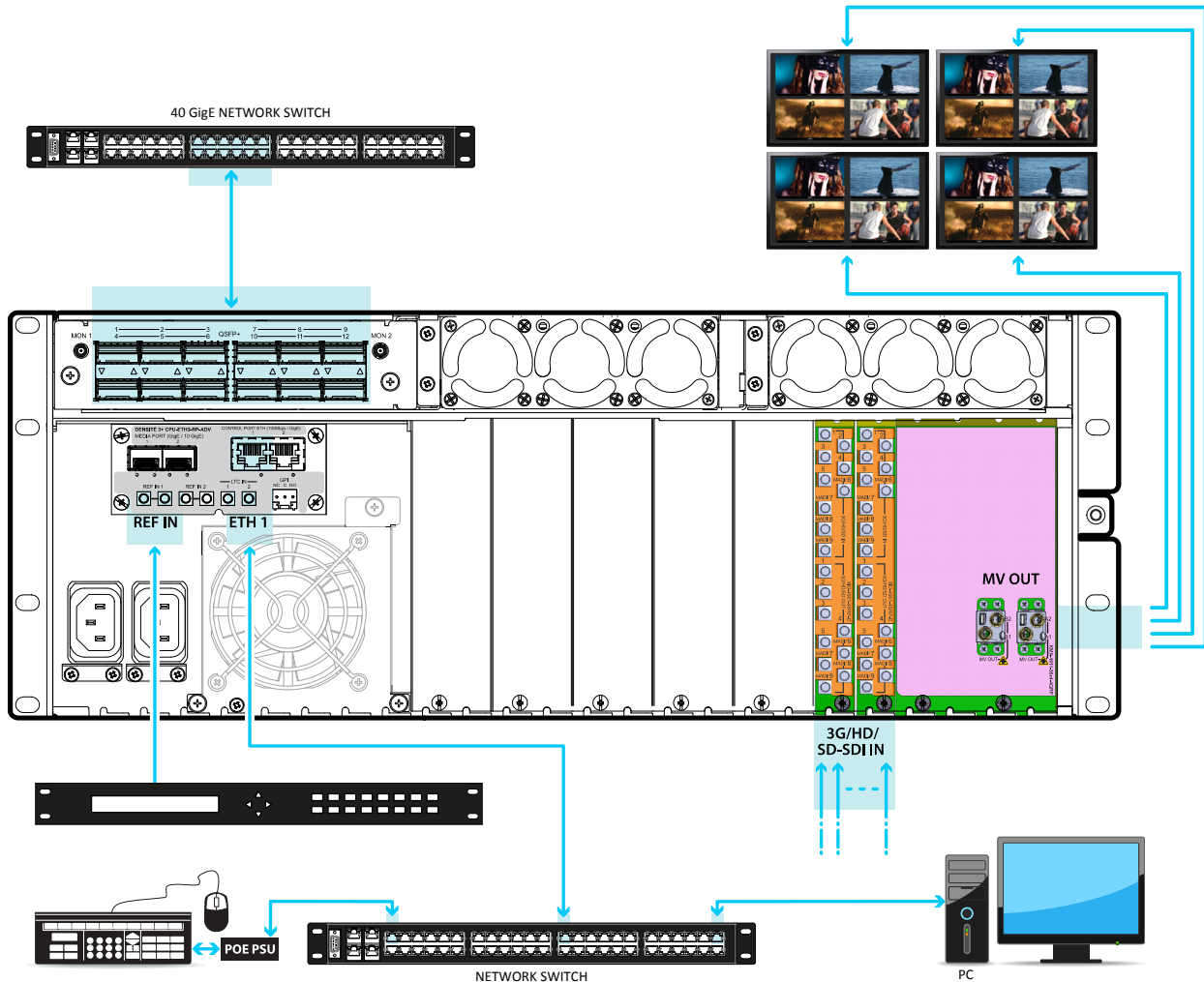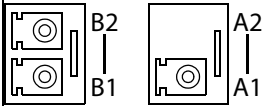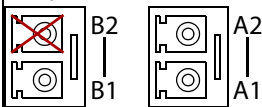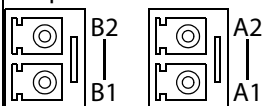

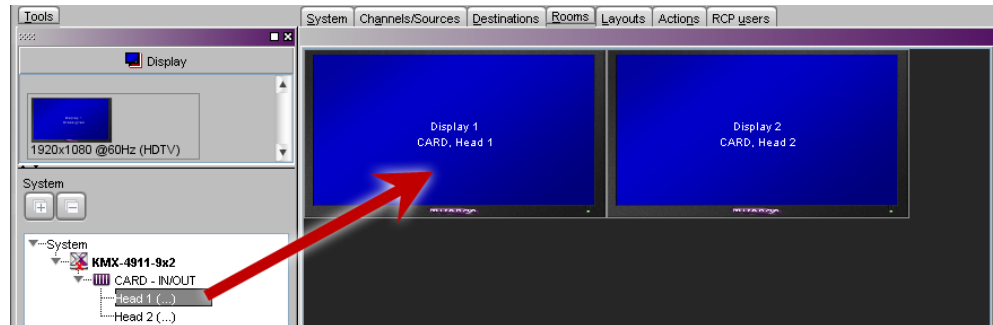*Cabling diagram for a KMX-4911 (typical setup)*

Multiviewer SFP Module Mosaic Output to Display Input Cable Connections

Connect displays to the SFP modules according to the following guidelines. Some SFP modules have two outputs and in rare cases, the output allocation for these modules may be reversed from what is shown. Configure the room layout in XEdit. The table below shows the nomenclature used in XEdit and the physical SFP output on the multiviewer's rear panel. Connections crossed-out with a red 'X' are not connected.

31

| Multiviewer Capacity	Rear Panel Connections	KMX-4911 Room Configuration Nomenclature in XEdit
9 × 1	Fiber Connection for a single Tx SFP module. 2 1 Fiber Connection for a double SFP output module. 2 1	*Card - IN/OUT Head 1 (...)* = SFP output **1** *Card - IN/OUT Head 2 (...)* = No Connection
18 × 1 27 × 1 36 × 1	Fiber Connection for a single Tx SFP module. B2 A2 B1 A1 Fiber Connection for a double SFP output module. B2 A2 B1 A1	*Card A - IN/OUT Head 1 (...)* = SFP output **A1** *Card A - IN/OUT Head 2 (...)* = No Connection *Card B - IN/OUT Head 1 (...)* = No Connection *Card B - IN/OUT Head 2 (...)* = No Connection
9 × 2	Fiber Connection for a double SFP output module. 2 1	*Card - IN/OUT Head 1 (...)* = SFP output **1** *Card - IN/OUT Head 2 (...)* = SFP output **2**
18 × 2 27 × 2 36 × 2	Fiber Connection for two single Tx SFP modules. B2 A2 B1 A1	*Card A - IN/OUT Head 1 (...)* = SFP output **A1** *Card A - IN/OUT Head 2 (...)* = No Connection *Card B - IN/OUT Head 1 (...)* = SFP output **B1** *Card B - IN/OUT Head 2 (...)* = No Connection
	Fiber Connection for a double SFP output module. B2 A2 B1 A1	*Card A - IN/OUT Head 1 (...)* = SFP output **A1** *Card A - IN/OUT Head 2 (...)* = SFP output **A2** *Card B - IN/OUT Head 1 (...)* = No Connection *Card B - IN/OUT Head 2 (...)* = No Connection

Multiviewer Capacity	Rear Panel Connections	KMX-4911 Room Configuration Nomenclature in XEdit
18 × 3 27 × 3 36 × 3	Fiber Connection for a single Tx SFP module with a double SFP output module. B2 / B1 / A2 / A1	*Card A - IN/OUT Head 1 (...)* = SFP output **A1** *Card A - IN/OUT Head 2 (...)* = SFP output **A2** *Card B - IN/OUT Head 1 (...)* = SFP output **B1** *Card B - IN/OUT Head 2 (...)* = No Connection
	Fiber Connection for a single Tx SFP module with a double SFP output module. B2 / B1 / A2 / A1	*Card A - IN/OUT Head 1 (...)* = SFP output **A1** *Card A - IN/OUT Head 2 (...)* = No Connection *Card B - IN/OUT Head 1 (...)* = SFP output **B1** *Card B - IN/OUT Head 2 (...)* = SFP output **B2**
	Fiber Connection for two double SFP output modules. B2 / B1 / A2 / A1	*Card A - IN/OUT Head 1 (...)* = SFP output **A1** *Card A - IN/OUT Head 2 (...)* = SFP output **A2** *Card B - IN/OUT Head 1 (...)* = SFP output **B1** *Card B - IN/OUT Head 2 (...)* = No Connection
18 × 4 27 × 4 36 × 4	Fiber Connection for two double SFP output modules. B2 / B1 / A2 / A1	*Card A - IN/OUT Head 1 (...)* = SFP output **A1** *Card A - IN/OUT Head 2 (...)* = SFP output **A2** *Card B - IN/OUT Head 1 (...)* = SFP output **B1** *Card B - IN/OUT Head 2 (...)* = SFP output **B2**

Assign a multiviewer display to an SFP output as follows: in the **Rooms** tab of XEdit, drag the multiviewer's card output onto a display. See XEdit Installation, on page 41 and the *Kaleido-X User's Manual* for more information.

Multiviewer SFP Module Mosaic Output to a 4K Display Input Cable Connection

To support a 4K UHD display, connect the four multiviewer mosaic outputs to an SDI to HDMI 2.0 Converter as shown below.
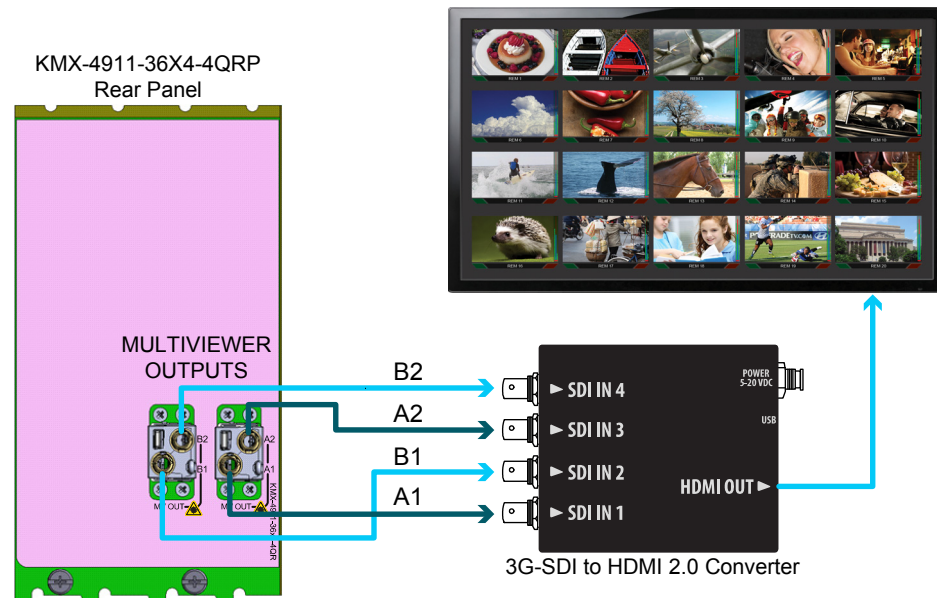
Cabling diagram for a KMX-4911 setup for a mosaic output with a quad-link 3G to HDMI 2.0 converter (partial view)

Changing the Mosaic Output Resolution

To change a display's resolution from the GV Node frame's local control panel

1 Press the icon representing the appropriate card on the GV Node frame's local control panel touch display.

The Status LED on the selected card flashes orange, and the associated local menu and navigation controls appear on the frame's control panel touch display.

> Note: You can navigate the menu by using the four virtual buttons on the touch display:
> • Touch the [+] and [–] buttons, to navigate between menu options or between parameter values.
> • Touch SEL to access the next menu level. When a parameter value is shown on the display, modify the value by using the [+] and [–] buttons, and then touch SEL to apply the new value.
> • Touch ESC to go back to the previous menu level.
> • Once you have completed your changes, press the Select button *on the front edge of the KMX-4911 card* to exit the control menu.

2 On the local control panel, touch the [–] button, until RESOLUTION appears on the display.

3 Touch the SEL button.

HEAD 1 appears on the control panel's touch display.

4 Touch the SEL button again.

5 The current resolution for the display that is connected to the to the card's output head 1 (i.e. through the SFP1 or SFP A1 connector) appears on the display.

6 Touch the [+] and [–] buttons, to navigate to a suitable output resolution for your display.

7 Touch SEL to apply the value shown on the display.

The selected resolution is applied to the display.

8 Touch ESC to return to the previous level in the local control menu.

HEAD 1 appears again on the display.

9 If you want to change the resolution on the second display (if available), then touch the [–] button.

HEAD 2 appears on the display and you can repeat step 4 to step 8 above to verify or configure the resolution of the display that is connected to the card's output head 2 (i.e. through the SFP2 or SFP A2 connector).

10 When you are satisfied with the selected output resolution settings, press the Select button *on the front edge of the KMX-4911 card* to exit the control menu.

> Notes
>
> • If you do not touch any button on the GV Node frame local control panel, the CPU-ETH3 controller will revert to its normal standby mode, and the selected card's Status LED will revert to its normal operating mode, after 30 seconds.
>
> • If you changed a parameter from the card's control menu, but have not applied your change (you did not touch the SEL button on the local control panel), once the 30-second timeout has occurred, the parameters will be confirmed as if you had touched the SEL button.

Step 1: Networking Setup

For the KMX-4911 multiviewer to join a TCP/IP network, it must be configured with a system IP address, a network mask, a gateway, and a system name. In addition, a client PC must be configured to communicate with the multiviewer (see Configuring a Client PC, on page 39). You must also configure any Kaleido-RCP2 units you may have ordered.

The KMX-4911 is shipped with the following default network settings:

System IP address	192.168.3.30
Network mask	255.255.255.0
Gateway	0.0.0.0

> Note: If the system IP address of the multiviewer has been changed (i.e. it no longer corresponds to the as-shipped configuration), it is still possible to determine the current setting; see Finding the System IP Address and Application Version, on page 38.

Network Switch Considerations

The GV Node's **Control Port** Ethernet connection can present to the connected network switch more than one MAC address as GV Node has an internal switch that aggregates multiple network interfaces for the frame itself and that of certain cards or systems installed in the frame such as any KMX-4911 multiviewer system. Each KMX-4911 multiviewer system (as defined by each installed KMX-4911 rear panel) has its own MAC address.

By default, many network switches support only one MAC address to be connected to an individual switch's network port. This is done for security reasons to prevent people from extending the reach of the network by connecting unauthorized equipment to the network.

In cases where a GV Node frame is connected to a network switch with such security enabled, network connectivity to all GV Node frame components will be impossible. With administrative access to the switch, the solution is to increase the switch's setting for the number of MAC addresses it will support on the port used for the GV Node frame to a number that reflects the current number of network interfaces used within GV Node. If the required number of network interfaces is undetermined, set the switch to allow 17 network interfaces for the GV Node as this is the maximum number of network interfaces a GV Node frame can support. Refer to the switch's administrator's guide for the appropriate configuration instructions.

For example, for a Cisco brand switch, use the following administrative command to increase the number of supported IP interfaces on a port to 17.
```
Switch(config-if)# switchport port-security maximum 17
```

Changing the Multiviewer's IP Address

To change the IP address of a KMX-4911 multiviewer

1 Press the icon representing the appropriate card on the GV Node frame's local control panel touch display.

> Note: You can configure a KMX-4911 system's network settings from any one of its cards. These settings are automatically replicated to all other cards.

The Status LED on the selected card flashes orange, and the associated control menu appears on the display of the GV Node frame's local control panel.

> Note: You can navigate the menu by using the four virtual buttons on the touch display:
> • Touch the [+] and [–] buttons, to navigate between menu options or between parameter values.
> • Touch SEL to access the next menu level. When a parameter value is shown on the display, modify the value by using the [+] and [–] buttons, and then touch SEL to apply the new value.
> • Touch ESC to go back to the previous menu level.
> • Once you have completed your changes, press the Select button *on the front edge of the KMX-4911 card* to exit the control menu.

2 On the local control panel, touch the [–] button repeatedly until NETWORK SETTINGS appears on the display, and then touch the SEL button.

   SYSTEM IP EDIT appears on the control panel's display.

3 Touch the SEL button again.

   The current IP address appears on the display.

   • Touch the [+] and [–] buttons, to change the current value at the current input position.
   • Touch SEL to move one position to the right.
   • Touch ESC to move one position to the left.

   > Note: Touching ESC when the input focus is in the first position returns to the previous menu level.

4 When the display shows the correct IP address, touch SEL to apply your change.

5 Touch ESC to return to the previous menu level.

   SYSTEM IP EDIT appears on the control panel's display.

6 Touch the [–] button.

   NETMASK EDIT appears on the control panel's display.

7 Repeat step 3 to step 5 to configure the netmask.

8 Once you have set the network mask and navigated back to the previous menu level, touch the [–] button again.

   DEFAULT GW EDIT appears on the control panel's display.

9 Repeat step 3 to step 5 to configure the gateway.

10 Once you have set the gateway, press the Select button on the front edge of the KMX-4911 card to exit the control menu.

> Notes
>
> • If you do not touch any button on the GV Node frame local control panel, the CPU-ETH3 controller will revert to its normal standby mode, and the selected card's Status LED will revert to its normal operating mode, after 30 seconds.
>
> • If you changed a parameter from the card's control menu, but have not applied your change (you did not touch the SEL button on the local control panel), once the 30-second timeout has occurred, the parameters will be confirmed as if you had touched the SEL button.

The card restarts. The startup sequence takes approximately two minutes, during which time the Status LED is flashing orange. Once the startup has completed, the Status LED should be green.

11 Check the card's Status LED, and make sure that it does not indicate an error condition. See KMX-4911 Front Card-edge Interface and Troubleshooting, on page 45.

12 Verify that the new IP address is effective, by referring to Finding the System IP Address and Application Version, below. Perform this verification for all the cards that are connected to your system's rear module.

Finding the System IP Address and Application Version

To find the system IP address and application version

1 Press the icon representing the appropriate card on the GV Node frame's local control panel touch display.

The Status LED on the selected card is flashing orange, and the version of the Kaleido-X Software that is running on the card (e.g. "8.00 build 2220") appears on the display of the GV Node frame's local control panel.

2 On the local control panel, touch the [–] button repeatedly until NETWORK SETTINGS appears on the display, and then touch the SEL button.

SYSTEM IP EDIT appears on the control panel's display.

3 Touch the SEL button again.

The current IP address appears on the display.

4 Press the Select button *on the front edge of the KMX-4911 card* to exit the control menu.

Configuring a Kaleido-RCP2

By default, the Kaleido-RCP2 is configured with DHCP enabled, so it will automatically be assigned an IP address by a DHCP server. If no DHCP server can be found, the Kaleido-RCP2 will fall back to its default static IP address, subnet mask, and gateway settings:

Default IP address	10.0.3.191
Default subnet mask	255.255.0.0
Default gateway	0.0.0.0

If you need to operate with a fixed IP address, you must use the Kaleido-RCP2's configuration menu to disable DHCP and set up the correct IP address, Network Mask, and Gateway (see the "Enabling or Disabling DHCP" and "Setting an IP Address, Subnet Mask and Gateway" sections in the *Kaleido-RCP2 Guide to Installation and Operation*, available from the Documentation Library section of Grass Valley's website).

To access Kaleido-X rooms located in other subnets, the Kaleido-RCP2 must be configured with the appropriate unicast IP addresses (see the "Configuring Unicast IP Addresses" section in the *Kaleido-RCP2 Guide to Installation and Operation*, available from the Documentation Library section of Grass Valley's website).

To start using the Kaleido-RCP2 with its default settings

1 On the Kaleido-RCP2 unit, press the ENTER button and hold it until the ESC button lights up.

   The following message appears on the LCD display:
   Configuration
   ROOM SELECTION

2 Press ENTER again to obtain the room list from the multiviewers that are currently available on the network.

   The message **ROOM Select** followed by the name of the first room available appears on the LCD display.

3 Press the **2** key (to move up in the list) or the **8** key (to move down the list) until the name of the room you wish to access is displayed.

4 Press ENTER, and then press ESC to exit the configuration menu.

5 Press the LOGIN button.

   The following message appears on the LCD display:

   LOGIN Position
   Admin

6 Press ENTER to log on to your system as *Admin*.

   A message prompting you for a password appears on the LCD display.

7 Press ENTER again (by default, there is no password).

   The message **Access granted** will appear on the LCD display if the login is successful. If a mouse is connected to the Kaleido-RCP2, then you should be able to see and move the mouse pointer on the monitor wall.

Configuring a Client PC

The client PC that you will use to communicate with the KMX-4911 multiviewer (via XAdmin and XEdit) and the multiviewer itself must be on the same subnet. The following procedure applies to a typical Windows 10, Windows 8, or Windows 7 system.

To change the IP address of the client PC

1 Press the Windows key on your keyboard, type "control panel" and then press Enter.

2 In the search box, type "adapter", and then, under **Network and Sharing Center**, click **View network connections**.

3 In **Network Connections**, right-click the network adapter you wish to configure (e.g., *Local Area Connection,* or *Ethernet*), and then click **Properties**. If the system prompts you

for an administrator password or confirmation, type the password or provide confirmation.
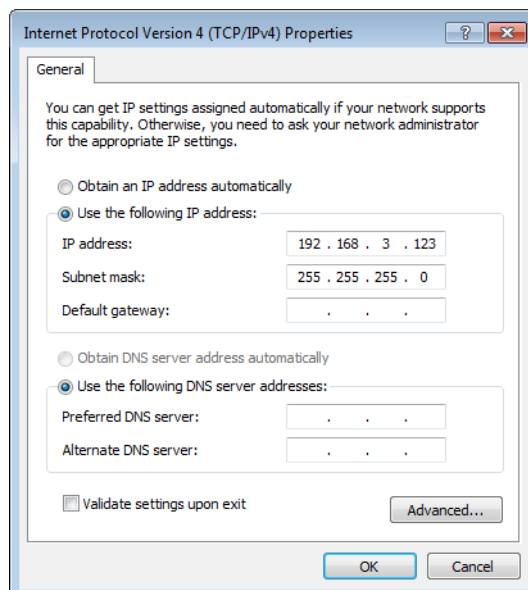
The Properties window for the selected network adapter opens.
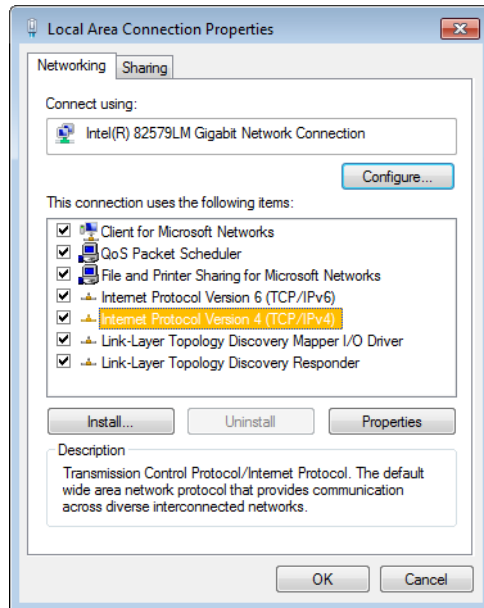
4 On the **Networking** tab, under **This connection uses the following items**, click **Internet Protocol Version 4 (TCP/IPv4)**, and then click **Properties**.

The **Internet Protocol Version 4 (TCP/IPv4) Properties** window opens.

5 On the **General** tab, click **Use the following IP address**.

6 Type an IP address in the same range as the multiviewer's current IP address.

For example, if the multiviewer's IP address is 192.168.3.31, then the IP address of your client PC could be 192.168.3.123. If you are unsure, contact your network administrator.

7 Type a subnet mask in the same range as that of the multiviewer.

8 Click **OK**.

9 In **Local Area Connection Properties**, click **Close**.

Step 2: XEdit Installation

XEdit is a client application used to create layouts for the monitor wall, and to configure your multiviewer system, from your PC or laptop. When the computer with XEdit is connected to the multiviewer through a TCP/IP network, you can use XEdit to modify layouts and settings directly on the multiviewer, or you can work locally on the computer and then export your changes to the multiviewer.**To install XEdit from your multiviewer's home page**

1 From a workstation on the same subnet as the multiviewer, open a Web browser window and type the multiviewer's IP address in the address bar.

   The multiviewer's home page appears.

2 Click the **XEdit** button.

   The browser prompts you to save an executable file to your hard drive (`Kaleido-windows32-online.exe`[1]). This file is an online installer, which will download XEdit and other companion elements from your multiviewer, and install them on your PC. Some browsers may allow you to run the file directly. Depending on your browser's security features, warnings may appear, which you may safely dismiss.

3 Unless your browser lets you run the file (and you chose to do so), navigate to the location were you saved the installer file and open it.

   More security warnings or prompts can appear, which you may safely dismiss or accept.

   A window appears, showing the download and installation progress.

1.Installers for Linux or Mac OS X are not yet available.

At the end of the installation process:

- If you have Windows 7, or Windows 10, shortcuts ( ) are added to your desktop and to the Start menu (under **All Programs**).
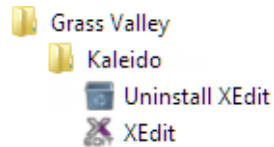
- If you have Windows 8.1, or Windows 8, XEdit will appear on your desktop, in the Apps view with all the other applications on your PC (Windows 8.1), or in your Start screen (Windows 8).
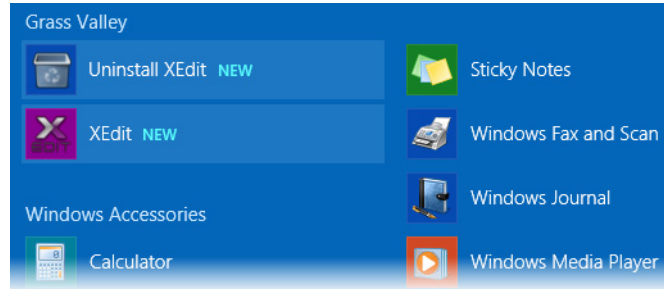

Once the installation has completed, the XEdit startup screen appears.

Depending on your Windows Firewall settings, a security alert may appear.

- Click **Allow access** to unblock the application's network access.

If XEdit cannot find all of the fonts it needs already on your PC or laptop, it downloads them from the multiviewer automatically, in which case a message will appear to confirm the font update, and instruct you to restart the application.
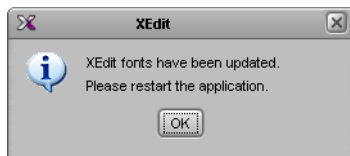
- Click **OK** to continue, and then open XEdit again, by using the shortcut on your desktop, in your Apps view (Windows 8.1) or Start screen (Windows 8), or from the Start menu (Windows 7, Windows 10).

4 When prompted to specify a database, choose one from the **Path** list, or click **Browse** to navigate to the database you wish to use as your local workspace, and then click **OK**.
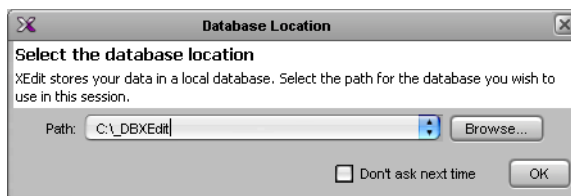
Once the database has finished loading, XEdit's main application window appears.
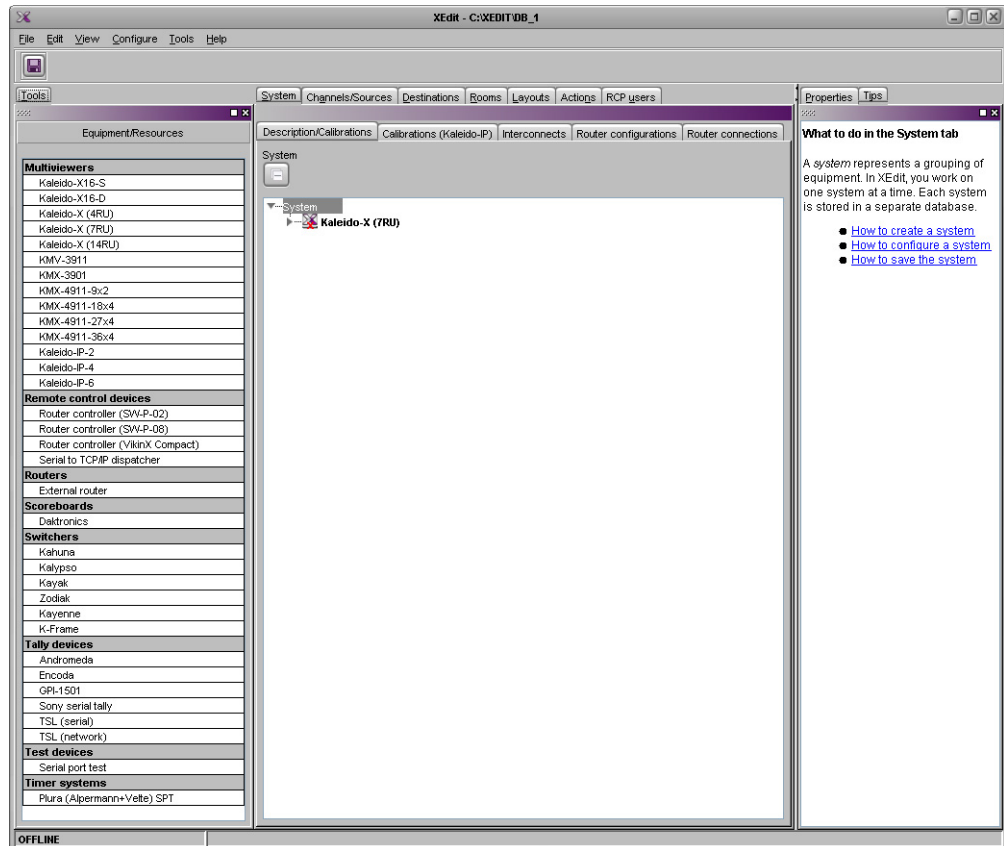
Note: Once it has been installed from the multiviewer, XEdit remains on your PC or laptop, and can be launched from the shortcut that was added to your desktop, Apps view, or Start screen (see page 42), or from the Start menu. Whenever you install a new version of the Kaleido-X software on the multiviewer, the next time you open XEdit, your installed copy of the application will be automatically updated from the multiviewer.
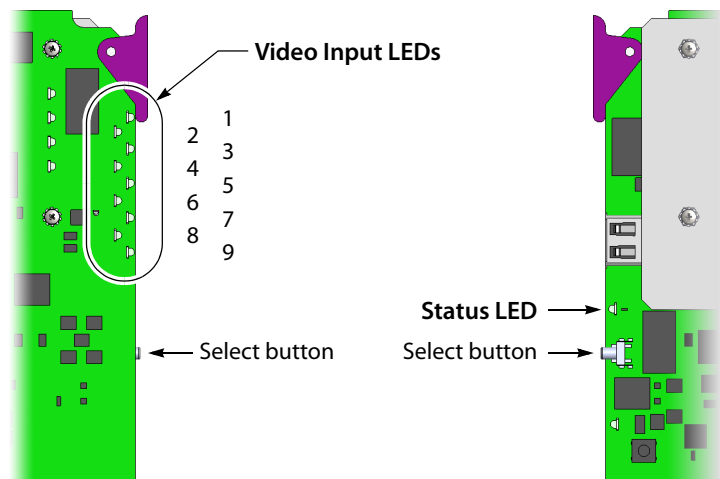
2 Operation

A KMX-4911 multiviewer system can be controlled in the following ways:

- In the housing frame, the card-edge LEDs can be enabled to allow you to monitor the KMX-4911card input's operating status (see KMX-4911 Front Card-edge Interface and Troubleshooting, on page 45), or use the CPU-ETH3 local control panel and its buttons to navigate menus and adjust parameter values (see Using the GV Node Frame Control Panel, on page 47).

- The loading and management of layouts is handled through XEdit, accessed through the GV Node's ETH port.

- Grass Valley's iControl system can be used to access the card's operating parameters from a remote computer, using a convenient graphical user interface (see Remote Control Using iControl, on page 49).

- A GPI interface can be used to remotely control layout selection. See *GPI-1501 General Purpose Interface I/O Module* in the Kaleido-X User's Guide.

- The mosaic output resolution of the card can be controlled automatically through the EDID interface with the display.

- The RCP-200 advanced remote control panel, and the Kaleido-RCP2 control panel allow you to perform operations on the monitor wall, either by themselves or in association with an external keyboard and a mouse. Refer to the RCP-200, Kaleido-RCP2, and Kaleido-X documentation (available from the *Documentation Library* section of Grass Valley's website).

- The KMX-4911 multiviewer can be controlled as a router by router control systems which can trigger actions on this multiviewer. See the *Routers & Kaleido-X* chapter in the Kaleido-X User's Guide.

KMX-4911 Front Card-edge Interface and Troubleshooting

The front card edges of the KMX-4911 incorporate several operational elements shown below.

Video Input LEDs

Summary view of the interface of a KMX-4911 card

The status LED shows the card's current operating status. During operation, the cards' Status LED should be green.

Status LED Color	Description
Extinguished	• LEDs are silenced: press the Select button on the front edge of a KMX-4911 card to enable this indicator. • No power. • Card not fully inserted.
Green	• Normal operation.
Flashing orange	• Booting. • The card is selected for local control.
Red	• No Ethernet. • SD card error.
Flashing red	• No rear panel. • Fan failure. • High temperature.

Under normal operation, the Video Input LEDs are silenced. To make the Video Input LEDs operational, press the Select button on the front edge of a KMX-4911 card. Video Input LEDs for the corresponding video inputs that have been assigned a valid video signal should be green.

Video Input LED	Description
Green	• Normal operation.
Red	• Input is unconfigured • No signal

The select button allows you to access and set basic configuration parameters. The use of the select button is described in Changing the Mosaic Output Resolution, on page 34 and Networking Setup, on page 36.

Using the GV Node Frame Control Panel

All of the cards installed in a GV Node frame are connected to the frame's controller card, which handles all interaction between the cards and the outside world. There are no operating controls located on the cards themselves. The controller supports remote operation via its Ethernet ports, and local operation using its integrated control panel.

CPU-ETH3 Local Control Panel

The CPU-ETH3 local control panel is located in the top right side of the GV Node frame. The control interface is a touch screen that allows you to view the status of GV Node frame components including that of each card currently installed in the 16 slots. A number of buttons (PS1, PS2, FANs, CTRL, and REF) allow you to access the menus for the GV Node frame components including its reference module. The outline color of the buttons behave like status indicators. For example, in the image below, the card in slot 13 is in alarm.

CPU-ETH3 local control panel - Top Menu

Once a card has been selected, four virtual navigation buttons (SEL, ESC, [+], and [-]) allow you to navigate through menus to view and configure the card's parameters.

CPU-ETH3 local control panel

The panel is assigned to operate any card in the frame by pressing the icon representing the appropriate card on the GV Node frame's local control panel touch display. Alternatively, pressing the status button on the front edge of a card will also bring up the menu. The Status LED on the selected card becomes flashing orange.

Touch the CTRL button on the control panel to select the GV Node frame's controller card itself.

Navigating the Local Control Panel Menu

The KMX-4911 has operating parameters which may be adjusted locally at the controller card interface. Press the Select button on the front edge of a KMX-4911 card to assign the local control panel to operate the card.

The local control panel displays a menu that can be navigated using the four buttons located next to the display. The functionality of the buttons is as follows:

[+] and [-]   Used for menu navigation and value modification.

SEL   Gives access to the next menu level. When a parameter value is shown, touching this button once enables modification of the value using the [+] and [-] buttons; pressing a second time confirms the new value.

ESC   Cancels the effect of parameter value changes that have not been confirmed; touching ESC causes the parameter to revert to its former value.
              Touching ESC moves the user back up to the previous menu level. At the main menu, ESC does not exit the menu system. To exit, press the Select button on the front edge of the card being controlled.

If no controls are operated for 30 seconds, the controller reverts to its normal standby status, and the selected card's Status LED reverts to its normal operating mode. If a parameter was changed on the card but not submitted (SEL was not pressed or touched) and the 30 second timeout occurs, the parameters will be confirmed as if the SEL button had been touched.

Local Control Panel Menu Structure

Where applicable, default values are underlined.

KMX-4911 local menu

STATUS	CARD STATUS	{CARD STATUS}**	OFF
RESOLUTION	HEAD 1 {FORMAT}**		
	HEAD 2 {FORMAT}**		
NETWORK SETTINGS	SYSTEM IP EDIT	{IP ADDRESS}	
	NETMASK EDIT	{mask}	
	DEFAULT GW EDIT	{IP ADDRESS}	
	MAC ADDRESS		
CONFIG	SFP CONFIG***	SFP OUT 1	<u>ON</u> (ABSENT)
			OFF (ABSENT)
		SFP OUT 2	<u>ON</u> (ABSENT)
			OFF (ABSENT)
		SFP OUT 3	<u>ON</u> (ABSENT)
			OFF (ABSENT)
		SFP OUT 4	<u>ON</u> (ABSENT)
			OFF (ABSENT)
{CARD VERSION}**			

** Parameters shown here in braces { } will display the actual value of the item and not the text shown above.

*** The SFP ports are not yet supported.

Remote Control Using iControl

The KMX-4911 cards may be controlled by using Grass Valley's iControl version 7.20 or later. This section describes the control panels associated with the KMX-4911 cards and their use. Refer to the iControl User's Guide for information about setting up and operating iControl.

In iControl Navigator, iControl Web, or iControl Solo, double-click the icon for a KMX-4911 card to open the associated control panel.

KMX-4911 Service Control Panels in iControl

The card label and the modular card slot number where the card is installed in the GV Node frame are indicated in the window's title bar. In the control panel window, there are three main areas: the status icon area, the navigation area, and the operating control area.
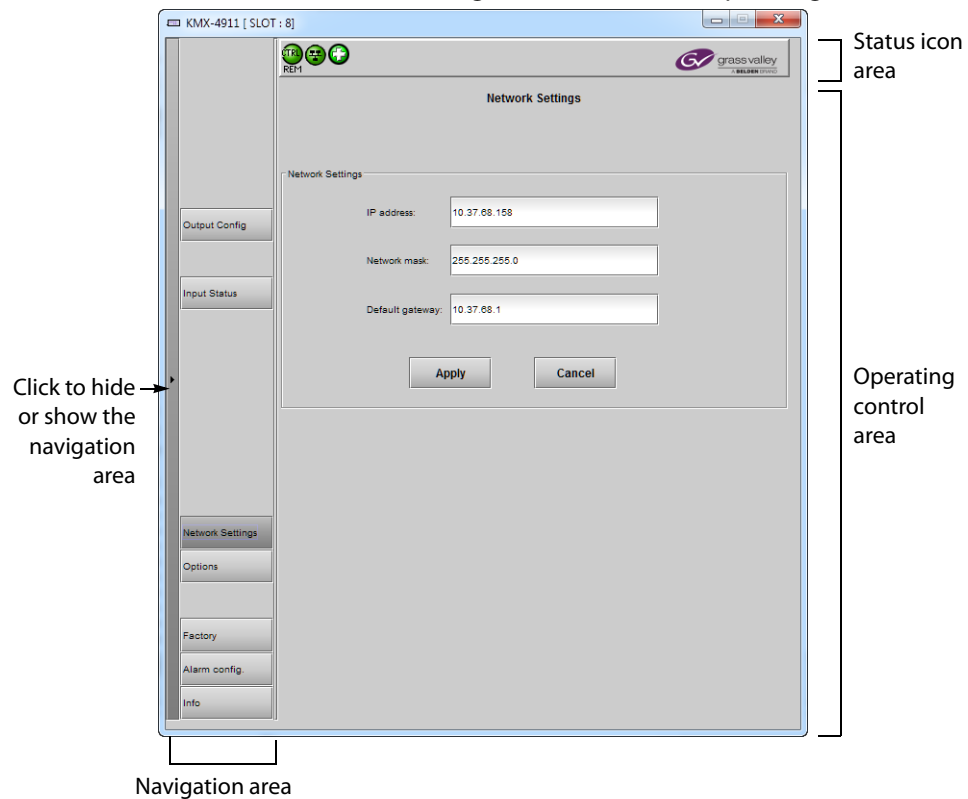
Service control panel for a KMX-4911 card

The KMX-4911 panel's status icon has the following icons.

Status	Icon	Description
Manual Card Configuration	Green	Remote card control activated. The iControl interface can be used to operate the card.
	Yellow	Local card control active, The card is being controlled through the GV Node frame control panel, as described in Using the GV Node Frame Control Panel, on page 47. Any changes made using the iControl interface will have no effect on the card.
Ethernet Port Status	Green	The card's IP link up and active.
	Red	The card has no IP link (port down).
	Gray	The card's Ethernet port not used.
Card Health Status	Green	Hardware OK.
	Yellow	Hardware Health Monitoring (Hardware fault detected). If this icon appears flashing red, you need to call Technical Support.

The navigation area contains buttons that control the contents of the operating control area.

- Click a button to access the associated features.
- Click the left side border (identified by a small arrow icon) to show or hide this area.

The operating control area contains the main operating controls for managing the KMX-4911 multiviewer's feature set. The contents change depending on the button you clicked in the navigation area. The relevant panels are described individually in the following sections:

- Output Configuration Settings Panel, on page 50
- Input Status Panel, on page 51
- Network Settings Panel, on page 52
- Options Panel, on page 53
- Factory Panel, on page 53
- Alarm Configuration Panel, on page 54
- Information Panel, on page 57

Output Configuration Settings Panel

Set the resolution of the multiviewer mosaic output heads to an appropriate value according to the displays being used. For a multiviewer system that has three or four KMX-4911 cards, this panel is not available for the third and fourth cards.
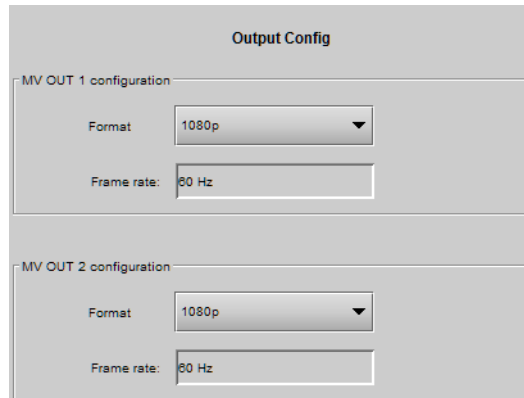
The following table lists the mosaic output formats supported at the SFP outputs.

KMX-4911 mosaic output resolutions

Resolution	Refresh rates (Hz)
• 1920 × 1080i • 1920 × 1080p	50.00, 59.94
• 2160p Square Division Quad Split (SDQS) over quad-link 3G • 2160p Square Division Quad Split (SDQS) over quad-link 3G • HDMI 2.0 2160p through an external quad-link 3G to HDMI 2.0 converter • HDMI 2.0 2160p through an external quad-link 3G to HDMI 2.0 converter	50.00, 59.94

Note: The refresh rate is always determined by the reference signal connected to the GV Node frame.

Input Status Panel

This screen shows the status of the current inputs assigned to the KMX-4911 card's inputs from the GV Node's fabric. Click *XAdmin status and options* for direct access to the card's web interface that provides more detail about the card's operating status.
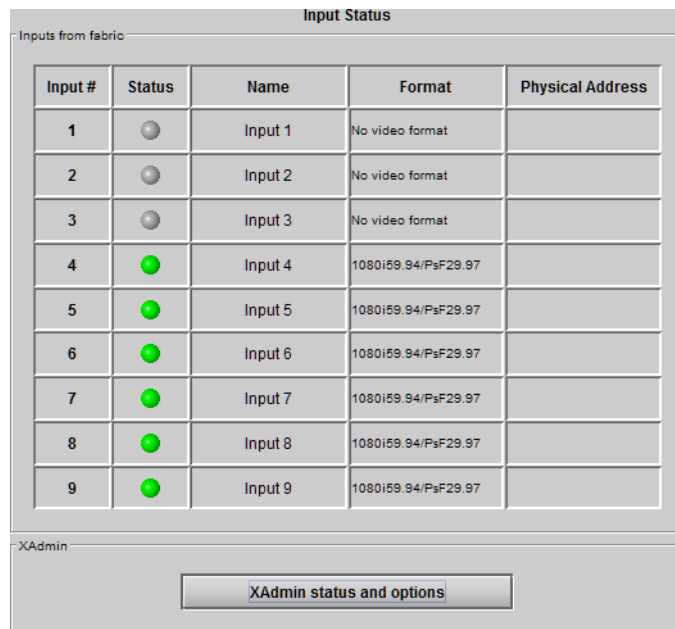
Network Settings Panel

KMX-4911 cards are shipped with default network settings, which you must replace with values suitable for your network environment. You may need to consult your network administrator to get the correct values. Enter the appropriate IP address, mask, and gateway information to configure a KMX-4911 card so that it can work with your Ethernet network. For a multiviewer system that has three or four KMX-4911 cards, this panel is not available for the third and fourth cards.
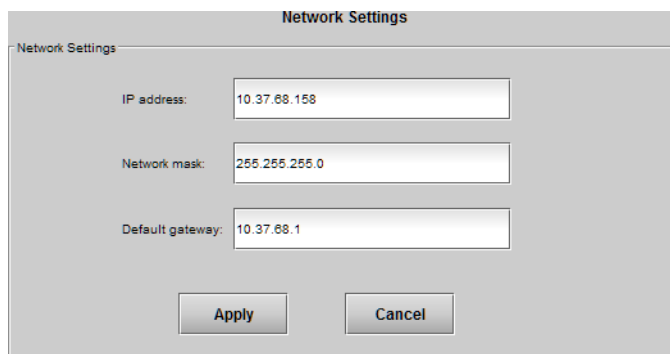
Click **Apply** to set these values into the card, or **Cancel** to leave the original values unchanged.

Notes

• These settings apply to the *CONTROL PORT ETHERNET* ports at the back of the GV Node frame.

• Network adapters are set to auto-negotiate. By default, the connection speed and duplex mode will be set automatically based on the corresponding port settings on the switch.

Notes *(continued)*

- A GV Node frame can require more than one MAC address which could cause connectivity problems with certain network switch configurations. See Network Switch Considerations, on page 36 for more information.

Options Panel

The Options panel is used to enable software options that are not part of the basic offer. Software options are enabled by entering a software key that has been sent to you once you have purchased the option. See the datasheet for a list of available options and their corresponding part numbers.

Activate an option as follows.

1 Obtain a license key from Grass Valley.
2 Open the *Options* panel and select the tab for the option you are enabling.
3 Type the license key in the *Enter Key* box.
4 Click on *ENABLE OPTION* to enable the option's features.

Factory Panel

Use this panel to revert a card's configuration settings back to their factory-default state. Set the checkbox for the configuration types you want to reset to their factory-default state and click *Load Factory*.

For a multiviewer system that has three or four KMX-4911 cards, this panel is not available for the third and fourth cards.

Configuration Type Checkbox	Description
Card Parameters	Resets the card's configuration parameters to their factory-default values, except for alarm and network configuration parameters.
Card Alarms	Resets the card's alarm configuration parameters to their factory-default values. See below.
Network Settings	Resets the card's network configuration parameters to their factory-default values.

Card Alarms only are reset to factory values; iControl Alarms and GSM alarms are not reset. With reference to the Alarm Configuration panel, this is shown below.

Alarms reset to factory-default   Yes   No   No
by clicking *Load Factory?*

Alarm Configuration Panel

This panel allows alarm reporting to be configured. The panel opens in a new window
when the button is clicked, and can be resized if needed.

The panel is organized into the following columns.

Alarm Column	Description
Status/Name	This contains an expandable tree listing all the alarms reported by this card. • Each alarm name includes an icon that shows its current status. • Some alarms may be text-only and the alarm status is shown in the name and not by a status icon. The **Card LED**, **Overall Alarm and GSM Contribution** columns contain pulldown lists that allow the level of contribution of each individual alarm to the alarm named in the column heading to be set. Click on the alarm icon to see the available levels; then click on one to select it.
Card LED	This column allows configuration of the contribution of selected individual alarms to the status LED located on the front card edge. The Card LED status is shown at the bottom of the alarm tree in the Status/Name column.
Overall Alarm	This column allows configuration of the contribution of each individual alarm to the Overall Alarm associated with this card. The Overall Alarm is shown in the upper left corner of the iControl panel, and also appears at the bottom of the Status/Name column.
GSM Contribution	This column allows configuration of the contribution of each individual alarm to the GSM Alarm Status associated with this card. GSM is a dynamic register of all iControl system alarms, and is also an alarm provider for external applications. The possible values for this contribution are related to the Overall alarm contribution: • If the Overall alarm contribution is selected as Disabled, the GSM alarm contribution can be set to any available value • If the Overall alarm contribution is selected as any level other than disabled, the GSM contribution is forced to follow the Overall Alarm.
Log Events	iControl maintains a log of alarm events associated with the card. The log is useful for troubleshooting and identifying event sequences. Click in the checkbox to enable logging of alarm events for each individual alarm.

Levels associated with these alarms:

The pulldown lists may contain some or all of the following options:

Icon Label / Color	Description
Disabled (black icon)	The alarm makes no contribution
Minor (yellow icon)	The alarm is of minor importance

Icon Label / Color	Description
Major (orange icon)	The alarm is of major importance
Critical (red icon)	The alarm is of critical importance
Passthrough (light orange icon)	The alarm exists but has no effect (used for text and composite alarms)

Shortcut: If you click in one of the *Set All boxes* beside a section heading, you will open a pulldown that lets you assign a level to all alarms in that section of the column simultaneously.

Once alarms are configured, you may accept the changes or discard them:
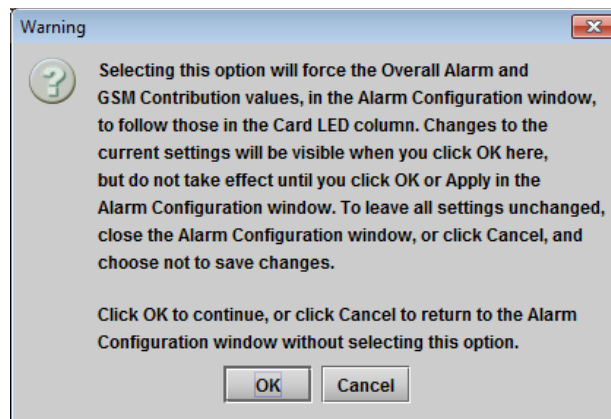
Warning for Follow LED change

Overall alarm and GSM contribution follow card LED Checkbox

Click in this checkbox to force the Overall alarm and GSM contribution to be identical to the Card LED status

- All Overall alarms and GSM contributions for which there is a Card LED alarm will be forced to match the Card LED alarm
- All Overall Alarms and GSM contributions for which there is no Card LED alarm will be forced to Disabled

A warning box will open allowing you to confirm the action, since it will result in changes to the configuration and there is no *undo* function.

Copy to other cards

Click this button to open a panel that allows the alarm configuration set for this card to be copied into another KMX-4911 card.
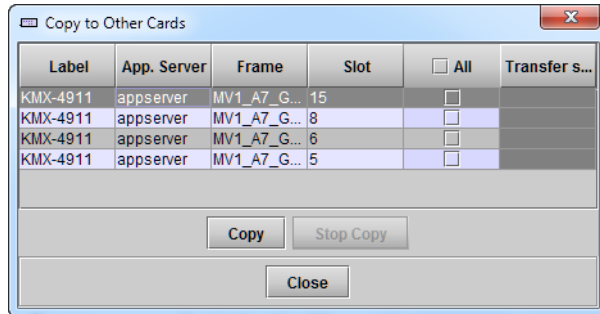
Select one or more destination cards from the list in the window by clicking in the checkboxes, or all of them by clicking in the *All* checkbox

Get alarm keys
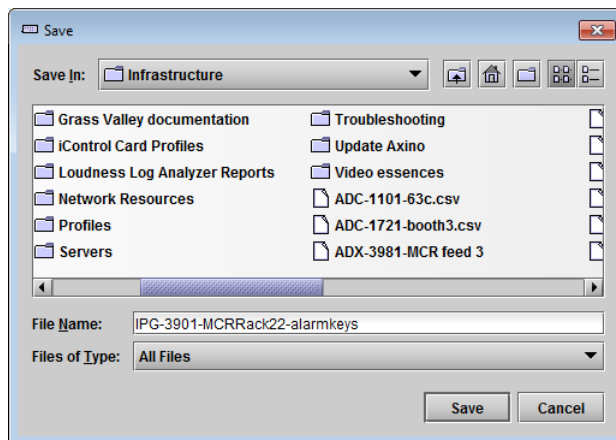
Click this button to open a save dialog where you can save a file containing a list of all alarms on this card and their current values, along with an Alarm Key for each. The alarm keys are useful for system integration and troubleshooting.

• The file is saved in .csv format

OK, Apply, Cancel

• **OK** accepts the settings and closes the window once the card confirms that there are no errors.

• **Apply** accepts the settings, but leaves the window open

• **Cancel** closes the window without applying any changes, and leaves the previous settings intact.

Information Panel
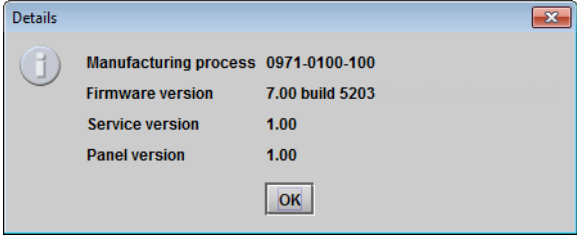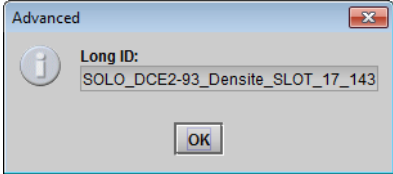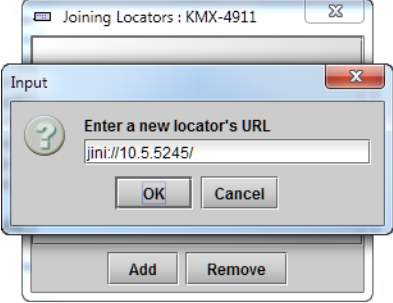
When a KMX-4911 card is included in an iControl environment, certain information about the card may be made available to the iControl system. In the boxes with a white background, you can type labels and comments that will make this card easier to identify in a complex setup.

Parameter	Description
Label	Type a label to identify this KMX-4911 card when it appears in iControl applications. This label appears in the service panel's title bar, in iControl Solo, and in the iControl Navigator views
Short label	Type the shorter label that iControl uses in some cases (8 characters).
Source ID	Type a descriptive name for this KMX-4911 card.
Comments	Type descriptive text.

The remaining boxes show manufacturing information about this card, including the card type, and the rear panel type.

Three buttons give access to additional information and controls:

Button	Description
Details	Reports the firmware version, service version, and panel version for this card.
	Output card Details window
Advanced	Shows the Long ID for this KMX-4911 card. The Long ID is the address of this card in the iControl network.
Remote system administration	Opens the **Joining Locators** window, which lists remote lookup services to which this KMX-4911 card is registered.
	• Click **Add** to force the iControl service for this KMX-4911 card to register itself on a lookup service, by using the following syntax in the **Input** window: `jini://<ip_address>` where `<ip_address>` is the IP address of the server running the lookup service. • Select one of the services listed in the window by clicking on it, and then click **Remove** to remove it from the list.

Routing Inputs and Mosaic Returns between the Multiviewer and the GV Node's Fabric

The GV Node's internal router, the IFM-2T fabric module, controls the signal flows into and out of the multiviewer's KMX-4911 cards. To know the quantity of GV Node frame inputs from fabric and mosaic returns to fabric each KMX-4911 card supports, see Installation of the KMX-4911 in the GV Node Frame, on page 18. The slot a given KMX-4911 card is installed in determines the input range / mosaic return range the card will use to communicate with the GV Node frame's fabric. This is shown in the following tables. Under certain conditions, audio stream signals are managed separately from video stream signals and are managed through a separate GV Node audio router.

Video Streams

KMX-4911 Card Video Matrix Input from Fabric Number / Mosaic Return to Fabric Number for each GV Node Frame Slot

Card's Input from GV Node Fabric / Mosaic Return to GV Node Fabric	GV Node Frame Slot Number															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
First Input / Mosaic Return 1	1	10	19	28	37	46	55	64	73	82	91	100	109	118	127	136
Second Input / Mosaic Return 2	2	11	20	29	38	47	56	65	74	83	92	101	110	119	128	137
Third Input	3	12	21	30	39	48	57	66	75	84	93	102	111	120	129	138
Fourth Input	4	13	22	31	40	49	58	67	76	85	94	103	112	121	130	139
Fifth Input	5	14	23	32	41	50	59	68	77	86	95	104	113	122	131	140
Sixth Input	6	15	24	33	42	51	60	69	78	87	96	105	114	123	132	141
Seventh Input	7	16	25	34	43	52	61	70	79	88	97	106	115	124	133	142
Eighth Input	8	17	26	35	44	53	62	71	80	89	98	107	116	125	134	143
Ninth Input	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135	144

Audio Streams

The multiviewer has the following modes for processing audio source.

- MDX mode: enables embedding of discrete audio sources into the corresponding video source prior to monitoring/metering being done. This mode will replace any pre-existing embedded audio in the video source.
- Non-MDX mode: existing embedded audio is preserved and is monitored/metered by the multiviewer. Discrete audio is also monitored/metered separately by the multiviewer.

The MDX mode is set in the GV Node Manager application under *Enabled Options*.

MDX Mode: KMX-4911 Card Audio Matrix (discrete to embedded audio) Input from Fabric Number for each GV Node Frame Slot

Card's Input from GV Node Fabric	GV Node Frame Slot Number															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
First Input	1 to 16	145 to 160	289 to 304	433 to 448	577 to 592	721 to 736	865 to 880	1009 to 1024	1153 to 1168	1297 to 1312	1441 to 1456	1585 to 1600	1729 to 1744	1873 to 1888	2017 to 2032	2161 to 2176
Second Input	17 to 32	161 to 176	305 to 320	449 to 464	593 to 608	737 to 752	881 to 896	1025 to 1040	1169 to 1184	1313 to 1328	1457 to 1472	1601 to 1616	1745 to 1760	1889 to 1904	2033 to 2048	2177 to 2192
Third Input	33 to 48	177 to 192	321 to 336	465 to 480	609 to 624	753 to 768	897 to 912	1041 to 1056	1185 to 1200	1329 to 1344	1473 to 1488	1617 to 1632	1761 to 1776	1905 to 1920	2049 to 2064	2193 to 2208
Fourth Input	49 to 64	193 to 208	337 to 352	481 to 496	625 to 640	769 to 784	913 to 928	1057 to 1072	1201 to 1216	1345 to 1360	1489 to 1504	1633 to 1648	1777 to 1792	1921 to 1936	2065 to 2080	2209 to 2224
Fifth Input	65 to 80	209 to 224	353 to 368	497 to 512	641 to 656	785 to 800	929 to 944	1073 to 1088	1217 to 1232	1361 to 1376	1505 to 1520	1649 to 1664	1793 to 1808	1937 to 1952	2081 to 2096	2225 to 2240
Sixth Input	81 to 96	225 to 240	369 to 384	513 to 528	657 to 672	801 to 816	945 to 960	1089 to 1104	1233 to 1248	1377 to 1392	1521 to 1536	1665 to 1680	1809 to 1824	1953 to 1968	2097 to 2112	2241 to 2256
Seventh Input	97 to 112	241 to 256	385 to 400	529 to 544	673 to 688	817 to 832	961 to 976	1105 to 1120	1249 to 1264	1393 to 1408	1537 to 1552	1681 to 1696	1825 to 1840	1969 to 1984	2113 to 2128	2257 to 2272
Eighth Input	113 to 128	257 to 272	401 to 416	545 to 560	689 to 704	833 to 848	977 to 992	1121 to 1136	1265 to 1280	1409 to 1424	1553 to 1568	1697 to 1712	1841 to 1856	1986 to 2001	2129 to 2144	2273 to 2288
Ninth Input	129 to 144	273 to 288	417 to 432	561 to 576	705 to 720	849 to 864	993 to 1008	1137 to 1152	1281 to 1296	1425 to 1440	1569 to 1584	1713 to 1728	1857 to 1872	2001 to 2016	2145 to 2160	2289 to 2304

Non-MDX Mode: KMX-4911 Card Audio Matrix (discrete audio) Input from Fabric Number for each GV Node Frame Slot

Card's that Support Input from GV Node Fabric	GV Node Frame Slot Number															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Standalone, 'A', or 'B' cards only	1 to 64	145 to 208	289 to 352	433 to 496	577 to 640	721 to 784	865 to 928	1009 to 1072	1153 to 1216	1297 to 1360	1441 to 1504	1585 to 1648	1729 to 1792	1873 to 1936	2017 to 2080	2161 to 2224

Note that in the non-MDX mode, only the first two cards (when equipped) receive discrete audio inputs from the GV Node fabric.

> Note: Monitoring audio is embedded in the multiviewer's mosaic video outputs only, either through the GV Node's fabric or through an SFP output(s). The multiviewer does not provide any discrete audio monitoring outputs.

To control the IFM-2T fabric module, use Grass Valley's NV9000 or GV Convergent router control system.

Audio / Video Source Example

For example, a four KMX-4911 card multiviewer is installed in slots 2, 3, 4, and 5 of a GV Node Frame as shown below. We want to know the video matrix input from fabric number and the mosaic return to fabric number for these cards.
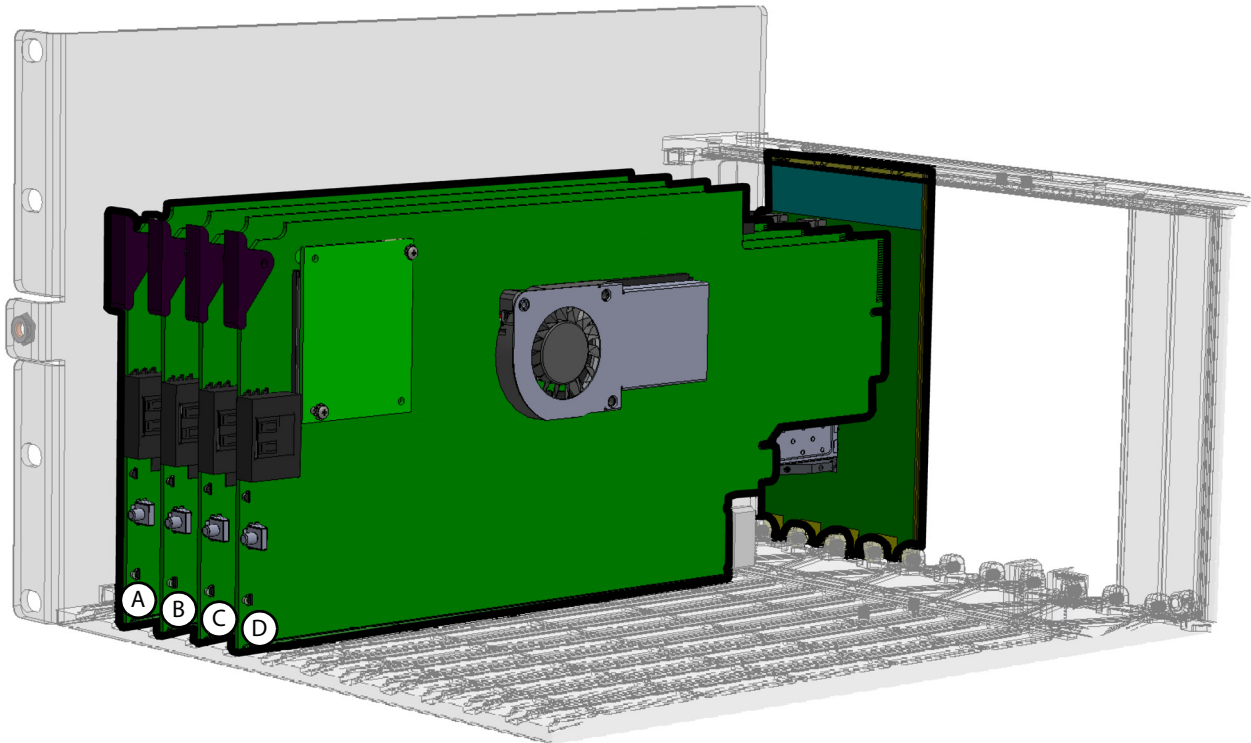
Example of Four KMX-4911 Cards shown Assembled with a KMX-4911-36X4-4QRP Rear Panel located in slots 2, 3, 4, and 5 of a GV Node Frame

For this example, in the above diagram, the cards are identified with letters A, B, C, and D where A = slot 2, B = slot 3, C = slot 4, and D = slot 5. Note that cards C and D do not provide mosaic returns to the GV Node fabric, nor do they get discrete audio from GV Node's fabric.

Example Video Matrix Input from Fabric Number / Mosaic Return to Fabric Number for Four KMX-4911 Cards located in slots 2, 3, 4, and 5 of a GV Node Frame with a KMX-4911-36X4-4QRP Rear Panel

Card's Input from GV Node Fabric / Mosaic Return	GV Node Frame Slot Number															
	1	2 Card 'A'	3 Card 'B'	4^2 Card 'C'	5^2 Card 'D'	6	7	8	9	10	11	12	13	14	15	16
First Input / Mosaic Return 1	-	10	19	28^1	37^1	-	-	-	-	-	-	-	-	-	-	-
Second Input / Mosaic Return 2	-	11	20	29^1	38^1	-	-	-	-	-	-	-	-	-	-	-
Third Input	-	12	21	30	39	-	-	-	-	-	-	-	-	-	-	-
Fourth Input	-	13	22	31	40	-	-	-	-	-	-	-	-	-	-	-
Fifth Input	-	14	23	32	41	-	-	-	-	-	-	-	-	-	-	-
Sixth Input	-	15	24	33	42	-	-	-	-	-	-	-	-	-	-	-
Seventh Input	-	16	25	34	43	-	-	-	-	-	-	-	-	-	-	-
Eighth Input	-	17	26	35	44	-	-	-	-	-	-	-	-	-	-	-
Ninth Input	-	18	27	36	45	-	-	-	-	-	-	-	-	-	-	-

1 KMX-4911 cards C & D do not provide any mosaic return to the GV Node fabric. These cards only receive inputs from GV Node's fabric.
2 KMX-4911 cards C & D do not accept discrete audio from the GV Node fabric.
- The value is not relevant as these card slots are not used by the multiviewer in this example.

As some discrete audio sources need to be monitored, the first two cards have been set to non-MDX mode. Consequently, these two cards will monitor the audio program embedded within the video signals when present. The audio sources coming from the audio matrix will be separately monitored.

Example Non-MDX Mode: KMX-4911 Card Audio Matrix (discrete audio) Input from Fabric Number for each GV Node Frame Slot

Card's Input from GV Node Fabric	GV Node Frame Slot Number															
	1	2 Card 'A'	3 Card 'B'	4^1 Card 'C'	5^1 Card 'D'	6	7	8	9	10	11	12	13	14	15	16
Audio index number range	-	145 to 208	289 to 352	N/A	N/A	-	-	-	-	-	-	-	-	-	-	-

1 Not applicable; these KMX-4911 cards do not receive discrete audio inputs from the GV Node fabric.
- The value is not relevant as these card slots are not used by the multiviewer in this example.

3

Specifications

This chapter lists equipment specifications for the KMX-4911 input, output, and companion cards, and their rear panels.

KMX-4911 Multiviewer Cards

Video

Audio / Video Inputs

Parameters	Value
Formats	525i59.94 625i50 720p50 720p59.94 1080i50 1080p50 1080i59.94 1080p59.94 Note: ASI and TICO formats are not supported by the KMX-4911.

Mosaic Outputs

Parameters	Value
Delay	Referenced: • 33 ms @ 59.94 Hz • 40 ms @ 50 Hz

Mosaic Outputs *(continued)*

Parameters	Value
Formats	• 1080p50 • 1080p50 • 1080i59.94 • 1080i59.94 • 2160p59.94 Square Division Quad Split (SDQS) over quad-link 3G • 2160p50 Square Division Quad Split (SDQS) over quad-link 3G • HDMI 2.0 2160p59.94 through an external quad-link 3G to HDMI converter • HDMI 2.0 2160p50 through an external quad-link 3G to HDMI converter
Audio Monitoring	Embedded on mosaic outputs

HDMI SFP (optional)

Parameters	Value
Number of outputs	1 per SFP module
Connector	HDMI type D
Signal	HDMI V1.4
Format	1920x1080p 50 Hz or 59.94 Hz

SDI Coaxial SFP (optional)

Parameters	Value
Number of outputs	2 per SFP module
Connector	DIN 1.0/2.3
Signal HD	SMPTE ST 292-1 (1.485, 1.485/1.001 Gb/s)
Signal 3G	SMPTE ST 424 (2.97, 2.97/1.001 Gb/s) Level A
Formats	1080p59.94, 1080p50, 1080i59.95, 1080i50

Fiber SFP (optional)

Parameters	Value
Number of outputs	2 per SFP module
Formats	1080p59.94, 1080p50, 1080i59.95, 1080i50 For more SFP fiber options refer to http://www.grassvalley.com/products/sfp_optical_plug-in_cartridges. See also Grass Valley's DXF-300 Optical AV Media Extender.

GV Node Frame

Parameters	Value
Frame	See GV Node webpage for full specifications.
LTC Inputs (1 or 2*)	Through the GV Node's GVN-CPU-ETH3 (see GV Node webpage for full specifications).
Reference	Through the GV Node's GVN-CPU-ETH3 (see GV Node webpage for full specifications).
Control	Ethernet through the GV Node's GVN-CPU-ETH3 (see GV Node webpage for full specifications) Serial Port via terminal server*.
GPIO	Densité GPI-1501 card (see GPI-1501 webpage for full specifications).

* Check for availability.

Electrical

Power consumption (without SFP Module)

Multiviewer Capacity	Multiviewer Cards	KMX-4911 rear panel	Power consumption
9 × 1	1 × KMX-4911-9X1	KMX-4911-9X2-4SRP	28.5 W total
9 × 2	1 × KMX-4911-9X2	KMX-4911-9X2-4SRP	28.5 W total
18 × 1	2 × KMX-4911-9X1	KMX-4911-18X4-4DRP	57.0 W total
18 × 2	2 × KMX-4911-9X2	KMX-4911-18X4-4DRP	57.0 W total
18 × 4	2 × KMX-4911-9X2	KMX-4911-18X4-4DRP	57.0 W total
27 × 1	3 × KMX-4911-9X1	KMX-4911-27X4-4TRP	87.0 W total
27 × 2	3 × KMX-4911-9X2	KMX-4911-27X4-4TRP	87.0 W total
27 × 4	3 × KMX-4911-9X2	KMX-4911-27X4-4TRP	87.0 W total
36 × 1	4 × KMX-4911-9X1	KMX-4911-36X4-4QRP	117.0 W total
36 × 2	4 × KMX-4911-9X2	KMX-4911-36X4-4QRP	117.0 W total
36 × 4	4 × KMX-4911-9X2	KMX-4911-36X4-4QRP	117.0 W total

Each typical SFP module consumes 1.5 W maximum.

Physical

Environment

Parameters	Value
Full specification temperature range	0–40°C (32–104°F) (ambient)
Maximum storage humidity	90% RH non-condensing
Maximum functional humidity	65% RH non-condensing

Weight (without SFP Module)

Multiviewer Capacity	Multiviewer Cards	KMX-4911 rear panel	Weight
9 × 1	1 × KMX-4911-9X1	KMX-4911-9X2-4SRP	305.1 g total
9 × 2	1 × KMX-4911-9X2	KMX-4911-9X2-4SRP	305.1 g total
18 × 1	2 × KMX-4911-9X1	KMX-4911-18X4-4DRP	612.6 g total
18 × 2	2 × KMX-4911-9X2	KMX-4911-18X4-4DRP	612.6 g total
18 × 4	2 × KMX-4911-9X2	KMX-4911-18X4-4DRP	612.6 g total
27 × 1	3 × KMX-4911-9X1	KMX-4911-27X4-4TRP	899.4 g total
27 × 2	3 × KMX-4911-9X2	KMX-4911-27X4-4TRP	899.4 g total
27 × 4	3 × KMX-4911-9X2	KMX-4911-27X4-4TRP	899.4 g total
36 × 1	4 × KMX-4911-9X1	KMX-4911-36X4-4QRP	1186.2 g total
36 × 2	4 × KMX-4911-9X2	KMX-4911-36X4-4QRP	1186.2 g total
36 × 4	4 × KMX-4911-9X2	KMX-4911-36X4-4QRP	1186.2 g total

Each SFP module typically weighs 75 g or less.

A

Installing the SFP Output Module

Introduction

Installing and removing the SFP output interface cartridge requires special care. This annex describes the process.

Rear panels incorporate one or two SFP interface(s). The interface consists of two parts:

- A socket on the rear panel into which an SFP interface module is plugged
- An SFP (Small Form-factor Pluggable) module that performs output medium translation to which connections are made for optical fibers, coaxial copper, or HDMI.

> CAUTION
> - SFP fiber Transmitter modules contain a class 1 laser, which emits invisible radiation whenever the module is powered up. Because the SFP is hot-swappable, the module may be powered up as soon as it is installed.
> - DO NOT LOOK INTO AN OPERATING SFP FIBER MODULE'S CONNECTORS, AS EYE DAMAGE MAY RESULT.
> - The SFP module is sensitive to electrostatic discharge (ESD). It is recommended that you use an ESD-preventive wrist strap grounded to the GV Node chassis while handling the SFP module.
> - SFP modules are subject to wear, and their useful lifetime is reduced each time they are inserted or removed. Do not remove them more often than is absolutely necessary.
> - Never remove or install an SFP fiber module with the fiber optic cables connected. Damage to the cables could result.
> - The presence of dust and debris can seriously degrade the performance of an optical interface. It is recommended that you insert a dust plug into the SFP fiber module whenever a fiber optic cable is not connected.
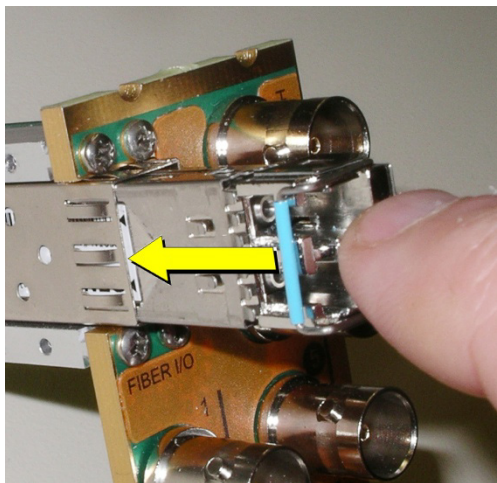
Installing an SFP module

1 Make sure that the bale clasp lever is in the closed position
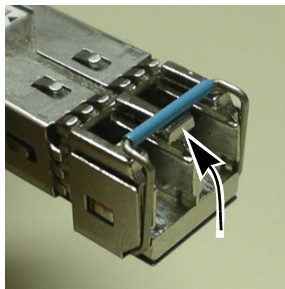
2 Position the SFP module so that the recessed slot is lined up with the tab side of the socket.
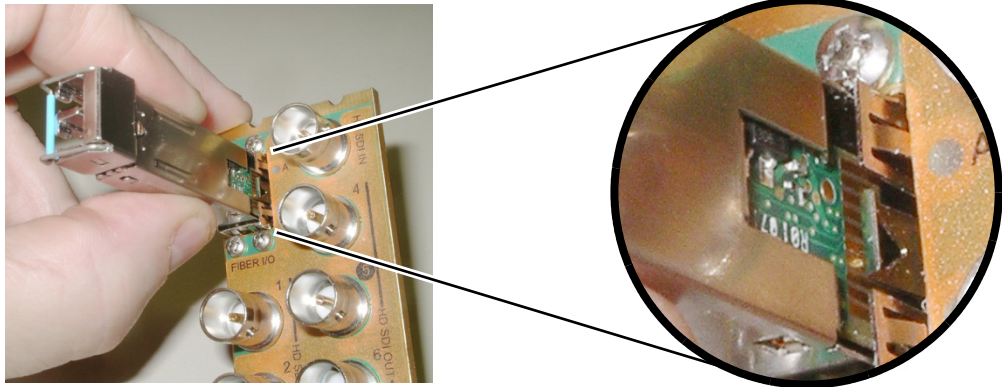
3   Slide the module straight into the socket, and push gently until it clicks into position.


Connecting the fiber optic cables

1   Remove the dust plug from the SFP module if present
2   Verify that the exposed end of the optical fiber in the LC connector is clean
   •   Carefully remove any debris if necessary.
3   Plug the LC-terminated fiber optic cable into the SFP module

Removing the fiber optic cables

1   Grasp the LC fiber optic connector that is plugged into the SFP module, and pull it straight out to disengage the optical fiber from the SFP.
   •   Never pull the fiber optic cable itself, as irreversible damage may occur.
2   Insert a dust plug into the SFP module.

Removing the SFP module

1   Move the bale clasp lever to the open position.
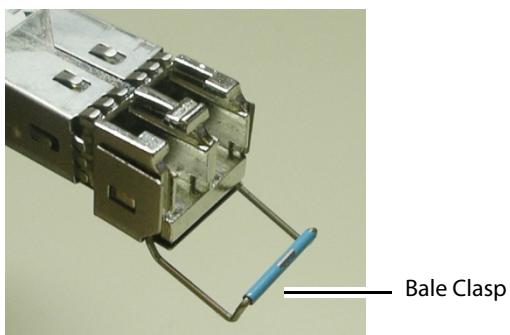
Bale Clasp

2 Grasp the SFP module between your thumb and forefinger, and pull it straight out of the slot.
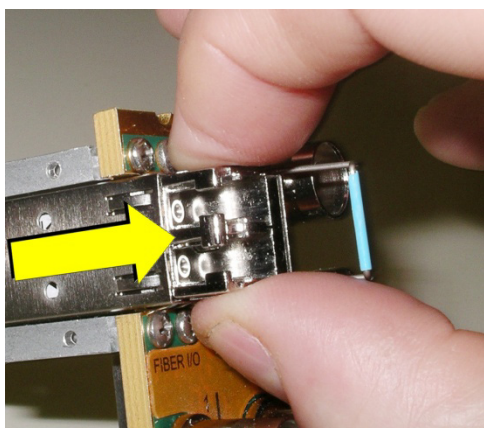
- Do NOT pull on the bale clasp lever to remove the module, as it is easily damaged.
- You may find that you need to wiggle the module, or perhaps push it into the slot a bit, before it will release and slide out.

3 For fiber optic models, insert a dust plug into the SFP module.

Grass Valley Technical Support

For technical assistance, contact our international support center, at 1-800-547-8949 (US and Canada) or +1 530 478 4148.

To obtain a local phone number for the support center nearest you, please consult the Contact Us section of Grass Valley's website (www.grassvalley.com).

An online form for e-mail contact is also available from the website.

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