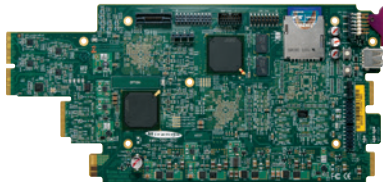


# Kaleido-Modular

Space Saving, Single and Dual Quad-Split Multiviewer (4x1 / 8x2)



A clear view for any of your monitoring requirements.

With the most dense quad-split multiviewer available, Kaleido-Modular from Grass Valley, a Belden Brand, is ideal for production applications. Space-saving, super-silent and energy-efficient, with up to 20 multiviewer outputs per 3 RU frame, it consumes less than 300 watts total. Kaleido-Modular can be expanded up to 288 multiviewer outputs when connected to an upstream router.



# Kaleido-Modular Space Saving, Single and Dual Quad-Split Multiviewer (4x1 / 8x2)

## KEY FEATURES

### Unmatched Space and Energy Efficiency

- 20 quad-splits, or ten 8-input multiviewers, per 3 RU frame
- Fully loaded frame with 20 cards weighs only 8.6 kg (19 lbs.)
- Less than 300W for fully loaded 3 RU frame with 10 cards and up to 20 outputs (24W per dual output card)
- Available cascading bridge connector for combining up to 3 cards, for a 24x2 multiviewer configuration

### Fastest Multiviewer

- Requires less than 1/2 frame of processing delay, eliminating audio to video lip sync issues

### Super Silent

- Ideal for installation within studios, control rooms and trucks

### High Quality, Flexible Monitoring

- Outstanding multiviewer picture quality, based on award-winning Kaleido-X technology, with all essential display elements for production
- Choice of single multiviewer output per card with up to 8 pictures, or dual quad-split displays
- DXF-200 optical DVI extension uses multimode fiber with SC connector to simplify long runs of up to 1 km (3,280 ft.)
- Easy layout editing with XEdit
- Rapid remote control with Kaleido-RCP2 and RCP-200
- Dual HDMI and HD/SD outputs for easy connection to monitors, or for feeding a router with multiviewer mosaics

### Router Integration

- Tight integration with NVISION and third-party routers allows expansion up to 1,152 inputs and 288 multiviewer outputs
- Multiple multiviewer outputs can be controlled from a single remote panel

### Mix-and-Match Card Functions

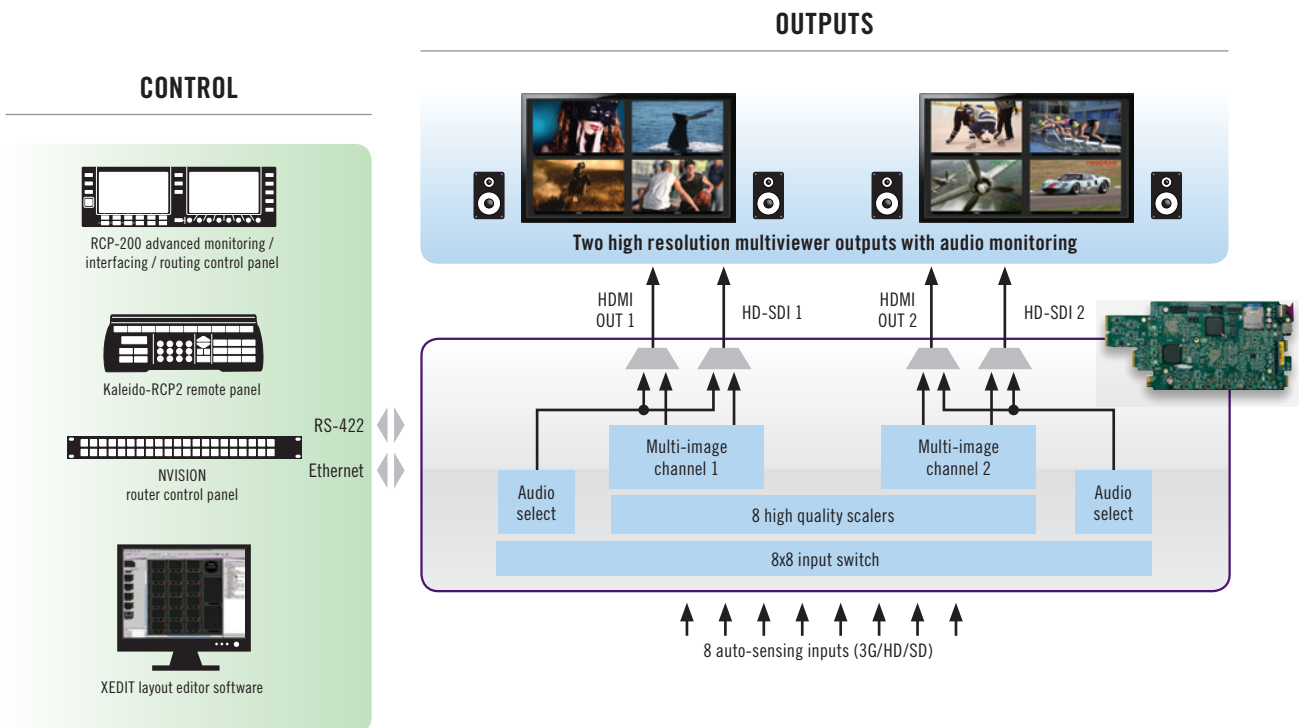
- Kaleido-Modular multiviewer cards can be installed in a 3 RU frame with other Densité Series cards, such as signal processors and DAs, for maximum space and cost-effectiveness

### Ultra-Resilient

- Hot swappable cards with IP address recovery
- 3 RU frame features dual hot swappable power supplies and fans plus redundant Ethernet

### 3G/HD/SD performance with Stereoscopic 3D support

- Triple rate, future-proof performance
- Stereoscopic 3D support (dual link 1.5 Gb/s, SMPTE-292M)



**Optimized for Production Monitoring**

With its unmatched space and energy efficiency, Kaleido-Modular is especially well suited to production monitoring in trucks. It also offers the picture quality and display flexibility demanded by the most critical operators. Its lightning fast processing removes the need for complex audio delay compensation, while satisfying the most discerning of directors. The multiviewer system integrates tightly with the NVISION 8500 Hybrid

routers with integrated audio processing, as well as Densité signal processing cards, and third-party production switchers. Control of a highly integrated system is simplified with the RCP-200 panel, which can operate the router and multiviewer, as well as signal processing and distribution cards.



**RCP-200 panel - controls**

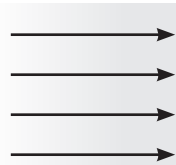
- Multiviewers
- Routing
- Signal processing
- Distribution



**Grass Valley or third-party switcher**

- Tally updates
- Source and destination labels

3G/HD/SD FEEDS



**NVISION 8500 Hybrid router**



Multiviewer outputs



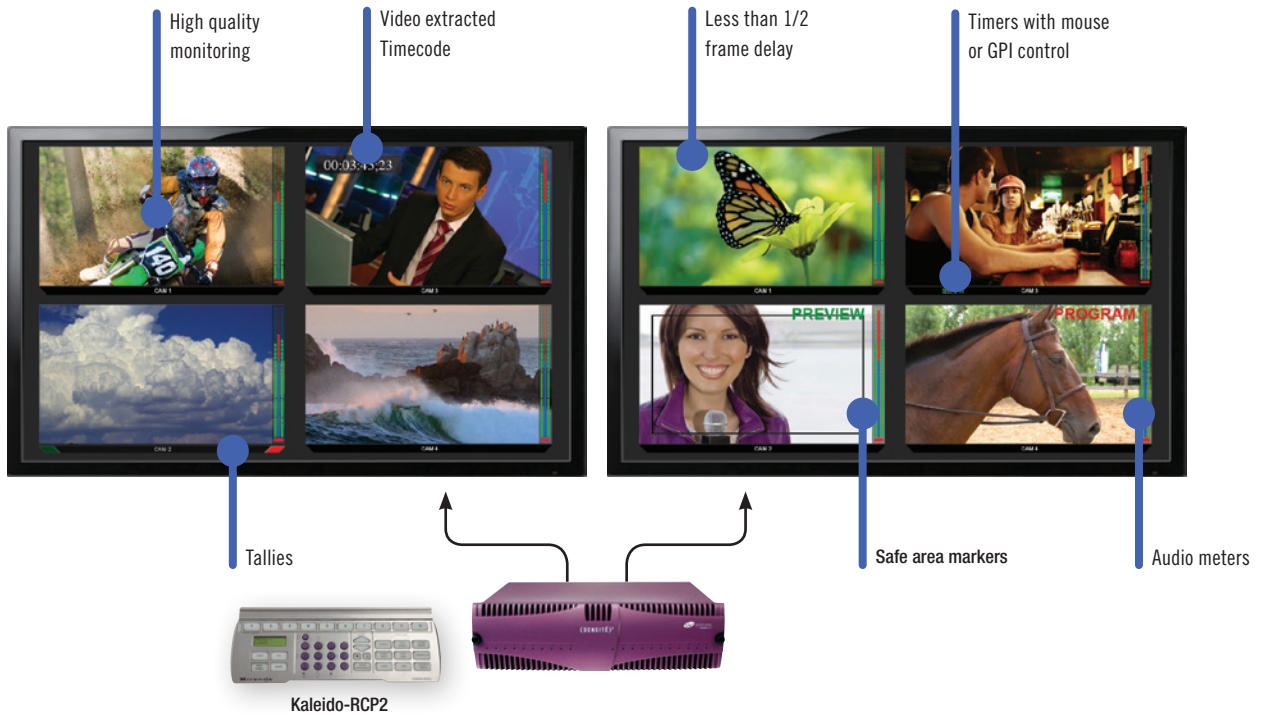
**Densité 3 RU frame - mix and match cards**

- Kaleido-Modular multiviewer cards
- Signal processing cards
- Distribution cards

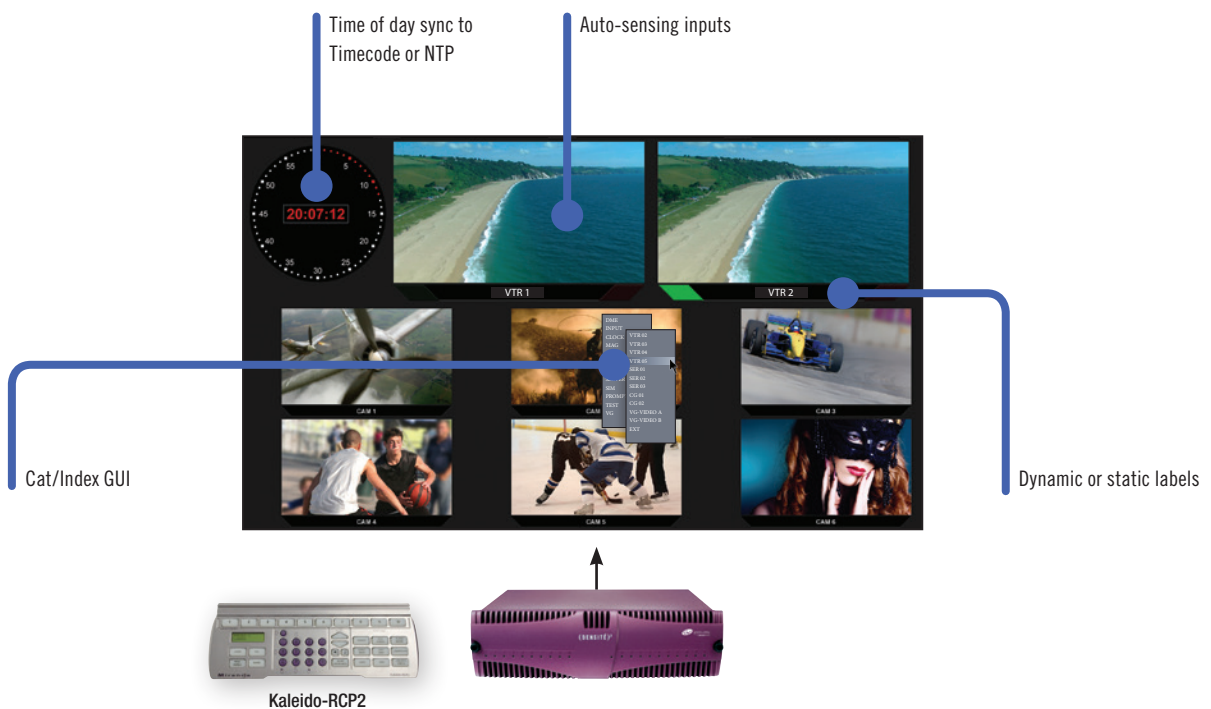
### Flexible Single or Dual Output Layouts

The Kaleido-Modular system is highly flexible, and each multiviewer card can be configured to provide either a single display with up to eight pictures, or dual quad-split displays. The system provides all the essential display elements required for high quality production monitoring.

### Dual output layout example



### Single output layout example



### Cascading for High Picture Counts

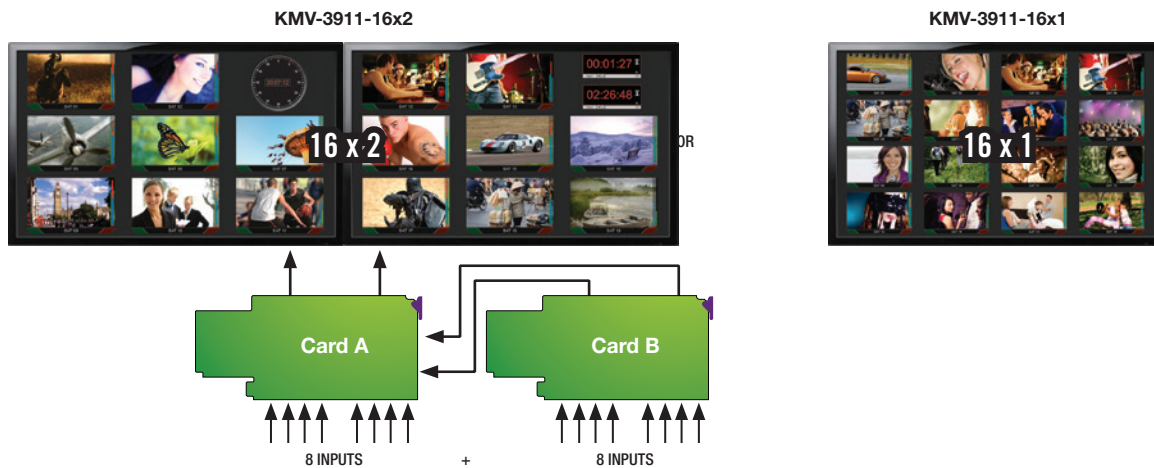
Up to three Kaleido-Modular cards can be cascaded to increase the picture count per monitor to up to 16 or 24 pictures. This cascading process doesn't affect the outstanding image quality or the ultra-fast processing, and the software integration makes layout control seamless to operators. This architecture is also highly flexible, and allows the display configuration to be changed readily as requirements change.



A front bridge connector provides simple and clean interconnection for the modules.

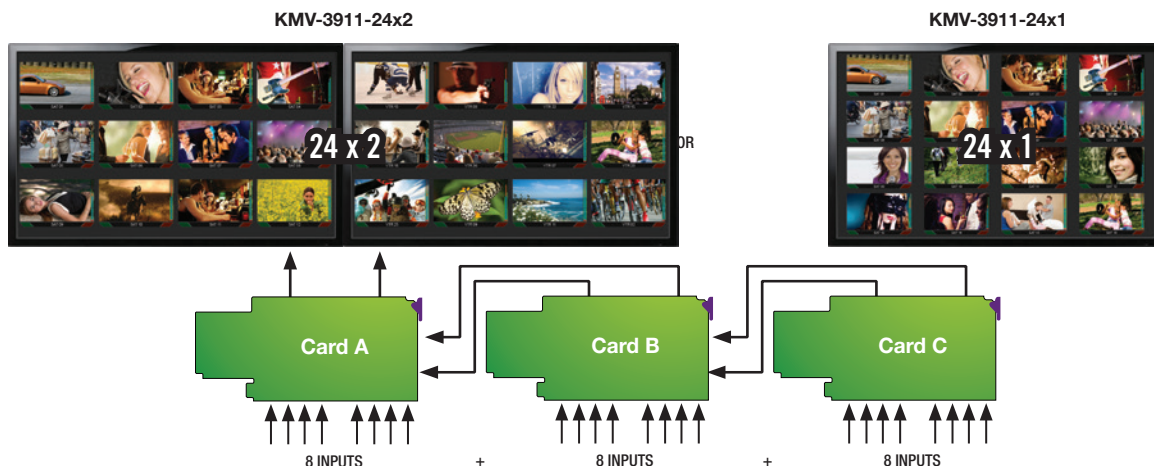
### Dual card cascading

A dual card, cascaded module can provide either 16 inputs distributed across 2 displays (KMV-3911-16x2), or 16 inputs across one display (KMV-3911-16x1).



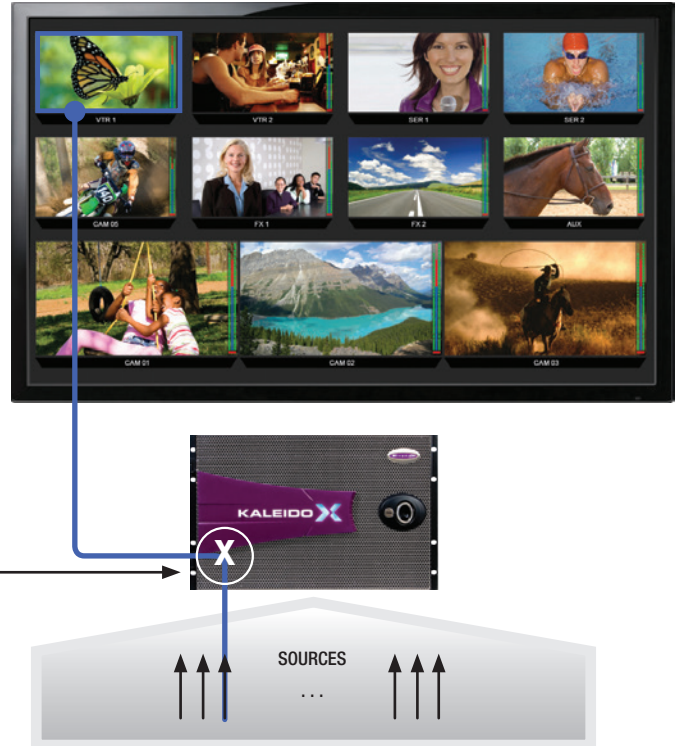
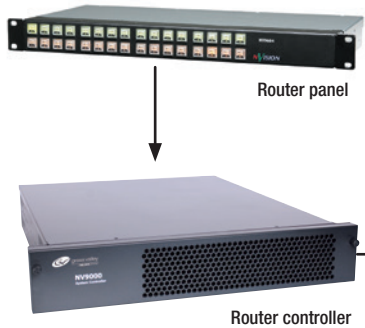
### Triple card cascading

A triple card, cascaded module can provide either 24 inputs distributed across 2 displays (KMV-3911-24x2), or 24 inputs across one display (KMV-3911-24x1).



**Remote Control of Integrated Routing and Multiviewer Systems**

Integrated multiviewer and routing systems can be controlled using a choice of remote control panels. One simple option is to use a traditional router control panel to assign any source, anywhere, any number of times on the monitor wall. This mimics what the router would do to a traditional monitor wall, by allowing the user to assign any source to any destination. This type of control is available with the NVISION control panels, as well as third-party router control panels from Snell (Pro-bel) and Neveion.

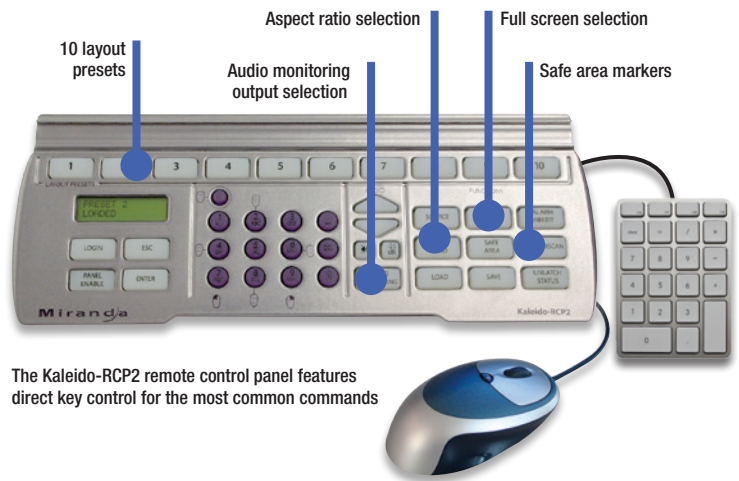


The highly graphical RCP-200 touchscreen remote panel offers more advanced control of combined multiviewer and routing systems. The panel provides multiviewer layout pre-set selection and quick router source assignment control via a category/index graphical interface. The RCP-200 is a multifunctional panel, and can also be used for control of Densité Series interfaces.



**Intuitive control across multiviewers**

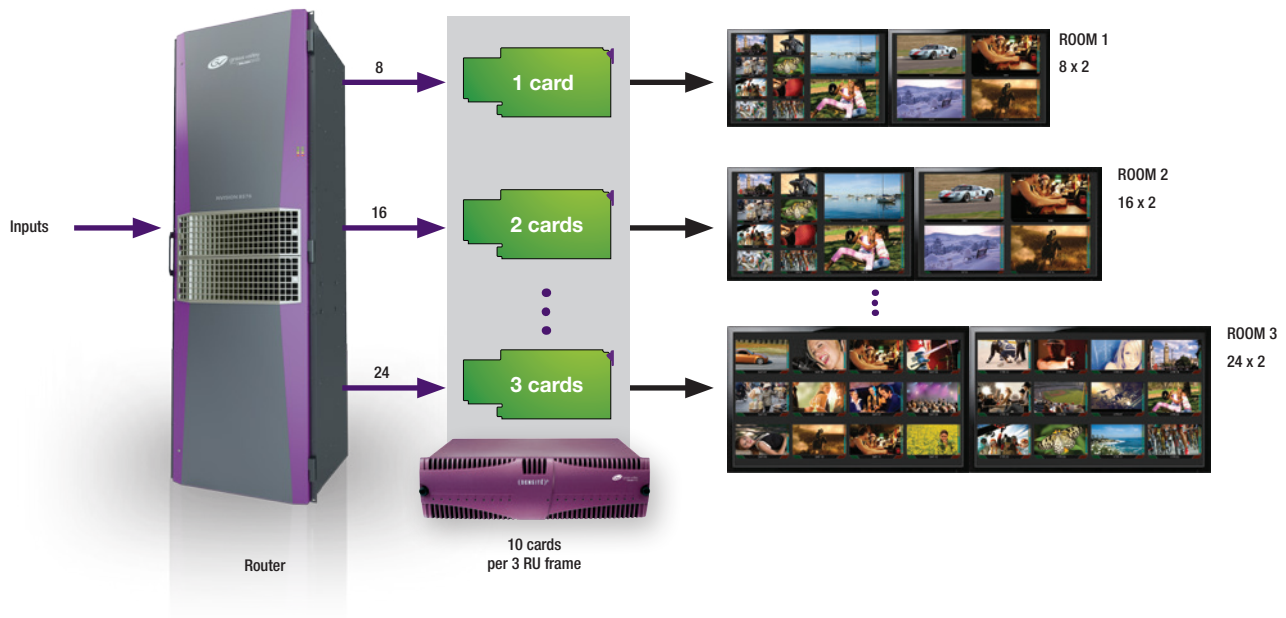
Kaleido multiviewer systems can be easily controlled by one or more dedicated remote control panels, or by on-screen mouse control. Simple to use, on-screen mouse operated drop-down menus are contextual to speed operations, and offer numerous functions, such as changing aspect ratios, checking the safe area, assigning an input and changing text in a UMD. Users can also instantly change layout configurations, and dynamically zoom one source larger for quality control, or audio monitoring of an on-screen source. The Kaleido-RCP2 remote panel exemplifies this simplicity, and provides easy multiroom, multioperator control over Ethernet, with local connections for a mouse and keyboard.



The Kaleido-RCP2 remote control panel features direct key control for the most common commands

**Using a Router to Create a Range of Picture Counts Per Monitor**

Kaleido-Modular “building blocks” (16x1, 16x2, 24x1 or 24x2 cascaded cards) simplify the building of large monitoring systems, fed by an upstream router. The overall system is easily expanded, cost effective and highly flexible, with full access to any source at any display.



For example, 12 monitors are fed by 10 Kaleido-Modular multiviewer cards within a single Densité 3 frame to create a monitoring system with a customized number of pictures per display.



**Router Integration for Large Systems**

The Kaleido-Modular system offers seamless integration with the NVISION router family, and third-party routers, to allow expansion up to 1,152 video inputs and 288 multiviewer outputs. By using the “Kaleido Cluster Feature,” multiple multiviewers can behave like a single virtual system from an operator’s perspective, with full layout flexibility.

For example, two NVISION 8576 routers are integrated with 144 Kaleido-Modular multiviewer cards, housed in 15 Densité 3 frames (45 RU total), to provide up to 288 multiviewer outputs. This system spans three independent control rooms, controlled by three operators.

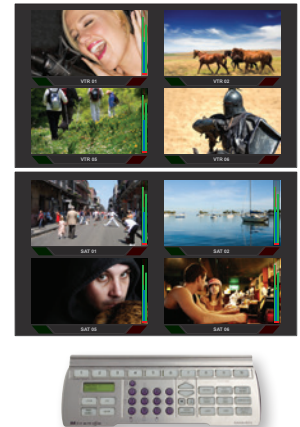
**Room 1: Audio**



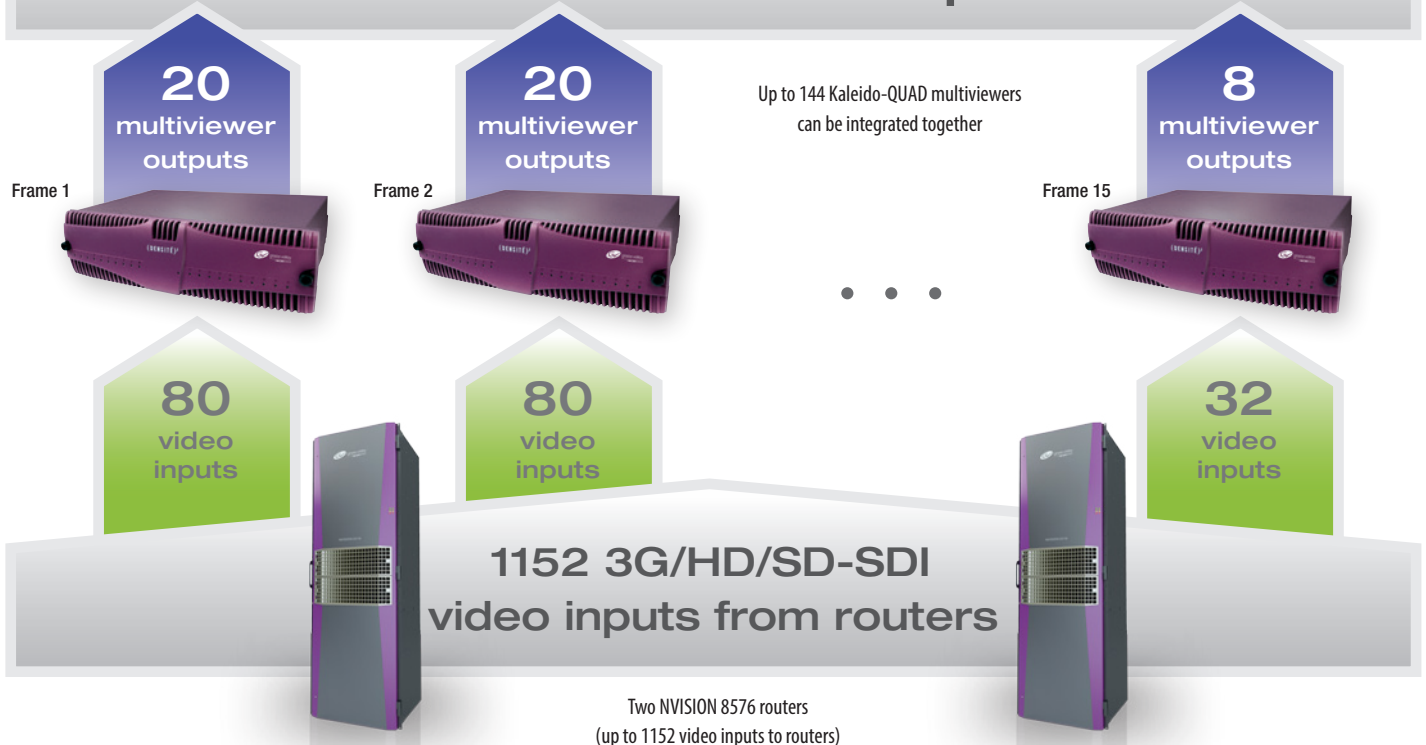
**Room 2: Production control**



**Room 3: Replay**



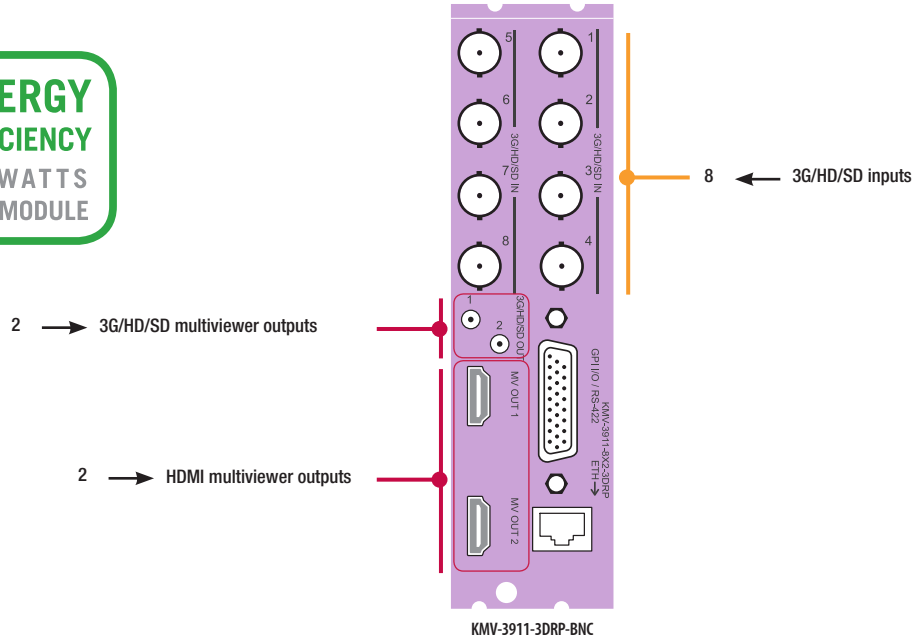
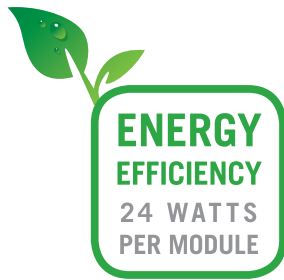
**288 multiviewer outputs**



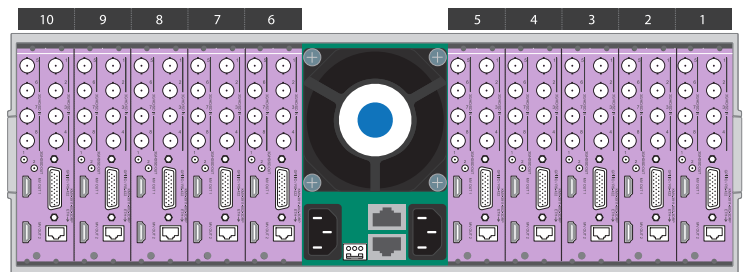


**Energy and Space Efficiency**

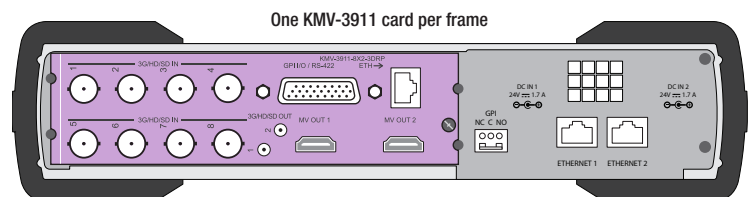
The Kaleido-Modular system offers unmatched space and energy efficiency, with a choice of two frames: 3 RU and half 1 RU.



A single card for the Kaleido-Modular system (KMV-3911-8X2) features 8 inputs and dual multiviewer outputs. Each card consumes only 24 watts, offering unprecedented energy efficiency



The Densité 3 frame provides unmatched space efficiency, with up to 10 cards per 3 RU frame, providing up to 20 quad-splits. A fully loaded frame with 10 cards consumes less than 300 watts, and weighs just 8.6 kg (19 lbs.)



The highly compact, half 1 RU Densité 3 mini frame can hold a single Kaleido-Modular multiviewer card, providing up to two quad-split outputs

# Kaleido-Modular Space Saving, Single and Dual Quad-Split Multiviewer (4x1 / 8x2)

## SPECIFICATIONS

### VIDEO INPUTS (8)

#### SD-SDI

**Signal:** SMPTE-259M-C (270 Mb/s), SMPTE 272M-1994

**Formats:** 480i59.94 and 576i50

**Return loss:** >15 dB up to 270 MHz

**Jitter:** <0.2 UI

**Cable length:** 250m (820 ft.) Belden 1694A

**Connector:** BNC

#### HD-SDI

**Signal:** SMPTE 292M-C (1.485, 1.485/1.001 Gb/s)

SMPTE 272M-1994

**Formats:** 720p59.94, 1080p23.98, 1080p23.98SF, 1080p24, 1080p24SF, 1080p25SF, 1080p 29.97, 1080i50, 1080i59.94

**Return loss:** >15 dB up to 1.5 GHz

**Jitter:** <0.2 UI

**Cable length:** 100m (325 ft.) Belden 1694A

### 3G-SDI

**Signal:** SMPTE 424M-2006 (2.97, 2.97/1.001 Gb/s) Level A

**Formats:** 1920x1080p60, 1920x1080p59.94, 1920x1080p50

**Return loss:** >10 dB from 1.5 GHz to 3 GHz

**Jitter (wideband):** <0.3 UI

**Cable length:** 85m (276 ft.) Belden 1694A

Graphic converted to HD-SDI from KXI-DVI-Bridge

**Signal:** SMPTE 292M-C (1.485, 1.485/1.001 Gb/s)

**Resolutions:** Mode A: 1024x768, 1366x768, 1280x1024, 1680x1050, 1600x1200 at 60 Hz

**Mode B:** 1280x720 and 1920x1080 at 50/60 Hz

**Cable length:** 100m (325 ft.) Belden 1694A

### MOSAIC OUTPUTS (video and graphic)

#### HDMI (2)

**Signal:** HDMI V1.3

**Format:** 1280x1024 up to 1920x1200 configurable

Refresh rate supported (50 Hz and 59.94 Hz)

**Cable length:** 4.57m (15 ft.)

**Connector:** HDMI

**Signal path:** 8 bits output

### HD-SDI (2)

**Signal:** 3G/HD-SDI SMPTE 424M and 292M compliant

Supports data rates of 1483.5, 1485, 2967, 2970 Mb/s

**Return loss:**

>15 dB up to 1.5 GHz

>10 dB from 1.5 GHz to 3 GHz

**Jitter (wideband):** HD: <0.2 UI

**3 Gb/s:** <0.3 UI

### REFERENCE

Internal Universal reference from the Densité frame

### GPI INPUTS (8)

**Contact closure:** GND

**Protection:** Up to 24V

**Connector:** Terminal block interface PCB via DB-26

### GPI OUTPUTS (2)

**Maximum voltage:** 24V

**Maximum current at 1V:** 20 mA (through 200Ω series resistor)

**Pulse minimum duration:** 10 μs

**Connector:** Terminal block interface PCB via DB-26

### COMMUNICATION

#### ETHERNET (1)

**Signal:** 10/100 BASE-T

**Connector:** RJ45

#### SERIAL PORT (1)

**Signal:** RS-422 (SMPTE 207M, EBU-3245)

**Connector:** Terminal block interface PCB via DB-26

### VIDEO PROCESSING PERFORMANCE

**Signal path:** 8-bit YCbCr to 24-bit RGB

**Processing delay:** ~1 field in genlock mode, 1-2 fields in non-genlock mode

### AUDIO PROCESSING PERFORMANCE

**Quantization:** 20-24 bits

**Sampling:** 48 kHz

**THD+N:** 80 dB

**SNR:** 98 dB

### ELECTRICAL

**Power consumption:** 24W max



## ORDERING

### Kaleido-Modular Cards

KMV-3911-4X1	Kaleido-Modular HD/SD-SDI 4x1 multiviewer with HD-SDI outputs
KMV-3911-4X2	Kaleido-Modular HD/SD-SDI 4x2 multiviewer with HD-SDI outputs
KMV-3911-8X1	Kaleido-Modular HD/SD-SDI 8x1 multiviewer with HD-SDI outputs
KMV-3911-8X2	Kaleido-Modular HD/SD-SDI 8x2 multiviewer with HD-SDI outputs
KMV-39N1-NX1-OPT-OP2	Output two enabled license
KMV-3911-8X2-3DRP	Double rear connector panel

Note: Can be used with either Densité 3 or Densité 3 mini but frame must be equipped with ETH2 controller in order to insure proper functionality.

### Options

KMV-3901-8XN-BRIDGE	Cascading bridge for KMV-3901-8XN modules
Note:	One bridge per pair of cards, can cascade up to 3 KMV-3901-8x2 modules
KMV-39N1-8XN-OPT-3GBPS	3 Gb/s signal decoding option (8 inputs)
KMV-39NN-8x1-OPT-3DLA	Stereoscopic display license (line alternate mode) for KMV-3911-8x1
KMV-39NN-8x2-OPT-3DLA	Stereoscopic display license (line alternate mode) for KMV-3911-8x2
DXF-200-C	Optical extension system w/HDMI+L - HDMI cable
DXF-200-PSU	DXF-200 power supply (1x sub-module)
KALEIDO-RCP2	Ethernet remote control panel and KM Gateway
KRCP-RK2	Kaleido-RCP2 rack mount bracket
RCP-200	Advanced remote control panel for models and accessories
NSH26M	Terminal block adaptor for HD-26 connections (for audio I/O connections)
KXC-HDMI-DVI	HDMI to DVI female cable 0.3m (1 ft.)

### Grass Valley & Third-Party Interface Options

KMV-39N1-8XN-OPT-RT-NVISION	Control and UMD support for NVISION routers
KMV-39N1-8XN-OPT-RT-DATATEK	Control and UMD support for Datatek routers
KMV-39N1-8XN-OPT-RT-ENCORE	Control and UMD support for Encore controllers
KMV-39N1-8XN-OPT-RT-EVERTZ	Control and UMD support for Evertz routers
KMV-39N1-8XN-OPT-RT-GVG7000	Control and UMD support for GVG7000 routers

KMV-39N1-8XN-OPT-RT-JUPITER	Control and UMD support for Jupiter routers
KMV-39N1-8XN-OPT-RT-HARRIS	Control and UMD support for Harris routers
KMV-39N1-8XN-OPT-RT-NETWORK	Control and UMD support for Neveon routers
KMV-39N1-8XN-OPT-RT-SNELL	Control and UMD support for Snell routers
KMV-39N1-8XN-OPT-RT-PESA	Control and UMD support for PESA routers
KMV-39N1-8XN-OPT-RT-UTAH	Control and UMD support for Utah routers
KMV-39N1-8XN-OPT-TLY-KAHUNA	Tally interface for Snell and Wilcox Kahuna switchers
KMV-39N1-8XN-OPT-TLY-KALYPSO	Tally interface for Grass Valley Kalypto switchers
KMV-39N1-8XN-OPT-TLY-KAYAK	Tally interface for Grass Valley Kayak switchers
KMV-39N1-8XN-OPT-TLY-SONY	Tally interface for Sony switchers (serial protocol)
KMV-39N1-8XN-OPT-TLY-SYNERGY	Tally interface for Ross Synergy and Vision switchers
KMV-39N1-8XN-OPT-TLY-ZODIAK	

Control and UMD support for Jupiter routers
Control and UMD support for Harris routers
Control and UMD support for Neveon routers
Control and UMD support for Snell routers
Control and UMD support for PESA routers
Control and UMD support for Utah routers
Tally interface for Snell and Wilcox Kahuna switchers
Tally interface for Grass Valley Kalypto switchers
Tally interface for Grass Valley Kayak switchers
Tally interface for Sony switchers (serial protocol)
Tally interface for Ross Synergy and Vision switchers

### Housing frames and options

Densité 3	Housing frame with (1) PSU (AC-IN), (1) Ethernet controller with front control panel, blank rear
Densité 3-PSU-AC	Redundant PSU for Densité 3
Densité 3-CPU-ETH2-OPT-LNK	Full link redundancy using channel bounding on Densité-CPU-ETH2
REF-1801-3RU	Reference card for Densité 3 frame (including 3RU adaptor)
REF-1801-SRP-3RU	Single rear connector panel for REF-1801 (including 3RU adaptor)
Densité 3 mini	Housing frame with (1) PSU (AC-IN), (1) basic controller with front control panel, (1) blank rear panels SRP
Densité 3 mini PSU	Redundant external PSU for Densité 3 mini
Densité 3 mini-Tray	1RU tray for two Densité 3 mini frames
Densité 3 mini-CPU-ETH2	Controller card with redundant Ethernet ports
	Full link redundancy using channel bounding on Densité 3 mini-CPU-ETH2

Note: The KMV-3911 can only be used with Densité 3 or Densité 3 mini frames with ETH2 controllers.



GVB-1-0228A-EN-DS

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