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KALEIDO-MODULAR-X

HIGH PICTURE COUNT, ULTRA-FLEXIBLE AND SCALABLE MULTIVIEWER

Quick Start Guide

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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

Electromagnetic Compatibility

This equipment has been tested for verification of compliance with FCC Part 15, Subpart B requirements for class A digital devices.

> 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 Electromagnetic Compatibility directive 2004/108/EC:

- EN 55022 Class A Radiated and conducted emissions
- EN 61000-3-2 Limits for harmonic current emissions
- EN 61000-3-3 Limitation of voltage fluctuations and flicker
- EN 61000-4-2 Electrostatic discharge immunity
- EN 61000-4-3 Radiated, radio-frequency, electromagnetic field immunity
- EN 61000-4-4 Electrical fast transient immunity
- EN 61000-4-5 Surge transient immunity
- EN 61000-4-6 Conducted disturbances immunity
- EN 61000-4-11 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
金属零件 Metal parts	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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Setting Up Your Kaleido-Modular-X System

Welcome to the Kaleido family of multiviewers! This Quick Start Guide is designed to help you get your Kaleido-Modular-X multiviewer system up and running for the first time. The following sections will guide you through the installation of a Kaleido-Modular-X system in its default configuration. For more information about the Kaleido-Modular-X hardware, refer to the *Kaleido-Modular-X Hardware Description & Installation Manual* (available from the Documentation Library section of Grass Valley's website).

Summary

Introduction

Grass Valley's Kaleido family of multiviewers ranges from quad-splits to large-scale, multi-room monitoring systems, with outstanding image quality and signal flexibility. The Kaleido multiviewers are available in different models: the Kaleido-MX, the Kaleido-MX 4K, the Kaleido-IP (also available as a virtual image: Kaleido-IP VM), the Kaleido-X (7RU), the Kaleido-X (4RU), the Kaleido-X16, and the Kaleido-XQUAD frames, as well as the KMX-4911 cards, the Kaleido-Modular-X cards, the Kaleido-Modular KMV-3901/3911 cards.

The **Kaleido-Modular-X** 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. FlexBridge coax cable bridging between the input and output modules allows for the installation of the input stage next to the router or sources, and the output stage next to displays, for simpler, cost-effective cabling with none of the risk associated with HDMI extenders. The Kaleido-Modular-X supports up to 64 video inputs, and up to four multiviewer outputs.

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

A Kaleido-Modular-X multiviewer system in its default configuration includes a number of layout presets. Each preset shows the video signals from a specific input module (card). Refer to the *Kaleido-X User's Manual* (available from the Documentation Library section of Grass Valley's website) for instructions on how to create rooms and layouts according to your specific requirements.
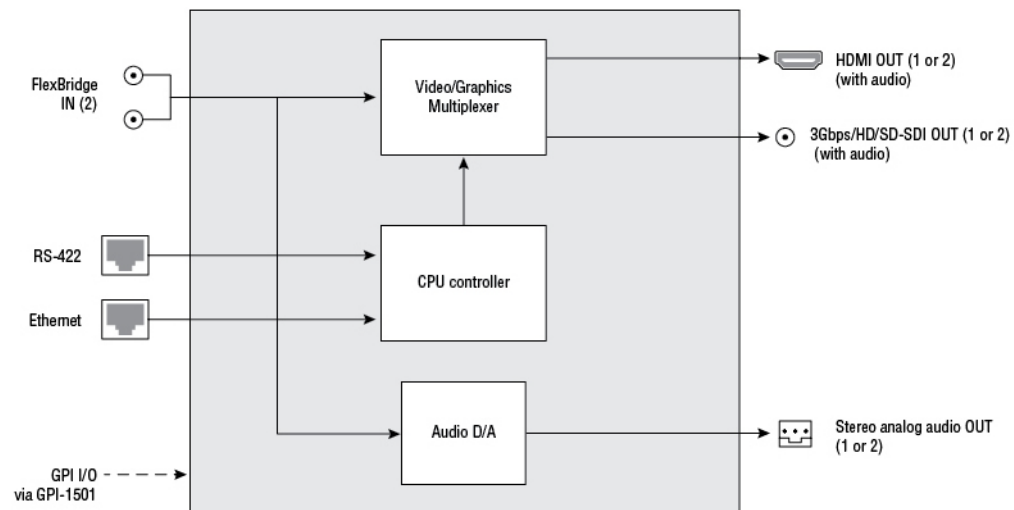
Functional block diagrams
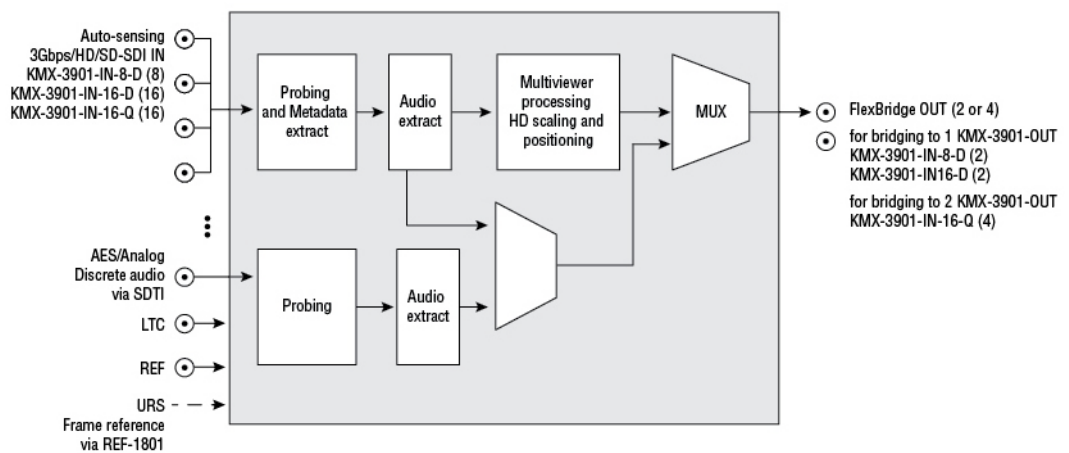
Kaleido-Modular-X functional block diagram: KMX-3901-IN input module
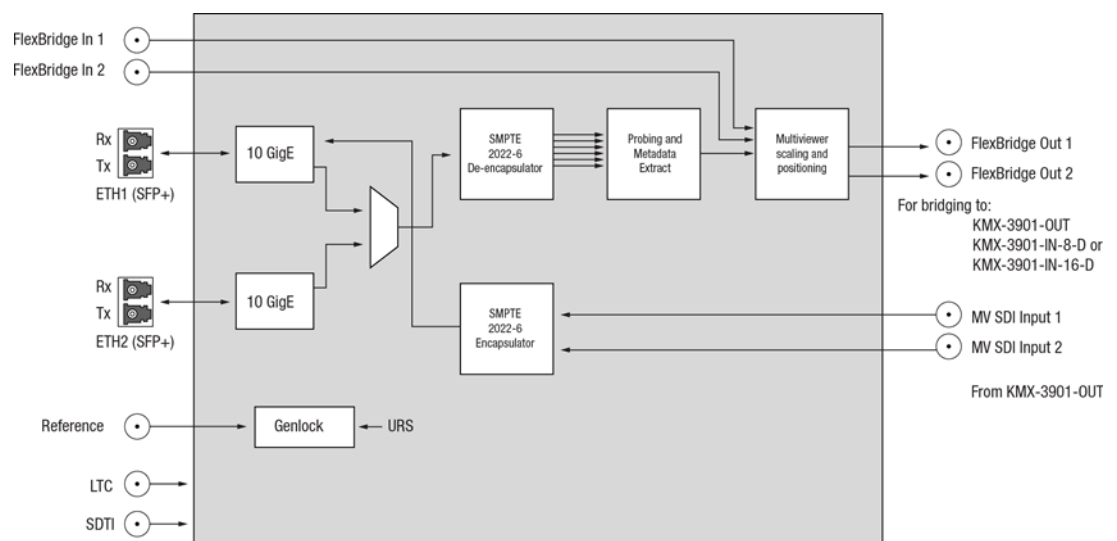
Kaleido-Modular-X functional block diagram: KMX-3901-IN IP input/output modules

Kaleido-Modular-X functional block diagram: KMX-3901-OUT output module

Getting Organized

This section provides information about system requirements, and items shipped with your Kaleido-Modular-X.

Required Materials

Your Kaleido-Modular-X system package includes the following:

- 1–4 KMX-3901-IN input cards with matching rear modules, as per order

Input module parts	Description
KMX-3901-IN-8-D	8 input HD/SD-SDI and 3 Gbps input module with dual FlexBridge outputs.
KMX-3901-IN-8-D-3TRP	Triple rear connector panel with bypass relay.
KMX-3901-IN-8-D-3+DRP	Double rear connector panel with bypass relay. Compatible with Densité 3+ FR1, and Densité 3+ FR4 only.
KMX-3901-IN-16-D	16 input HD/SD-SDI and 3 Gbps input module with dual FlexBridge outputs.
KMX-3901-IN-16-D-3QRP	Quadruple rear connector panel with bypass relay.
KMX-3901-IN-16-D-3+DRP	Double rear connector panel with bypass relay. Compatible with Densité 3+ FR1, and Densité 3+ FR4 only.
KMX-3901-IN-16-Q	16 input HD/SD-SDI and 3 Gbps input module with quad FlexBridge outputs. convertible to a 4K UHD prescaler.
KMX-3901-IN-16-Q-3PRP	Quintuple rear connector panel with bypass relay.
KMX-3901-IN-16-Q-3+DRP	Double rear connector panel with bypass relay. Compatible with Densité 3+ FR1, and Densité 3+ FR4 only.

- 1–4 KMX-3901-IN IP input/output cards with matching rear modules, as per order

IP module parts	Description
KMX-3901-IN-IP-D	10 GigE IP input module for SMPTE-2022-6 (3G/HD/SD) sources. This module comprises *two cards:* a KMX-3901-IN-8-D input card, and an IPG-3901 SDI/IP gateway card. *KMX-IN-8-OPT-3GBPS license required for 3 Gb/s.*
KMX-3901-IN-IP-D-3+TRP	Triple rear connector panel. Compatible with Densité 3+ FR4 only.

- 1–4 KMX-3901-IN-M3 rear modules, M3 cables, and NVISION router-side rears, as per order

M3 module parts	Description
KMX-3901-IN-M3-D-3QRP	Quadruple rear connector panel with bypass relay for the M3 cable. Use with KMX-3901-IN-16-D.
KMX-3901-IN-M3-Q-3PRP	Quintuple rear connector panel with bypass relay for the M3 cable. Use with KMX-3901-IN-16-Q.
KMX-3901-IN-M3-D-3+DRP	Double rear connector panel with bypass relay for the M3 cable. Use with KMX-3901-IN-16-D. Compatible with Densité 3+ FR1, and Densité 3+ FR4 only.
KMX-3901-IN-M3-Q-3+DRP	Double rear connector panel with bypass relay for the M3 cable. Use with KMX-3901-IN-16-Q. Compatible with Densité 3+ FR1, and Densité 3+ FR4 only.

- 1 or 2 KMX-3901-OUT output cards, with rear modules, as per order

Output module parts	Description
KMX-3901-OUT-S	Single head output module, upgradable to dual head outputs.
KMX-3901-OUT-D	Dual head output module.
KMX-3901-OUT-D-3DRP	Double rear connector panel.
KMX-3901-OUT-D-3+SRP	Single rear connector panel. Compatible with Densité 3+ FR1, and Densité 3+ FR4 only.

- 1–16 12-inch FlexBridge cables (DIN-DIN coax cables), as per order

Number of FlexBridge cables for typical configurations (SDI inputs)

Model	FlexBridge	Model	FlexBridge	Model	FlexBridge
8 × 1	1	24 × 1	2	48 × 2	6
8 × 2	2	24 × 2	4	48 × 4	12
16 × 1	1	32 × 2	4	64 × 2	8
16 × 2	2	32 × 4	8	64 × 4	16
16 × 4	4				

Number of FlexBridge cables for IP-only configurations

Number of IP input/output cards	1	2	3	4
FlexBridge cables		2	4	6	8

- 2 WECO analog audio mating connectors for each output card
- 2 serial port adapters (1 with straight cabling and 1 with crossover cabling — see RS-422 Connection Diagram, on page 59) for every output card ordered with a double rear connector panel

Part number	Adapter cabling	RS-422 pinout at the DE-9P connector
1737-3000-102	Straight	Controller (SMPTE master) mode
1792-3700-100	Crossover	Tributary (SMPTE slave) mode

> Note: The single rear connector panel KMX-3901-OUT-D-3+SRP does not have a serial port. To support a serial device, your Kaleido-Modular-X system must have at least one output card with a double rear connector panel (KMX-3901-OUT-D-3DRP).

- The Kaleido-Modular-X Quick Start Guide (this document)

> Note: In line with our commitment to environmental preservation, only the Quick Start Guide for your multiviewer model, and some ancillary documents (e.g., welcome letters, warranty cards) are distributed in printed form. You can obtain the latest version of the Kaleido-X User's Manual, Quick Start guides and hardware reference manuals for all multiviewer models, as well as the Release Notes, from the *Documentation Library* section of Grass Valley's website. (Refer to the *Documentation* section of the Release Notes for a complete list.) Software, drivers, sample databases, and useful data are available from the *Downloads* section of the website.

In addition to the above, you might need the following (not supplied):
- At least one Densité 3, Densité 3+ FR4, or Densité 3+ FR1 housing frame

> Notes
> - Early revisions of the KMX-3901-IN input cards are *not* fully compatible with the Densité 3+ FR4 frame. Refer to the Kaleido-Modular-X Hardware Description & Installation Manual, for more information.
> - Input cards with a *double* rear connector panel are compatible with Densité 3+ FR4, and Densité 3+ FR1 only.
> - KMX-3901-IN IP input/output cards and their associated rear connector panel are compatible with Densité 3+ FR4 only.

- For a quad-head system with 64 SDI inputs, or if you wish to have separate input and output stages, then you will also need a separate Densité 3 Densité 3+ FR4, or Densité 3+ FR1 frame to house your output cards

> Note: Output cards with a single rear connector panel (KMX-3901-OUT-D-3+SRP) are compatible with Densité 3+ FR4, and Densité 3+ FR1 only.

- A Densité CPU-ETH2, or CPU-ETH3 frame controller card for each housing frame
- A GPI-1501 GPI I/O module *(optional)*
- A REF-1801 HD/SD frame reference module *(optional — not needed if the frame controller is a CPU-ETH3)*
- Up to 4 displays
- Management network—A dedicated 100Base-T Ethernet switch with enough ports for the KMX-3901-OUT output cards, the housing frames' CPU-ETH2, or CPU-ETH3 controller cards, client PCs, Kaleido-RCP2 units, and Audio Bridge Terminals
- Data network—Access to a separate network, for the KMX-3901-IN IP input/output modules' IPG-3901 card to connect to data streams (if your order includes KMX-3901-IN IP modules)
- KMX-3901-IN IP profile file (available from the *Downloads* section of Grass Valley's website), to configure the KMX-3901-IN IP modules' IPG-3901 card (if your order includes KMX-3901-IN IP modules)
- Client PC (see below for system requirements)
- Cables (to connect your multiviewer to video sources, to displays, and to the network):

Cable type	Purpose
CAT-5	For Ethernet connectivity

Display cables	To connect the multiviewer's HDMI outputs to displays:
	• Standard HDMI cables
	• Extension modules—for example, Grass Valley's DXF-200 DVI/HDMI Optical Extension System:
	  • part number DXF-200-B, for output cards with a double rear connector panel (KMX-3901-OUT-D-3DRP)
	  • part number DXF-200-C, for output cards with a single rear connector panel (KMX-3901-OUT-D-3+SRP)
	
	To connect the multiviewer's SDI outputs to displays:
	• Standard coaxial cables with DIN 1.0/2.3 connectors
	• SDI to HDMI 2.0 (or SDI to DisplayPort) converter—for example, AJA's Hi5-4K Mini-Converter (firmware version 2.2 or later)

Video cables	Standard coaxial cables with DIN 1.0/2.3 connectors

> Note: On all Kaleido multiviewers, the 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.

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

Step 1: Physical Setup

To set up the Kaleido-Modular-X hardware

1 Install your Densité 3, Densité 3+ FR4, or Densité 3+ FR1 housing frames in their designated rack position, if they are not installed already (refer to the appropriate manuals for your frames: the *Densité 3+ FR4 User Manual, the Densité 3+ FR1 User Manual,* or the *Densité 3 Housing Frame Guide to Installation and Operation,* available from the Documentation Library section of Grass Valley's website).

2 Identify the appropriate slots for your new cards.

The following table shows the number of slots required for every available input and output cards. In a Densité 3+ FR4 frame, there is a special slot for the CPU-ETH3 controller card. In a Densité 3, or Densité 3+ FR1 frame, there is a special slot for the CPU-ETH2 controller card. The Densité 3+ FR1 frame has another special slot for the GPI-1501. In a Densité 3 frame, allow one slot for the GPI-1501 (if available).

Card	Description	Rear panel
KMX-3901-IN-8-D (with KMX-3901-IN-8-D-3TRP)	8-input HD/SD-SDI and 3 Gbps input module with dual FlexBridge outputs, and triple rear connector panel	3 slots
KMX-3901-IN-8-D (with KMX-3901-IN-8-D-3+DRP)	8-input HD/SD-SDI and 3 Gbps input module with dual FlexBridge outputs, and double rear connector panel	2 slots
KMX-3901-IN-16-D (with KMX-3901-IN-16-D-3QRP, or KMX-3901-IN-M3-D-3QRP)	16-input HD/SD-SDI and 3 Gbps input module with dual FlexBridge outputs, and quadruple rear connector panel	4 slots
KMX-3901-IN-16-D (with KMX-3901-IN-16-D-3+DRP, or KMX-3901-IN-M3-D-3+DRP)	16-input HD/SD-SDI and 3 Gbps input module with dual FlexBridge outputs, and double rear connector panel	2 slots
KMX-3901-IN-16-Q (with KMX-3901-IN-16-Q-3PRP, or KMX-3901-IN-M3-Q-3PRP)	16-input HD/SD-SDI and 3 Gbps input module with quad FlexBridge outputs (convertible to a 4K UHD prescaler), and quintuple rear connector panel	5 slots

Card	Description	Rear panel
KMX-3901-IN-16-Q (with KMX-3901-IN-16-Q-3+DRP, or KMX-3901-IN-M3-Q-3+DRP)	16-input HD/SD-SDI and 3 Gbps input module with quad FlexBridge outputs (convertible to a 4K UHD prescaler), and double rear connector panel	2 slots
KMX-3901-IN-IP-D (with KMX-3901-IN-IP-D-3+TRP)	10 GigE IP input module for SMPTE-2022-6 (3G/HD/SD) sources, with triple rear connector panel	3 slots
KMX-3901-OUT-S (with KMX-3901-OUT-D-3DRP)	Single-head output module, with double rear connector panel	2 slots
KMX-3901-OUT-S (with KMX-3901-OUT-D-3+SRP)	Single-head output module, with single rear connector panel	1 slot
KMX-3901-OUT-D (with KMX-3901-OUT-D-3DRP)	Dual-head output module, with double rear connector panel	2 slots
KMX-3901-OUT-D (with KMX-3901-OUT-D-3+SRP)	Dual-head output module, with single rear connector panel	1 slot

The following tables show examples of slot distributions for typical Kaleido-Modular-X configurations, for SDI source monitoring purposes. In these examples, the input cards have the 3–5-slot rear connector panels compatible with the Densité 3 frame, and the output cards have a *double* rear connector panel. A Densité 3+ FR1 frame can house up to 4 output cards with *single* rear panels.

64 × 4 in two separate housing frames

Card	Model	Rear panel covers...	Insert card at...
Output A	KMX-3901-OUT-D	Slots 1–2 (e.g., in Densité 3+ FR1)	Slot 1
Output B	KMX-3901-OUT-D	Slots 3–4 (e.g., in Densité 3+ FR1)	Slot 3
Input A	KMX-3901-IN-16-Q	Slots 1–5	Slot 3
Input B	KMX-3901-IN-16-Q	Slots 6–10	Slot 8
Input C	KMX-3901-IN-16-Q	Slots 11–15	Slot 13
Input D	KMX-3901-IN-16-Q	Slots 16–20	Slot 18

64 × 2

Card	Model	Rear panel covers...	Insert card at...
Output A	KMX-3901-OUT-D	Slots 1–2	Slot 1
Input A	KMX-3901-IN-16-D	Slots 3–6	Slot 5
Input B	KMX-3901-IN-16-D	Slots 7–10	Slot 9
Input C	KMX-3901-IN-16-D	Slots 11–14	Slot 13
Input D	KMX-3901-IN-16-D	Slots 15–18	Slot 17

48 × 4

Card	Model	Rear panel covers...	Insert card at...
Output B	KMX-3901-OUT-D	Slots 2–3	Slot 2
Output A	KMX-3901-OUT-D	Slots 4–5	Slot 4
Input A	KMX-3901-IN-16-Q	Slots 6–10	Slot 8
Input B	KMX-3901-IN-16-Q	Slots 11–15	Slot 13
Input C	KMX-3901-IN-16-Q	Slots 16–20	Slot 18

48 × 2

Card	Model	Rear panel covers...	Insert card at...
Output A	KMX-3901-OUT-D	Slots 1–2	Slot 1
Input A	KMX-3901-IN-16-D	Slots 3–6	Slot 5
Input B	KMX-3901-IN-16-D	Slots 7–10	Slot 9
Input C	KMX-3901-IN-16-D	Slots 11–14	Slot 13

32 × 4

Card	Model	Rear panel covers...	Insert card at...
Output B	KMX-3901-OUT-D	Slots 2–3	Slot 2
Output A	KMX-3901-OUT-D	Slots 4–5	Slot 4
Input A	KMX-3901-IN-16-Q	Slots 6–10	Slot 8
Input B	KMX-3901-IN-16-Q	Slots 11–15	Slot 13

32 × 2

Card	Model	Rear panel covers...	Insert card at...
Output A	KMX-3901-OUT-D	Slots 1–2	Slot 1
Input A	KMX-3901-IN-16-D	Slots 3–6	Slot 5
Input B	KMX-3901-IN-16-D	Slots 7–10	Slot 9

24 × 2

Card	Model	Rear panel covers...	Insert card at...
Output A	KMX-3901-OUT-D	Slots 2–3	Slot 2
Input A	KMX-3901-IN-16-D	Slots 4–7	Slot 6
Input B	KMX-3901-IN-8-D	Slots 8–10	Slot 9

16 × 4

Card	Model	Rear panel covers...	Insert card at...
Output B	KMX-3901-OUT-D	Slots 2–3	Slot 2
Output A	KMX-3901-OUT-D	Slots 4–5	Slot 4
Input A	KMX-3901-IN-16-Q	Slots 6–10	Slot 8

16 × 2, 16 × 1

Card	Model	Rear panel covers...	Insert card at...
Output A	KMX-3901-OUT-D	Slots 1–2	Slot 1
Input A	KMX-3901-IN-16-D	Slots 3–6	Slot 5

8 × 2, 8 × 1

Card	Model	Rear panel covers...	Insert card at...
Output A	KMX-3901-OUT-D	Slots 2–3	Slot 2
Input A	KMX-3901-IN-8-D	Slots 4–6	Slot 5

The KMX-3901-IN IP input/output module (KMX-3901-IN-IP-D), for IP source monitoring, comprises two cards: a KMX-3901-IN-8-D input card, and an IPG-3901 SDI/IP gateway card, with a common rear panel covering 3 slots, compatible with Densité 3+ FR4 only.

6 × 2, 6 × 1 (IP)

Card	Model	Rear panel covers...	Insert card at...
Output A	KMX-3901-OUT-D	Slots 2–3	Slot 2
Input A	KMX-3901-IN-IP-D	Slots 4–6	Slot 5 (IPG-3901), and slot 6 (KMX-3901-IN-8-D)

3 Remove the blank rear panels that cover the slots where you wish to install your cards, by releasing their captive screws.

4 Position the new rear panels, and secure them in place with the captive screws at the bottom (or on the right, in the case of a Densité 3+ FR1 frame).

5 Slide each of your new input and output cards into the appropriate slot (refer to the tables matching your intended configuration, above, if needed), and push gently on the handle to seat the connectors. Seating an input card requires more pressure.

> IMPORTANT
>
> • If you need to replace or momentarily remove a rear panel, make sure to first remove the corresponding card itself from its slot (see *Replacing Cards,* in the Kaleido-Modular-X Hardware Description & Installation Manual).
>
> • Removing more than one input card at a time from a Kaleido-Modular-X system in operation is not supported.

6 Verify that each card is securely seated in its slot, and leave the frame door open so that you can monitor all the card's LEDs.

> Note: For more information on the card's LEDs, refer to the *Kaleido-Modular-X Hardware Description & Installation Manual,* available from the Documentation Library section of Grass Valley's website.

7 Make the physical connections between your input and output cards, by using the FlexBridge cables that shipped with your system. See Bridging the Input and Output Cards in a Kaleido-Modular-X, on page 16.

8 Power up the frame, if it was not in operation already.

Once the networking parameters are correctly configured on your KMX-3901-OUT output cards, it will not be necessary to switch off the housing frame's power when installing or removing cards.

The Kaleido-Modular-X system starts up. The startup sequence takes approximately four minutes, during which time every card's status LED is blinking orange.

Status LED →

Select button →

Front edge of a KMX-3901 input card

Status LED →

Select button →

Front edge of a KMX-3901 output card
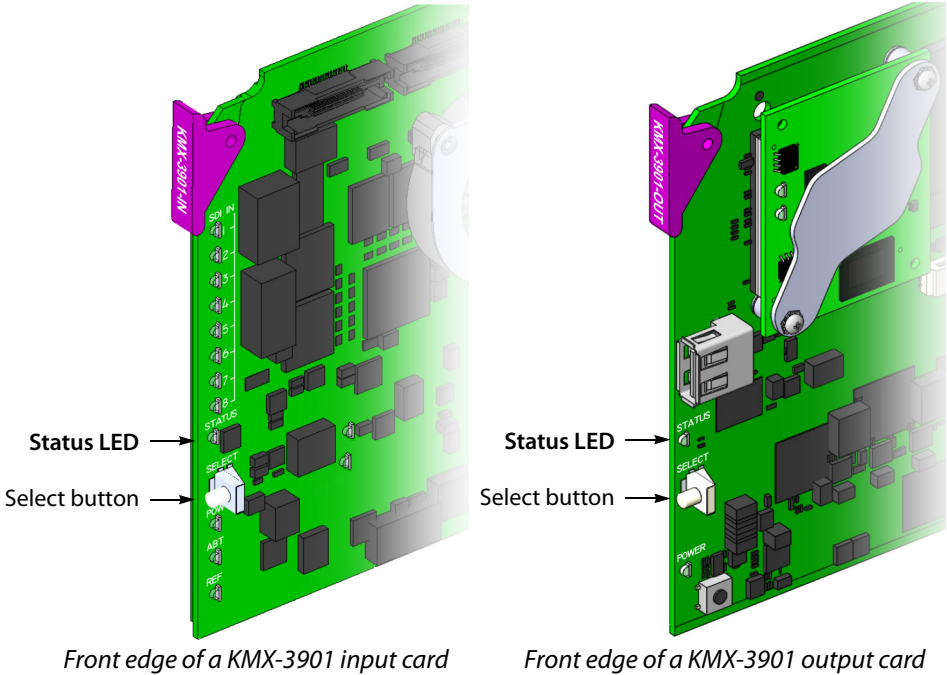
Once the startup has completed, the status LEDs on the *output cards* should be red (steady) because the cards are not connected to the network yet:

Green	Normal
Blinking orange	Booting (or the card is selected for local control)
Red	Firmware initialization in progress / no Ethernet / SD card error
Blinking red	Fan failure / no rear / duplicate IP address

9 If your system includes KMX-3901-IN-16-Q input cards to be used as 4K UHD prescalers, connect their FlexBridge outputs **A1** and **B1** to the 3G/HD SDI inputs you wish to use for your 4K monitoring purposes, at the rear of a KMX-3901 input card, and then see

enable these cards' prescaler mode.
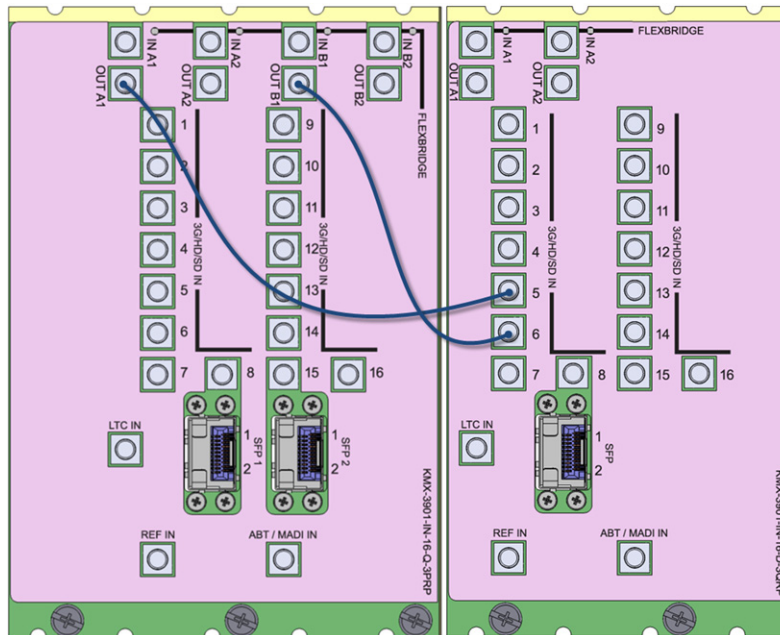
*Example: 4K UHD prescaler's FlexBridge outputs A1 and B1, connected to
3G/HD SDI inputs 5 and 6, at the rear of a KMX-3901-IN-16-D input card*

10 Connect the Kaleido-RCP2 and the Audio Bridge Terminal (if available) to the
management network (see Cabling Diagram, on page 16). You can also connect a
mouse and a keyboard to your Kaleido-RCP2.

Notes

• The Kaleido-RCP2, and Audio Bridge Terminal (ABT) are optional devices,
and may not have been shipped with your Kaleido-Modular-X system. For
information on these and other Kaleido-Modular-X options, please contact
your Grass Valley sales representative.

• You may need to upgrade your Audio Bridge Terminal and Kaleido-RCP2
devices (if available) to the latest firmware. The update files are available
from the *Downloads* section of Grass Valley's website. Please refer to the
Kaleido-RCP2 Guide to Installation and Operation, and to the *Audio Bridge
Terminal Guide to Installation and Operation* (available from the
Documentation Library section of Grass Valley's website) for instructions on
how to determine the firmware level, and how to perform the upgrade for
these devices.

• The Kaleido-Modular-X supports one ABT device. With a 3RU model, you
can achieve redundancy by connecting the ABT to more than one input
card, in which case the Kaleido-Modular-X system uses the signal from the
input card that is the farthest from the output cards (i.e., Input D, if you
have 4 input cards, Input C if you have 3 input cards, Input B if you have 2
input cards).

KMX-3901-OUT output cards automatically detect the resolution of any connected display. If the required information is not available, then a fall-back resolution of 1920 × 1080 @ 60 Hz (HDTV) is used.

11 Connect your KMX-3901-OUT output cards to displays that support this resolution.

- **Monitor wall displays:** Connect the output cards' MV OUT outputs to the displays.
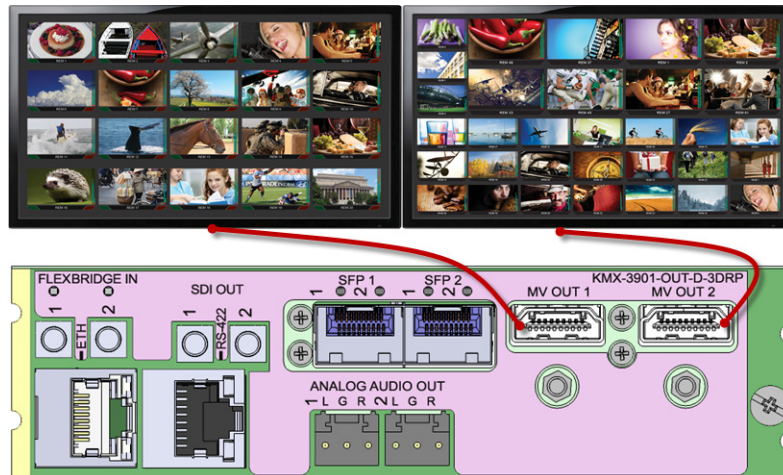
HDMI outputs on double rear module, connected to displays
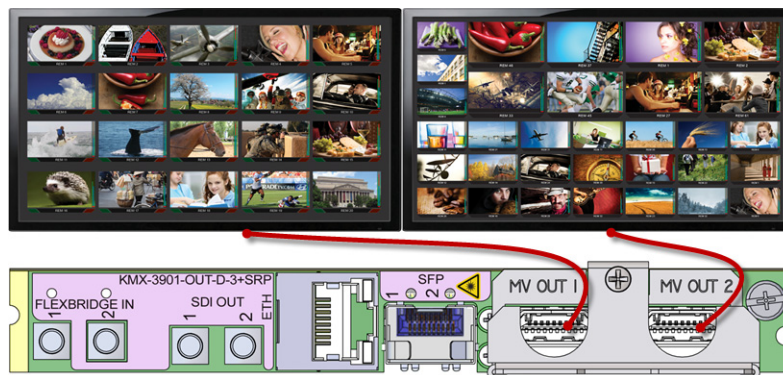
HDMI outputs on single rear module, connected to displays

- **Quad-link 4K UHD output:**
  - **Four 1080p displays**—In the case of a quad-head system meant to output a 4K UHD signal to four 1080p displays, connect the output cards' SDI monitoring outputs to the displays, referring to the table below for proper mapping.
  - **One 4K UHD display**—If your system is meant to output to a single 4K UHD display, connect the output cards' SDI monitoring outputs to the display, using an SDI-to-HDMI converter, if needed. Refer to the table below for proper mapping.

The SDI outputs are mapped as follows. This configuration does not support rotated displays. Refer to *Creating a 4K UHD Room,* and to *4K UHD Spanning,* in the Kaleido-X User's Manual, for instructions on how to create 4K UHD rooms and layouts.

13

OUTPUT A, SDI OUT 1	Top left quadrant	OUTPUT B, SDI OUT 1	Top right quadrant
OUTPUT A, SDI OUT 2	Bottom left quadrant	OUTPUT B, SDI OUT 2	Bottom right quadrant

- **Broadcast monitors:** If your installation involves broadcast monitors, connect them to the appropriate SDI outputs. It is also possible to connect SDI outputs to a router. Refer to *Configuring the HD-SDI Monitoring Output Format,* in the Kaleido-X User's Manual, for instructions on setting the scan format.

If you wish to use a different resolution, see Changing the Output Resolution, on page 26, for detailed instructions.

> **IMPORTANT**
> Within a Kaleido-Modular-X system, all output heads must be configured with the same refresh rate. If your system is referenced, then the heads' refresh rate must also match the reference signal's refresh rate.

12 Connect one or more video sources to the KMX-3901-IN input cards (see Cabling Diagram, on page 16).

13 If you have configured 4K UHD prescaler cards (at step 9, above), connect one or two quad link 3G-SDI signal sources to each prescaler card, as follows:

Description	Connector
Link 1A – Top left quadrant of 4K UHD signal A	3G/HD/SD IN 1
Link 2A – Top right quadrant of 4K UHD signal A	3G/HD/SD IN 2
Link 3A – Bottom left quadrant of 4K UHD signal A	3G/HD/SD IN 9
Link 4A – Bottom right quadrant of 4K UHD signal A	3G/HD/SD IN 10
Link 1B – Top left quadrant of 4K UHD signal B	3G/HD/SD IN 5
Link 2B – Top right quadrant of 4K UHD signal B	3G/HD/SD IN 6
Link 3B – Bottom left quadrant of 4K UHD signal B	3G/HD/SD IN 13
Link 4B – Bottom right quadrant of 4K UHD signal B	3G/HD/SD IN 14

> **IMPORTANT**
> The 4K UHD prescaler card and its 4K UHD source signals must be referenced together.

14 If your system configuration involves M3 cables, connect them between the appropriate output modules on the router side, and the KMX-3901-IN-M3 rear modules on the multiviewer side.
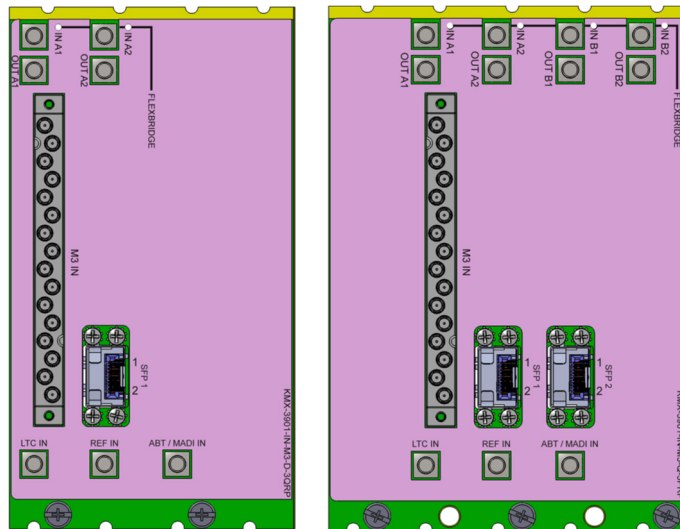
KMX-3901-IN-M3-D-3QRP
rear module

KMX-3901-IN-M3-Q-3PRP rear module

> Note: When the M3 output card is installed in the *lower output bays of an
> NV8576 router frame,* its backplane is *upside down* and the ordering of its
> ports differs from when the backplane is installed in the upper bays (right
> side up) of an NV8576 frame. Refer to *NV8500 M3 Backplane Connections,* in
> the Kaleido-Modular-X Hardware Description & Installation Manual to
> determine the correct mapping between router outputs and multiviewer
> inputs, when using the M3 cable.

15 Connect a reference source (if available) to one or more reference inputs.

> Note: Unless your system includes a 4K UHD prescaler card (see step 9, and
> step 13 above), a reference is optional. If minimal processing delay is
> required for your monitoring purposes, then you must reference your
> system. However, if you must monitor 50 Hz input signals on 60 Hz displays
> (or vice-versa), then do not reference your system.
> To properly reference a Kaleido-Modular-X system, either:
> • Connect all reference inputs on all the KMX-3901-IN input cards, or
> • Use a REF-1801 card externally connected to the house reference, in every
>   Densité frame that contains KMX-3901-IN input cards. The REF-1801 will
>   distribute the reference to all cards in the frame internally through the URS
>   on the frame midplane.

You can now proceed with the networking setup (see Step 2: Networking Setup, on
page 29).

Cabling Diagram
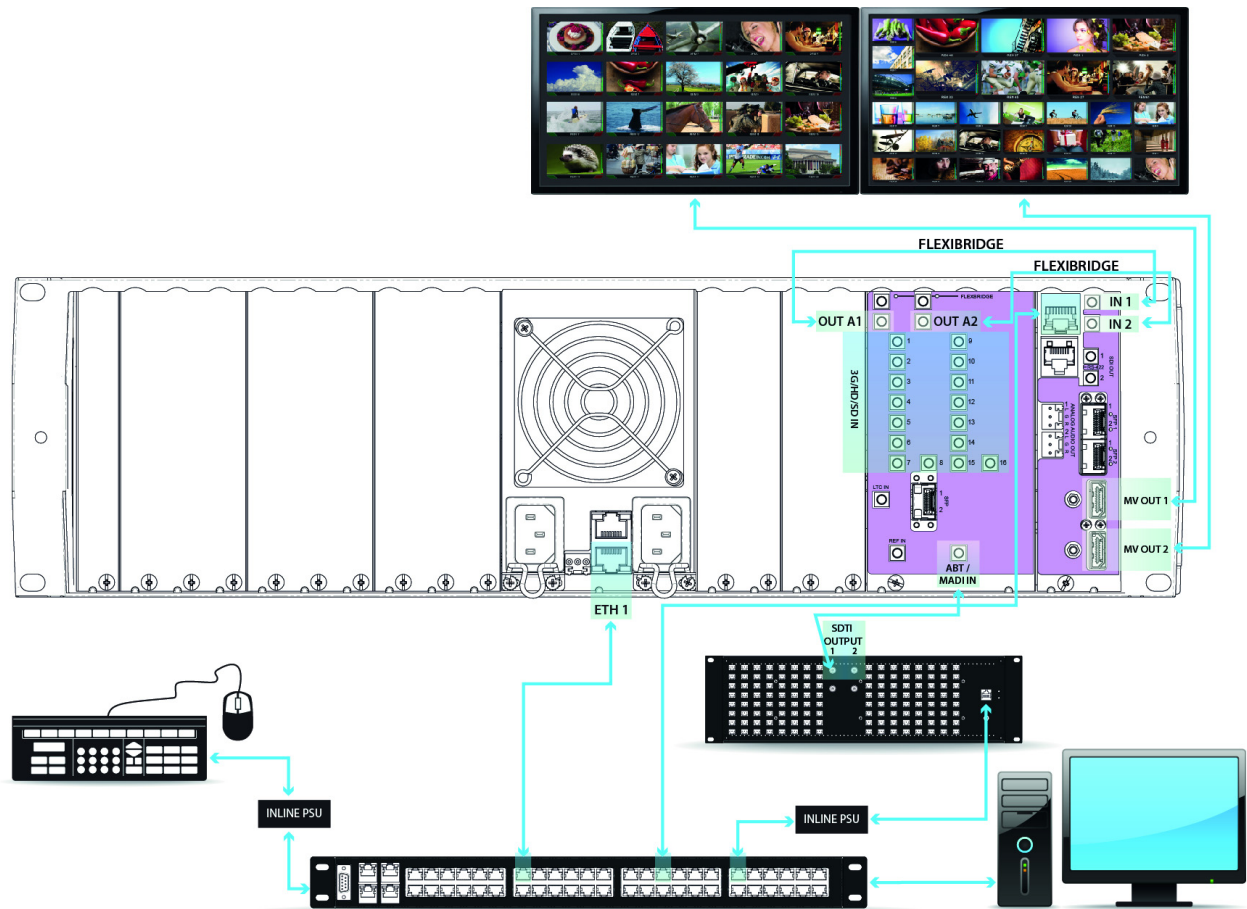
Cabling diagram, showing rear view of a Kaleido-Modular-X 16 × 2 system

> Note: **Do not** connect the KMX-3901-OUT *output cards* to the network until the cards' networking parameters are properly set.

Bridging the Input and Output Cards in a Kaleido-Modular-X

The Kaleido-Modular-X requires FlexBridge connections between the input and output cards. Use the DIN-DIN coax cables that shipped with your system to make these physical connections. The number of cables required depends on the number of input and output cards (see Required Materials, on page 3).

Depending on your monitoring purposes you may have ordered SDI input cards, or IP input/output cards, or both. The following sections describe FlexBridge wiring for typical configurations:

- FlexBridge wiring for SDI systems, on page 17
- FlexBridge wiring for IP systems, on page 22
- FlexBridge wiring for SDI/IP hybrid systems, on page 25

FlexBridge wiring for SDI systems

FlexBridge wiring for a 8 × 1 or 16 × 1 SDI system
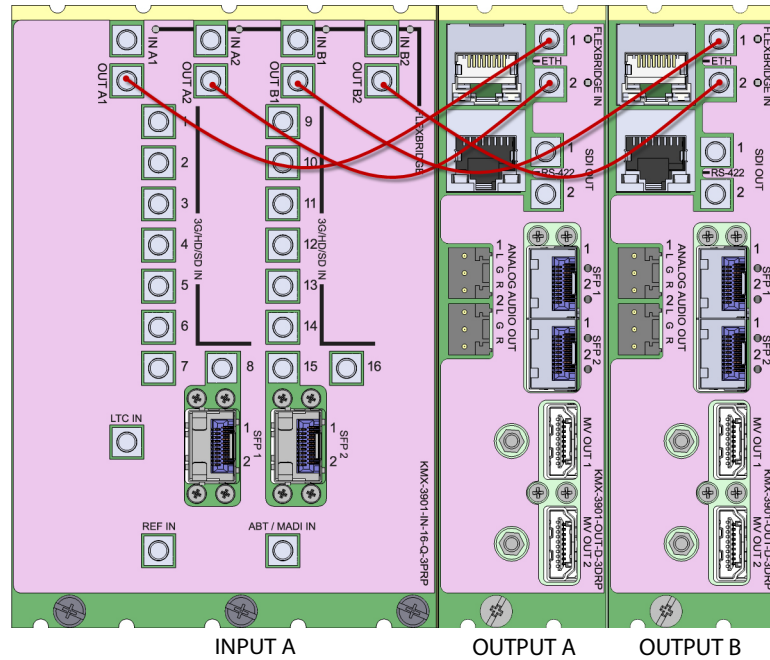
To connect the input and output cards in a Kaleido-Modular-X 8 × 1 or 16 × 1

- Bridge **Input A** to **Output A**, by connecting:
    - INPUT A FLEXBRIDGE OUT A1 to OUTPUT A FLEXBRIDGE IN 1
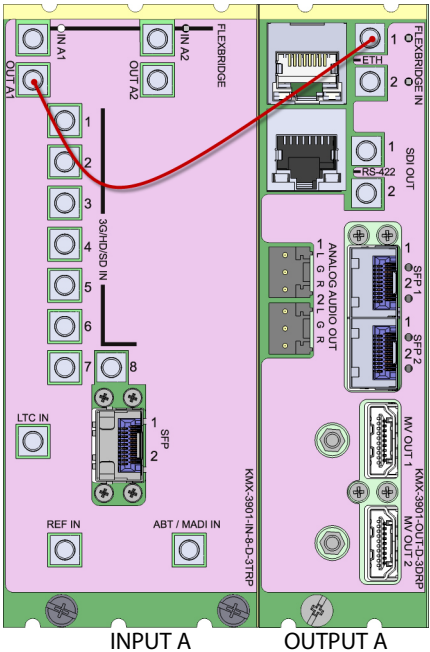
Rear panels for a KMX-3901-IN-8-D (left), and KMX-3901-OUT-D (double panel shown on right). The Flexbridge connectors are the same on the KMX-3901-IN-8-D and KMX-3901-IN-16-D card's rear panels, and on the output card's single and double rear panels.

FlexBridge wiring for a 8 × 2 or 16 × 2 SDI system

To connect the input and output cards in a Kaleido-Modular-X 8 × 2 or 16 × 2

- Bridge **Input A** to **Output A**, by connecting:
    - INPUT A FLEXBRIDGE OUT A1 to OUTPUT A FLEXBRIDGE IN 1
    - INPUT A FLEXBRIDGE OUT A2 to OUTPUT A FLEXBRIDGE IN 2

Rear panels for a KMX-3901-IN-8-D (left), and KMX-3901-OUT-D (double panel shown on right). The Flexbridge connectors are the same on the KMX-3901-IN-8-D and KMX-3901-IN-16-D card's rear panels, and on the output card's single and double rear panels.

INPUT A   OUTPUT A

FlexBridge wiring for a 32 × 2 SDI system

**To connect the input and output cards in a Kaleido-Modular-X 32 × 2**

1 Complete the bridging for a 16 × 2 configuration (see FlexBridge wiring for a 8 × 2 or 16 × 2 SDI system, above).

2 Bridge **Input B** to **Input A**, by connecting:

- INPUT B FLEXBRIDGE OUT A1 to INPUT A FLEXBRIDGE IN A1
- INPUT B FLEXBRIDGE OUT A2 to INPUT A FLEXBRIDGE IN A2

INPUT B   INPUT A   OUTPUT A
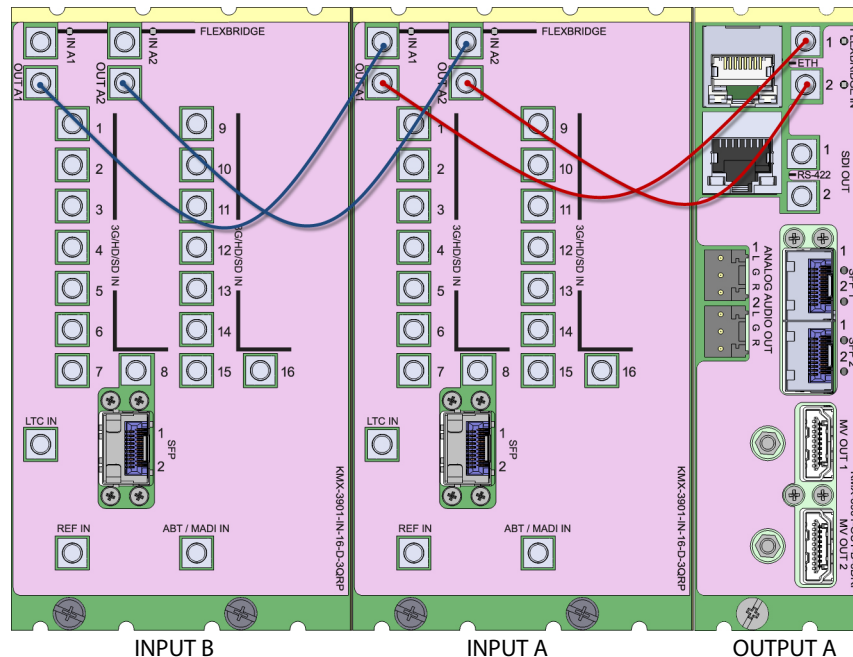
FlexBridge wiring for a 48 × 2 SDI system

To connect the input and output cards in a Kaleido-Modular-X 48 × 2

1 Complete the bridging for a 32 × 2 configuration (see FlexBridge wiring for a 32 × 2 SDI system, above).

2 Bridge **Input C** to **Input B**, by connecting:

- INPUT C FLEXBRIDGE OUT A1 to INPUT B FLEXBRIDGE IN A1
- INPUT C FLEXBRIDGE OUT A2 to INPUT B FLEXBRIDGE IN A2

FlexBridge wiring for a 64 × 2 SDI system

To connect the input and output cards in a Kaleido-Modular-X 64 × 2

1 Complete the bridging for a 48 × 2 configuration (see FlexBridge wiring for a 48 × 2 SDI system, above).

2 Bridge **Input D** to **Input C**, by connecting:

- INPUT D FLEXBRIDGE OUT A1 to INPUT C FLEXBRIDGE IN A1
- INPUT D FLEXBRIDGE OUT A2 to INPUT C FLEXBRIDGE IN A2
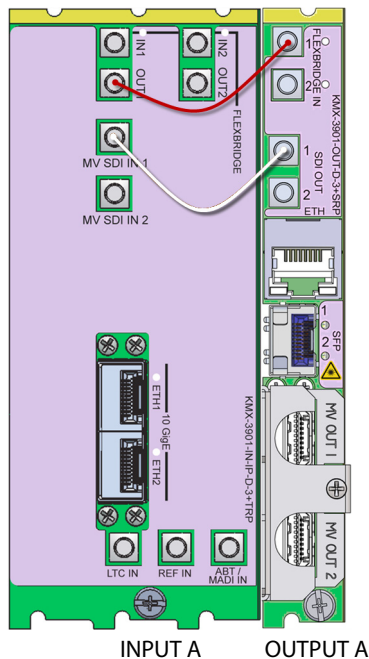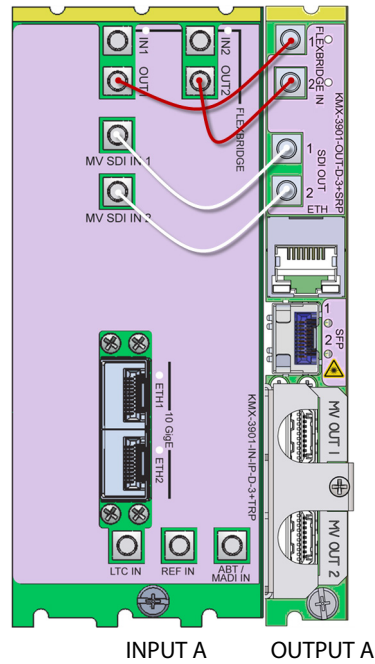
FlexBridge wiring for a 16 × 4 SDI system

To connect the input and output cards in a Kaleido-Modular-X 16 × 4

1 Bridge **Input A** to **Output A**, by connecting:

- INPUT A FLEXBRIDGE OUT A1 to OUTPUT A FLEXBRIDGE IN 1
- INPUT A FLEXBRIDGE OUT A2 to OUTPUT A FLEXBRIDGE IN 2
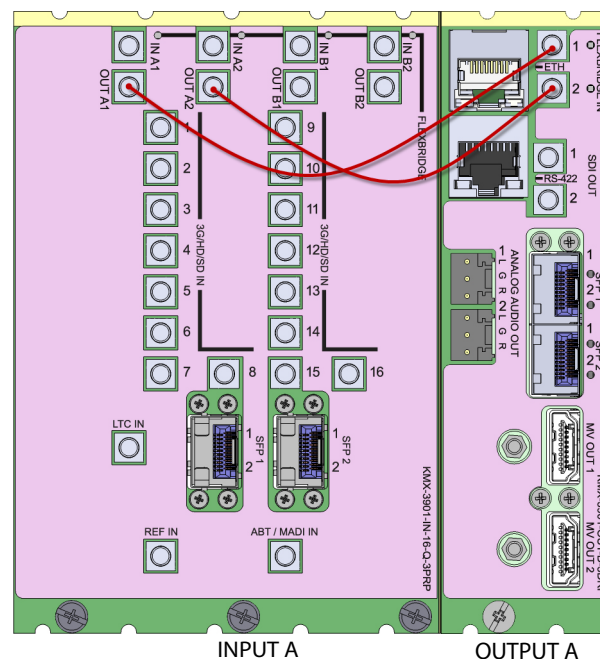
INPUT A   OUTPUT A

2 Bridge **Input A** to **Output B**, by connecting:

- INPUT A FLEXBRIDGE OUT B1 to OUTPUT B FLEXBRIDGE IN 1
- INPUT A FLEXBRIDGE OUT B2 to OUTPUT B FLEXBRIDGE IN 2

INPUT A   OUTPUT A   OUTPUT B

FlexBridge wiring for a 32 × 4 SDI system

To connect the input and output cards in a Kaleido-Modular-X 32 × 4

1. Complete the bridging for a 16 × 4 configuration (see FlexBridge wiring for a 16 × 4 SDI system, above).

2. Bridge **Input B** to **Input A**, by connecting:

   - INPUT B FLEXBRIDGE OUT A1 to INPUT A FLEXBRIDGE IN A1
   - INPUT B FLEXBRIDGE OUT A2 to INPUT A FLEXBRIDGE IN A2
   - INPUT B FLEXBRIDGE OUT B1 to INPUT A FLEXBRIDGE IN B1
   - INPUT B FLEXBRIDGE OUT B2 to INPUT A FLEXBRIDGE IN B2
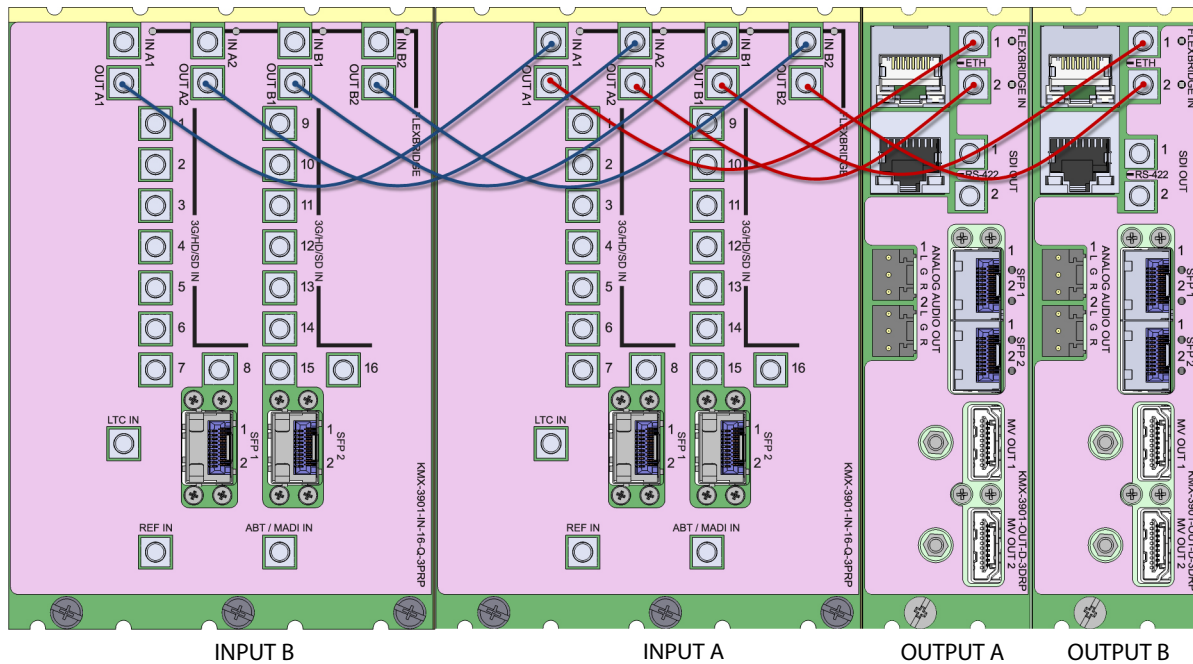
FlexBridge wiring for a 48 × 4 SDI system

To connect the input and output cards in a Kaleido-Modular-X 48 × 4

1 Complete the bridging for a 32 × 4 configuration (see FlexBridge wiring for a 32 × 4 SDI system, above).

2 Bridge **Input C** to **Input B**, by connecting:

- INPUT C FLEXBRIDGE OUT A1 to INPUT B FLEXBRIDGE IN A1
- INPUT C FLEXBRIDGE OUT A2 to INPUT B FLEXBRIDGE IN A2
- INPUT C FLEXBRIDGE OUT B1 to INPUT B FLEXBRIDGE IN B1
- INPUT C FLEXBRIDGE OUT B2 to INPUT B FLEXBRIDGE IN B2

FlexBridge wiring for a 64 × 4 SDI system

To connect the input and output cards in a Kaleido-Modular-X 64 × 4

1 Complete the bridging for a 48 × 4 configuration (see FlexBridge wiring for a 32 × 4 SDI system, above).

2 Bridge **Input D** to **Input C**, by connecting:

- INPUT D FLEXBRIDGE OUT A1 to INPUT C FLEXBRIDGE IN A1
- INPUT D FLEXBRIDGE OUT A2 to INPUT C FLEXBRIDGE IN A2
- INPUT D FLEXBRIDGE OUT B1 to INPUT C FLEXBRIDGE IN B1
- INPUT D FLEXBRIDGE OUT B2 to INPUT C FLEXBRIDGE IN B2

FlexBridge wiring for IP systems

FlexBridge wiring for a 6 × 1 IP system

To connect the input and output cards in a Kaleido-Modular-X 6 × 1 IP system

- Bridge **Input A** to **Output A**, by connecting:
    - INPUT A FLEXBRIDGE OUT 1 to OUTPUT A FLEXBRIDGE IN 1
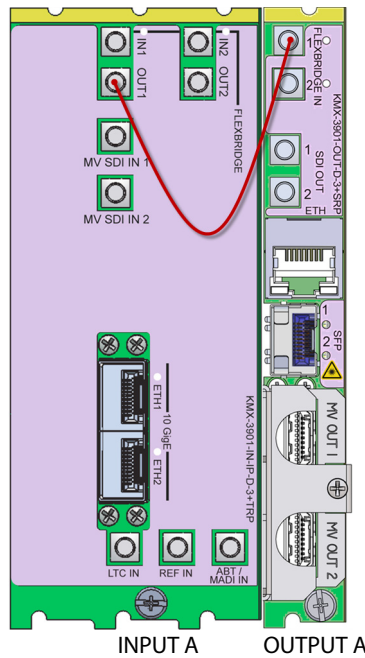
Rear panels for a KMX-3901-IN-IP-D (left), and KMX-3901-OUT-D (single panel shown on right). The Flexbridge connectors are the same on the output card's single and double rear panels.

INPUT A   OUTPUT A

- If you plan to stream the system's mosaic output to your data network, bridge **Output A** to **Input A** by also connecting OUTPUT A **SDI OUT 1** to INPUT A **MV SDI IN 1**

INPUT A   OUTPUT A

FlexBridge wiring for a 6 × 2 IP system

To connect the input and output cards in a Kaleido-Modular-X 6 × 2 IP system

- Bridge **Input A** to **Output A**, by connecting:
    - INPUT A FLEXBRIDGE OUT 1 to OUTPUT A FLEXBRIDGE IN 1
    - INPUT A FLEXBRIDGE OUT 2 to OUTPUT A FLEXBRIDGE IN 2
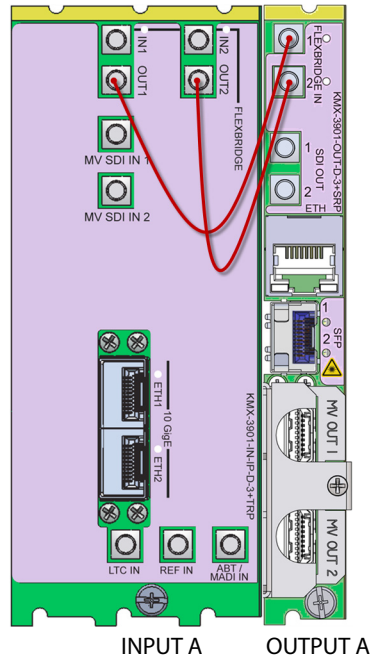
Rear panels for a KMX-3901-IN-IP-D (left), and KMX-3901-OUT-D (single panel shown on right). The Flexbridge connectors are the same on the KMX-3901-IN-8-D and KMX-3901-IN-16-D card's rear panels, and on the output card's single and double rear panels.

INPUT A   OUTPUT A

- If you plan to stream the system's mosaic output to your data network, bridge **Output A** to **Input A** by also connecting:
    - OUTPUT A **SDI OUT 1** to INPUT A **MV SDI IN 1**
    - OUTPUT A **SDI OUT 2** to INPUT A **MV SDI IN 2**

INPUT A   OUTPUT A

FlexBridge wiring for a 12 × 2 IP system

To connect the input and output cards in a Kaleido-Modular-X 12 × 2 IP system

1 Complete the bridging for a 6 × 2 configuration (see FlexBridge wiring for a 6 × 2 IP system, above).

2 Bridge **Input B** to **Input A**, by connecting:

   • INPUT B FLEXBRIDGE OUT 1 to INPUT A FLEXBRIDGE IN 1

   • INPUT B FLEXBRIDGE OUT 2 to INPUT A FLEXBRIDGE IN 2

INPUT B   INPUT A   OUTPUT A
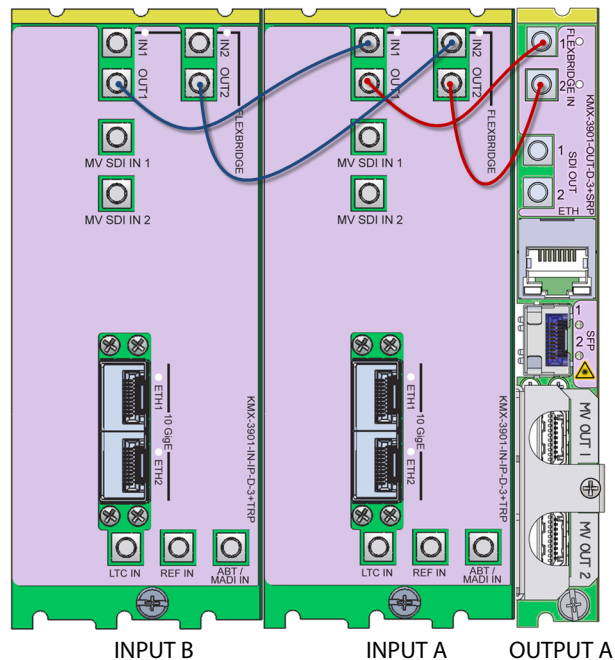
FlexBridge wiring for a 18 × 2 IP system

To connect the input and output cards in a Kaleido-Modular-X 18 × 2 IP system

1 Complete the bridging for a 12 × 2 configuration (see FlexBridge wiring for a 12 × 2 IP system, above).

2 Bridge **Input C** to **Input B**, by connecting:

   • INPUT C FLEXBRIDGE OUT 1 to INPUT B FLEXBRIDGE IN 1

   • INPUT C FLEXBRIDGE OUT 2 to INPUT B FLEXBRIDGE IN 2

FlexBridge wiring for a 24 × 2 IP system

To connect the input and output cards in a Kaleido-Modular-X 24 × 2 IP system

1 Complete the bridging for a 18 × 2 configuration (see FlexBridge wiring for a 18 × 2 IP system, above).

2 Bridge **Input D** to **Input C**, by connecting:

   • INPUT D FLEXBRIDGE OUT 1 to INPUT C FLEXBRIDGE IN 1

   • INPUT D FLEXBRIDGE OUT 2 to INPUT C FLEXBRIDGE IN 2

FlexBridge wiring for SDI/IP hybrid systems

You can mix and match up to four SDI and IP cards, in any order. The following procedure describes a system with one KMX-3901-IN IP input/output card, between a KMX-3901-IN-16-D input card, and a KMX-3901-OUT output card. To configure a system with a different card distribution, refer to the FlexBridge wiring procedures for SDI systems, or for IP systems, as needed (see FlexBridge wiring for SDI systems, on page 17, and FlexBridge wiring for IP systems, on page 22).

To connect the input and output cards in a Kaleido-Modular-X SDI/IP hybrid system

1 Complete the bridging for a 6 × 2 configuration (see FlexBridge wiring for a 6 × 2 IP system, above).

2 Bridge **Input B** to **Input A**, by connecting:

   • INPUT B FLEXBRIDGE OUT A1 to INPUT A FLEXBRIDGE IN 1

   • INPUT B FLEXBRIDGE OUT A2 to INPUT A FLEXBRIDGE IN 2
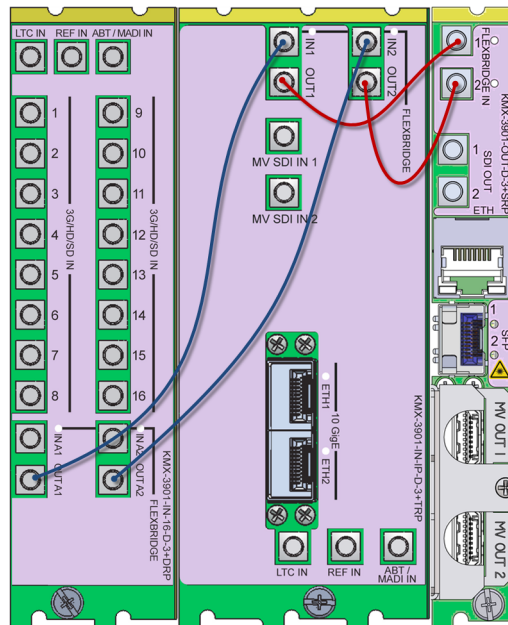
Rear panels for a KMX-3901-IN-16-D (double panel shown on the left), KMX-3901-IN-IP-D (center), and KMX-3901-OUT-D (single panel shown on the right). The Flexbridge connectors are the same on the KMX-3901-IN-8-D and KMX-3901-IN-16-D card's rear panels, and on the output card's single and double rear panels.

Changing the Output Resolution

> IMPORTANT
>
> Within a Kaleido-Modular-X system, all output heads must be configured with the same refresh rate. If your system is referenced, then the heads' refresh rate must also match the reference signal's refresh rate. If you must monitor 50 Hz input signals on 60 Hz displays (or vice-versa), then do not reference your system.

To change the display resolution from the frame controller's local control panel

1 Press the Select button on the front edge of the *output card* whose heads you wish to configure.
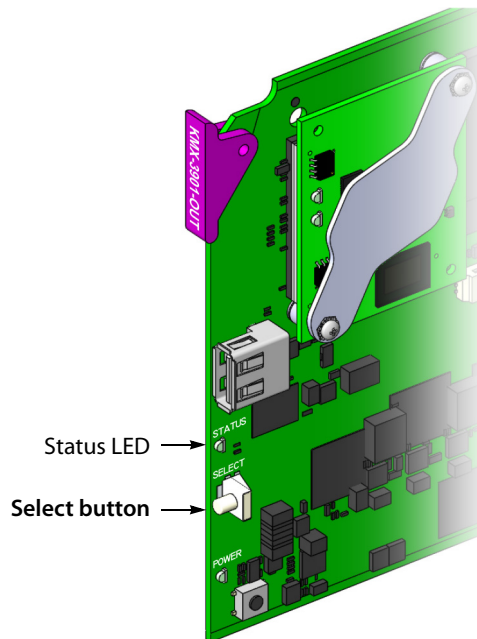
Status LED →

Select button →

The Status LED on the selected card flashes orange, and the associated control menu appears on the LCD display of the Densité frame's local control panel.
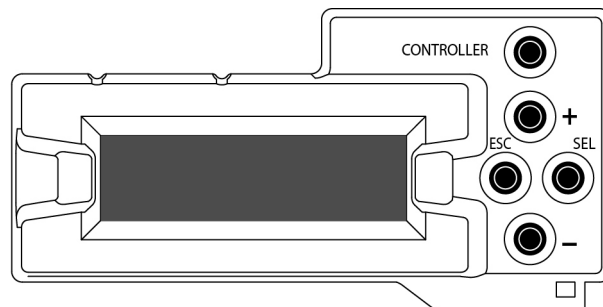
Note: This procedure refers to the CPU-ETH2 frame controller, whose control panel has an LCD display and physical buttons. The CPU-ETH3 frame controller has a touchscreen display with virtual buttons. In either case, the menus and button operation are equivalent.

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

3 Press the SEL button.

   HEAD 1 appears on the LCD display.

4 Press the SEL button again.

5 The current resolution for the monitor wall display that is connected to the multiviewer's output head 1 (i.e. through the MV OUT 1 connector) appears on the LCD display.

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

7 Press SEL to apply the value shown on the LCD display.

The selected resolution is applied to the multiviewer's output head 1.

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

HEAD 1 appears again on the LCD display.

9 If you wish to change the resolution on the second output head (if available), then press the [–] button.

HEAD 2 appears on the LCD 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 multiviewer's output head 2 (i.e. through the MV OUT 2 connector).

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

Notes

- If you do not press any button on the local control panel, the frame 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 press the SEL button on the local control panel), once the 30-second timeout has occurred, the parameters will be confirmed as if you had pressed the SEL button.

Converting a KMX-3901-IN-16-Q Input Card to a 4K UHD Prescaler

To configure a KMX-3901-IN-16-Q input card as a 4K UHD prescaler

1 Press the Select button on the front edge of the *KMX-3901-IN-16-Q input card* you wish to configure.
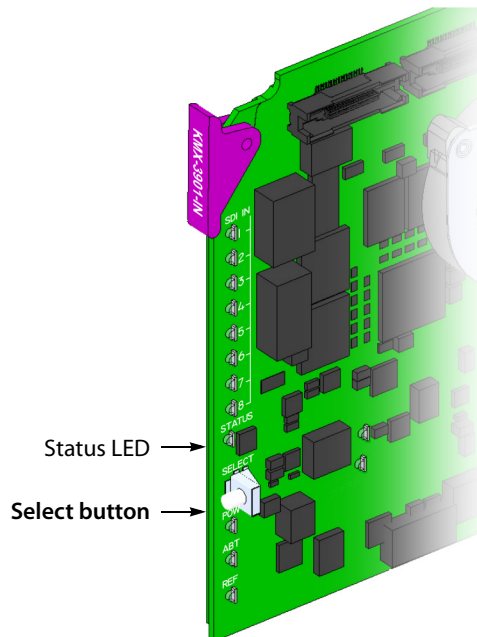
The Status LED on the selected card flashes orange, and the associated control menu appears on the LCD display of the Densité frame's local control panel.

> Note: This procedure refers to the CPU-ETH2 frame controller, whose control panel has an LCD display and physical buttons. The CPU-ETH3 frame controller has a touchscreen display with virtual buttons. In both cases, the menus and button operation are equivalent.

2 On the local control panel, press the [–] button.

CONFIG appears on the LCD display.

3 Press the SEL button.

4K UHD PRESCALER appears on the LCD display.

4 Press the SEL button.

5 Press the [+] or [–] buttons, if needed, until ENABLE appears on the LCD display.

6 Press the SEL button.

ENABLE appears on the top line of the LCD display, and then, after 10 seconds, a message appears on the second line to let you know that the card will restart in 20 seconds.

7 After the card has restarted, notice that the SDI LEDs 3, 4, 7, 8, 11, 12, 15, and 16 are not lit.

This indicates that the card is now configured as a 4K UHD prescaler.

Step 2: Networking Setup

For the Kaleido-Modular-X multiviewer to join a TCP/IP network, it must be configured with a system name, appropriate IP addresses, network mask, and gateway settings. You may also need to configure networking parameters for the CPU-ETH2, or CPU-ETH3 frame controllers (if your housing frames were not already in operation), any new Kaleido-RCP2 and Audio Bridge Terminal units you ordered, and a client PC to communicate with the multiviewer and its peripheral devices (see Configuring a Client PC, on page 48).

A quad-head Kaleido-Modular-X multiviewer system requires three IP addresses (one for each output card, one for the system), while a dual- or single-head system requires only one (the output card's IP address doubles as the system IP address), unless your system includes KMX-3901-IN IP input/output modules, in which case you need to allow one or two IP addresses for every KMX-3901-IN IP module.[1] KMX-3901-OUT output cards are shipped with the following default settings:

KMX-3901-OUT default IP settings

System	IP address	192.168.3.31
	Network mask	255.255.255.0
	Gateway	0.0.0.0
Output A	IP address	192.168.3.31
Output B	IP address	0.0.0.0

---

1. Refer to the IPG-3901 Guide to Installation and Operation, for more information.

> Note: The default gateway address is either 0.0.0.0, or the default system IP address. Both settings result in the same system behavior.

Densité 3 and Densité 3+ FR1 housing frames are shipped with their CPU-ETH2 controller configured with the following default settings:

CPU-ETH2 controller default IP settings

IP address 1	192.168.3.1
Network mask	255.255.255.0
Gateway	0.0.0.0
IP address 2	0.0.0.0
Network mask	0.0.0.0
Gateway	0.0.0.0

Densité 3+ FR4 housing frames are shipped with their CPU-ETH3 controller configured with the following default settings:

CPU-ETH3 controller default IP settings

IP address	192.168.3.1
Network mask	255.255.0.0
Gateway	0.0.0.0

Once the networking parameters are correctly configured on your KMX-3901-OUT output cards, it will not be necessary to switch off the housing frame's power when installing or removing cards.

To set the system name and IP addresses for your Kaleido-Modular-X multiviewer

1   If any frame housing your Kaleido-Modular-X input and output cards was not already in operation, configure the frame controller's networking parameters. See Setting a Densité Frame Controller's IP Address on page 31.

2   For every frame housing Kaleido-Modular-X input or output cards, verify that the frame controller's automatic restore feature is enabled (see Enabling the Frame Controller's Automatic Restore Feature, on page 33).

> Note: For the card hot swap feature to function properly, the frame controller's automatic restore feature must be activated on all frames housing Kaleido-Modular-X cards (i.e., both input and output cards).

3   Configure your output cards' networking parameters:

   •   If you are setting up a **quad-head** Kaleido-Modular-X, replace the system IP address, network mask, default gateway, and both output cards' IP addresses as appropriate. See Configuring the Network Settings for a Quad-Head System on page 33.

   The *system* IP address will be your system's virtual IP address. This is the address you will use to access your system from XEdit and XAdmin, for example.

- If you are setting up a **single-head** or a **dual-head** Kaleido-Modular-X, then replace the IP address for Output A with an appropriate IP address, and change the network mask and default gateway as appropriate. See Configuring the Network Settings for a Single- or Dual-Head System on page 36.

   The output card's IP address will automatically become your system's virtual IP address.

4 Configure your KMX-3901-IN IP input/output modules, if any. See Configuring a KMX-3901-IN IP Input/Output Module on page 39.

5 Configure the Kaleido-RCP2, and Audio Bridge Terminal units you have connected to your system, if any. See Using the Kaleido-RCP2 with Default Settings on page 45, and Configuring an Audio Bridge Terminal, on page 47.

6 Complete your Kaleido-Modular-X system configuration by changing the system name, if desired. See Setting the System Name on page 42.

Note: If there are more than one multiviewer in the same network environment, it is important to assign each a unique system name, so that you can tell them apart (for example, when using a remote control panel such as the Kaleido-RCP2 or RCP-200).

You are now ready to open XAdmin and XEdit, from a client PC or laptop within the same subnet, and verify your system communication status (see Step 3: XEdit Installation, on page 50, and Step 4: System Verification, on page 54).

Setting a Densité Frame Controller's IP Address

Note: This procedure refers to the CPU-ETH2 frame controller, whose control panel has an LCD display and physical buttons. The CPU-ETH3 frame controller has a touchscreen display with virtual buttons. In either case, the menus and button operation are equivalent.


To set the frame controller's IP address

1 On the housing frame's local control panel, press the CONTROLLER button.
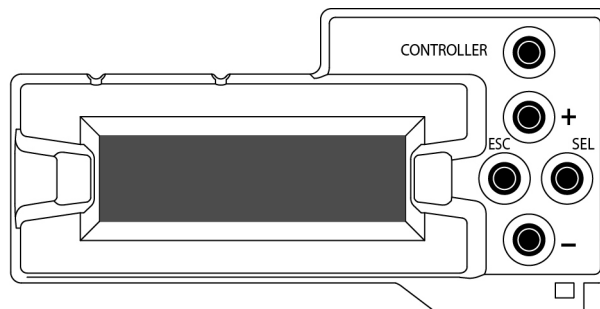
2 Press the [–] button repeatedly until ETH1 OPTIONS appears on the display, and then press the SEL button.

3 Press the [–] button repeatedly until IP ADDRESS appears on the display.

4 Press the SEL button.

   The current value appears on the display.

- Press the [+] and [–] buttons, to change the digit at the current input position.
- Press SEL to move one position to the right.
- Press ESC to move one position to the left.

5 When the display shows the desired value, press SEL repeatedly until you reach the last position (if needed), and then press SEL once more to save your changes and return to the previous menu level.

> Note: Pressing ESC when the input focus is in the first position returns to the previous menu level. Pressing SEL when the input focus is in the last position saves the changes and returns to the previous menu level.

IP ADDRESS appears on the control panel's display.

6 Press the [–] button.

NETWORK MASK appears on the control panel's display.

7 Repeat step 4 and step 5 to configure the netmask.

8 Once you have set the network mask, press the [–] button again.

GATEWAY appears on the control panel's display.

9 Repeat step 4 and step 5 to configure the gateway.

10 Once you have set the gateway, press the CONTROLLER button to exit the controller's menu.

The frame controller restarts.

11 Connect the controller card's ETHERNET 1 port to your management network (see Cabling Diagram, on page 16).

> Notes
>
> - The Kaleido-Modular-X does not support the controller card's second Ethernet port (ETHERNET 2).
>
> - To avoid IP-address conflicts, you should wait until you have configured the appropriate network settings for your KMX-3901 output cards before connecting the output cards' ETH ports to the management network.

> IMPORTANT
> **Make sure the controller's internal clock is set to the correct date and time.**
> The clock settings will persist for 10 days after a power loss. Should you later need to change the time on a CPU-ETH2 controller, then you will have to restart any multiviewer system housed in the same frame. Refer to the Densité CPU-ETH2 Enhanced Ethernet Controller Card Guide to Installation and Operation, for more information.

Enabling the Frame Controller's Automatic Restore Feature

> Note: This procedure refers to the CPU-ETH2 frame controller, whose control panel has an LCD display and physical buttons. The CPU-ETH3 frame controller has a touchscreen display with virtual buttons. In either case, the menus and button operation are equivalent.

To enable the frame controller's automatic restore feature

1 On the Densité frame's local control panel, press the CONTROLLER button.
2 Press the [–] button repeatedly until RESTORE POINTS appears on the display, and then press the SEL button.
3 Press the [–] button repeatedly until DEFAULT ACTION appears on the display, and then press the SEL button.
   • If the control panel's display shows UPDATE SETTINGS, then the automatic restore feature is already enabled.
   • If the control panel's display shows KEEP SETTINGS, navigate to UPDATE SETTINGS by pressing the [–] button, and then press the SEL button to apply your change.
4 Press the CONTROLLER button to exit the controller's menu.

Configuring the Network Settings for a Quad-Head System

> Note: This procedure refers to the CPU-ETH2 frame controller, whose control panel has an LCD display and physical buttons. The CPU-ETH3 frame controller has a touchscreen display with virtual buttons. In either case, the menus and button operation are equivalent.

To configure the network settings for a Kaleido-Modular-X with two output cards

1 Press the Select button on the front edge of one of your system's *output* cards.
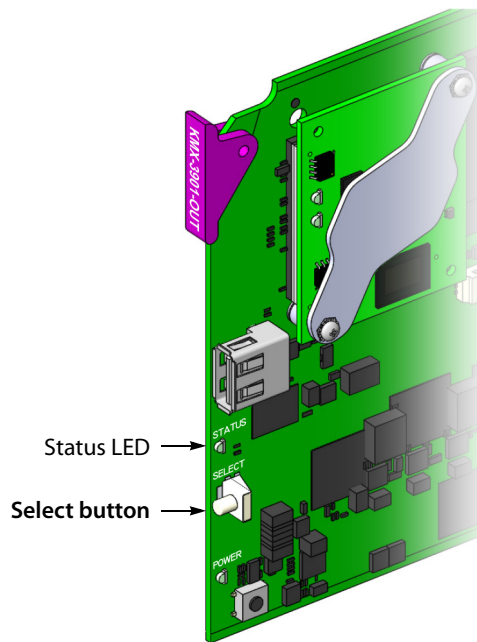
Status LED →

Select button →

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

2 On the local control panel, press the [–] button repeatedly until NETWORK SETTINGS appears on the display, and then press the SEL button.
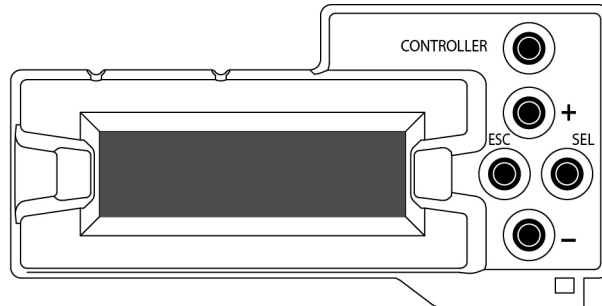
FRAME IP ADDRESS EDIT appears on the display.

3 Press the SEL button again.

The current value appears on the display.

- Press the [+] and [–] buttons, to change the digit at the current input position.
- Press SEL to move one position to the right.
- Press ESC to move one position to the left.

4 When the display shows the desired value, press SEL repeatedly until you reach the last position (if needed), and then press SEL once more to save your changes and return to the previous menu level.

> Note: Pressing ESC when the input focus is in the first position returns to the previous menu level. Pressing SEL when the input focus is in the last position saves the changes and returns to the previous menu level.

FRAME IP ADDRESS EDIT appears on the control panel's display.

5 Press the [−] button.

NETMASK EDIT appears on the control panel's display.

6 Repeat step 3 and step 4 to configure the netmask.

7 Once you have set the network mask and navigated back to the previous menu level, press the [−] button again.

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

8 Repeat step 3 and step 4 to configure the gateway.

9 Once you have configured the gateway and navigated back to the previous menu level, press the [−] button again.

LINK MODE EDIT appears on the control panel's display.

10 Press the SEL button.

11 The current link mode ("Auto-negotiate") appears on the LCD display.

> Note: On all Kaleido multiviewers, the 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.

12 If your network's mode of operation requires you to change the link mode, press the [+] and [−] buttons to navigate to the suitable option (100 Mbps half-duplex, or 100Mbps full-duplex), and then press SEL to apply the value shown on the display.

The selected link mode is applied.

13 Press ESC to return to the previous level in the local control menu.

LINK MODE EDIT appears again on the LCD display.

14 Press the [−] button.

OUTPUT A IP EDIT appears on the control panel's display.

15 Repeat step 3 and step 4 to configure the IP address for Output A.

16 Once you have set the IP address for Output A, and navigated back to the previous menu level, press the [−] button again.

OUTPUT B IP EDIT appears on the control panel's display.

17 Repeat step 3 and step 4 to configure the IP address for Output B.

18 Once you have set the IP address for Output B, press the Select button *on the front edge of the output card* to exit the control menu.

> Notes
>
> • If you do not press any button on the Densité frame local control panel, the frame 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 press the SEL button on the local control panel), once the 30-second timeout has occurred, the parameters will be confirmed as if you had pressed the SEL button.

After a moment, the card restarts. The startup sequence takes approximately four minutes, during which time the Status LED is first red and then blinking orange. Once the startup has completed, the Status LED should be red (steady) because the card is not connected to the network yet.

19 Press the Select button on the front edge of *the other output card,* and repeat from step 2, to configure the second output card with the same network settings.

20 Connect both output cards' ETH ports to your management network (see Cabling Diagram, on page 16).

21 The system momentarily reports a duplicate IP address on the monitor wall, after which Output B restarts. Once the startup has completed, check both cards' Status LEDs again, and make sure that they do not indicate an error condition.

Green	Normal
Blinking orange	Booting (or the card is selected for local control)
Red	Firmware initialization in progress / no Ethernet / SD card error
Blinking red	Fan failure / no rear / duplicate IP address

Should the Status LED indicate an error condition, refer to your Kaleido-Modular-X Hardware Description & Installation Manual to find out what the other LEDs might be indicating.

22 Verify that both cards' and the system's new IP addresses are effective, by referring to Verifying the Multiviewer's IP Addresses and Application Version, on page 57.

Configuring the Network Settings for a Single- or Dual-Head System

Note: This procedure refers to the CPU-ETH2 frame controller, whose control panel has an LCD display and physical buttons. The CPU-ETH3 frame controller has a touchscreen display with virtual buttons. In either case, the menus and button operation are equivalent.

To configure the network settings for a Kaleido-Modular-X with one output card

1 Press the Select button on the front edge of the *output* card.
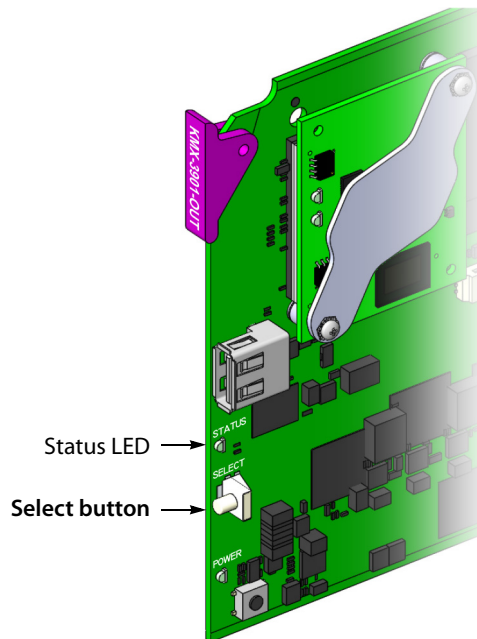
Status LED →

Select button →

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

2 On the local control panel, press the [–] button repeatedly until NETWORK SETTINGS appears on the display, and then press the SEL button.
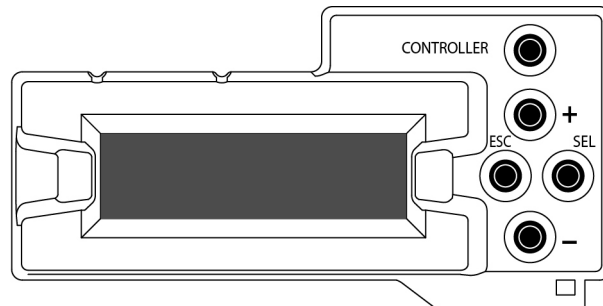
FRAME IP ADDRESS EDIT appears on the display.

3 Press the [–] button to skip this option (the system will automatically receive the IP address you configure for Output A, once the card will have restarted).

NETMASK EDIT appears on the display.

4 Press the SEL button.

The current value appears on the display.

· Press the [+] and [–] buttons, to change the digit at the current input position.

· Press SEL to move one position to the right.

· Press ESC to move one position to the left.

5 When the display shows the desired value, press SEL repeatedly until you reach the last position (if needed), and then press SEL once more to save your changes and return to the previous menu level.

> Note: Pressing ESC when the input focus is in the first position returns to the previous menu level. Pressing SEL when the input focus is in the last position saves the changes and returns to the previous menu level.

NETMASK EDIT appears on the display.

6　Once you have set the network mask, press the [–] button.

DEFAULT GW EDIT appears on the display.

7　Repeat step 4 and step 5 to configure the gateway.

8　Once you have configured the gateway and navigated back to the previous menu level, press the [–] button again.

LINK MODE EDIT appears on the display.

9　Press the SEL button.

10　The current link mode appears on the display.

> Note: On all Kaleido multiviewers, the 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.

11　If your network's mode of operation requires you to change the link mode, press the [+] and [–] buttons to navigate to the suitable option (100 Mbps half-duplex, or 100Mbps full-duplex), and then press SEL to apply the value shown on the display.

The selected link mode is applied.

12　Press ESC to return to the previous level in the local control menu.

LINK MODE EDIT appears again on the display.

13　Press the [–] button.

OUTPUT A IP EDIT appears on the display.

14　Repeat step 4 and step 5 to configure the IP address for Output A.

15　Once you have set the IP address for Output A, press the Select button *on the front edge of the output card* to exit the control menu.

> Notes
>
> • If you do not press any button on the Densité frame local control panel, the frame 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 press the SEL button on the local control panel), once the 30-second timeout has occurred, the parameters will be confirmed as if you had pressed the SEL button.

After a moment, the card restarts. The startup sequence takes approximately four minutes, during which time the Status LED is first red and then blinking orange. Once the startup has completed, the Status LED should be red (steady) because the card is not connected to the network yet.

16 Connect the output card's ETH port to your management network (see Cabling Diagram, on page 16).

17 Check the card's Status LED again, and make sure that it does not indicate an error condition.

Green	Normal
Blinking orange	Booting (or the card is selected for local control)
Red	Firmware initialization in progress / no Ethernet / SD card error
Blinking red	Fan failure / no rear / duplicate IP address

Should the Status LED indicate an error condition, refer to your Kaleido-Modular-X Hardware Description & Installation Manual to find out what the other LEDs might be indicating.

18 Verify that the new IP address is effective, by referring to Verifying an Output Card's IP Address and Application Version, on page 58.

Configuring a KMX-3901-IN IP Input/Output Module

Configuring a KMX-3901-IN IP input/output module involves the following:

- the KMX-3901-IN IP profile file for the IPG-3901 gateway card (available from the *Downloads* section of Grass Valley's website)
- a host address for the IPG-3901 gateway card
- stream addresses, port numbers, and a signal format, for each input or output gateway you choose to enable on the IPG-3901
- the scan rate and reference source for the IPG-3901

To configure a KMX-3901-IN IP module

1 Physically connect the KMX-3901-IN IP module to the data network.

2 Download the KMX-3901-IN IP profile file, and save it to your hard drive.

3 Configure your client PC or laptop with an IP address in the same range as the frame controller if needed (see Configuring a Client PC, on page 48).

4 Open **iControl Solo** (or **iControl Navigator,** if you have an iControl application server), and locate the service panel for the IPG-3901 card you wish to configure, based on the slot number, and the housing frame's name (refer to the iControl Solo User Guide, or to the iControl User Guide, for more information).

5 Open the IPG-3901 service panel.

6 Click the **Factory/Presets** button, in the service panel's navigation area.
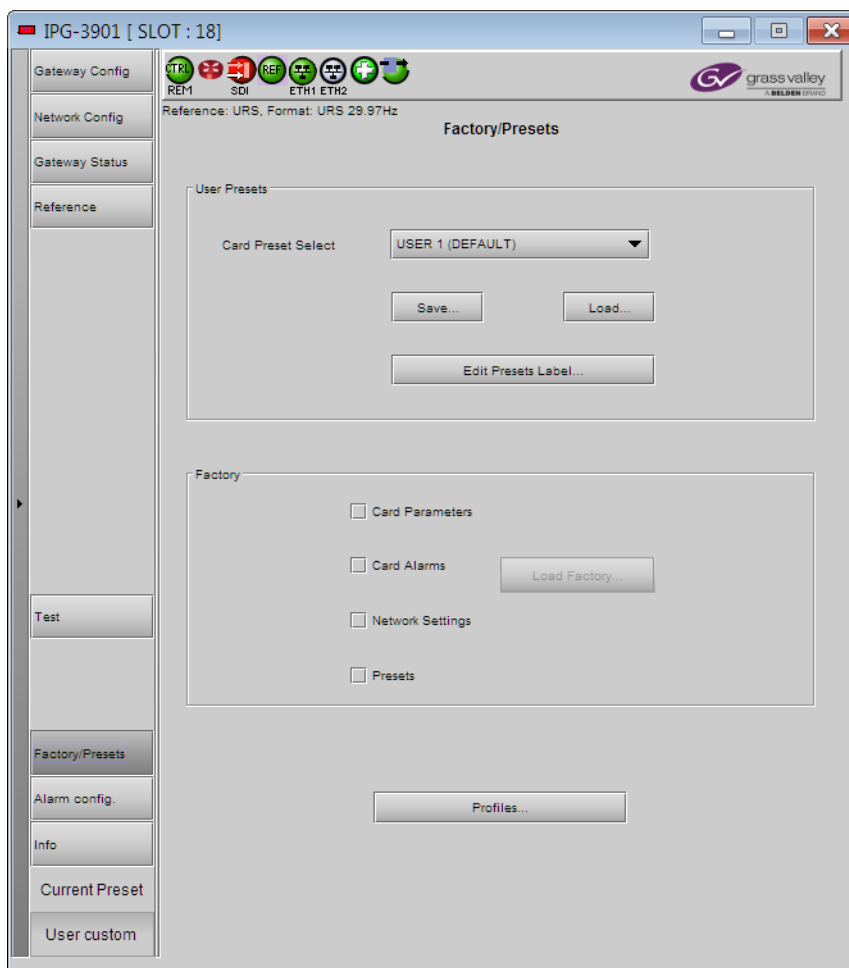
7 In the **Factory/Presets** tab, click **Profiles**.

   Profile Copy for Card opens.
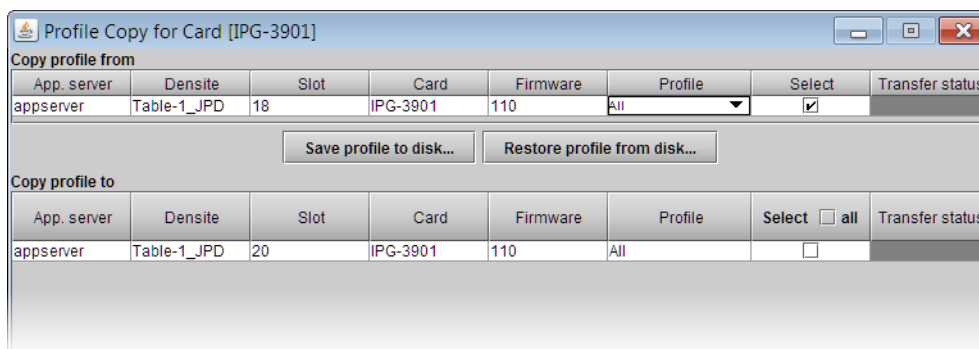
8 Click **Restore profile from disk**.

   The **Open** window appears.

9 Navigate to the location where you saved the KMX-3901-IN IP profile file, select the file, and then click **Open**.

   A message appears prompting you to confirm your intention.

10 Click **OK** to dismiss the message.

In **Profile Copy for Card**, the transfer status indicator reports the profile restore progress.

11 Once the indicator shows *Succeeded,* click **Exit**.

The KMX-3901-IN IP profile has now been applied to the IPG-3901 card's default preset USER 1. This profile sets appropriate directions and friendly names for the available gateways to act as multiviewer inputs and outputs.

12 Click the **Network Config** button, in the service panel's navigation area.

13 In the **Settings** tab, type the appropriate IP address, mask and gateway information to configure the IPG-3901 module within your *data* network, and then click **Apply**.

14 Click the **Gateway Config** button, in the service panel's navigation area.

15 Click the **Gateways** tab.

16 Determine how many input and output gateways you need, and then clear the check box, in the **En.** column, for every gateway you do *not* wish to use.

For example, if you do not wish to stream the mosaic output at all, clear the check boxes for both MV OUT 1 and MV OUT 2, or, if two input gateways can handle the number of streams you wish to monitor, then clear the check boxes for the remaining input gateways.

> Note: The current version of the KMX-3901-IN-IP card supports a maximum of 6 HD input streams.

17 For each enabled MV IN or MV OUT gateways:

    a Select the gateway, by clicking anywhere in the corresponding row.

    b In the editing area at the bottom of the panel, type the appropriate primary stream address and port number.

    c Type the appropriate secondary stream address and port number, if using redundancy[2].

    d Select the appropriate signal format.

18 Click **Apply**.

19 Click the **Reference** button, in the service panel's navigation area.

20 In the **Reference** tab, select the scan rate (59.94 Hz, or 50 Hz) that matches the reference signal you wish to use.

21 Under **URS**, select **On**.

22 Under **Reference Source**, select the appropriate mode:

- If *all* the sources you wish to monitor are synchronized to the reference signal, select **Auto**.

- If any of the sources you wish to monitor is *not* synchronized to the reference signal, select **No Reference**.

23 Close the IPG-3901 service panel, and iControl Solo (or iControl Navigator), as appropriate.

Setting the System Name

Once you have configured the output cards from the local control panel, use XAdmin to complete your system's network setup.

To set your Kaleido-Modular-X system name

1 Configure your client PC or laptop with an IP address in the same range as the multiviewer's current IP addresses if needed (see Configuring a Client PC, on page 48).

2 Open a Web browser window and enter the multiviewer's *system* IP address in the address bar (see Finding the System IP Address, on page 57, if needed).

3 The Kaleido-X home page appears.

---

2. Refer to the IPG-3901 Guide to Installation and Operation, for more information.
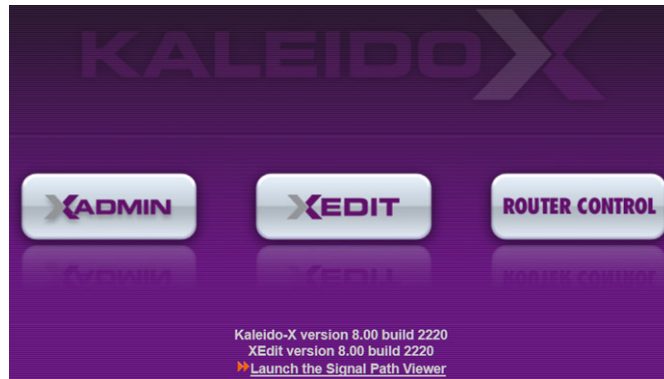
4 Click the XAdmin button.

5 If you see a security warning, or a certificate error message, then refer to *Registering your Multiviewer's Security Credentials with your Browser,* in the Kaleido-X User's Manual.

6 If the "Log in to XAdmin" page appears, type the password, and then click **Log in**.
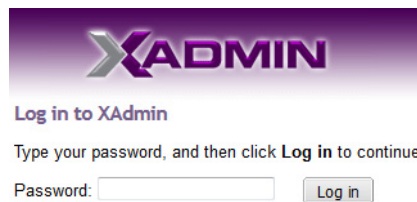
7 **Internet Explorer users:** If a blank page appears, then refer to *Enabling the Compatibility View in Internet Explorer 10,* in the Kaleido-X User's Manual.

The XAdmin Status and Options page appears.
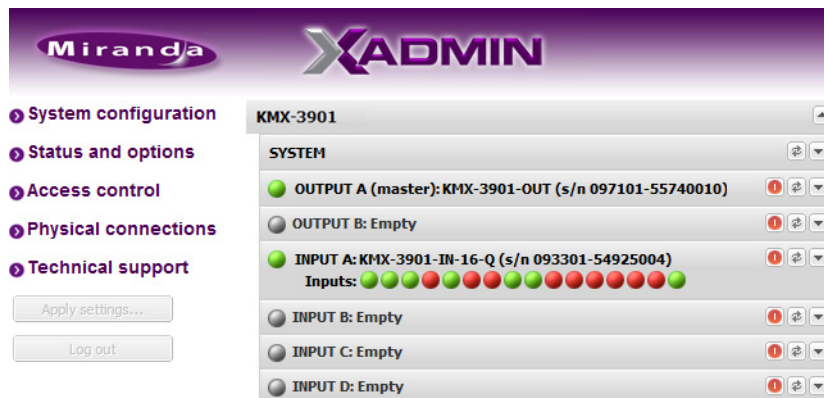
8 Click **System configuration**, in the navigation area on the left of the page.

The System Configuration page appears, showing the current system name, IP addresses, network mask, default gateway, connection-speed and duplex-mode settings, information about your housing frame, the input cards and the output card you are currently connected to, as well as date and time settings.

9 Under **General**, type the name you wish to use for your system.

If there are more than one multiviewer in the same network environment, it is important to assign each a unique system name, so that you can tell them apart (for example, when using a remote control panel such as the Kaleido-RCP2 or RCP-200). Only lower-ASCII characters are allowed in the system name. Braces and tilde are not allowed.

> Note: Under **Ethernet**, you may review the IP addresses, network mask, gateway settings, and the detected connection speeds and duplex modes. Should you wish to make any further changes to the network settings, you may find it more convenient to use XAdmin's System configuration page, from now on.

10 Click **Save**.

The new settings are saved locally, and XAdmin reminds you to click **Apply Setting** before closing your session.
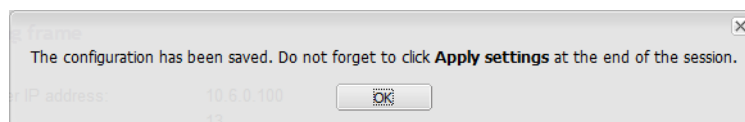
11 Click **OK**.

The **Apply settings** button becomes available.

> ● System configuration
> ● Status and options
> ● Access control
> ● Physical connections
> ● Technical support

Apply settings…

Log out

12 Click **Apply settings**.

The multiviewer must restart for changes to the network configuration to take effect. A message appears prompting you to restart the system immediately.

13 Click **OK**.

Note: Settings cannot be applied to a multiviewer system while an upgrade is in progress. If the multiviewer does not restart after 10 seconds or so, try clicking **Apply settings** again after a minute or two.

Using the Kaleido-RCP2 with Default Settings

Note: The Kaleido-RCP2 unit is optional and is not included in the standard Kaleido-Modular-X package.

To start using the Kaleido-RCP2 with its default settings

1 Physically connect the Kaleido-RCP2 unit to the management network (see Cabling Diagram, on page 16).

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

Notes

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

Notes *(continued)*

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

2 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

3 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.

4 Press the **2** key (to move up in the list) or the **8** key (to move down the list) until **Room1** is displayed.

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

6 Press the LOGIN button.

The following message appears on the LCD display:

LOGIN Position
Admin

7 Press ENTER to log on to your system as "Admin".

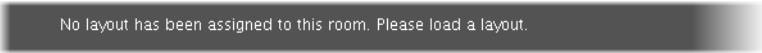A message prompting you for a password appears on the LCD display.

8 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.

9 Press any of the LAYOUT PRESETS buttons to load a predefined layout on the monitor wall.

If your system was configured prior to shipment, then a layout will appear on all displays. Otherwise, a gray screen will appear with the following message in the middle:
"No layout has been assigned to this room. Please load a layout."

No layout has been assigned to this room. Please load a layout.

Note: To access other layouts, press the LOAD button. To assign a layout to a preset button, press and hold the button for more than six seconds while the desired layout is showing on the monitor wall.

Configuring an Audio Bridge Terminal

The optional Audio Bridge Terminal (ABT) is an external audio multiplexer/serializer for the Kaleido-Modular-X. The Kaleido-Modular-X supports audio channel inputs from the ABT-64 or ABT-128 series of Audio Bridge Terminal panels through the KMX-3901-IN input cards ABT/MADI inputs. The ABT-64 supports 64 channels and the ABT-128 supports 128 channels.

There is not enough space on the Kaleido-Modular-X rear panels to also include discrete audio connectors. An ABT provides connector space for multiple audio signal inputs, and multiplexes all the audio signals into combined serial feeds on coaxial cables that connect to the KMX-3901-IN input cards.
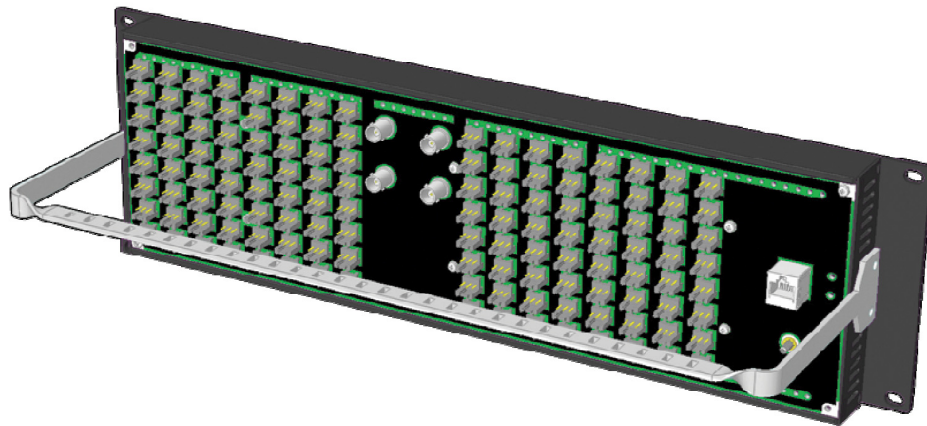
Note: The ABT is powered through the RJ45 Ethernet connector. There is no power ON/OFF button, so the device is ON whenever a powered Ethernet cable (PoE) is connected.

To configure the IP address and other network settings of the ABT

1 Connect a PC to a switch.

2 Referring to Configuring a Client PC, on page 48, configure the PC with the following network settings:

DHCP	OFF
Static IP address	10.0.0.1
Subnet mask	255.255.0.0
Default gateway	10.0.0.1

3 Apply power to the Audio Bridge Terminal and make sure it is connected to the same switch as the PC.

• If the switch is Power over Ethernet (PoE) enabled, simply connect it to the unit using an Ethernet cable.

• If not, PoE mid-span (*inserter*) equipment must be placed between the switch and the Audio Bridge Terminal.

4 Press the RESET button (located on the right-hand side of the ABT rear panel beside the ETHERNET/POWER RJ-45 connector) for at least 1 second.

The Audio Bridge Terminal will reboot with the following static network configuration:

DHCP	OFF
Static IP address	10.0.3.190
Subnet mask	255.255.0.0
Default gateway	10.0.0.1

5 Using a Web browser on the PC, connect to the ABT using the following address: 10.0.3.190.

The home page of the ABT's built-in Web server is displayed.

6 Click **Network Configuration** (in the navigation pane).

The **Network Configuration** page is displayed.

7 Change the ABT's network settings, as necessary, and then click **Apply & Reboot**.

Notes

• The Kaleido-Modular-X supports one ABT device. You can achieve redundancy by connecting the ABT to more than one input card, in which case the Kaleido-Modular-X uses the signal from the input card that is the farthest from the output cards (i.e., Input D, if you have 4 input cards, Input C if you have 3 input cards, Input B if you have 2 input cards).

• Keep in mind that all ABTs ship with the same default static IP address. If you are adding more than one ABT to your network and do not use DHCP, make sure to assign each ABT a different static IP address before connecting them to the network.

For more information about the ABT, refer to the *Audio Bridge Terminal Guide to Installation and Operation,* available from the Documentation Library section of Grass Valley's website.

Configuring a Client PC

The client PC that you will use to communicate with the Kaleido-Modular-X multiviewer (via XAdmin and XEdit), and the multiviewer itself, must have IP addresses within 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.
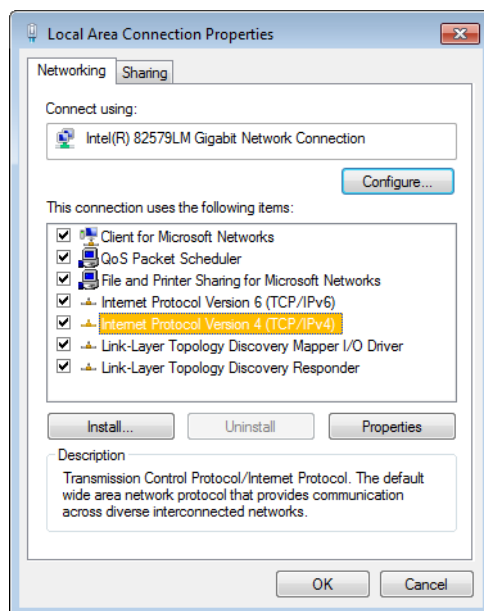
4 On the **Networking** tab, under **This connection uses the following items**, click **Internet Protocol Version 4 (TCP/IPv4)**, and then click **Properties**.

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

5 On the **General** tab, click **Use the following IP address**.
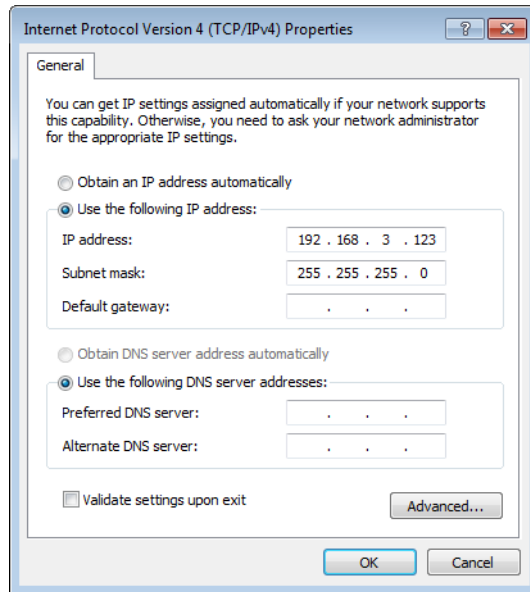
6 Type an IP address in the same range as the multiviewer's current IP address.

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 3: 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.
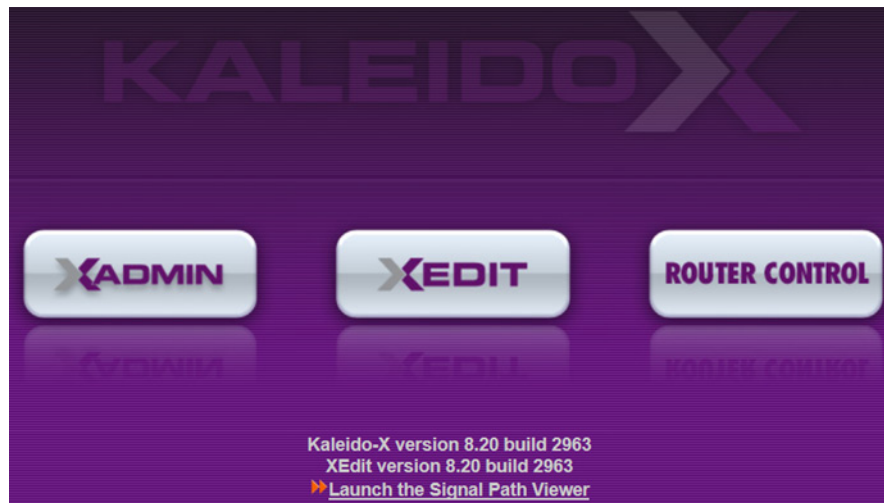
2 Click the **XEdit** button.

The browser prompts you to save an executable file to your hard drive (`Kaleido-windows32-online.exe`[3]). This file is an online installer, which will download XEdit and other companion elements from your multiviewer, and install them. 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 let 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 may appear, which you may safely dismiss or accept.
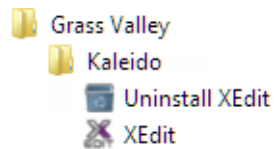
A window appears, showing the download and installation progress.

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**).

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

- 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).
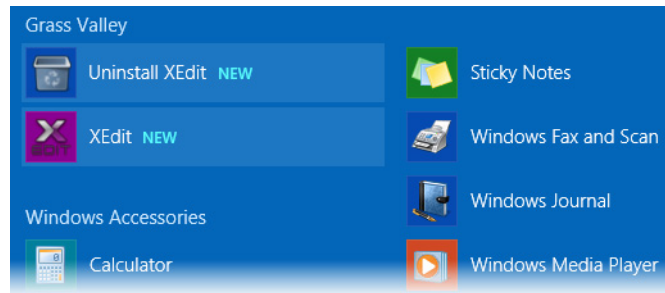

Once the installation has completed, the XEdit startup screen appears.


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

- Click **Allow access** to unblock the application.

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.
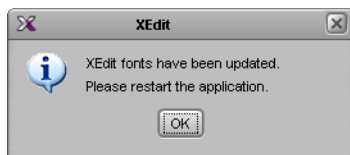
• Click **OK** to continue, and then open XEdit again, by using the shortcut on your desktop, in your Apps view (Windows 8.1) or Start screen (Windows 8), or from the Start menu (Windows 7, Windows 10).

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**.
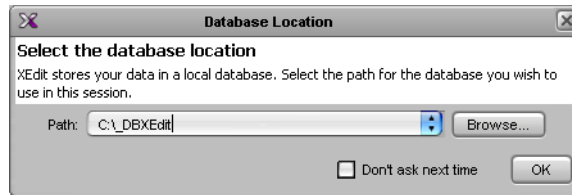
Once the database has completed loading, XEdit's main application window appears.
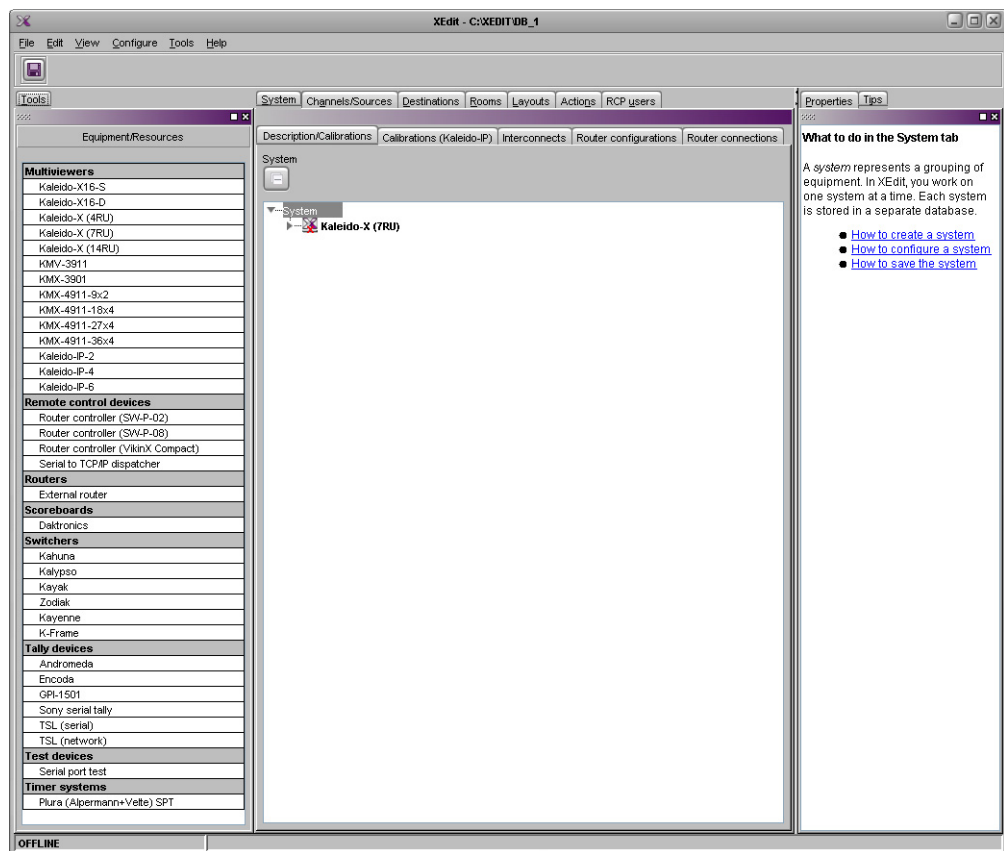
Note: Once it has been installed from the multiviewer, XEdit remains on your PC or laptop, and can be launched from the shortcut that was added to your desktop, Apps view, or Start screen (see page 51), or from the Start menu. Whenever you install a new version of the Kaleido-X software on the multiviewer, the next time you open XEdit, your installed copy of the application will be automatically updated from the multiviewer.

For more information about calibrating your system, configuring rooms, creating layouts, and operating the monitor wall, refer to the *Kaleido-X User's Manual*, available from the Documentation Library section of Grass Valley's website.

Step 4: System Verification

Verifying the Kaleido-Modular-X Multiviewer Status

You can check internal system statuses via the Web-based XAdmin application.

To verify the status of your Kaleido-Modular-X multiviewer

1   Open a Web browser window and type your multiviewer's *system* IP address (the IP address you configured for Output A, in the case of a single- or dual-head system (see step 14 on page 38), or the virtual IP address you configured at step 4 on page 34, in the case of a quad-head system) in the address bar.

The Kaleido-X home page appears.

2   Click the XAdmin button.

3   If you see a security warning, or a certificate error message, then refer to *Registering your Multiviewer's Security Credentials with your Browser,* in the Kaleido-X User's Manual.

4   If the "Log in to XAdmin" page appears, type the password, and then click **Log in**.
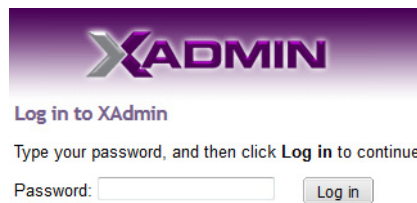
5   **Internet Explorer users:** If a blank page appears, then refer to *Enabling the Compatibility View in Internet Explorer,* in the Kaleido-X User's Manual.

The XAdmin Status and Options page appears, displaying a list of all modules and their statuses.
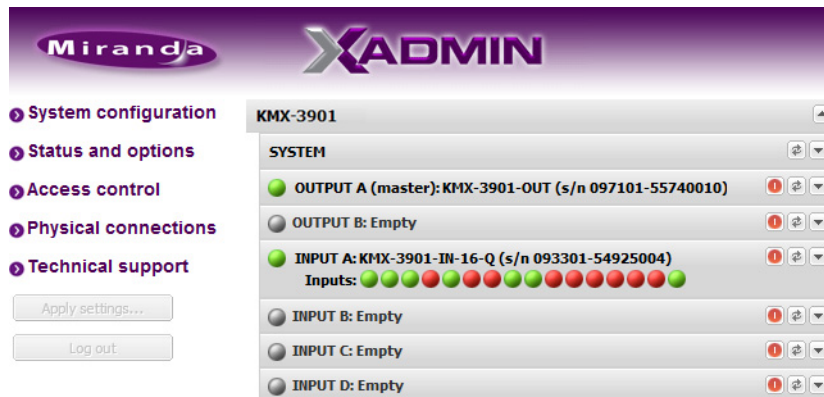
6 Click **Physical connections**, in the navigation area on the left of the page.

The Physical Connections page appears, showing the current connection status for
your system, with a visual representation of the physical connections between the
detected input cards and the output cards associated with the frame IP address.
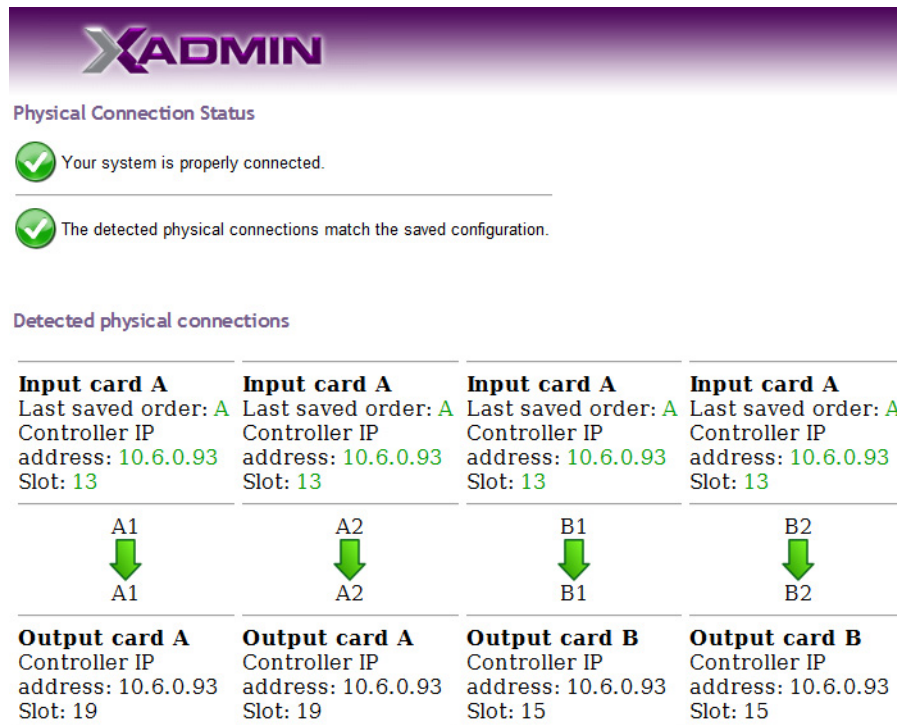
7 Review the information on this page, to make sure your input and output cards are all
properly interconnected. Information in red indicates the location where a problem
was detected.

8 Click **Status and options**, in the navigation area on the left of the page, to go back to
the Status and Options page.

The module headings show the card type and serial number for the input and output
cards, and a summary view of the input signals for each input card.

9 Move the pointer to an input signal status icon to view the associated signal format.

Card type   Serial number

Input signal status

Input signal format
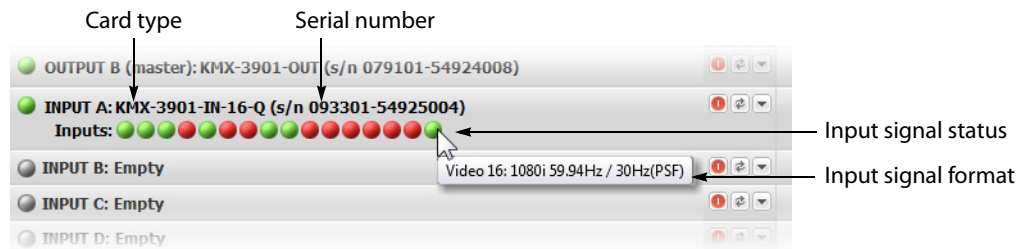
10 Click the arrow button ( ) at the end of a module's heading row to view detailed information.

Reset card
Expand details
Refresh
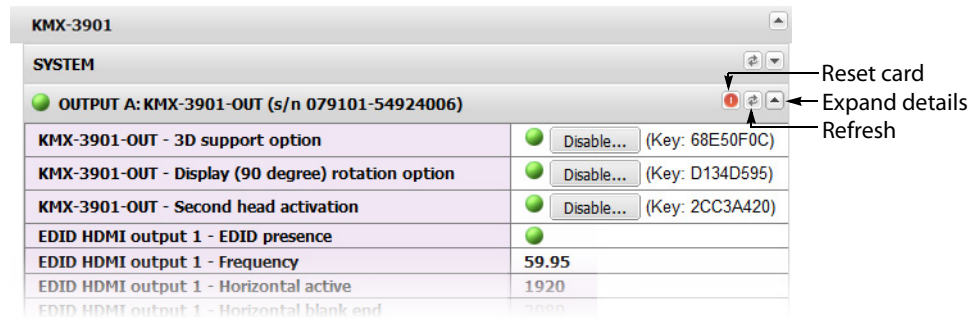
11 Review the enabled input and output options, and the main system statuses of the Kaleido-Modular-X frame, to make sure that there are no status errors, and no alerts related to system temperature, fan operation, FlexBridge connectivity, or card fault conditions.

Notes

- At any time you can click the **Refresh** button to make sure the data displayed for the selected card is up to date. Click the **Reset card** button at the end of a card's heading row to reset the card remotely, directly from your Web browser.

- See *Managing Hardware and Software Options,* in the Kaleido-X User's Manual, for more information on the available options.

Verifying the Kaleido-RCP2

To verify that the Kaleido-RCP2 is functioning normally

- Log on to the Kaleido-RCP2 (see Using the Kaleido-RCP2 with Default Settings, on page 45), and then test various operations using the Kaleido-RCP2 keyboard and the mouse (e.g. load a predefined layout).

Loading a Layout

To load a layout on the monitor wall

1 Connect a mouse to the Kaleido-RCP2 (if available) and log on to the appropriate room, if you have not already done so (see Using the Kaleido-RCP2 with Default Settings, on page 45).

Alternatively, connect the mouse directly to the USB port at the front of one of your system's output card.

2 Right-click anywhere on the monitor wall, point to **Monitor wall** (if you clicked a monitor), and then click **Load layout** on the menu.
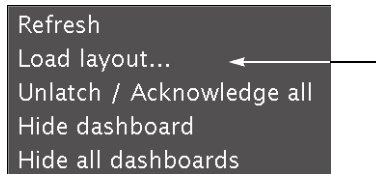
```
Refresh
Load layout...        ←
Unlatch / Acknowledge all
Hide dashboard
Hide all dashboards
```
Monitor wall shortcut menu

A layout browser appears on the displays associated with the current room.

3 Select the layout you wish to load from the list of available layouts for this room, and then click **OK**.

The selected layout appears on the room displays.

Verifying the Audio Bridge Terminal

To verify that the ABT is functioning normally

• Inspect the ACTIVITY and front panel LEDs on the unit to make sure there are no error conditions:

The ACTIVITY indicator is located on the right-hand side of the rear panel. This LED reports the status of the Ethernet connection as indicated in the table below.

Two LEDs are visible on the front panel, one for each power supply. When lit, they both indicate the same status.

When the ABT is powered up, all three LEDs will be orange until the boot sequence is terminated. This is a visual indicator that the LEDs are functioning properly.

| ACTIVITY Indicator on Rear Panel		Power-Supply LEDs on Front Panel	
Color	Status	Color	Status
Off	No link detected	Green	Normal
Green	Normal (good link)	Flashing green	Normal, rebooting
Orange	Activity	Orange	Warning
Red	Hardware fault	Flashing orange	Warning, rebooting
Flashing red	Upgrading firmware	Red	Hardware fault
		Flashing red	Upgrading firmware

Verifying the Multiviewer's IP Addresses and Application Version

Finding the System IP Address

Note: This procedure refers to the CPU-ETH2 frame controller, whose control panel has an LCD display and physical buttons. The CPU-ETH3 frame controller has a touchscreen display with virtual buttons. In either case, the menus and button operation are equivalent.

To find your multiviewer's system IP address

1 Press the Select button on the front edge of a *KMX-3901-OUT output* card.

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

2 On the local control panel, press the [–] button repeatedly until NETWORK SETTINGS appears on the display, and then press the SEL button.
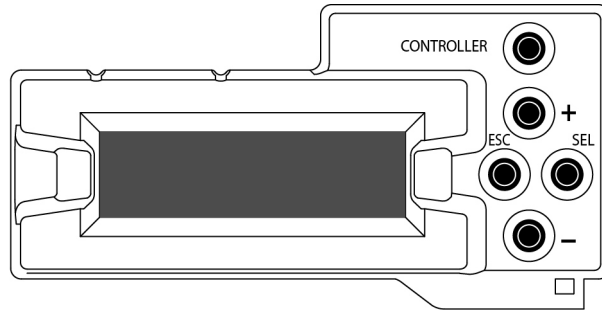
   FRAME IP ADDRESS EDIT appears on the control panel's display.

3 Press the SEL button again.

   The current system IP address appears on the display. This is your system's virtual IP address (i.e., the address you will use to access your system from XEdit and XAdmin).

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

Verifying an Output Card's IP Address and Application Version

> Note: This procedure refers to the CPU-ETH2 frame controller, whose control panel has an LCD display and physical buttons. The CPU-ETH3 frame controller has a touchscreen display with virtual buttons. In either case, the menus and button operation are equivalent.

To verify the IP address and application version on an output card

1 Press the Select button on the front edge of the KMX-3901-OUT output card.

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

2 Note the position indication *A* or *B* in the card information shown on the first line of the LCD display: either KMX-OUTA, or KMX-OUTB, followed with the slot number (e.g., KMX-OUTA Slot 4).

3 On the local control panel, press the [–] button.

   The version of the Kaleido-X Software that is running on the card (e.g. "7.10-build.5201") appears on the display.

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

   FRAME IP ADDRESS EDIT appears on the control panel's display.

5 If the card was identified as KMX-OUTA on the display, then press the [–] button repeatedly until OUTPUT A IP EDIT appears. If the card is identified as KMX-OUTB, then press the [–] button until OUTPUT B IP EDIT appears.

6 Press the SEL button.

The current IP address for this card appears on the display.

> Note: If you have a single- or dual-head Kaleido-Modular-X multiviewer, then this IP address doubles as the system IP address.

7 Press the Select button *on the front edge of the output card* to exit the control menu.

Verifying an Input Card's Application Version

> Note: This procedure refers to the CPU-ETH2 frame controller, whose control panel has an LCD display and physical buttons. The CPU-ETH3 frame controller has a touchscreen display with virtual buttons. In either case, the menus and button operation are equivalent.

To verify the application version on an input card

1 Press the Select button on the front edge of the KMX-3901-IN input card.
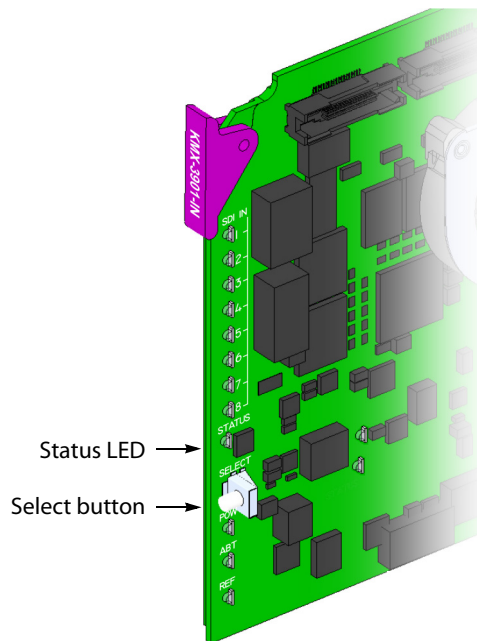
Status LED

Select button

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

2 On the local control panel, press the [–] button.

The version of the Kaleido-X Software that is running on the card (e.g. "7.10-build.5201") appears on the display.

3 Press the Select button *on the front edge of the input card* to exit the control menu.
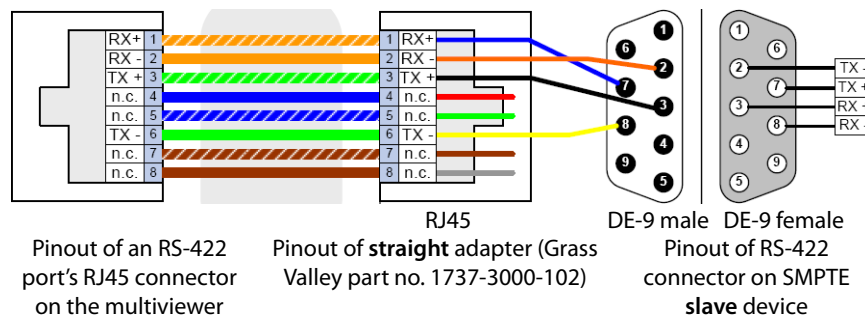
RS-422 Connection Diagram

Output cards paired with a double rear connector panel support one RS-422 port over an RJ-45 connector. This port allows the Kaleido-Modular-X to connect to external serial devices such as a router, production switcher, or router controller.
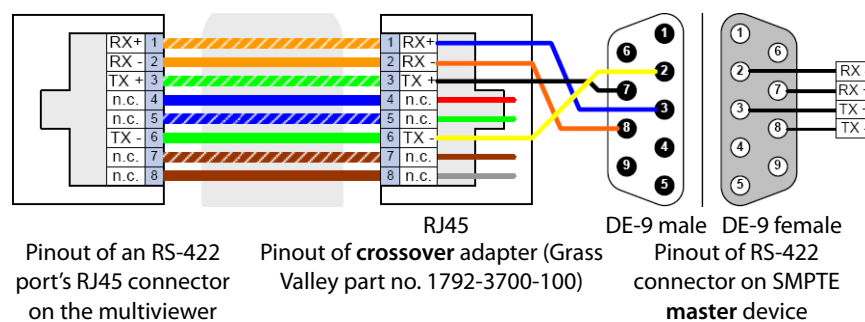
Notes

• The single rear connector panel KMX-3901-OUT-D-3+SRP does not have a serial port. To support a serial device, your Kaleido-Modular-X system must have at least one output card with a double rear connector panel (KMX-3901-OUT-D-3DRP).

• The RS-422 ports each have an RJ-45 connector in order to preserve space on a busy panel. The RS-422 interface specifies a DE-9 connector, so if you are using this interface, you will require a DE-9-to-RJ-45 adapter. Grass Valley supplies two adapter models, correctly wired for this application: a straight adapter (part no. 1737-3000-102), and a crossover adapter (part no. 1792-3700-100).

The pinout for the RS-422 signals on the RJ-45 connectors, and the wiring diagrams for the appropriate adapters, are shown here:

Pinout of an RS-422 port's RJ45 connector on the multiviewer

Pinout of **straight** adapter (Grass Valley part no. 1737-3000-102)

Pinout of RS-422 connector on SMPTE **slave** device

Standard wiring between multiviewer and devices wired to SMPTE "slave" specification (e.g. most routers, Ross Synergy switchers, Nevion ETH-CON)

Pinout of an RS-422 port's RJ45 connector on the multiviewer

Pinout of **crossover** adapter (Grass Valley part no. 1792-3700-100)

Pinout of RS-422 connector on SMPTE **master** device

Standard wiring between multiviewer and devices wired to SMPTE "master" specification (e.g. Philips Jupiter router control system, Grass Valley Presmaster PCS)

Note: The two RS-422 ports on the multiviewer side have no ground pin. Using the appropriate DE-9S-to-RJ-45 adapter, an external device should be able to communicate with a multiviewer despite the lack of a ground.

For more information about the RS-422 specifications, see the "Communication" section in the *Specifications* chapter of the Kaleido-Modular-X Hardware Description & Installation Manual. For more information about the RS-422 serial connections, see the "Serial Connections" section in the *Routers* chapter of the Kaleido-X User's Manual.

@ Contact Us

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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