DATASHEET

KMX-4921

Kaleido HDR-Ready Multiviewer for GV Node

Integrated multiformat multiviewer for GV Node ensures future flexibility with SMPTE ST 2022-6/2110 inputs paired with 4K UHD display outputs for live productions.

This integration within GV Node eliminates cables between the multiviewer and the router, translating into cost and weight savings, providing operational simplification of a single chassis solution for routing and multiviewing. This ensures that you will find the functionality you need for your specific application among the many features and benefits of the industry-acclaimed Kaleido multiviewer.

Designed with live production operations in mind, the KMX-4921 offers the fastest processing on the market with only one field of latency. This fast multiviewer has also been optimized for reduction in space and power to meet the challenges of outside broadcast trucks. Ready for the future with 4K outputs for UHD displays and IP input capabilities through the GV Node platform, the KMX-4921 modular design is scalable from 9 to 54 inputs, and 1 to 4 outputs using the same building block module.

Introducing high dynamic range (HDR) and wide color gamut (WGC) into a live production workflow adds a challenge for accurately viewing these sources on a multiviewer. The KMX-4921 provides HDR and WCG processing for HLG, PQ and S-Log3 HDR formats, and BT.2020 WCG. Each input is individually configurable, which allows to mix and match SDR and HDR sources, as well as different formats of HDR, on the same display.

Using flexible and increasingly commoditized common off-the-shelf (COTS) IP as an infrastructure base, several GV Node frames equipped with multiviewers can be added and combined for greater capacity, meeting even the largest multiviewing requirements. GV Node's standards-based IP inputs and outputs ensure that your investment will be protected into the future.

IP HDR AIMS Alliance for IP Media Solutions

KEY FEATURES

Fully integrated into GV Node

- Easy to install, no wiring required
- Reduce space and weight with direct input and output integration into the GV Node IP platform
- Ethernet, LTC and reference distributed to all multiviewers within a GV Node via frame controller
- Up to 16 KMX-4921 cards fit in a single 4 RU GV Node for up to 32 multiviewer outputs

Modular multiviewer design

- Each multiviewer expands up to 54 inputs
- Up to four 3G/HD outputs or a single 4K UHD output per multiviewer
- Choice of rear panel SFP output options: SDI coaxial, HDMI, fiber or IP SMPTE ST 2022-6/2110

Scalable and distributed multiviewer systems

- Scalable multiviewer system design using COTS IP switches with up to 384 multiviewer outputs
- Seamless control across multiple multiviewers in a cluster
- Distributed input and output capabilities using IP networks
- Based on industry standards for interoperability with other broadcast equipment

Fastest multiviewer

- Extreme low processing latency of 20 ms @ 50 Hz and 16.7 ms @ 59.94 Hz for live TV production requirements

High Dynamic Range (HDR) and Wide Color Gamut (WCG) processing

- Accurate monitoring experience of HDR/WCG sources on standard displays (HDR or SDR)
- Support for HLG, PQ and S-Log3 HDR format, and BT.2020 WCG
- Input individually configurable for mix and match SDR and HDR sources, or different formats of HDR

Unmatched image quality at any signal format

- 3G/HD/SD and 4K UHD/HDR ready inputs
- SDI or SMPTE ST 2022-6 IP/2110 inputs and outputs via GV Node IFM-2T
- 4K UHD output available for higher resolution monitoring on 4K displays
- Space saving portrait display orientation capabilities with a simple software license activation, no additional hardware required

Ready for live production

- Low processing latency of 1 field for live TV production requirements
- Tallies and multiple UMD levels to simplify workflow
- Timecode and timers to keep production staff on cue
- Wide range of switcher interface protocols for easy installation and configuration

Advanced playout monitoring

- Extraction and display of SCTE 104 messages, including segmentation descriptors, for verifying transmission of ad insertion triggers and downstream processing signaling such as transcoders
- Main & Backup 50/50 split view widget allowing operators to rapidly catch main versus backup channel problems
- Zone-based black and freeze for excluding certain zones from signal probing, such as branding and lower third graphics
- Loudness metering, closed captions and teletext subtitle detection to ensure compliance with regulatory broadcasting requirements
- Dolby-E monitoring for silence detection without the need to decode the audio signal

SPECIFICATIONS

Video Inputs (9, 18, 27, 36 or 54)

Via GV Node IFM-2T Internal Fabric Module

See XIO-4901 webpage for full specifications

Formats:

525i59.94
625i50
720p50
720p59.94
1080i50
1080p50
1080i59.94
1080p59.94

Mosaic Outputs (1, 2 or 4)

Outputs are available to GV Node IFM-2T Internal Fabric, and directly on the rear panel. The KMX-49N1-9X2-4SRP rear module is equipped with one (1) SFP slot, and the KMX-49N1-18X4-4DRP, the KMX-49N1-27X4-4TRP, the KMX-49N1-36X4-4QRP and the KMX-49N1-54X4-4HRP are equipped with two (2) SFP slots. Each slot can house one (1) of the SFP models listed below

Processing Performance:

Delay (referenced):
– 16.7 ms @ 59.94 Hz
– 20 ms @ 50 Hz
Delay (free running):
– maximum 33 ms @ 59.94 Hz
– maximum 40 ms @ 50 Hz

HDMI SFP (optional):

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

SDI Coaxial SFP (optional):

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

Fiber SFP (optional):

Number of outputs: 2 per SFP
Formats: 1080p59.94, 1080p50, 1080i59.95, 1080i50

(see SFP Optical Plug-in Cartridges webpage for full specifications)

Frame

See GV Node webpage for full specifications

LTC Inputs (1 or 2*)

Via GVN-CPU-ETH3 (see GV Node webpage for full specifications)

Reference

Via GVN-CPU-ETH3 (see GV Node webpage for full specifications)

Control

Ethernet via GVN-CPU-ETH3 (see GV Node webpage for full specifications)

GPIO

Device: Densité GPI-1501 (see webpage for full specifications)

Audio Monitoring

Embedded on mosaic outputs

* Check for availability

ORDERING

KMX-4921-9X1

9x1 Kaleido multiviewer card for GV Node (SD/HD/3G SDI). Provides up to 9 PIPs over 1 display. Expandable to 18x1 with two cards, 27x1 with three cards, 36x1 with four cards and 54x1 with six cards

KMX-4921-9X2

9x2 Kaleido multiviewer card for GV Node (SD/HD/3G SDI). Provides up to 9 PIPs over 2 displays, or 4 display when used with appropriate rear panel. Expandable to 18x2 or 18x4 with two cards, 27x2 or 27x4 with three cards, 36x2 or 36x4 with four cards, or 54x2 or 54x4 with six cards

KMX-49N1-9X2-4SRP

Single rear panel with single SFP slot for KMX-4921 card. SDI, HDMI or fiber outputs from the rear panel require SFP selection (optional)

KMX-49N1-18X4-4DRP

Double rear panel with dual SFP slots. Required for expanding two KMX-4911 or KMX-4921 cards to 18x1, 18x2 or 18x4 multiviewer to provide up to 18 PIPs over 1, 2 or 4 displays. SDI, HDMI or fiber outputs from the rear panel require SFP selection (optional)

KMX-49N1-27X4-4TRP

Triple rear panel with dual SFP slots. Required for expanding three KMX-4911 or KMX-4921 cards to 27x1, 27x2 or 27x4 multiviewer to provide up to 27 PIPs over 1, 2 or 4 displays. SDI, HDMI or fiber outputs from the rear panel require SFP selection (optional)

KMX-49N1-36X4-4QRP

Quadruple rear panel with dual SFP slots. Required for expanding four KMX-4911 or KMX-4921 cards to a 36x1, 36x2 or 36x4 multiviewer to provide up to 36 PIPs over 1, 2 or 4 displays. SDI, HDMI or fiber outputs from the rear panel require SFP selection (optional)

KMX-49N1-54X4-4HRP

Six slot rear panel with dual SFP slots. Required for expanding four KMX-4911 or KMX-4921 cards to a 54x1, 54x2 or 54x4 multiviewer to provide up to 54 PIPs over 1, 2 or 4 displays. SDI, HDMI or fiber outputs from the rear panel require SFP selection (optional)

Output Options

An output option is required for mosaic output from the rear panel

SFP-3G-20UT-L

Dual output HD/3G SDI long-reach coaxial SFP with DIN 1.0/2.3 connectors

SFP-HDMI-OUT

Single output HDMI type D SFP with retention lock, cable not included

HDMI-D-A-2

HDMI type D to A cable (2m) with retention lock

SFP-T-S13-LC

Single Tx Fiber Module at 1310 nm with LC Connector

SFP-TT-S13S13-LC

Dual Fiber Tx (output) cartridge at 1310 nm with LC/PC Connector

For more fiber options refer to CWDM SFP devices.

Software Options

KMX-49N1-OPT-OP2

Head output two enable license for KMX-4921-9X1 (1/card)

KMX-49N1-OPT-CSX

CC/Subtitling and XDS data license for KMX-4921 (1/card)

KMX-49N1-OPT-DOLBY

License for extraction of Dolby-E Metadata for KMX-4921(1/card)

KMX-49N1-OPT-SCTE

License for extraction of SCTE 104 metadata for KMX-4921 (1/card)

KMX-49N1-OPT-ROT

Output rotation license for portrait display orientation. (1/card)

KMX-49N1-OPT-LOUD

License for loudness monitoring for KMX-4921 (1/card)

KMX-4921-OPT-HDR

License for HDR input processing for KMX-4921 (1/card)

Software options are required for every card in a multiple card configuration: 18x4, 27x4, 36x4 or 54x4

Accessories

IPVU

Dual channel IP to HDMI converter for 720p/1080i/1080p video formats, supports 10G/25G SFPs (not included)

IPVU-UHD

Dual channel IP to HDMI converter for 720p/1080i/1080p/2160p video formats, supports 10G/25G SFPs (not included)

KALEIDO-RCP2

Ethernet remote control panel and KM Gateway

DXF-4K

Display output extender via fiber optic with SC connector. Distance: 1 km (3,280 ft.). Fiber optic cable: multimode 50 or 62.5/125 SC

PSU-POE

Replacement power over Ethernet module

KRCP-RK2

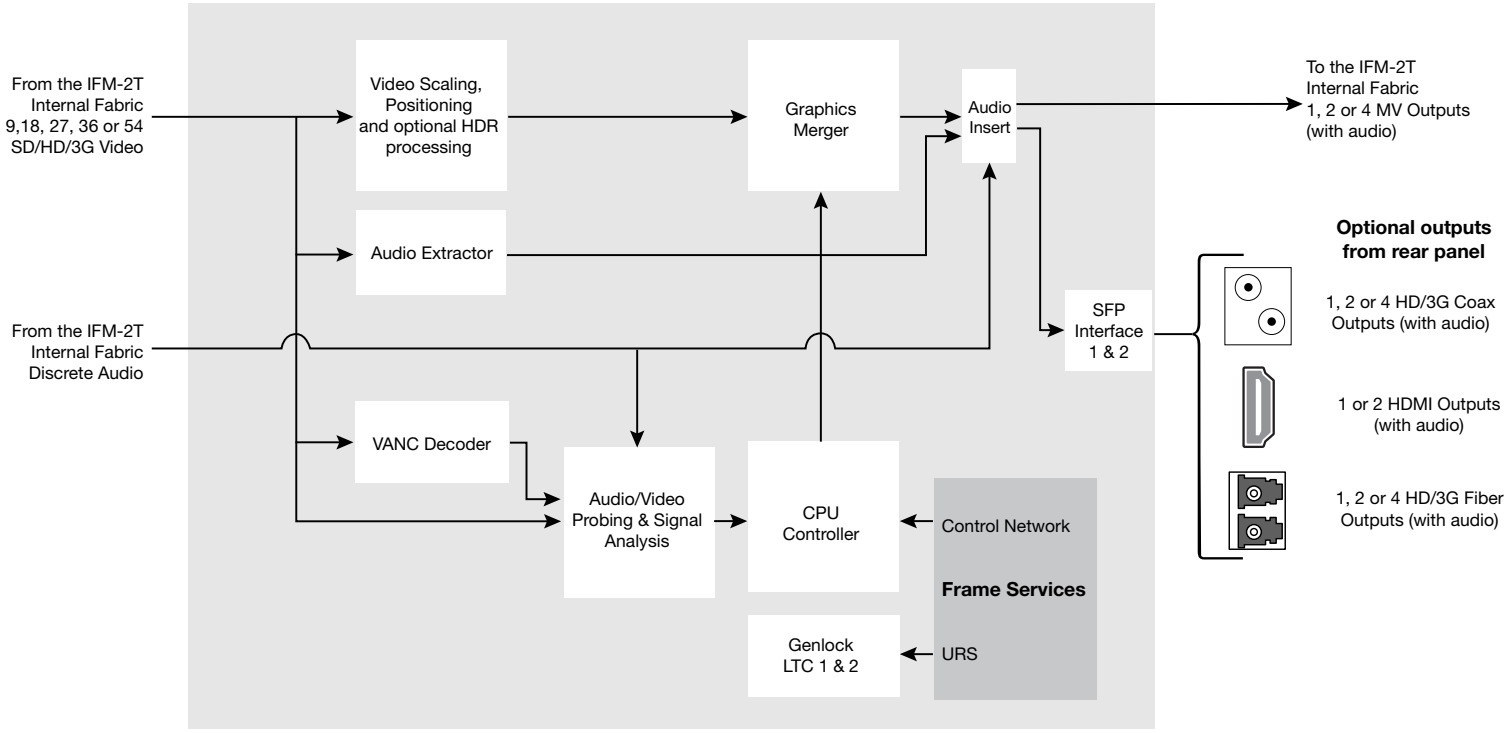
Kaleido-RCP2 rack mount bracket

GPI-1501-TBA

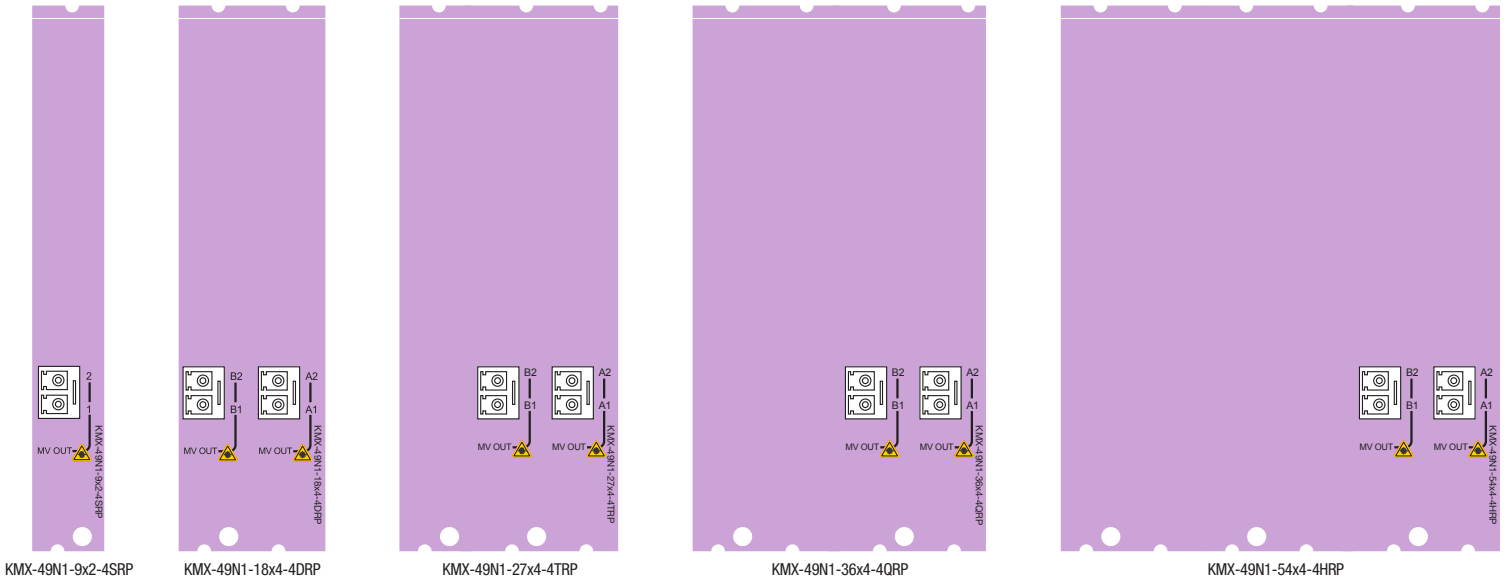
GPI I/O terminal block adapter

GPI-1501

GPI I/O module



KMX-4921 Functional Block Diagram

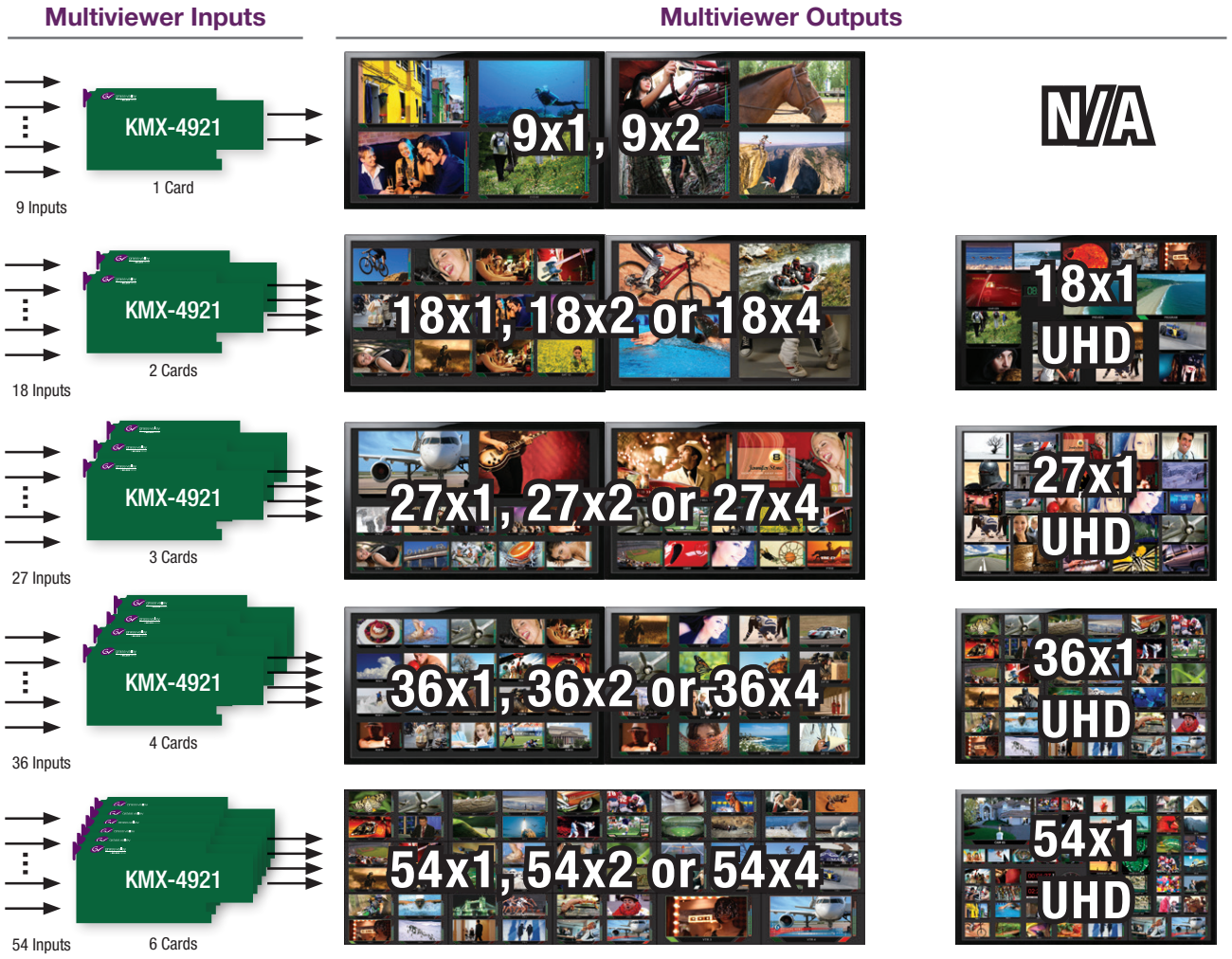


Rear Panels

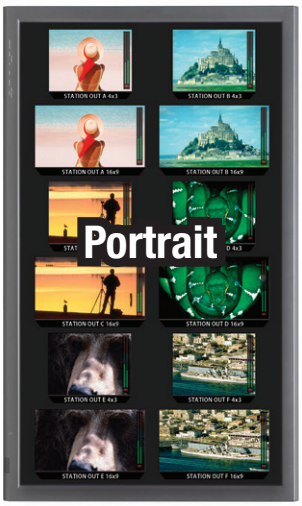
Scalable inputs and outputs

The number of inputs and outputs is scalable by combining two, three or four modules and a rear panel option that integrates all inputs to all outputs. Unlike cascading, the method of expansion used in the KMX-4921 does not add delay or latency to sources coming from different modules. 4K UHD output capability is available on the KMX-4921 in combinations of two or more cards.

Scalable input & output capability using the same KMX-4921 building block.



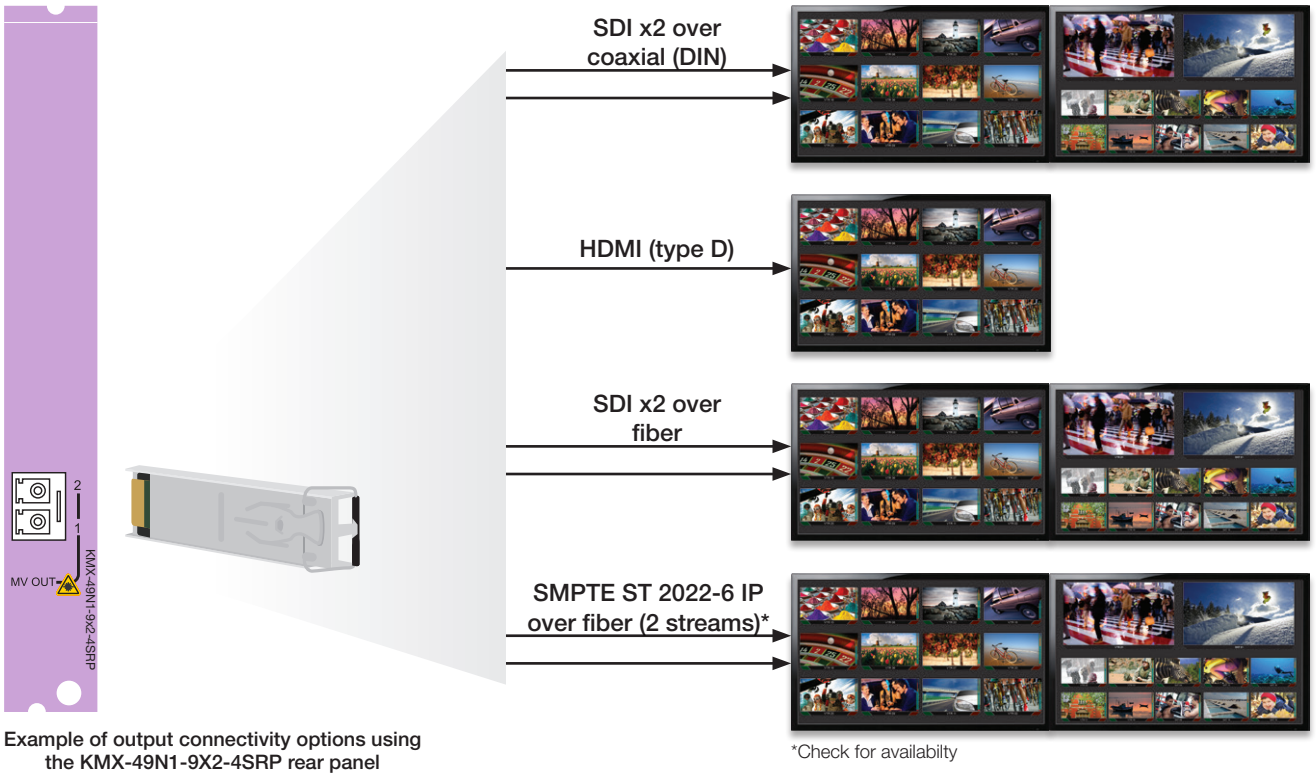
Any Format



Signals of different aspect ratios can be displayed alongside each other, and the displays can be either landscape or portrait.

Choice of multiviewer output connectivity options

Rear panels are available with one or two SFP slots. Each SFP slot can be equipped with one of the following SFP output options: SDI coaxial for broadcast monitors, HDMI for displays installed close to the multiviewer, fiber for extending the distance to the display, and SMPTE ST 2022-6/2110 IP to benefit from IP routing to the displays and remote installations. In addition, all multiviewer outputs are returned into the GV Node internal fabric module (IFM-2T) so they are available on the IP aggregation ports, as well as XIO-4901 outputs. The HDMI output SFP option is designed with a latching mechanism to ensure the connection is solid in high vibration mobile environments such as outside broadcast trucks.

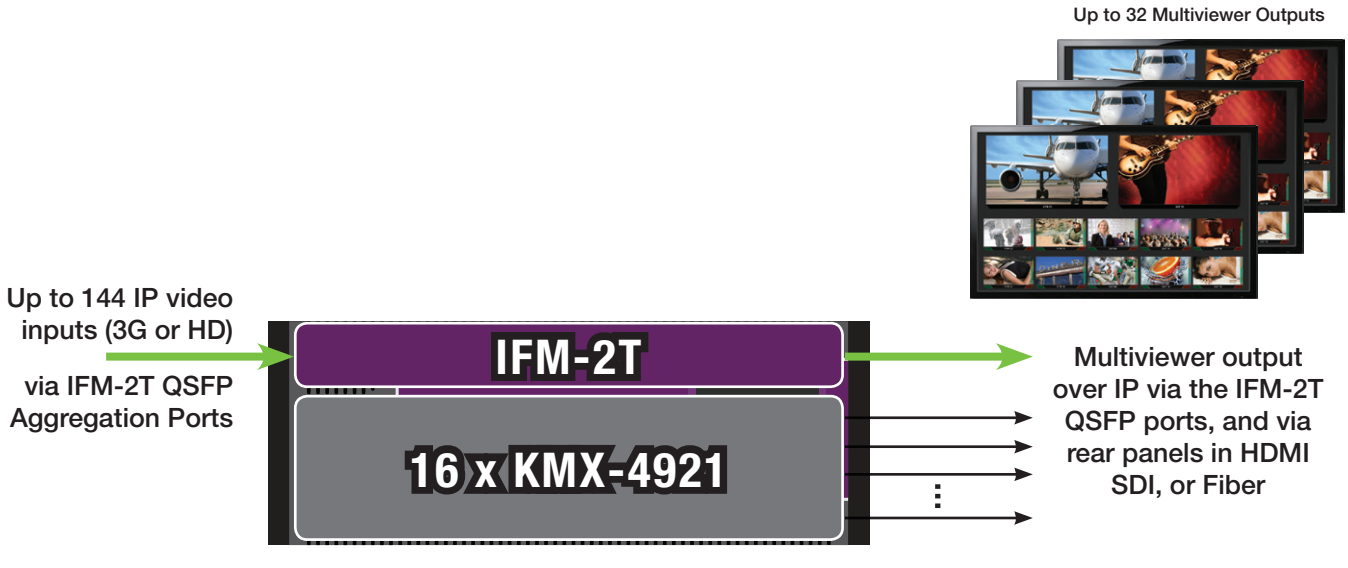


Example of output connectivity options using the KMX-49N1-9X2-4SRP rear panel

*Check for availabilty

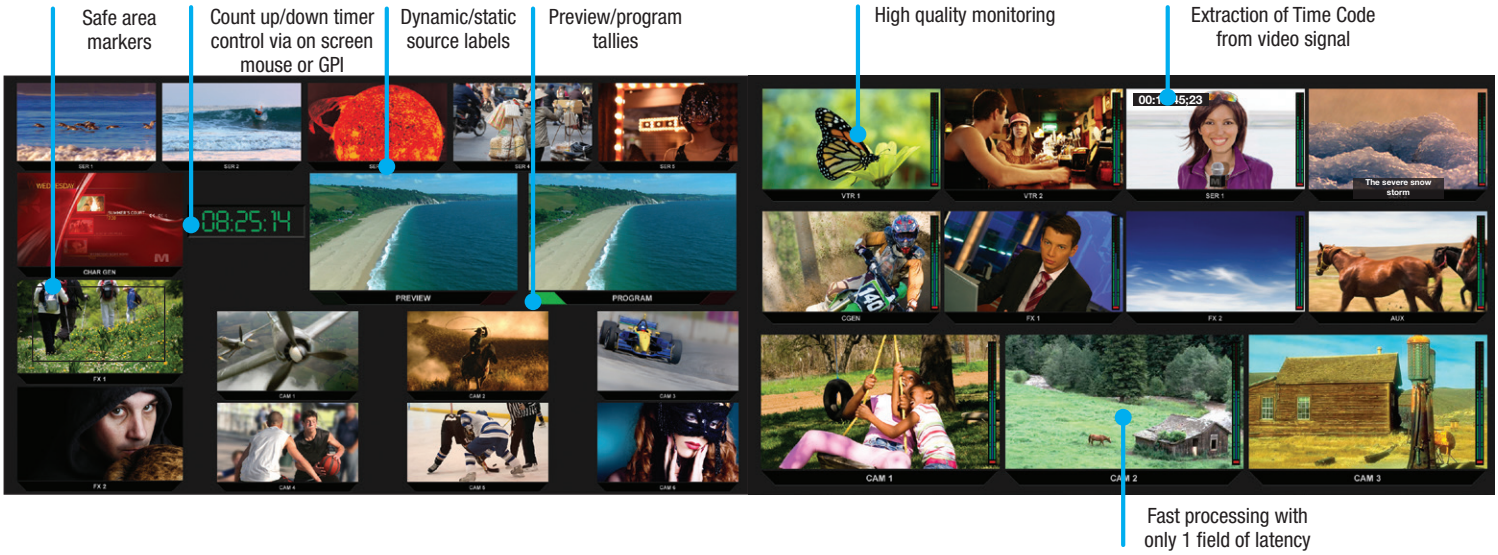
Live IP multiviewer platform

The KMX-4921 in combination with the IP aggregation ports of the GV Node IFM-2T offers the ability to build IP SMPTE ST 2022-6/2110 input multiviewers. For example, a multiviewer system with up to 144 3G IP inputs and 32 multiviewer outputs can be designed in a compact 4 RU frame. Multiple GV Nodes can be combined to meet the largest monitoring requirements.



All the features you need for live production

Providing fast, easy and simplified workflows, the KMX-4921 is ready to go with all the features required for production control rooms and outside broadcast trucks. This includes timecode displays, built-in timers, safe area markers, audio meters and tallies from the production switcher. The KMX-4921 also offers multiple levels of UMDs showing both static or dynamic information obtained from the control system, the production switcher or the tally management system. The fast processing time of one field makes it perfect for live production monitoring.

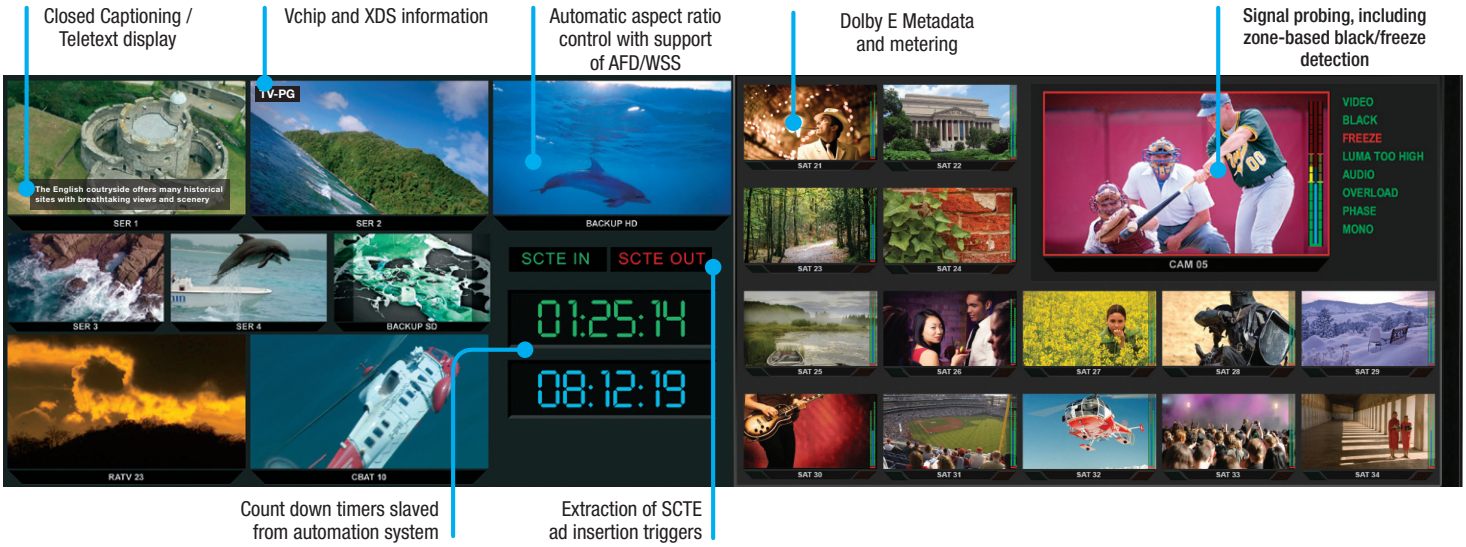


High Dynamic Range (HDR) processing for accurate monitoring experience

Introducing high dynamic range (HDR) and wide color gamut (WGC) into a live production workflow adds a challenge for accurately viewing these sources on a multiviewer. Without an HDR capable multiviewer, the image will appear saturated, details are washed out, and colors are incorrectly reproduced. Adding HDR/WCG processing on the multiviewer provides the ability to correct this and provide a more accurate image, more HDR-like, on regular SDR displays. The KMX-4921 provides HDR and WCG processing for HLG, PQ and S-Log3 HDR format, and BT.2020 WCG. Each input is individually configurable which allows to mix and match SDR and HDR sources, as well as different format of HDR, on the same display.

Ready for playout master control and transmission

The KMX-4921 provides all of the advanced probing and metadata extraction for ensuring the quality of your on-air transmission, including specialized features like Dolby-E monitoring, zone-based black and freeze detection.



Large scale and distributed multiviewer systems using COTS IP

Using flexible and increasingly commoditized COTS IP as an infrastructure base, several GV Node frames equipped with multiviewers can be added and combined for greater capacity, meeting even the largest multiviewing requirements. GV Node's standards based IP inputs and outputs ensure that your investment will be protected into the future.

Highly flexible and scalable multiviewing systems can be realized using COTS IP as the core infrastructure. In the example below, Grass Valley's UCP-3901 gateways are used to encapsulate SD/HD/3G SDI inputs to SMPTE ST 2022-6/2110 IP in local and remote locations. Sources are then distributed to all KMX-4921 multiviewers using a COTS IP switch. The multiviewer outputs are then returned to the COTS IP switch to be distributed to any display within the facility. At the display, a IPVU IP to HDMI output converter is used to interconnect with the display. The control of the IP routing is managed by GV Orbit using familiar interfaces such as router control panels and software panels.