

KALEIDO-IP SD, HD and 4K UHD IP Video Multiviewer



A clear view for any of your monitoring requirements.

The Kaleido-IP™ Video Multiviewer from Grass Valley® offers the most simultaneous video and audio program decodes in the industry, including SMPTE ST 2110 suite, MPEG-2, MPEG-4 part 2 (H.263) and part 10 (H.264/AVC), H.265/HEVC, HE-AAC v1 & v2, AAC, DD 2.0, DD 5.1 and DD+.

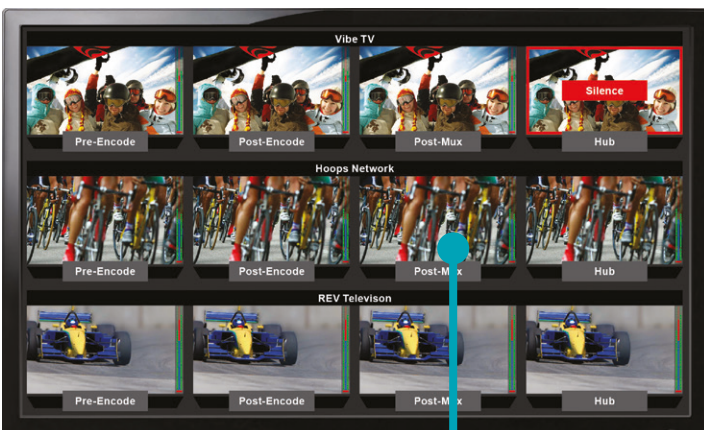
For scalable, space-saving and easy-to-manage installations, the Kaleido-IP VM version offers all the benefits of virtualization in an easy to deploy virtual image (OVA file).

Possessing superior layout flexibility and remarkably easy to use, Kaleido-IP monitors local and remote DVB IP streams, either in single or multiprogram transport stream formats, uncompressed IP video and audio streams such as SMPTE ST 2110, as well as OTT streams such as HLS. The unique Kaleido-IP cluster feature supports combining of multiple units to support the very largest monitoring requirements.

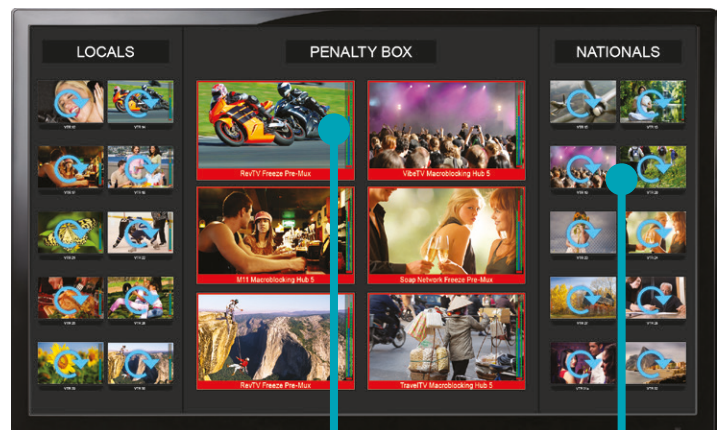
Thanks to its advanced signal quality probing and alarming, it stays on top of video and audio faults, including

freeze, black, silence, loudness, SCTE 35 digital cue tones and TR 101 290 analysis.

Kaleido-IP is the world's first multiviewer that fully implements the Networked Media Open Specifications (NMOS) Discovery and Registration Specification (IS-04), as well as the Device Connection Management Specification (IS-05). These specifications are promoted by AMWA, JT-NM, AIMS and several major media companies, as they provide an easy and interoperable method for integrating control of IP devices.



Visualize signals at different monitoring points including remote unmanned hubs with up to 6 GbE ports connectivity. Quickly identify the location of the problem and dispatch the correct fix agent



On-exception alerting and visualization to keep the operator's attention where you need it with Penalty Box actions

Monitor hundreds of channels with automatic cycling actions using iControl

Key Features

Ease of Use

- Simple and flexible layout creation with powerful XEdit layout editor
- Wide range of codecs, as well as uncompressed video and audio support for monitoring any IP source
- All video streams can be displayed, multiple times, at different resolutions and sizes up to full screen, on the multiviewer outputs

Density

- Leads the industry in offering the highest number of simultaneous video and audio program decodes

Output Flexibility

- Up to four independent HDMI outputs with audio monitoring for Kaleido-IP X240
- Up to four IP Streaming outputs (simultaneous compressed and uncompressed) for Kaleido-IP X240
- Remote control and monitoring through web browser
- Single IP Stream output (compressed) per Kaleido-IP VM instance

Advanced Signal Quality Probing and Alarming

- Performs detection and alarms on video and audio faults, including freeze, black and silence
- Monitors closed captioning, Teletext subtitles, DVB subtitling and XDS metadata extraction and alarming

Robust Platform (Kaleido-IP X240)

- High power Ubuntu platform
- 1 RU frame with redundant power supplies
- 2x 1 GbE for management and 2x 10 GbE for compressed media
- Options for up to 4x 100 GbE for uncompressed media
- GPI I/O support via Grass Valley's GPI-1501
- ASI via Grass Valley's Densité IRG-3401
- SDI via Grass Valley ST 2110 Gateway products

Kaleido-IP X240 At A Glance

Formats	SD / HD / 3G / UHD
Number of multiviewer outputs	2 standard, 2 additional via software license, and cluster feature to combine multiple units on the same wall
Frame size and format	1 RU frame
Number of ports	2x 1 GbE, 2x 10 GbE, optional up to 4x100 GbE
Stream input formats	SMPTE ST 2110, MPEG-TS UDP/RTP Multicast/Unicast, SSM IGMPv3, HLS, RTMP/H.264, RTSP
Video codec	MPEG-2, MPEG-4 part 2 (H.263) and part 10 (H.264/AVC), H.265/HEVC
Audio codec	MPEG-1, MPEG-2, Dolby Digital 2.0 / 5.1 / Plus, HE-AAC v1 & v2, AAC
Other input formats	ASI via Densité IRG-3401 / SDI via Grass Valley SMPTE ST 2110 Gateway
Output formats	HDMI, DisplayPort, UDP/RTP MPEG TS and RTSP, SMPTE ST 2110-20
Audio monitoring out	HDMI, UDP/RTP MPEG TS, RTSP and SMPTE ST 2110-30
Image repetition	Any source anywhere up to 128 times on any display
Output rotation	Yes
CC and DVB subtitle support	Yes
Other metadata or measurement	AFD/WSS, audio/video format, XDS, Captions, Subtitles, Loudness Measurement and SCTE35 ad-insertion cues
Signal probing	Video/audio loss or invalid, black, freeze, silence, loss/invalid metadata, TR 101 290 P1 and P2 transport stream probing
On-screen mouse operation	Yes
Multiroom and clustering control	Yes
Kaleido-RCP2 remote control	Yes
XEdit layout editor	Yes
Image quality	Unmatched picture quality
Processing delay	4 frames for SMPTE ST 2110-20 / Depends on codec for compressed sources
Redundancy and recovery	Hot swappable redundant PSU

Specifications

IP Inputs

- 2x 1 GbE (management)
- 2x 10 GbE (compressed media)
- Optional up to 4x 100 GbE (uncompressed media)
- Transport:** MPEG transport streams over UDP or RTP Multicast/Unicast
- IGMPv3 SSM/SFM
- Multi Program Transport Streams (MPTS)
- Single Program Transport Streams (SPTS)
- HTTP Live Streaming (HLS)
- Real Time Streaming Protocol (RTSP)
- Real Time Messaging Protocol (RTMP/H.264)
- SMPTE ST 2110-20 input (video):
 - 1080i/720p/1080p/2160p
 - 23.98/29.97/50/59.94 Hz
 - Narrow, Narrow Linear, Wide receivers
- SMPTE ST 2110-30 input (audio):
 - Synchronous streams
 - Level A and B
- SMPTE ST 2110-40 input (metadata):
 - Subtitling (CC 608/708, OP-47)
 - ATC (timecode)
 - AFD

Other Input Formats

- ASI:** Densité IRG-3401 (optional)
- SDI via Grass Valley ST 2110 Gateway products (optional)

Video Decoders

- Standard:** MPEG-2
 - MPEG-4 Part 2 H.263
 - MPEG-4 Part 10 H.264/AVC (ITU-T H.264)
 - MPEG-H Part 2 H.265/HEVC
- Chroma format:** 4:2:0 and 4:2:2

Audio Decoders

- Standard:** MPEG-1 layer 1
 - MPEG-1 layer 2
 - MPEG-2 layer 1
 - MPEG-2 layer 2
 - Dolby Digital AC-3 (optional)
 - Dolby Digital Plus EAC-3 (optional)
 - AAC and HE-AAC v1 & v2 (optional)

Video Display Outputs

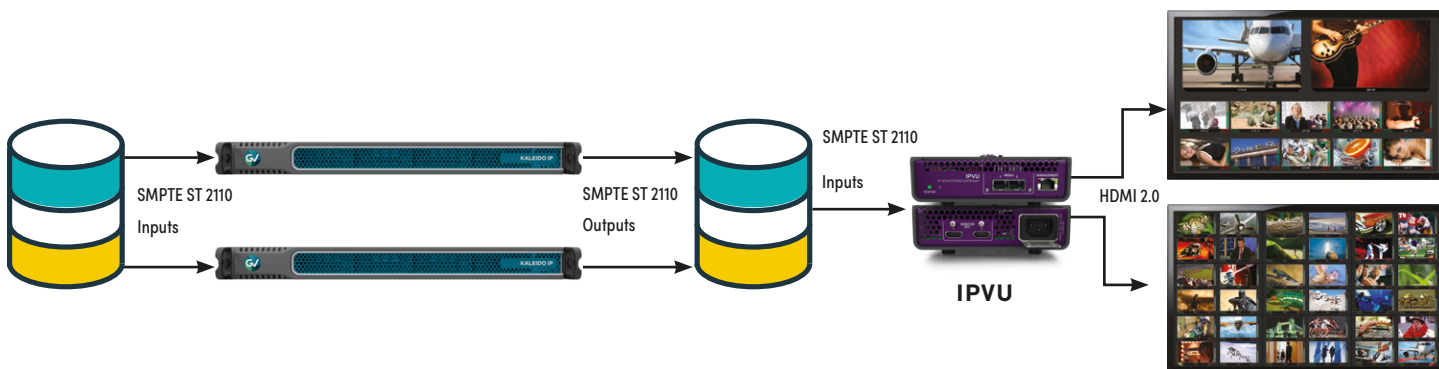
- Two (2) independently configurable and operable display outputs
- Additional two (2) outputs via software license
- Connectors:** HDMI or Display Port
- Standard:** Display Port 1.4, HDMI 2.0
- Resolution:** Up to 3840x2160 at 60 Hz
- IP Outputs:** SMPTE ST 2110-20, SMPTE ST 2110-30 (audio profile: 16 ch, 125 μ s, L24, 48 kHz), MPEG-TS and RTSP

Physical (KIP-X240)

- Height:** 43 mm (1.7 in.) 1 RU
- Width:** 437 mm (17.2 in.)
- Depth:** 683 mm (27 in.)
- Weight:** 21.9 kg (48.3 lbs.)
- Power supply:**
 - 750W (1+1) hot swappable, redundant power supply
 - 110VAC: 10 Amp
 - 240VAC: 5 Amp
- AC:** 100-240 V, 60-50 Hz
- Operating temperature:** 10 to 35°C (50 to 95°F)
- Storage relative humidity:** 5% to 95% RH with 33°C (91°F) maximum dew point. Atmosphere must be non-condensing at all times
- Max. operating relative humidity:** 10% to 80% relative humidity with 29°C (84.2°F) maximum dew point
- Operational and Configuration**
 - On-screen control:** KALEIDO-RCP2 (optional)
 - Source and layout configuration:** XEdit
 - Display Output Extender via Fiber Optic**
 - Device:** DXF-4K
 - Distance:** 1 km (3,280 ft.)
 - Fiber optic cable:** Multimode 50 or 62.5/125 SC
 - Connector:** SC

Kaleido-IP SMPTE ST 2110 application

Kaleido-IP receives SMPTE ST 2110 sources, and also outputs the mosaic views over SMPTE ST 2110. The outputs are routable over IP to any display. The Grass Valley IPVU converts from IP to HDMI at the display. As demand for more displays increases, scalability is enabled by increasing the number of Kaleido-IP and IPVUs.



Ordering

KIP-X240

Kaleido-IP X240 multi-image IP processor. Advanced processing performance with increased input/output capacity. Includes 4 independent HDMI/DP outputs, 2x 10 GbE ports, redundant power supply, 1 RU frame. Purchase optional 2x KIP-OPT-ETH-2X for 2022-7 support

KIP-OPT-OP34

Software license to enable output 3 and 4 at 1080p resolution. Available for KIP-X130, KIP-X330, KIP-X120, KIP-X320 and KIP-X240

KIP-OPT-STREAMING-OUT

License for remote streaming of the multiviewer outputs over IP. Also required for remote control and monitoring through a web browser

KIP-VM16, KIP-VM24, KIP-VM32, KIP-VM48, KIP-VM64

Virtual Kaleido-IP license. Includes 16, 24, 32, 48 or 64 HD/SD video decode licenses with audio/video baseband probing and caption/subtitle extraction (CC 608/708, TXT/DVB subtitling). Provides a single multiviewer output over IP streaming. Audio DD or AAC licenses not included

Note: KIP-VM is currently only supported on VMware hypervisor software version 5.5 or higher

Decode Licenses

KIP-OPT-DEC-AVC

Decode license for Advanced Video Codec (AVC) H.264 streams. One license per Kaleido-IP

KIP-OPT-DEC-DD-5.1

Decode license for up to 32 Advanced Audio Codec (AAC) stereo or 5.1 programs

KIP-OPT-DEC-DD-2.0

Decode license for up to 32 Dolby Digital stereo (AC3) programs

KIP-OPT-DEC-AAC-5.1

Decode license for up to 32 Advanced Audio Codec (AAC) stereo or 5.1 programs

KIP-OPT-DEC-AAC-2.0

Decode license for up to 32 Advanced Audio Codec (AAC) stereo programs

KIP-OPT-HD-HEVC

Decode license for H.265/HEVC SD/HD video codec. One license per Kaleido-IP

KIP-OPT-UHD-HEVC

Decode license for H.265/HEVC UHD video codec. One license per Kaleido-IP

KIP-OPT-UCIP

License for uncompressed input monitoring. Requires one of KIP-OPT-ETH-2S or KIP-OPT-ETH-1X network interface card. One license per Kaleido-IP

KIP-OPT-UCIP-OUT

License for SMPTE ST 2110-20 IP outputs. Requires one of KIP-OPT-ETH-2S or KIP-OPT-ETH-1X. One license per Kaleido-IP

Probing Licenses

KIP-OPT-LOUDNESS

Loudness level measurement for all programs. One license per Kaleido-IP

KIP-OPT-SCTE-35

SCTE-35 metadata extraction and alarming license for all programs. One license per Kaleido-IP

KIP-OPT-TS-PROBE

TR 101 290 DVB transport stream probing option for priority 1 and priority 2 indicators. One license per Kaleido-IP. Note: indicator 2.4 is not supported

Hardware Options

KIP-OPT-ETH-2X

Option for ConnectX-6 DX NIC - Dual 100 GbE QSFP56 network interface card. SFPs not included. Includes Rivermax license and silver 1 year support. Up to 2 per KIP-X240 for a total of 4x 100 GbE.

KALEIDO-RCP2

Ethernet remote control panel and KM gateway

KRCP-RK2

Kaleido-RCP2 rack mount bracket

DXF-4K

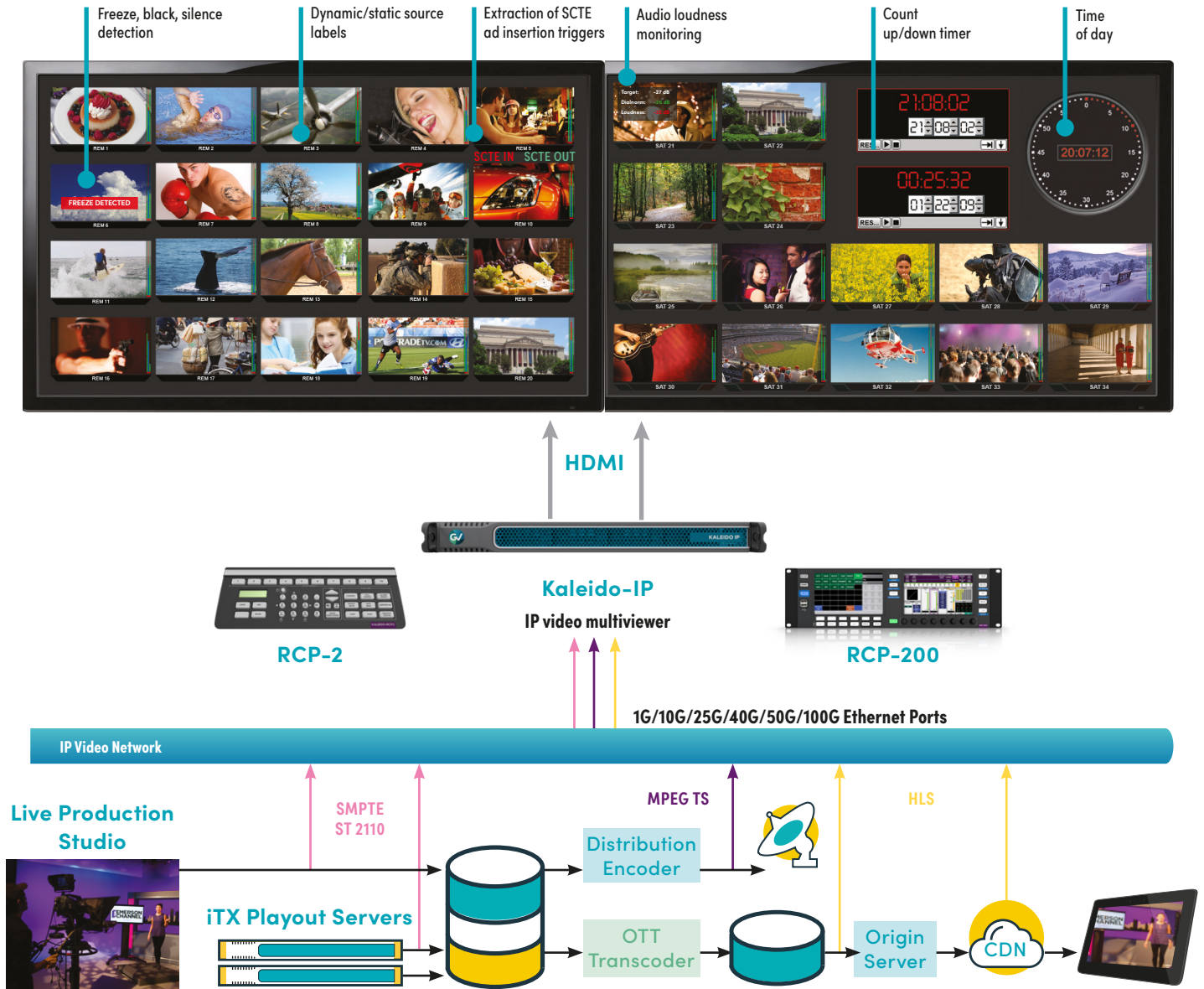
Optical HDMI-HDMI 4K UHD extension system. Includes transmitter, receiver and PSUs

IP Monitoring in the Broadcast Facility

Whether you are building or upgrading a master control room for content delivery, live or remote production, the Kaleido-IP is the perfect solution for monitoring all types of IP streams within your broadcast facility.

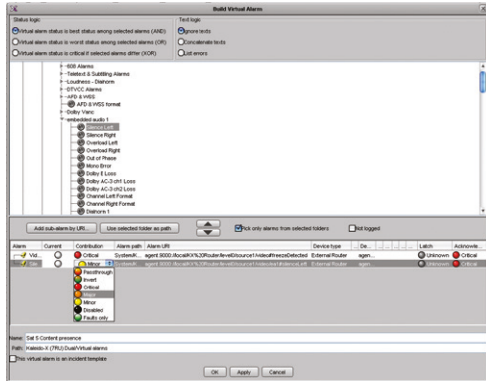
Kaleido-IP offers visualization and probing of uncompressed IP sources such as SMPTE ST 2110, alongside DVB MPEG IP transport streams, and over-the-top (OTT) delivery formats such as HLS.

This makes the Kaleido-IP the perfect solution to simplify monitoring of all types of IP streams on a single multiviewer.



Sophisticated Alarm Displays

The Kaleido-IP offers very sophisticated alarm display elements, which are activated when video/audio, metadata or SNMP alarms are detected. Informative text and graphics alert operators at the monitor wall, with color coded on-screen alarm status indicators. These status indicators can be configured to latch the status, in case of sudden faults that cannot be intercepted by the operators. Acknowledgement mechanisms are available, with interaction by an on-screen mouse.



The virtual alarm configuration tool allows grouping of alarm statuses to create a single "virtual" alarm. It also offers alarm severity configuration and logical operations like AND, OR, and XOR between alarms.



Kaleido-IP

GSM service



GSM service



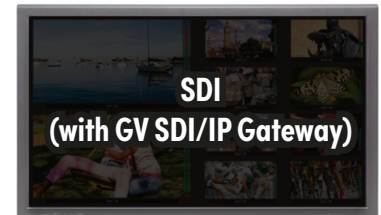
GV Orbit or iControl
Facility monitoring and control system

GV Orbit's or iControl's extensive library of third-party devices allows Kaleido-IP to leverage existing IP and MPEG probing devices to increase alarming capabilities.

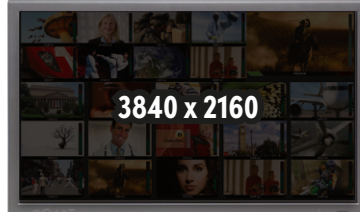
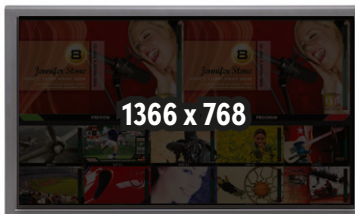
Highly Flexible Layouts with Kaleido-IP

- Kaleido-IP offers exceptional layout flexibility, and this allows an operator to focus on the ideal monitoring configuration, without worrying about the multiviewer's limitations
- Simultaneously display across monitors of different resolutions up to 3840x2160, and display across flat panels and projection cubes
- Signals can be displayed at any size up to full screen at full UHD resolution
- Sources can be repeated across multiple displays
- Signals can be positioned anywhere across displays
- Sources can be repeated and overlapped (picture-in-picture) across displays (KIP-X130, KIP-X330 and KIP-240 only)
- Signals of different aspect ratios can be displayed alongside each other

Any source



Any resolution



Simultaneously display across monitors of different resolutions up to 3840x2160, and display across flat panels and projection cubes.

Any size



Signals can be displayed at any size up to full screen at full UHD resolution.

Any repetition



Sources can be repeated across multiple displays.

Any position



Signals can be positioned anywhere across displays.

Any format



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

Multiviewer Remote Control Panels

RCP-200

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.



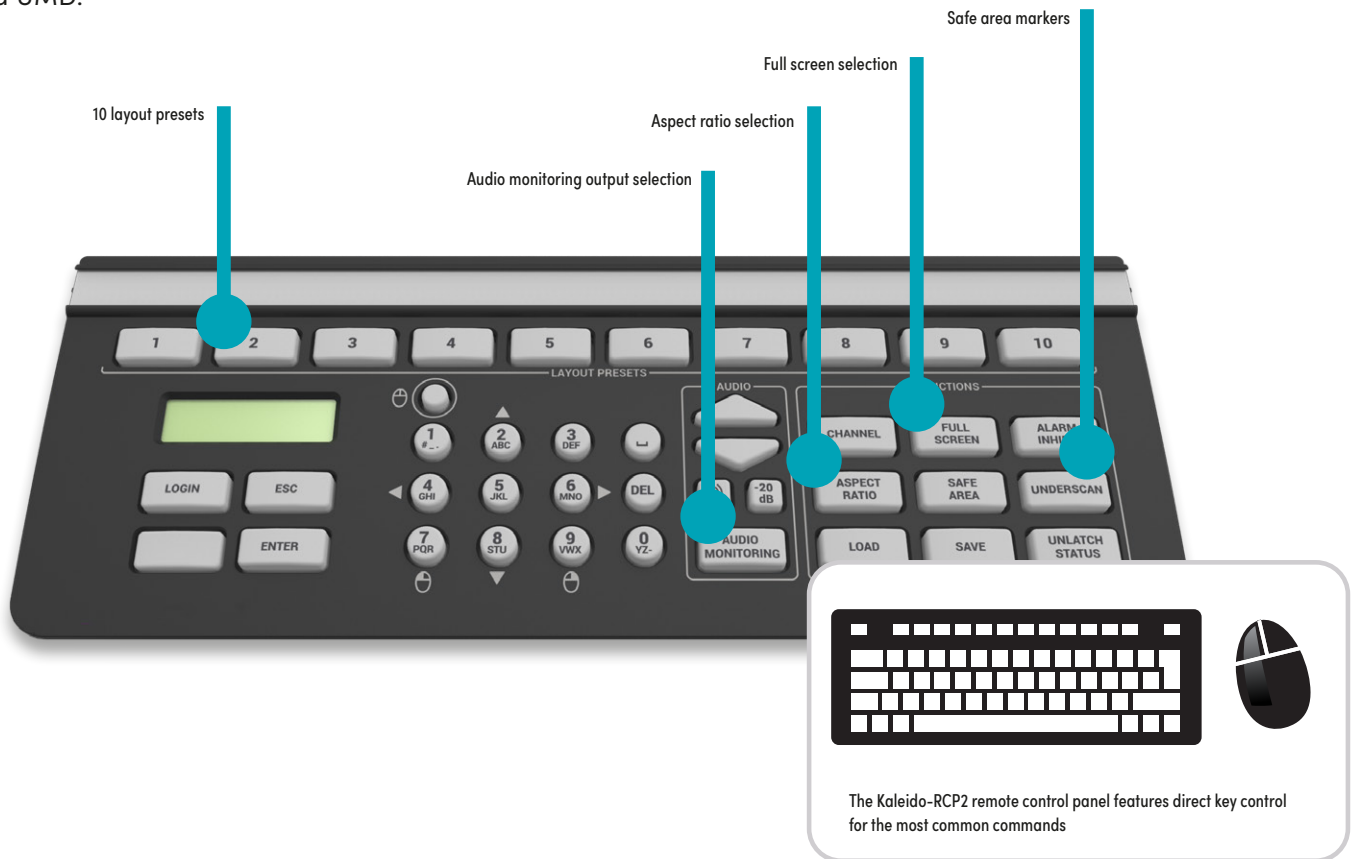
Intuitive Control Across Multiviewers

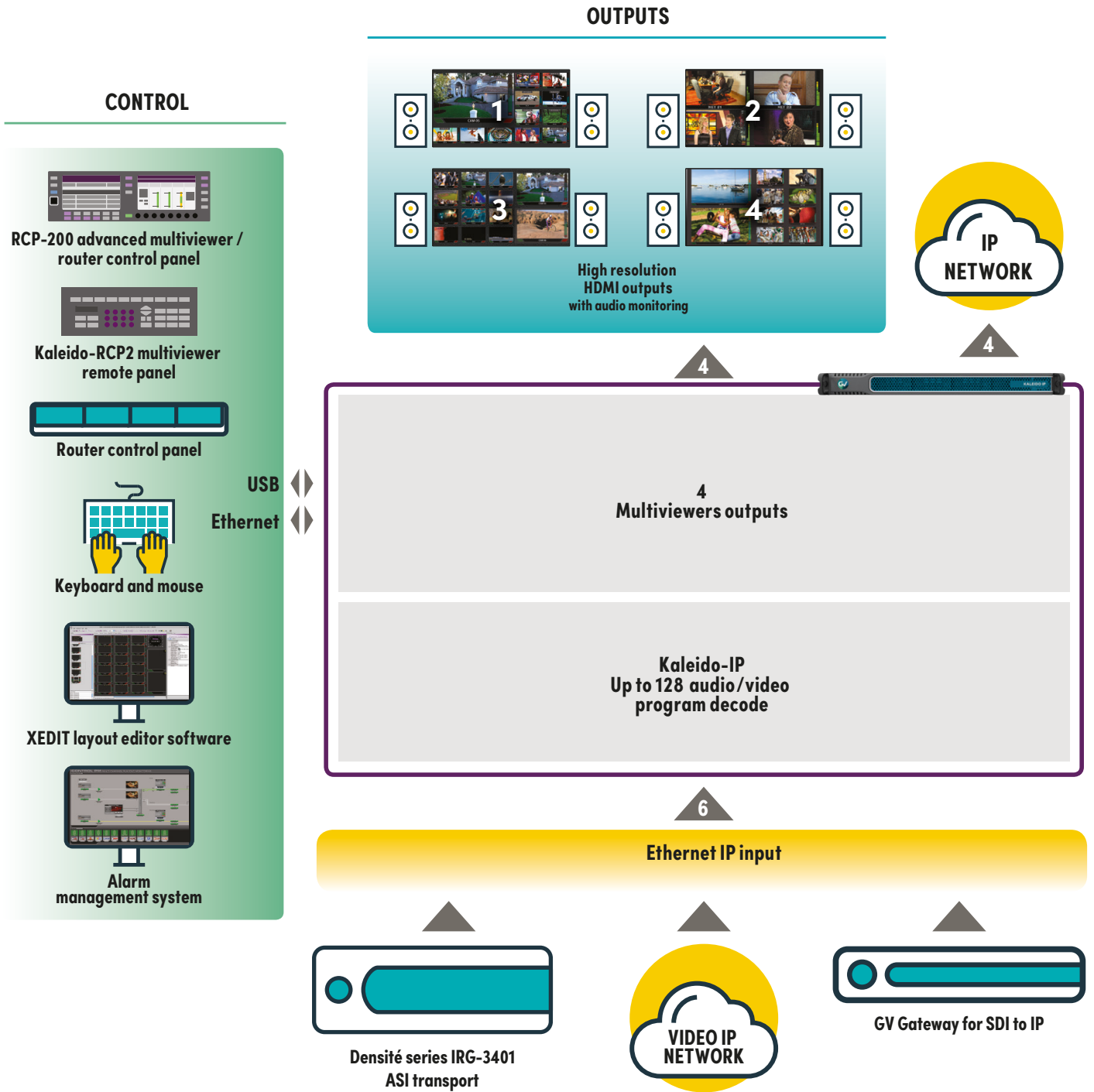
Kaleido multiviewer systems can be easily controlled by one or more dedicated remote control panels, or by an on-screen mouse control.

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.





This product may be protected by one or more patents. For further information, please visit: www.grassvalley.com/patents

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