

# Production Switchers

## Performance and Mid-Range Switcher Catalog



Production switchers from Grass Valley, a Belden Brand, are engineered for fast, efficient and creative productions. Operations are optimized with easy to load show programming, responsive automation and powerful features using macros and timelines. As an integral component of creating live television coverage of sports, entertainment and news from both studio and mobile installations, Kayenne, Karrera and GV Korona panels include familiar controls and intuitive interfaces. These systems define the industry standard operation, so training costs are lower and finding operators is easier.

The Kayenne Video Production Center, Karrera Video Production Center and GV Korona Video Production Center are Grass Valley's next-generation 4K UHD, 1080p 3G and HD production switcher solutions and broadcasters' preferred switchers of choice for any level of sports and event coverage. They are powered by Grass Valley's K-Frame video processing engine — providing the ultimate in production innovation, functionality, power and flexibility. The various panels available offer users a similar and intuitive operating environment that will feel very familiar.

Grass Valley production switcher integrate with camera controllers, routers, server clip storage, third-party tally control and news automation systems for a seamless production ecosystem.

With four Emmy® Awards for production switcher technologies, Grass Valley is the proven leader when it comes to combining power and creativity to deliver the compelling programming that viewers expect.

### 4K and IP Scalability

Every K-Frame, including the V-series, can be software enabled to support 1080p 3G (level A or B) which means you are ready for 4K UHD productions. This provides you the confidence in knowing that if and when you transition from traditional HD to 3G or 4K, that your switcher maintains its value while not putting additional strain on your CapEx budget.

4K sources can be formatted as either 2-sample-interleave (2SI) quad-link SDI, four-quadrant quad-link SDI, uncompressed SMPTE ST 2022-6 IP or TICO 4:1 compressed IP or SDI 2SI. With K-Frame, 4K can also come into the switcher using 12G-SDI making it your choice when determining the 4K production mode — 2SI or quad mode.

You can use 4K over 1-wire TICO-compressed IP connectivity for more streamlined video-over-IP infrastructures, with greater scalability as well as less cabling and faster installation, which is especially valuable in truck environments.

The K-Frame boasts the largest switcher I/O capacity enabling the largest 4K UHD productions. With 4 M/Es in 4K UHD and the addition of iDPM support in 2SI, producing compelling 4K UHD content has never been easier.

Support for Dolby HDR is available without any modifications.

### Any Panel/Any Frame

Every Grass Valley switcher control surface can operate with any Grass Valley K-Frame processing engine, giving you the ability to switch today's productions on a panel that meets your budget and production needs today, with the ability to run on a frame with overcapacity for tomorrow's unknown production requirements — without having to replace both switcher components.

K-Frame processing engines are available in four different sizes: Standard, Compact, S-series and V-series. Each K-Frame supports smart I/O for up/down/crossconversion.

The K-Frame Standard 13 RU frame with a separate 1 RU power supply housing has an industry maximum of 192 inputs — 32 per module and 96 outputs — 16 per module. Up to 9 M/Es, accessible across two suites — by using DoubleTake this may be increased to 18 virtual M/Es. Every M/E has six keyers with standard keying modes including chromakey, two frame stores per keyer, and 2D DVEs (2D DPMS) on every keyer. A pool of floating 3D DVEs (iDPMS) can be assigned as required.

The K-Frame Compact 6 RU frame with internal power supply has a maximum of 80 inputs — 32 per module and 48 outputs — 16 per module. Up to 5 M/Es, accessible across two suites — by using DoubleTake this may be increased to 10 virtual M/Es. Just as in the Standard frame, every M/E has six keyers.

The compact K-Frame S-series 6 RU frame with internal power supply has a maximum of 80 inputs — 32 per module and 48 outputs — 16 per module. Up to 6 M/Es are accessible across two suites. By using DoubleTake, this may be increased to 12 virtual M/Es. Every M/E has four keyers with standard keying modes including chromakey, two frame stores per keyer — and every keyer can use the pool of floating iDPMS and the 2D DPMS on each keyer.

The K-Frame V-series 3 RU frame with internal power supply supports four I/O modules and a maximum of 36 inputs — 32 SDI and 4 Media Ports, and 18 outputs — 16 SDI and 2 Media Ports. Up to 3 M/Es plus 2 VPEs (Video Processing Engines) are accessible across two suites. By using DoubleTake, this may be increased to 10 virtual M/Es. Every M/E and VPE has four keyers with standard keying modes including chromakey, two frame stores per keyer — and every keyer can use the pool of optional floating iDPMS and the 2D DPMS on each keyer.

All frames can be upgraded to support 1080p (level A or B), bringing 4K capability to every K-Frame system.

### KEY FEATURES

#### K-Frames

- K-Frame Standard Frame:
  - Up to 192 inputs and 96 outputs
  - Up to 9 M/Es, accessible across two suites — by using DoubleTake this may be increased to 18 virtual M/Es
  - Largest I/O footprint in the switcher market for both HD and 4K productions
  - Every M/E has six keyers with standard keying modes including chromakey, two frame stores per keyer — every keyer except for Controller M/E can use the pool of floating 3D iDPMS
  - 2D DPMS (resizers) on every keyer, with 6 pairs per M/E so iDPMS can be utilized for more complex effects
  - The Controller M/E has a complement of 6 full keyers with chromakey and 2D DPMS
  - Up to 16 iDPMS (integrated Digital Picture Manipulators), assigned as either floating iDPMS or within an eDPM at user's discretion
  - Optional multiple multiviewer capability with 5 pre-configured layouts (maximum 14 panes per layout) with On-Air and Preview tally
- K-Frame Compact Frame:
  - Up to 80 inputs and 48 outputs
  - Up to 5 M/Es, accessible across two suites — by using DoubleTake this may be increased to 10 virtual M/Es
  - Every M/E has six keyers with standard keying modes including chromakey, two frame stores per keyer — every keyer except for Controller M/E can use the pool of floating 3D iDPMS
  - 2D DPMS (resizers) on every keyer, with 6 pairs per M/E
  - The Controller M/E has a complement of 6 full keyers with chromakey and 2D DPMS
  - Up to 8 iDPMS (integrated Digital Picture Manipulators), assigned as either floating iDPMS or within an eDPM at user's discretion
  - Optional multiple multiviewer capability with 5 pre-configured layouts (maximum 14 panes per layout) with On-Air and Preview tally
- K-Frame Compact S-series Frame (differences from Compact Frame):
  - Up to 6 M/Es, accessible across two suites — by using DoubleTake this may be increased to 12 virtual M/Es
  - Every M/E has four keyers with standard keying modes including chromakey — every keyer can use the pool of floating 3D iDPMS
  - 2D DPMS (resizers) on every keyer, with 4 pairs per M/E
  - Controller M/E replaced by pair of multiviewers with pre-configured layouts and On-Air/Preview tally
  - Optional multiple multiviewer capability with 5 pre-configured layouts (maximum 14 panes per layout) with On-Air and Preview tally

- K-Frame V-series Frame:
  - Up to 36 inputs and 18 outputs
  - Up to 3 M/Es plus 2 VPEs, accessible across two suites — by using DoubleTake this may be increased to 10 virtual M/Es
  - Every M/E and VPE has four keyers with standard keying modes including chromakey, two frame stores per keyer — every keyer can use the pool of optional floating 3D iDPMS
  - 2D DPMS (resizers) on every keyer, with 4 pairs per M/E and VPE
  - Up to 4 optional iDPMS (integrated Digital Picture Manipulators), assigned as either floating iDPMS or within an eDPM at user's discretion
  - Multiple multiviewer capability with 5 pre-configured layouts (maximum 14 panes per layout) with On-Air and Preview tally

#### General

- Fully digital 10-bit 4:2:2 video switcher including 4K, 1080p (level A or B) 3G support plus HDR
- Optional Mod I/O modules provide up/down/crossconversion when licensed with SetDef/MatchDef
- Integrated macro builder/editor allows users to edit macros online or offline on a PC running the menu application
- Optional DoubleTake (split M/E mode) effectively increases the number of M/Es and adds flexibility to Suites operation while FlexiKey programmable clean feed mode supports separately programmable configurations of keyers from four M/E outputs
- Aux bus transitions for dissolves/wipes on aux bus outputs
- Interfaces with Grass Valley routers and Kaleido multiviewers and their control systems
- Optional integrated ImageStore capable of delivering up to 64 GB storage of Stills or "Movies" with audio (up to 32 GB in S-series and V-series)
- LDK Series & LDX Series camera control with Ethernet tally via Connect Gateway
- Optional integrated external ClipStore provides multiple channels of video/key pairs for up to 10+ hours of nonvolatile video/key/audio clip content
- 999 macros with many new ways to recall macros from the panel
- 1,000 E-MEM registers with Define E-MEM for fine control in creation and editing of effects
- Optional M/E Previewer provides a method to check and monitor any input to an M/E and any M/E's output (except in V-series)
- VDCP Ethernet connection for stadium applications
- Ethernet tally connection for integration with external tally systems
- Optional RGB color correction on M/E buses and aux bus outputs
- Source Rules:
  - Links keyers to sources
  - Settings for on-off-left alone on every M/E
  - Full look-ahead preview of rules
- Hot-swappable, front/rear removable modules and power supplies
- Integrated control of XPression graphics engine using RossTalk protocol

**Grass Valley production switchers** bring an unsurpassed level of performance to live productions with the innovative features and upgradability expected from a strong history of exemplary switcher solutions.

The K-Frame video processing engine brings a software-based, modular approach to switcher frames that provides simple upgradability, more efficient operations, simplified production workflows, as well as easy configuration and setup. K-Frame requires less initial capital investment and brings the ability to configure a video production switcher with full multiformat support — including 1080p 50/60 and 4K — to a user's specific application.

### High Value Production Platform

Grass Valley production switchers package higher performance, processing, capabilities and usability into solutions unmatched by any other vendor. This makes them powerful, creative production solutions, and smart business propositions.

In addition to being cost-effective, Grass Valley video production switchers offer long-term savings with a wide variety of configuration options in both hardware and software. Features including 1080p support are implemented with simple to install software licenses, enabling the system to grow to suit both present and future needs.

Familiar Grass Valley controls and intuitive interfaces mean that minimal training time is required, which translates into faster setups and an ideal situation for rental and mobile production companies dependent on a freelance workforce.

### Immersive User Experience

Configuration, setup and operation are all streamlined to make users more efficient and require fewer resources per production.

The ergonomically designed and finely tuned control panels make users more efficient by providing the most used functions front and center while also giving quick access to in-depth features. The panel utilizes crisp OLED displays for source and function names, and all pushbuttons have full RGB color illumination to permit custom color schemes which dynamically change for color-coding functions and source grouping.

The high-resolution touchscreen interface has a shallow menu structure including History and Favorites features that operators find extremely useful, and context-sensitive pull-down menus that put everything at their fingertips.

Source Rules to simplify accurate key-to-source relationships, E-MEMs with Define E-MEM for granular control, P-MEM for panel memory and pre-built macros all can be recalled from the panel, and many of these functions can be delegated to rows within an operator's easy reach.

### Advanced Production Processing

Each K-Frame Switcher provides more processing power per module with 1080p support and keyers, an array of digital effects processors types, video scalers and a significant increase in the number of I/Os compared to competitive offerings. The production switcher keyers give operators more integrated keying capabilities — such as chromakey, memory store and picture processing — as well as flexibility in assignment of keyers to provide more advanced overlays per production.

M/E functionality can be expanded with the DoubleTake software option that has the power to split an M/E bank and assign keyers to each partition, each of which has its own dedicated backgrounds to double the number per system with no change in physical hardware to assist users in creating more complex effects. DoubleTake forms a base to propel users into the world of 4K UHD productions with already understandable and established tools. When linked together with Transition Chaining and with automatic source substitution, complex feeds as well as expanded use with future production formats become easy. Additionally, by using layering mode in DoubleTake as well as FlexiKey programmable clean feed, complex multi-client live productions become much easier and safer to accomplish.

Image processing is extensive with assignable software-based effects processing, assignable I/O image scalers, input resizers and an integrated ImageStore that give users the flexibility they need to create sophisticated on-air looks.

Feature	K-Frame Standard	K-Frame Compact	K-Frame Compact S-series	K-Frame V-series
Frame Size	14 RU (w/1 RU PS)	6 RU (internal PS)	6 RU (internal PS)	3 RU (internal PS)
4K Support	Yes	Yes	Yes	Yes
3Gig Support	1080p 50/60, level A & B	1080p 50/60, level A & B	1080p 50/60, level A & B	1080p 50/60, A&B
Max. I/O	192 x 96	80 x 48	80 x 48	32x16 SDI, 4x2 Media Port
Standard I/O w/Package	64 x 32	32 x 16	32 x 16	16x8 SDI, 2x2 Media Port
Max. Standard I/O	160 x 64	64 x 32	64 x 32	32 x 16
Max. Mod. I/O	32 x 32	16 x 16	16 x 16	32 x 16
IP I/O capability plus TICO	Yes	Yes	Yes	Future
Max. M/Es / VPEs	9 M/E	5 M/E	6 M/E	3 M/E plus 2 VPE
Full Keyers per M/E / VPE	6	6	4	4
Max. iDPM Channels	16	8	8	4
2 DPMs on all M/E Keyers	Yes	Yes	Yes	Yes
ImageStore Support	Still and Movies w/audio	Still and Movies w/audio	Still and Movies w/audio	Still and Movies w/audio (AES outputs)
Multiviewer Support	4	4	2	2



## K-Frame File Compatibility

All switcher panels and K-Frames maintain show file compatibility. This not only gives you the ability to move a show file on a thumb drive between similar panel/frame configurations, but to take the entire show or elements of a show from one production to another production that has a different panel or K-Frame processing engine.

This feature saves TDs not only time, but the hassle of having to re-create a show or show elements when moving between panels or frames.

The technology Grass Valley uses to support this feature is unique within the industry.

Source Rules automatically add and drop keys when a source is selected — without using macros or E-MEMs. Source Rules also apply during look-ahead previews for transitions.

Up to 999 macros can be recalled in many new ways from the panel, and then fine-tuned with an integrated Macro Editor.

Delegation of macros, E-MEM, aux bus and router control to the control panel's source-select rows ensures that controls are within reach when they are needed. Background buses can be delegated to keyer rows to expand the number of sources on an M/E. Panel Memory stores up to 99 delegation patterns.

Define E-MEM exposes granular sub-levels within an M/E or top level E-MEM layers for partial keyframing and allows both fine tuning of effects within a layer as well as the pushing of control of individual effects assets, such as aux bus or servers to M/E layers.

The Suites mode adds the ability to share resources in one video processor frame across two different production suites while completely isolating the resources in one suite from the other, as well as supporting more than one control panel in the same suite.

The large I/O and video processor count on the standard frame supports splitting the number of M/Es in a single frame across locations and controllers with a substantial cost saving for users.

Aux bus transitions permits the switcher to be fully utilized for every production. Dissolves and wipes on aux bus transitions are provided to enhance the look of in-studio, on-stage monitors.

A cost-effective option for productions with lower source counts is the internal multiviewer capability. With five pre-configured screen layouts to choose from, up to 14 tiles per layout with On-Air and "Look Ahead" Preview tally, along with customizable labeling. Logical and fixed sources come from the menu name while Aux sources come from the aux name.

## Powerful Processing, with a User's Choice

All Grass Valley production switchers support multiformat productions including 1080p50/60 standards, Level A and B, plus 4K.

All K-Frame processing engines work with any control panel configurations. They are available in three different sizes: the Standard 13 RU frame with a separate 1 RU power supply housing, the Compact 6 RU frame with internal power supspace, and the V-series 3 RU frame with internal power supply space. The Standard frame has a maximum of 192 inputs — 32 per module and 96 outputs — 16 per module. The Compact S-series frame has a maximum of 80 inputs — 32 per module and 48 outputs — 16 per module. The V-series supports four I/O modules and a maximum 36 inputs — 32 SDI and 4 Media Ports and 18 outputs — 16 SDI and 2 Media Ports.

All processing frames can offer another type of module option with four inputs and four outputs that includes four video scalars, except V-series which has eight inputs and a total of twelve scalars. When routed, the scalars are flexible to scale any input or output signal from the frame. This means that the video scalars — which are both internal and fully integrated in the control system — remove any multiformat production problems.

In the Standard frame, every M/E has six keyers and all can be used with chromakey. Every keyer is also capable of storing two video+key images. There is a Controller M/E with six full keyers, each having two key stores and chromakey capability along with 2D DPMs on every keyer. The Standard frame's maximum number of M/Es is nine: one Controller M/E and eight licensable from dual M/E modules.

K-Frame's internal ImageStore has two paired video/key inputs and 10 paired video/key outputs, except for the V-series which has four paired video/key inputs and eight paired video/key outputs. The memory storage capacity of up to 64 GB (32 GB in S-series and V-series) is available for instant recall of stills and movies with audio.

The Compact K-Frame is yet another example of why Grass Valley video production switchers offer unmatched versatility and capability for any type of event. Users have the choice of configurations with the main determining factor — number of M/Es and keyers per M/E. Load the standard dual M/E module with six keyers per M/E and compatible Controller board; or choose the latest S-series modules for the compact frame that support four keyers per M/E with three licensable M/Es on a single board, and a total of six M/Es within the frame. The S-series Controller board houses the ImageStore and multiviewer options with no Controller M/E. There are Karrera and GV Korona K-Frame S-series systems specially designed to meet cost-sensitive environments.

The K-Frame V-series is a no compromise mid-range switcher providing an unbelievable amount of production power at an affordable price. The switcher comes with an M/E board that supports three licensable M/Es and two VPEs with four keyers each and multiviewers options. The controller board also houses the large ImageStore with no controller M/E. GV Korona K-Frame V-series systems are designed to offer maximum features at a minimum price.

### Extensive Digital Effects Availability

The iDPMs (integrated Digital Picture Manipulators) are licensed in groups of two, they come complete with 2D, 3D and defocus effects. The Standard frame can have up to 16 iDPMs, the Compact and S-series frame can have up to 8 iDPMs and the V-series frame can have up to 4 iDPMs. The iDPMs are floating licenses and can be assigned to any full M/E keyer. iDPM includes extensive Kurl nonlinear warp effects such as corner pinning, page turn, page roll, slits, mirrors, spheres and ripples along with Spektra advanced lighting, defocus, glow and output recursive effects for unlimited creative application.

An alternative use for the iDPM channels is to use them inside the eDPM system which uses a separate control system, and which also allows effects to be taken to air on any M/E as a single source. Up to six iDPMs and six 2D DPMs can be incorporated within a single eDPM to provide the advantage of an external digital effects, compositing multiple channels to re-enter on one or more keyers with its own independent E-MEMs. The eDPM channels provide the advantage of an external DVE compositing multiple channels to re-enter on one or more keyers.

Any M/E key bus can be resized and repositioned using the 2D DPM systems. One global license activates all 2D DPMs available on the video frame — the number of pairs of 2D DPMs depends on the amount of keyers present.

### Completely Self-Contained Multiformat Video Production

The SetDef output conversion, combined with MatchDef input conversion, allows complete, multiformat production with up/down/crossconverting of all input and output formats, including aspect ratio conversion.

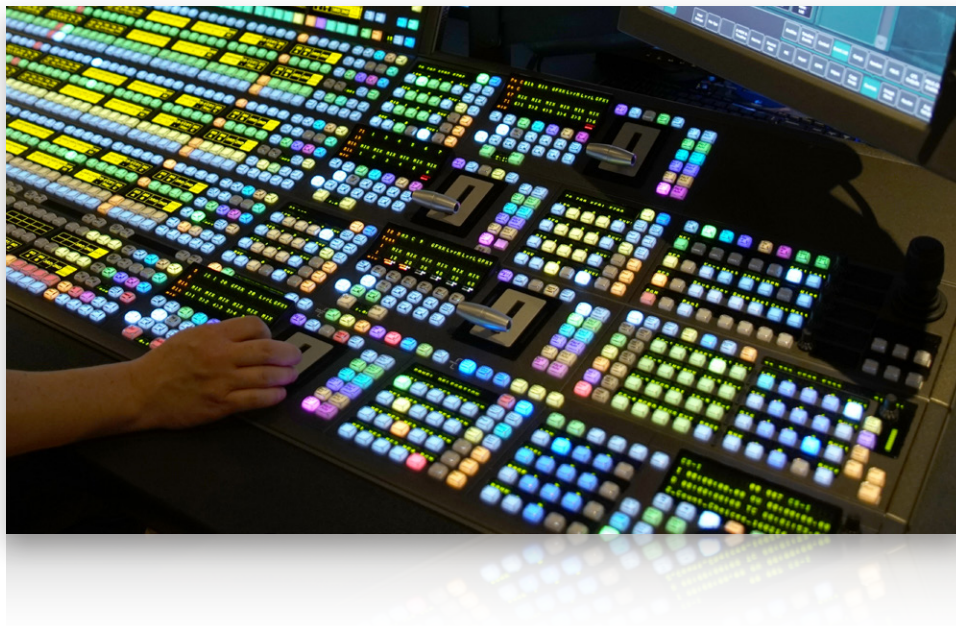
The converters are not limited to simple vector scaling but also allow cross-conversion of HD and/or 3G formats with color space conversion when converting to/from HD and SD, motion adaptation, and full synchronization. Simultaneous HD and SD program feeds are easily done without external conversion gear. Signals converted with MatchDef video input converters may be used anywhere within the system, sent to any output (including aux buses), and they do not consume expensive resources such as an entire M/E bus or other M/E resources.

The optional FlexiKey and DoubleTake split layered modes are available for all M/Es. Control is enhanced on the panel by dedicated primary/secondary partition buttons, and the use of the Kayenne split lever arm.

Transition Chaining augments parallel video paths using Key Chaining, Background Chaining, and Partition Sync functions to simplify productions requiring multi-client feeds.

### Production into the Future

Kayenne, Karrera and GV Korona with K-Frame made 3D production as straightforward as 2D production by using DoubleTake and linked M/Es with all of the resources switched in parallel. By adding Transition Chaining to the mix, these systems take the next step forward into 4K with the same ease — and no need for special hardware or software. To make things even easier, a 4K configuration, mapping and effects file is supplied from Grass Valley. For those users moving into the IP world, we offer the IP I/O board for the K-Frame video processing engine. Not only does this board support SMPTE ST 2022-6 IP, but it also supports TICO over IP and 12G-SDI.



# Control Panels



## Kayenne Modular Control Panels

Each module of the Kayenne control panel snaps into an extruded aluminum tray, is easily removable, and is hot-swappable. This modularity provides multiple panel configurations ranging in depth from 1 to 4 M/E stripes and a width choice of 35, 25 or 15 (on selected models) source select buttons per row. The control panels are ergonomically designed and can be mounted flat or in a banked curve.

Each source select and aux bus module has two rows of OLED Source Name Displays that provide ultra-clear text and extremely wide viewing angles. All buttons are illuminated with a selection of RGB colors, which dynamically change to indicate context (M/E colors, key colors, source colors and function colors). Many buttons also have programmable soft functions, which are indicated by a four-character LED

display above them, such as those found on the innovative Multifunction Module. Transition Modules have Enhanced Status Displays using easy to read LEDs.

The Kayenne's Device Control Module (DCM) supports full motion control (including jog wheel) for up to 32 devices such as DDRs/VTRs. Another unique feature is Q-MEM, a library of device cues independent of E-MEM, which operate in conjunction with the DCM and the up to six Device Control Windows on the system bar.

The user-friendly menu system also leads the industry with simplified navigation so that no menu view is more than two levels deep. Each menu is assisted by favorites, history and semi-transparent pull-down quick-links. Better yet, it is the same across Kayenne, Karrera and GV Korona control surfaces for quick recognition and ease of use.

Additionally, the intuitive menu view is incorporated into another control surface called KSP. An easy-to-use 1 M/E soft-panel GUI paired with a custom keyboard that can be used in many environments as a secondary control for replay or alternate event feeds.

## Panel Control Units

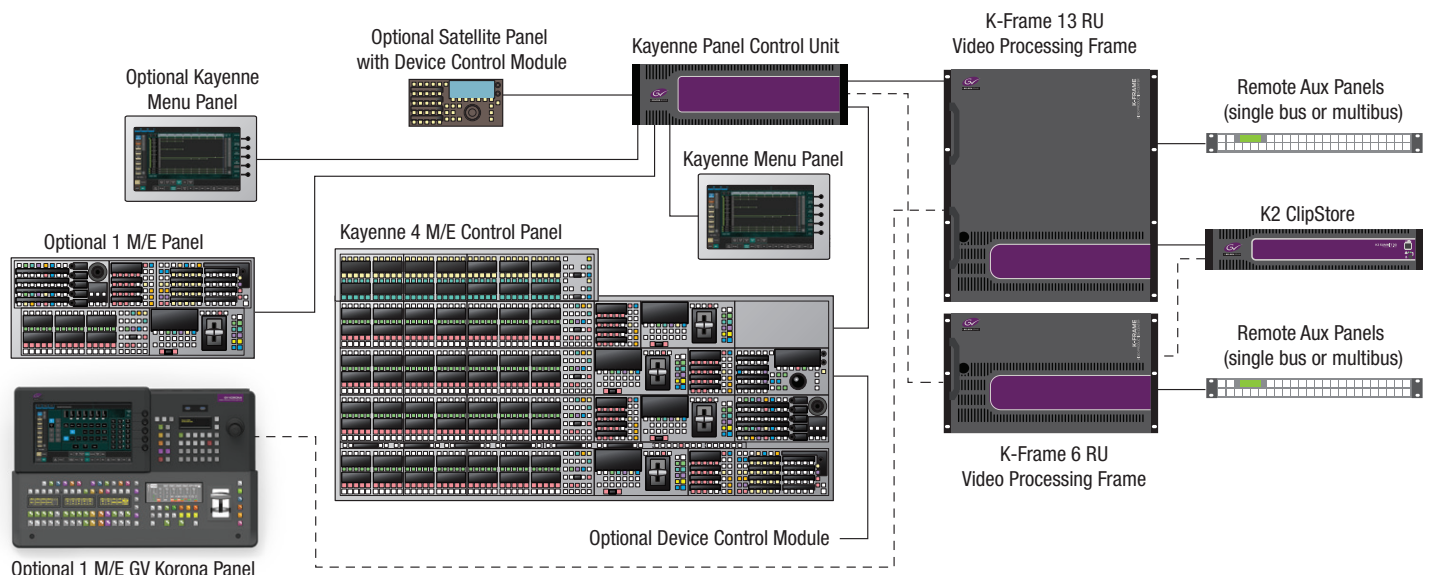
The Kayenne switcher's control panels run silently with no fan noise as their CPUs are located remotely in a 3 RU panel control unit (PCU).

Each PCU supports one or two control surfaces, either in the same or different logical suites. A control surface typically consists of M/E stripes, a local aux stripe, plus a touchscreen menu panel with five knobs. This may be augmented with satellite panels consisting of one or two modules. Each PCU has eight ports that connect to panel stripes or satellite panels. The PCU can be mounted up to 15 meters from the main panel.

## KAYENNE CONTROL PANEL FEATURES IN DEPTH

- Modular control panel surface with hot-swappable modules
- Completely quiet environment at the technical director's fingertips, as the control panel has no fans or processors to create noise
- RGB button illumination highlights for context and function clarity
- System bar on panel with up to six device control windows, switched preview, aux bus delegation and macro controls
- Optional panel Device Control Module for integrated machine control with Q-MEM cue library for server/VTR content

## Kayenne System Setup Options





**KAYENNE SYSTEM ORDERING**

**Select a System**

**Choose a PRO or  
ELITE Performance  
Suite if desired**

**Customize with  
Options as needed**



**Kayenne Systems (Includes license to enable all 2D DPMs on licensed M/Es.)**

System	M/Es	Stripes	Buttons	Frame Type	Inputs	Outputs
KAYN-2-25-2M-KC	2	2	25	Compact	32	16
KAYN-2-25-3M-KC	3	2	25	Compact	32	16
KAYN-3-35-3M-KC	3	3	35	Compact	32	16
KAYN-3-35-4M-KC	4	3	35	Compact	32	16
KAYN-3-35-4M-KS	4	3	35	Standard	64	32
KAYN-3-35-5M-KS	5	3	35	Standard	64	32
KAYN-4-35-4M-KS	4	4	35	Standard	64	32
KAYN-4-35-5M-KS	5	4	35	Standard	64	32

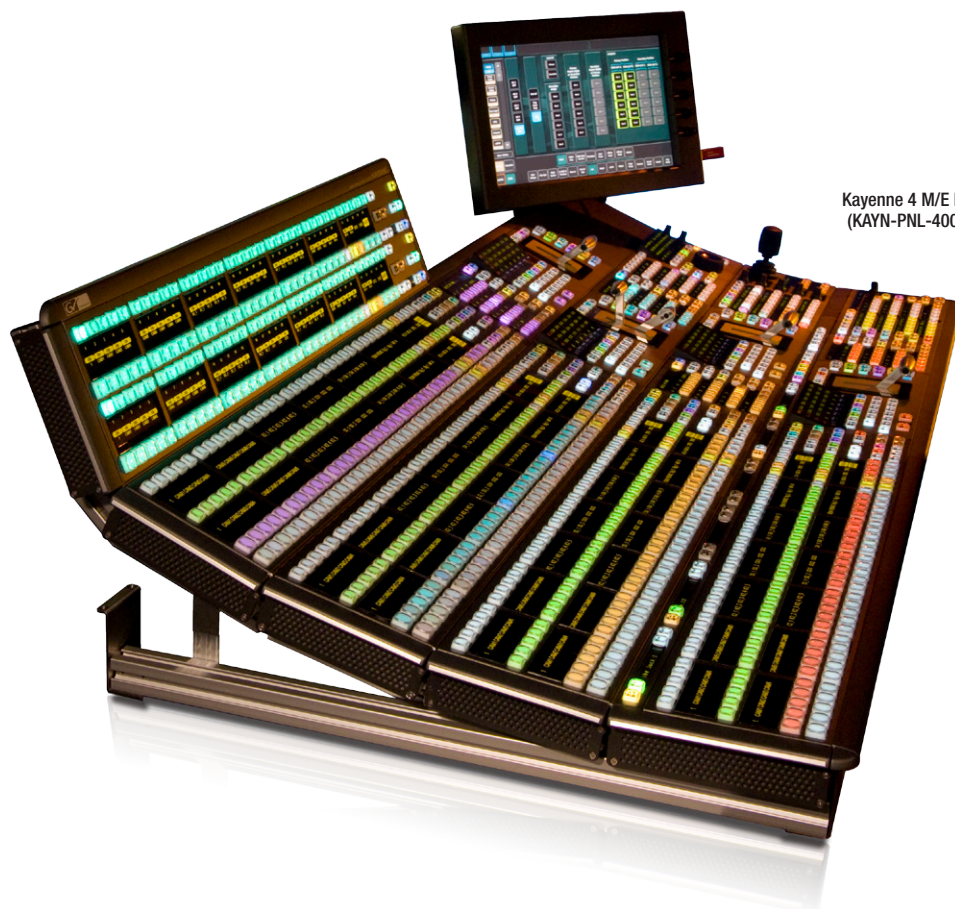
**Kayenne Performance Suites**

**PRO:**

Nomenclature: KAYN-PRO-PS  
ImageStore with license to enable 16 GB of stills operation  
License to enable two chromakeyers  
FlexiKey license for programmable clean feed  
License to enable two iDPMs

**ELITE:**

Nomenclature: KAYN-ELITE-PS  
ImageStore with license to enable 32 GB of stills operation  
License to enable ALL chromakeyers  
License to enable FlexiKey  
License to enable ALL iDPMs available in the frame  
License to enable DoubleTake



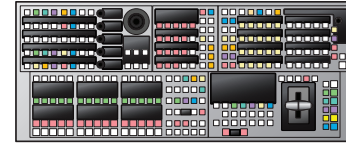
Kayenne 4 M/E Panel  
(KAYN-PNL-400-35)

## KAYENNE ORDERING

### KAYN-PNL-100-15

1 M/E panel with 15-button source selectors  
Panel control unit  
15:9 touchscreen menu panel  
One 15-button source select module  
One local E-MEM module  
One master E-MEM module

One transition module  
One multifunction module  
System bar  
Manual set  
Cables

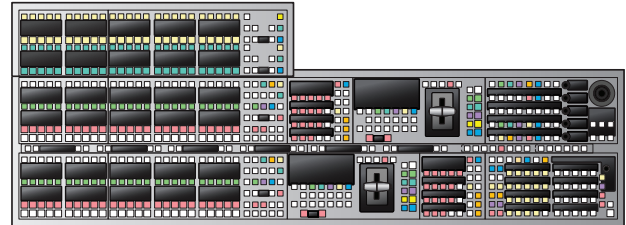


KAYN-PNL-100-15

### KAYN-PNL-200-25 or -35

2 M/E panel with 25- or 35-button source selectors  
Panel control unit  
15:9 touchscreen menu panel  
Two 25- or 35-button source select modules  
One 25- or 35-button local aux module  
Two local E-MEM modules

One master E-MEM module  
Two transition modules  
One multifunction module  
System bar  
Manual set  
Cables

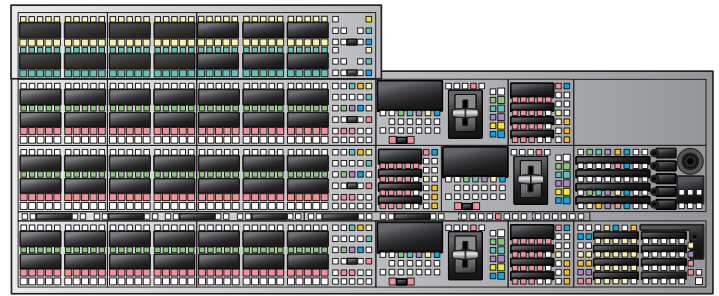


KAYN-PNL-200-25

### KAYN-PNL-300-25 or -35

3 M/E panel with 25- or 35-button source selectors  
Panel control unit  
15:9 touchscreen menu panel  
Three 25- or 35-button source select modules  
One 25- or 35-button local aux module  
Three local E-MEM modules

One master E-MEM module  
Three transition modules  
One multifunction module  
System bar  
Manual set  
Cables  
One option slot (DCM shown)

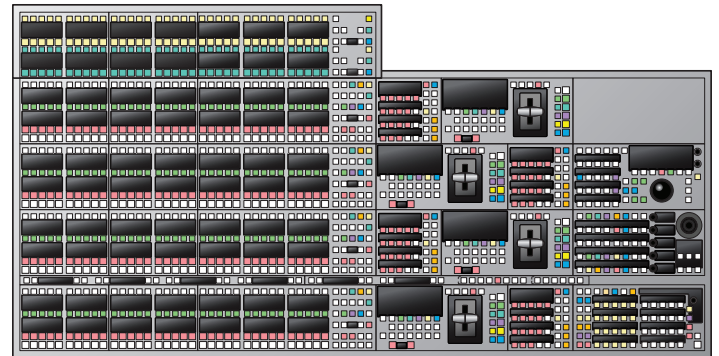


KAYN-PNL-300-35

### KAYN-PNL-400-25 or -35

4 M/E panel with 25- or 35-button source selectors  
Panel control unit  
15:9 touchscreen menu panel  
Four 25- or 35-button source select modules  
One 25- or 35-button local aux module  
Four local E-MEM modules

One master E-MEM module  
Four transition modules  
One multifunction module  
System bar  
Manual set  
Cables  
Two option slots (one DCM shown)



KAYN-PNL-400-35



## Karrera Control Panels

Karrera K-Frame S-series switchers deliver unmatched creative freedom for highly produced content, using up to 6 M/Es across two suites, with four keyers per M/E, and up to eight floating iDPMs. All this processing power is combined with high volume inputs/outputs (80x48 maximum) for outstanding versatility. The Karrera panel is primarily referenced with the S-series, but because of our “any panel on any frame” mantra, the Karrera can be used with any video processing frame.

The switchers are fully future-ready, with multiformat support including 1080p and 4K. Switching of 4K is offered without the need for any hardware upgrades.

Karrera K-Frame S-series switchers build on Grass Valley’s legendary ease of use, which simplifies the running of the most complex productions. Operators can rapidly build, save, punch and load shows for optimum efficiency. These highly familiar workflows help prevent on-air errors, and simplify the hiring and management of operator teams.

This exceptional breadth of capabilities makes these switchers ideal for a wide range of environments, from mobile trucks to fixed facilities. Typical applications include stadiums, broadcast facilities, production houses, corporate studios, houses of worship and educational media.

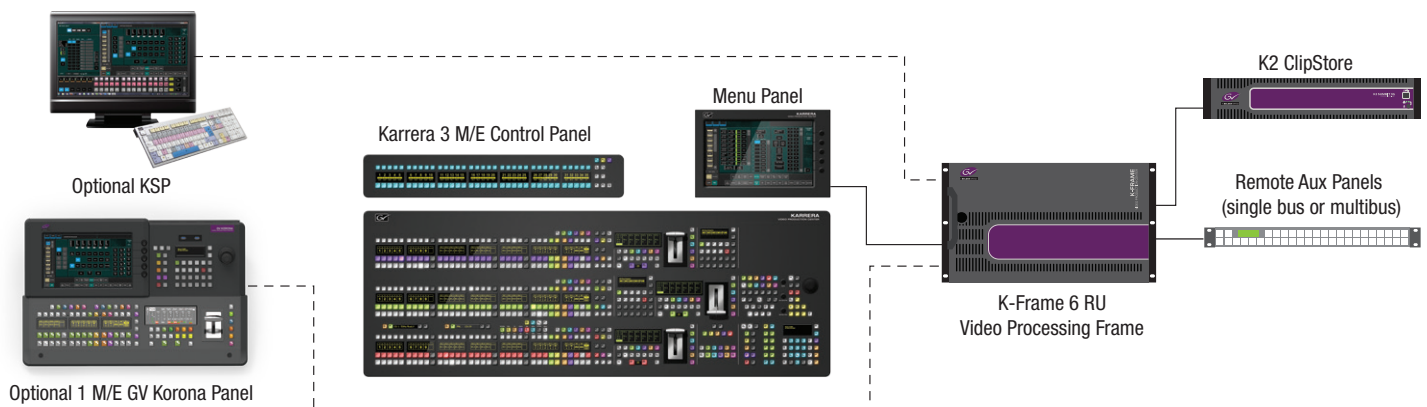
Many advanced features — including DoubleTake (split M/E mode) and Source Rules — can be enabled with software licenses to further customize the configuration and minimize up-front costs.



## KARRERA CONTROL PANEL FEATURES IN DEPTH

- Stripes are fully configurable to control any M/E, complete with local E-MEM areas
- Crisp OLED displays and customizable RGB buttons enable perfect visual cues
- External touchscreen menuing system runs the same software as every other panel
- Up to two device control sub-sections for quick access to machine control
- Optional local and remote aux bus control panels

## Karrera System Setup Options



Select a System

Choose an PRO, ELITE  
or SPORT Performance  
Suite if desired

Customize with  
Options as needed

All Karrera Systems (Includes the KRR-PNL-MENU-SET and license to enable all 2D DPMs on licensed M/Es.)

S-series systems come with additional licenses which provide tremendous value and can be seen below.

System	M/Es	Stripes	Buttons	Frame Type	Inputs	Outputs
KRR-2-25-2M-KC	2	2 (standard panel)	25	Compact	32	16
KRR-2-25-C-2M-KC	2	2 (compact panel)	25	Compact	32	16
KRR-2-25-3M-KC	3	2 (standard panel)	25	Compact	32	16
KRR-2-25-C-3M-KC	3	2 (compact panel)	25	Compact	32	16
KRR-3-35-3M-KC	3	3	35	Compact	32	16
KRR-3-35-4M-KC	4	3	35	Compact	32	16
KRR-3-35-4M-KS	4	3	35	Standard	64	32
KRR-3-35-5M-KS	5	3	35	Standard	64	32
KRR-2-25-2M-KCS*	2	2 (standard panel)	25	Compact (S-series)	32	16
KRR-2-25-C-2M-KCS*	2	2 (compact panel)	25	Compact (S-series)	32	16
KRR-3-35-3M-KCS*	3	3	35	Compact (S-series)	32	16

\*PRO and ELITE Performance Suites are not applicable

## Karrera Performance Suites

### PRO:

Nomenclature: KRR-PRO-PS  
ImageStore with license to enable 16 GB of storage  
License to enable two chromakeyers  
FlexiKey license for programmable clean feed  
License to enable two iDPMs

### ELITE:

Nomenclature: KRR-ELITE-xx-PS  
ImageStore with license to enable 32 GB of storage  
License to enable ALL chromakeyers  
License to enable FlexiKey  
License to enable ALL iDPMs available in the frame  
License to enable DoubleTake  
Auxiliary panel, 25 button (xx = 25) or 35 button (xx = 35)

### SPORT:

Nomenclature: KRR-SPORT-PS  
ImageStore with license to enable 32 GB of storage  
ImageStore license to enable movies  
License to enable DoubleTake

Note: SPORT only available on "S-series" systems

Karrera offers an extremely competitive entry price point with a wide variety of options to customize the system:

## Karrera K-Frame S-series 2 M/E Systems

### KRR-2-25-2M-KCS

Includes control panel, video frame and licenses.  
2 M/E Karrera standard panel (KRR-PNL-200-25) with touchscreen menu panel set (KRR-PNL-MENU-SET)  
Compact (6 RU) K-Frame S-series (K-FRM-100CS) which includes:  
S-series Controller module (K-FRM-CTRL-CS) with internal ImageStore and Multiviewers  
One S-series Mix/Effects module (K-FRM-ME-DPM)  
One input module with 32 inputs (K-FRM-INPUT)  
One output module with 16 outputs (K-FRM-OUTPUT)  
One power supply (K-FRM-PSU)

Software licenses include:

Two (2) S-series M/Es each with four keyers (K-FRM-LIC-ME-S)  
Two (2) floating iDPMs (K-FRM-LIC-IDPM-2)  
Two (2) floating Chromakeyers (K-FRM-LIC-CHRO-2)  
Eight (8) 2D DPMs (K-FRM-LIC-2DDPM)  
Internal ImageStore with storage (K-FRM-LIC-IMG-16GB)  
Two (2) internal Multiviewers (K-FRM-LIC-MLTVWR)  
FlexiKey functionality (K-FRM-LIC-FLEX)

### KRR-2-25-C-2M-KCS

Includes control panel, video frame, and licenses.  
2 M/E Karrera compact panel (KRR-PNL-200-25-C) with touchscreen menu panel set (KRR-PNL-MENU-SET)  
Compact (6 RU) K-Frame S-series (K-FRM-100CS) which includes:  
S-series Controller module (K-FRM-CTRL-CS) with internal ImageStore and Multiviewers  
One S-series Mix/Effects module (K-FRM-ME-DPM)  
One input module with 32 inputs (K-FRM-INPUT)  
One output module with 16 outputs (K-FRM-OUTPUT)  
One power supply (K-FRM-PSU)

Software licenses include:

Two (2) S-series M/Es each with four keyers (K-FRM-LIC-ME-S)  
Two (2) floating iDPMs (K-FRM-LIC-IDPM-2)  
Two (2) floating Chromakeyers (K-FRM-LIC-CHRO-2)  
Eight (8) 2D DPMs (K-FRM-LIC-2DDPM)  
Internal ImageStore with storage (K-FRM-LIC-IMG-16GB)  
Two (2) internal Multiviewers (K-FRM-LIC-MLTVWR)  
FlexiKey functionality (K-FRM-LIC-FLEX)

## Karrera K-Frame S-series 3 M/E Systems

### KRR-3-35-3M-KCS

Includes control panel, video frame and licenses.  
3 M/E Karrera panel (KRR-PNL-300-35) with touchscreen menu panel set (KRR-PNL-MENU-SET)  
Compact (6 RU) K-Frame S-series (K-FRM-100CS) which includes:  
S-series Controller module (K-FRM-CTRL-CS) with internal ImageStore and Multiviewers  
One S-series Mix/Effects module (K-FRM-ME-DPM)  
One input module with 32 inputs (K-FRM-INPUT)  
One output module with 16 outputs (K-FRM-OUTPUT)  
One power supply (K-FRM-PSU)

Software licenses include:

Three (3) S-series M/Es with four keyers (K-FRM-LIC-ME-S)  
Two (2) floating iDPMs (K-FRM-LIC-IDPM-2)  
Two (2) floating Chromakeyers (K-FRM-LIC-CHRO-2)  
Twelve (12) 2D DPMs (K-FRM-LIC-2DDPM)  
Internal ImageStore with storage (K-FRM-LIC-IMG-16GB)  
Two (2) internal Multiviewers (K-FRM-LIC-MLTVWR)  
FlexiKey functionality (K-FRM-LIC-FLEX)

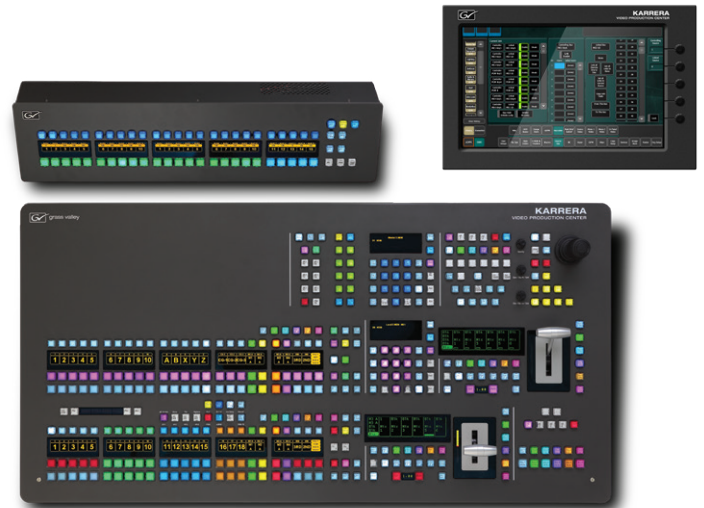
### KRR-PNL-200-25

2 M/E Karrera standard panel with 25 button source selectors. Includes two 25-button source select stripes, one 20 meter Ethernet cable and a System Control area with one device control sub-section, switched preview, aux bus delegation and macro controls, with controls for background and keyer source selection, master E-MEM, local E-MEM and horizontal keyer cut/mix. Optional Aux Panel and Menu display sold separately.



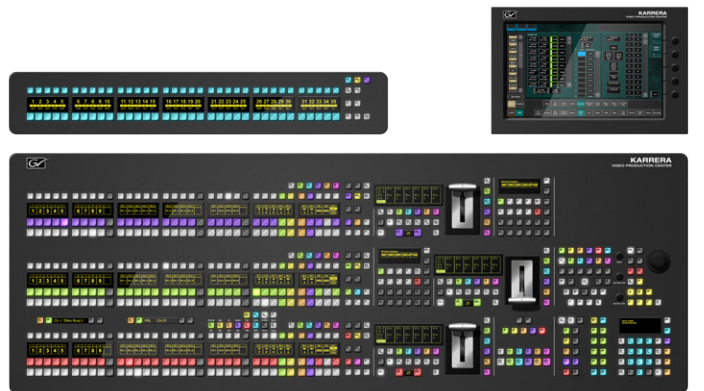
### KRR-PNL-200-25-C

2 M/E Karrera compact panel with 25 button source selectors. Includes two 25-button source select stripes, one 20 meter Ethernet cable and a System Control area with one device control sub-section, switched preview, aux bus delegation and macro controls, with controls for background and keyer source selection, master E-MEM, local E-MEM and horizontal keyer cut/mix. Optional Aux Panel and Menu display sold separately.



### KRR-PNL-300-35

3 M/E Karrera panel with 35 button source selectors. Includes three 35 button source select stripes, one 20 meter Ethernet cable and a System Control area with two device control sub-sections, switched preview, aux bus delegation and macro controls, with controls for background and keyer source selection, master E-MEM, local E-MEM and horizontal keyer cut/mix. Optional Aux Panel and Menu display sold separately.





## GV Korona Control Panels

Our newest control panels, the 1-stripe (1 M/E) 15-button, 2-stripe (2 M/E) 20-button and 3-stripe (3 M/E) 25-button GV Korona bring legendary Grass Valley production power to small and mid-sized studios and trucks. We've addressed space restrictions by innovating, not stripping out functionality.

GV Korona integrates the touchscreen menu into the panel itself, and adds another color touchscreen within the transition area to allow TDs quick access to commonly used functions that used to have dedicated buttons. Being a programmable touchscreen, options are limitless as to what it can do and, of course, we've added a "lock" to the touchscreen for prohibiting any unwanted actions. No other switcher in this space offers such high-end functionality and innovation with the price of a GV Korona.

## GV Korona K-Frame Systems

### S-series

GV Korona K-Frame S-series systems combine ultimate mid-range switcher performance, along with proven workflows and simplified control of complex productions. These unrivaled capabilities come pre-configured with 1, 2 or 3 M/Es, 32 inputs and 16 outputs, and software licenses that include floating iDPMs and chromakeyers, 2D DPMs for each keyer, internal 16 GB ImageStore, two multiviewers, and FlexiKey functionality.

The switchers are fully future-ready, with multiformat support including licensable 1080p and 4K UHD. Switching of 4K UHD is offered without the need for any hardware or software upgrades beyond the 1080p license.

### V-series

Out of the box, GV Korona K-Frame V-series provides you with 3G/1080p and 4K UHD (quad-split and 2SI) support capabilities, up to 3 M/Es plus two additional and powerful Video Processing Engines (VPEs) for all the no-compromise mixing and keying power you will ever need. Its native 10-bit 4:2:2 processing even supports High Dynamic Range (HDR). This is real big switcher performance in a small form factor with a lower CAPEX cost than previously available.

The GV Korona K-Frame V-series processing frame with 16 SDI inputs, 8 SDI outputs and 2x2 Media Ports is capable of expanding to 32x16 SDI

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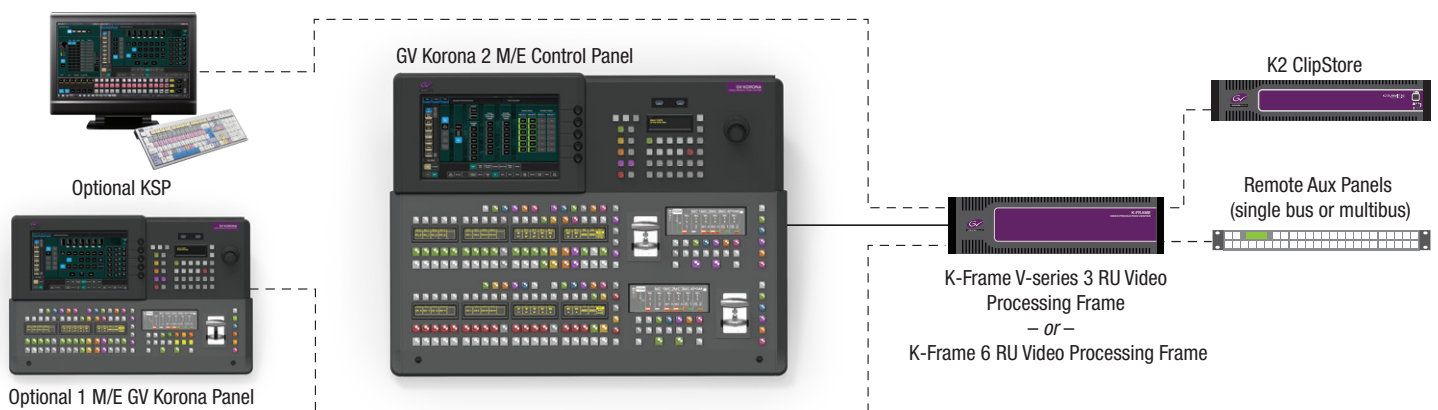
and 4x2 Media Ports. Software licenses include 1, 2 or 3 M/Es and two VPEs, each with 4 keyers and a mix effects engine, 2D DPMs (resizers) for every keyer, internal 16 GB ImageStore ready to record, store and instantaneously cue and playback over one minute of HD video, two internal multiviewers, two chromakeyers, two analog sync offset reference outputs and FlexiKey for programmable clean feeds.

With the V-series, you can optionally add many additional features including a larger 32 GB ImageStore, Grass Valley's legendary iDPM capability, up/down/crossconverters with frame syncs, DoubleTake to effectively double the number of M/Es and even IP I/O boards in the future to support your migration to IP.

## GV KORONA CONTROL PANEL FEATURES IN DEPTH

- Fully integrated multitouch menu system and innovative touchscreen in transition area
- Same familiar user interface and power as Karrera, but in a smaller form factor
- Compatibility with all K-Frame series frames — can be deployed as a second control panel for large events
- Just like any K-Frame switcher, the ability to load shows from Kayenne or Karrera show files

## GV Korona System Setup Options



Select a System

Choose SPORT  
Performance Suite  
if desired

Customize with  
Options as needed

S-series systems come with additional licenses that provide tremendous value and can be seen below:

System	M/Es	Stripes	Buttons	Frame Type	Inputs	Outputs
KOR-1-15-1M-KCS	1*	1	15	Compact (S-series)	32**	16***
KOR-2-20-2M-KCS	2*	2	20	Compact (S-series)	32**	16***
KOR-3-25-3M-KCS	3*	3	25	Compact (S-series)	32**	16***

\* S-series frames support up to 6 M/Es

\*\* S-series frames support up to 80 inputs

\*\*\* S-series frames support up to 48 outputs



KOR-1-15-1M-KCS



KOR-2-20-2M-KCS

## GV Korona Performance Suite

### KOR-SPORT-PS

K-Frame Compact S-series SPORT Performance Package adds additional functionality to the KOR- 3-25-3M-KCS, KOR-2-20-2M-KCS or KOR-1-15-1M-KCS models.

DoubleTake capability (K-FRM-LIC-DBL)

Additional storage for the ImageStore (K-FRM-LIC-IMG-32GB)

Movies capability for the ImageStore (K-FRM-LIC-IMG-RAMR)

## GV Korona Panel Options

### KOR-PNL-100-15

1-stripe (1 M/E) GV Korona panel including redundant power supply, with 15-button source selectors. Includes one 15-button source select stripe, one 20 meter Ethernet cable, and a system control area with device control, switched preview, alternate bus and aux bus delegation, and macro controls, with controls for background and keyer source selection, multi-function and E-MEM area, horizontal keyer cut/mix, multi-function keypad and display. Includes built-in multitouch display and menu system.

### KOR-PNL-200-20

2-stripe (2 M/E) GV Korona panel including redundant power supply, with 20-button source selectors. Includes two 20-button source select stripes, one 20 meter Ethernet cable, and a system control area with device control, switched preview, alternate bus and aux bus delegation, and macro controls, with controls for background and keyer source selection, multi-function and E-MEM area, horizontal keyer cut/mix, multi-function keypad and display. Includes built-in multitouch display and menu system.

### KOR-PNL-300-25

3-stripe (3 M/E) GV Korona panel including redundant power supply, with 25-button source selectors. Includes three 25-button source select stripes, one 20 meter Ethernet cable, and a system control area with device control, switched preview, alternate bus and aux bus delegation, and macro controls, with controls for background and keyer source selection, multi-function and E-MEM area, horizontal keyer cut/mix, multi-function keypad and display. Includes built-in multitouch display and menu system.

## GV Korona K-Frame S-series Systems

### KOR-1-15-1M-KCS

GV Korona K-Frame S-series 1 M/E system — includes control panel, video frame and licenses. 1-stripe (1 M/E) GV Korona panel (KOR-PNL-100-15) with built-in multitouch touchscreen menu.

Compact (6 RU) K-Frame S-series (K-FRM-100CS) which includes:

S-series Controller Module (K-FRM-CTRL-CS) with internal ImageStore and Multiviewers

One S-series Mix/Effects module (K-FRM-ME-DPMs)

One Input Module with 32 inputs (K-FRM-INPUT)

One Output Module with 16 outputs (K-FRM-OUTPUT)

One power Supply Unit (K-FRM-PSU)

Software licenses, which include:

One (1) S-series M/Es each with four keyers (K-FRM-LIC-ME-S)

Two (2) floating iDPMs (K-FRM-LIC-IDPM-2)

Two (2) floating Chromakeyers (K-FRM-LIC-CHRO-2)

Four (4) 2D DPMs (K-FRM-LIC-2DDPM)

Internal ImageStore with storage (K-FRM-LIC-IMG-16GB)

Two (2) internal Multiviewers (K-FRM-LIC-MLTVWR)

FlexiKey functionality (K-FRM-LIC-FLEX)

### KOR-2-20-2M-KCS

GV Korona K-Frame S-series 2 M/E system — includes control panel, video frame, and licenses.

2-stripe (2 M/E) GV Korona panel (KOR-PNL-200-20) with built-in multitouch touchscreen menu.

Compact (6 RU) K-Frame S-series (K-FRM-100CS) which includes:

S-series Controller Module (K-FRM-CTRL-CS) with internal ImageStore and Multiviewers

One S-series Mix/Effects module (K-FRM-ME-DPMs)

One Input Module with 32 inputs (K-FRM-INPUT)

One Output Module with 16 outputs (K-FRM-OUTPUT)

One Power Supply Unit (K-FRM-PSU)

Software licenses, which include:

Two (2) S-series M/Es each with four keyers (K-FRM-LIC-ME-S)

Two (2) floating iDPMs (K-FRM-LIC-IDPM-2)

Two (2) floating Chromakeyers (K-FRM-LIC-CHRO-2)

Eight (8) 2DDPMs (K-FRM-LIC-2DDPM)

Internal ImageStore with storage (K-FRM-LIC-IMG-16GB)

Two (2) internal Multiviewers (K-FRM-LIC-MLTVWR)

FlexiKey functionality (K-FRM-LIC-FLEX)

### KOR-3-25-3M-KCS

GV Korona K-Frame S-series 3 M/E system — includes control panel, video frame, and licenses.

3-stripe (3 M/E) GV Korona panel (KOR-PNL-300-25) with built-in multitouch touchscreen menu.

Compact (6 RU) K-Frame S-series (K-FRM-100CS) which includes:

S-series Controller Module (K-FRM-CTRL-CS) with internal ImageStore and Multiviewers

One S-series Mix/Effects module (K-FRM-ME-DPMs)

One Input Module with 32 inputs (K-FRM-INPUT)

One Output Module with 16 outputs (K-FRM-OUTPUT)

One Power Supply Unit (K-FRM-PSU)

Software licenses, which include:

Three (3) S-series M/Es each with four keyers (K-FRM-LIC-ME-S)

Two (2) floating iDPMs (K-FRM-LIC-IDPM-2)

Two (2) floating Chromakeyers (K-FRM-LIC-CHRO-2)

Twelve (12) 2DDPMs (K-FRM-LIC-2DDPM)

Internal ImageStore with storage (K-FRM-LIC-IMG-16GB)

Two (2) internal Multiviewers (K-FRM-LIC-MLTVWR)

FlexiKey functionality (K-FRM-LIC-FLEX)



KOR-3-25-3M-KCS



## Select a System

## Customize with Options as needed

V-series systems come with additional licenses that provide tremendous value and can be seen below:

System	M/Es	Stripes	Buttons	Frame Type	Inputs	Outputs
KOR-1-15-1M-KV	1 (plus 2 VPEs)*	1	15	V-series	16 (plus 2 Media Ports)**	8 (plus 2 Media Ports)***
KOR-2-20-2M-KV	2 (plus 2 VPEs)*	2	20	V-series	16 (plus 2 Media Ports)**	8 (plus 2 Media Ports)***
KOR-3-25-3M-KV	3 (plus 2 VPEs)*	3	25	V-series	16 (plus 2 Media Ports)**	8 (plus 2 Media Ports)***

\* V-series frames support up to 3 M/Es

\*\* V-series frames support up to 36 inputs

\*\*\* V-series frames support up to 18 outputs



### GV Korona Panel Options

#### KOR-PNL-100-15

1-stripe (1 M/E) GV Korona panel including redundant power supply, with 15-button source selectors. Includes one 15-button source select stripe, one 20 meter Ethernet cable, and a system control area with device control, switched preview, alternate bus and aux bus delegation, and macro controls, with controls for background and keyer source selection, multi-function and E-MEM area, horizontal keyer cut/mix, multi-function keypad and display. Includes built-in multitouch display and menu system.

#### KOR-PNL-200-20

2-stripe (2 M/E) GV Korona panel including redundant power supply, with 20-button source selectors. Includes two 20-button source select stripes, one 20 meter Ethernet cable, and a system control area with device control, switched preview, alternate bus and aux bus delegation, and macro controls, with controls for background and keyer source selection, multi-function and E-MEM area, horizontal keyer cut/mix, multi-function keypad and display. Includes built-in multitouch display and menu system.

#### KOR-PNL-300-25

3-stripe (3 M/E) GV Korona panel including redundant power supply, with 25-button source selectors. Includes two 25-button source select stripes, one 20 meter Ethernet cable, and a system control area with device control, switched preview, alternate bus and aux bus delegation, and macro controls, with controls for background and keyer source selection, multi-function and E-MEM area, horizontal keyer cut/mix, multi-function keypad and display. Includes built-in multitouch display and menu system.

### GV Korona K-Frame V-series Systems

#### KOR-1-15-1M-KV

GV Korona K-Frame V-series 1 M/E 15 button system includes control panel, video frame, and licenses. 1 stripe (1 M/E) GV Korona panel KOR-PNL-100-15 with built-in multitouch touchscreen menu. Compact (3 RU) K-Frame V-series video processing frame (K-FRM-100V) which includes:

- V-series Controller module (K-FRM-CTRL-V) with internal ImageStore
- One V-series Mix/Effects module (K-FRM-ME-V) with Multiviewers
- Two Input/Output modules each with 8 inputs and 4 outputs (K-FRM-IO-STND-V)
- One Power Supply (K-FRM-PSU-V)

Software licenses include:

- One (1) V-series M/E with four keyers (K-FRM-LIC-ME-V)
- Two (2) floating Chromakeyers (K-FRM-LIC-CHRO-2)
- Twelve (12) 2D DPMs (K-FRM-LIC-2DDPM), 4 assigned to 1 M/E-V and 8 assigned to 2 VPEs
- Internal ImageStore with 16 GB storage (K-FRM-LIC-IMG-16GB)
- "Movies" or RAM Record mode with audio for ImageStore (K-FRM-LIC-IMG-RAMR)
- Two (2) internal Multiviewers (K-FRM-LIC-MLTVWR)
- FlexiKey functionality (K-FRM-LIC-FLEX)

#### KOR-2-20-2M-KV

GV Korona K-Frame V-series 2 M/E 20 button system includes control panel, video frame, and licenses. 2 stripe (2 M/E) GV Korona panel KOR-PNL-200-20 with built-in multitouch touchscreen menu. Compact (3 RU) K-Frame V-series video processing frame (K-FRM-100V) which includes:

- V-series Controller module (K-FRM-CTRL-V) with internal ImageStore
- One V-series Mix/Effects module (K-FRM-ME-V) with Multiviewers
- Two Input/Output modules each with 8 inputs and 4 outputs (K-FRM-IO-STND-V)
- One Power Supply (K-FRM-PSU-V)

Software licenses, which include:

- Two (2) V-series M/Es each with four keyers (K-FRM-LIC-ME-V)
- Two (2) floating Chromakeyers (K-FRM-LIC-CHRO-2)
- Sixteen (16) 2D DPMs (K-FRM-LIC-2DDPM), 8 assigned to 2 M/E-Vs and 8 assigned to 2 VPEs
- Internal ImageStore with 16 GB storage (K-FRM-LIC-IMG-16GB)
- "Movies" or RAM Record mode with audio for ImageStore (K-FRM-LIC-IMG-RAMR)
- Two (2) internal Multiviewers (K-FRM-LIC-MLTVWR)
- FlexiKey functionality (K-FRM-LIC-FLEX)

#### KOR-3-25-3M-KV

GV Korona K-Frame V-series 3 M/E 25 button system includes control panel, video frame, and licenses. 3 stripe (3 M/E) GV Korona panel KOR-PNL-300-25 with built-in multitouch touchscreen menu. Compact (3 RU) K-Frame V-series video processing frame (K-FRM-100V) which includes:

- V-series Controller module (K-FRM-CTRL-V) with internal ImageStore
- One V-series Mix/Effects module (K-FRM-ME-V) with Multiviewers
- Two Input/Output modules each with 8 inputs and 4 outputs (K-FRM-IO-STND-V)
- One Power Supply (K-FRM-PSU-V)

Software licenses, which include:

- Three (3) V-series M/Es each with four keyers (K-FRM-LIC-ME-V)
- Three (3) floating Chromakeyers (K-FRM-LIC-CHRO-2)
- Twenty (20) 2D DPMs (K-FRM-LIC-2DDPM), 12 assigned to 2 M/E-Vs and 8 assigned to 2 VPEs
- Internal ImageStore with 16 GB storage (K-FRM-LIC-IMG-16GB)
- "Movies" or RAM Record mode with audio for ImageStore (K-FRM-LIC-IMG-RAMR)
- Two (2) internal Multiviewers (K-FRM-LIC-MLTVWR)
- FlexiKey functionality (K-FRM-LIC-FLEX)



KOR-3-25-3M-KV





## K-FRAME ORDERING

### K-FRM-100S and K-FRM-100C

K-Frame 3G-ready video processor frames with Controller module with on-board one M/E, 32 inputs, 16 outputs, 8 GPI in, 32 GPI out, AMP, Ethernet tally, 999 macros, 1,000 E-MEMs, Source Rules, Panel Memory, six keyers per M/E, hot-swappable modules, and power supplies (K-FRM-100S external power supplies; K-FRM-100C internal power supplies).

### K-FRM-100CS

K-Frame 3G-ready video processor frame with Controller module with on-board licensable ImageStore and multiviewers options, 32 inputs, 16 outputs, 8 GPI in, 32 GPI out, one Mix/Effects module licensable for three M/Es, AMP, Ethernet tally, 999 macros, 1,000 E-MEMs, Source Rules, Panel Memory, four keyers per M/E, hot-swappable modules, and internal power supplies.

### K-FRM-100V

K-Frame 3G-ready video processor frame with Controller module with on-board licensable ImageStore options, 16 SDI and 2 Media Port inputs, 8 SDI and 2 Media Port outputs, 8 GPI in, 32 GPI out, one Mix/Effects module licensable for five M/Es and multiviewer options, AMP, Ethernet tally, 999 macros, 1,000 E-MEMs, Source Rules, Panel Memory, four keyers per M/E, hot-swappable modules, and internal power supplies.



## KAYENNE/KARRERA/GV KORONA À LA CARTE ORDERING

1. Choose the desired K-Frame video processing frame. See description above for what comes with a frame.  
Standard: K-FRM-100S  
Compact: K-FRM-100C  
Compact S-series: K-FRM-100CS  
V-series: K-FRM-100V
2. Design a panel from the options available, or order one of the standard configurations
3. Add optional hardware to the frame: inputs; outputs; or smart I/O for up/down/crossconversion; ImageStore, extra M/E cards
4. Add software licenses as needed. Each M/E that is added needs an enabling license; chromakeyers and DPMs can be added as well

## OPTIONS

### K-Frame Hardware Options

#### K-FRM-100V

K-Frame V-series (3 RU) video processing frame with internal power supply includes:

- V-series Controller module (K-FRM-CTRL-V)
- One V-series Mix/Effects module (K-FRM-ME-V)
- Two Input/Output modules (K-FRM-IO-STND-V)
- Two additional Media Port outputs
- One Power supply (K-FRM-PSU-V)
- Eight (8) GPI inputs, 8 GPI outputs, and 24 tally connections
- AMP protocol
- Ethernet tally
- 999 Macros and 1000 E-MEMs

Video frame has six (6) VPEs each with four (4) keyer capability and a slot for optional DPM module; 36 inputs/18 outputs maximum.

#### K-FRM-100C

K-Frame Compact (6 RU) with one internal power supply, Compact Controller processor module with 1 M/E standard, six keyers, 32 inputs, 16 dual outputs, eight GPI inputs and 32 GPI outputs, AMP, 999 macros, 1,000 E-MEMs. Frame has a 5 M/E maximum with six keyers per M/E; 80 inputs maximum, 48 outputs maximum.

#### K-FRM-100CS

K-Frame Compact S-series (6 RU) with one internal power supply, S-series Controller processor module (K-FRM-CTRL-CS), One S-series Mix/Effects module (K-FRM-ME-DPM-S), One Input module with 32 inputs (K-FRM-INPUT), one Output module with 16 dual channel outputs (K-FRM-OUTPUT), eight GPI inputs and 32 GPI outputs, AMP protocol, Ethernet tally, 999 Macros and 1,000 E-MEMs. Frame has six M/Es with four keyers per M/E capability that may include an eDPM license — 80 inputs maximum, 48 outputs maximum.

#### K-FRM-100S

K-Frame Standard (13 RU) frame with standalone power supply (1 RU) frame and two PS, Standard Controller processor module with 1 M/E standard, six keyers, 32 inputs, 16 dual outputs, eight GPI inputs and 32 GPI outputs, AMP, 999 macros, 1000 E-MEMs. Frame has a 9 M/E maximum with six keyers per M/E; 192 inputs maximum, 96 outputs maximum.

#### K-FRM-100V-KIT

K-Frame V-series Spares Kit includes:  
– V-series Control Processor (K-FRM-CTRL-V)  
– V-series Fan Assembly

#### K-FRM-100CS-KIT

K-Frame Compact S-series 6 RU spares kit: includes S-series control processor and S-series fan module. (Only available for S-series systems.)

#### K-FRM-C-KIT

K-Frame Compact 6 RU spares kit: includes control processor and fan module.

#### K-FRM-S-KIT

K-Frame Standard 13 RU spares kit: includes control processor and fan module.

#### K-FRM-ME-CTRL-C

Controller M/E board for Compact frame.

#### K-FRM-ME-CTRL-S

Controller M/E board for Standard frame.

#### K-FRM-CTRL-V

K-Frame V-series Controller Processor module. The internal ImageStore functionality resides on this module, which is licensable

#### K-FRM-CTRL-CS

Controller Processor module for K-Frame Compact S-series. Both the internal ImageStore and multiviewers functionality reside on this module which are licensable.

#### K-FRM-IMG

K-Frame ImageStore — Requires one of the three following licenses for operation:

- K-FRM-LIC-IMG-16GB
- K-FRM-LIC-IMG-32GB
- K-FRM-LIC-IMG-64GB

#### K-FRM-DPM-V (Contact Grass Valley Sales for Availability)

K-Frame V-series DPM Module adds iDPM capability to V-series that supports:

- Four (4) licensed V/K channels of iDPM available as floating iDPMs or assignable to eDPM
- Includes the enabling DPM software license (K-FRM-LIC-IDPM-ALL)

#### K-FRM-ME-DPM

K-Frame ME/DPM module: adds one mix/effects module with two licensable M/Es and four licensable DPMs to the K-Frame. M/E includes: A/B and Utility 1 and 2 backgrounds and six full-function keyers with two pages of video and key store, cut, mix and wipe transitions, with six program, preview and clean feed outputs. Module hardware may also be utilized to support an eDPM license and/or multiviewer licenses.

#### K-FRM-ME-DPM-S

K-Frame ME-DPM S-series module: Adds one mix/effects module with three licensable S-series M/Es and four licensable DPMs to the K-Frame S-series. M/E includes: A/B and Utility 1 and 2 backgrounds and four full-function keyers, cut/mix/wipe transitions, with six program, preview and clean feed outputs. Module hardware may also be utilized to support an eDPM license. (Only available for S-series systems.)

#### K-FRM-ME-V

K-Frame V-series Mix/Effects Module with six (6) Video Processing Engines (VPE) that can be utilized as M/Es or VPEs. One module per frame:

V-series M/Es (K-FRM-LIC-ME-V):

- A/B and Utility 1 and 2 backgrounds
- Four (4) full-function keyers with 2D DPMs
- Cut/Mix/Wipe transitions
- Six (6) program, preview, and clean feed outputs

Two (2) licensable multiviewers (K-FRM-LIC-MLTVWR)

## OPTIONS (CONT.)

### K-FRM-INPUT

K-Frame input module: adds 32 inputs, eight GPI inputs and 32 GPI outputs per input board, one board per frame slot.

### K-FRM-OUTPUT

K-Frame output module: adds 16 dual channel outputs (32 outputs) per output board, one board per frame slot.

### K-FRM-IO

K-Frame input/output module: adds four inputs and four outputs with four licensable video up/down/crossconverting SD and HD sources including 1080p.

### K-FRM-IO-10GE

K-Frame Input/Output IP Module adds SMPTE ST 2022-6 (HD) capability to K-Frame:

- 2 SFP connectors
- 4x4 bidirectional IP signals
- 4K 1-Wire using TICO compression
- SDI and 4K uncompressed over 12G SDI

### K-FRM-IO-STND-V

K-Frame V-series Input/Output Module, adds 8 SDI inputs (plus 1 Media Port input) and 4 SDI outputs

### K-FRM-IO-CONV-V (Contact Grass Valley Sales for Availability)

K-Frame V-series Input/Output with Conversion Module, adds 8 SDI inputs (plus 1 Media Port input) and 4 SDI outputs with 12 licensable video up/down/crossconverters. Requires one K-FRM-LIC-SETM-V license per module. (Supports conversion between SD, HD, 1080p and quad-link 4K UHD 2SI or SDQS.)

### K-FRM-PSU-V

K-Frame V-series Power Supply, for replacement or spares

### K-FRM-PSU-FRAME

Power supply frame, holds up to three power supply modules. Includes two power supply unit modules

### K-FRM-PSU

K-Frame Power Supply for the K-FRM-PSU-FRAME

### KAL-32AUXx

Single and multibus remote aux panels.

## K-Frame Software Options

### K-FRM-LIC-3G-V

Software license enabling 3G formats in the K-FRM-100V video processing frame. For previously shipped systems, order under K-FRM-SW-OPT configuration and include frame serial number.

### K-FRM-LIC-3G-C

Software License enabling 3G formats in the K-FRM-100C Compact video processing frame.

### K-FRM-LIC-3G-S

Software License enabling 3G formats in the K-FRM-100S Standard video processing frame.

### K-FRM-LIC-ME

Software license enabling mix/effects functionality on the K-FRM-ME/DPM Module. Six keyers per M/E. One license required for every M/E.

### K-FRM-LIC-ME-V

Software License enabling M/E functionality on K-Frame V-series Mix/Effects Module.

- One license required for every M/E:
  - A/B and Utility 1 and 2 backgrounds
  - Four (4) full-function keyers with 2D DPMs
  - Cut/Mix/Wipe transitions
  - Six (6) program, preview, and clean feed outputs

Six (6) M/E licenses maximum on a K-FRM-ME-V module

### K-FRM-LIC-ME-S

Software license enabling mix/effects functionality on the K-FRM-ME-DPM-S Module. Four keyers per M/E. One license required for every M/E. (Only available for S-series systems.)

### K-FRM-LIC-ME-VIEW

Software license enabling the capability to view an additional preview output from the M/E that displays the input videos for that M/E. Six pre-configured layouts that are separately selectable for each M/E.

### K-FRM-LIC-SETM-V

(Contact Grass Valley Sales for Availability)

Software License enabling 12 SetDef/MatchDef video format converters for up, down, and cross converting inputs and outputs of SD and HD including 1080p. Modular Input/Output Module(s) (K-FRM-IO-CONV-V) are required for SETMATCH software option. For previously shipped systems order under K-FRM-SW-OPT configuration and include frame serial number. (Supports conversion between SD, HD, 1080p and quad-link UHD 2SI or SDQS.)

### K-FRM-LIC-SETMATCH

Software license enabling four SetDef/MatchDef video source format converters for up/down/crossconverting inputs or outputs of SD and HD including 1080p. Modular input/output module(s) (K-FRM-IO) are required for SETMATCH software option.

### K-FRM-LIC-EDPM

Software license enabling M/E hardware to act as either an M/E or an expansion Digital Picture Manipulator (eDPM) for grouping up to six licensed DPMs video and key channels. Includes Kurl with nonlinear transforms including page-turn, page-roll, spheres, ripple, slits, mirrors, splits, size modulation and position modulation, plus Spektra with lighting, wide-range defocus, glow and output recursives.

### K-FRM-LIC-IDPM-2

Software license enabling two of the available floating iDPM Digital Picture Manipulator video and key channels. Includes Kurl with nonlinear transforms including page-turn, page-roll, spheres, ripple, slits, mirrors, splits, size modulation and position modulation, plus Spektra with lighting, wide-range defocus, glow and output recursives.

### K-FRM-LIC-IDPM-ALL

Software license enabling all of the available floating iDPM video and key channels. Includes Kurl with nonlinear transforms including page-turn, page-roll, spheres, ripple, slits, mirrors, splits, size modulation and position modulation, plus Spektra with lighting, wide-range defocus, glow and output recursives.

### K-FRM-LIC-2DDPM

Software license enabling all 2D DPMs available on licensed M/Es or eDPM in the video processor frame.

### K-FRM-LIC-CHRO-2

Software license enabling two floating chromakeyers to use on any of the six keyers on every M/E.

### K-FRM-LIC-CHRO-ALL

Software license enabling all floating chromakeyers in the system. Possible 30 in fully loaded Compact frame, 54 in fully loaded Standard frame. Six chromakeyers per M/E.

### K-FRM-LIC-FLEX

Software license enabling FlexiKey programmable clean feed.

### K-FRM-LIC-RGB

Software license for RGB color correctors on every M/E bus, with color correction per input and on all outputs.

### K-FRM-LIC-DBL

Software license enabling DoubleTake (aux bus transitions, etc.) split M/E.

### K-FRM-LIC-MLTVWR

Software license enabling multiviewer functionality on the K-FRM-ME-DPM module. One license required for every multiviewer. Maximum licenses dependent on hardware availability. Five pre-configured layouts, max. 14 panes per layout with On-Air and Preview tally.

### K-FRM-LIC-IMG-RAMR

Software license enabling the ImageStore board to operate in "Movies" RAM Record mode. Requires a K-FRM-IMG and a K-FRM-LIC-IMG-xx.

### K-FRM-LIC-SNMP

Software license enabling the SNMP MIB functions to be used by various SNMP health monitoring systems.

## KSP Control Surface

### KSP-PNL-1ME-KBD

Soft Panel interface keyboard for 1 M/E GUI with special Keycap labels and colors for switcher control. Requires the KSP-LIC-1ME-SW software option to operate the KSP.

### KSP-LIC-1ME-SW

License enabling control of the K-Frame series video processor frames with the 1 M/E soft panel GUI on a customer supplied PC. Suggest the KSP-PNL-1ME-KBD option.



KSP Control Surface provides a software and keyboard option for operating K-Frame.

### Kayenne Options

#### KAYN-PNL-OPT-DCM

Device control module option for an option slot in the main panel or in a satellite panel enclosure. Used for controlling various image record and playback devices with full motion control features and a jog knob.

#### KAYN-PNL-SAT-X

Satellite panel enclosure for remote mounting panel modules separate from the main panel up to 15 meters from the panel control unit.

#### KAYN-PNL-MENU

Touchscreen menu panel and cable, as additional menu connected to second CPU (requires KAYN-PNL-CPU2), or standalone connected to customer furnished PC or as a spare.

#### KAYN-PNL-PSU

Spare power supply for the Panel Control Unit.

#### KAYN-PNL-SBAR-X

Kayenne control panel System Bar Module(s) with macro and switched preview control buttons, and either two or four device controllers.

#### KAYN-CLPS-xCH-PAK

Two or four video and key channel ClipStore packages based on the K2 media server platform with clip record, import, edit and playback including both DV and AVC-Intra codecs. All control is integrated into the Kayenne menu.

#### KAYN-PNL-CPU2

CPU module for connecting a second menu panel to one panel control unit.

#### KAYN-PRO-PS

Kayenne PRO Performance Suite comprising: K-FRM-IMG-16GB, K-FRM-LIC-CHRO-2, K-FRM-LIC-FLEX and K-FRM-LIC-IDPM-2

#### KAYN-ELITE-PS

Kayenne ELITE Performance Suite comprising: K-FRM-IMG-32GB, K-FRM-LIC-IDPM-ALL, K-FRM-LIC-CHRO-ALL, K-FRM-LIC-FLEX, K-FRM-LIC-DBL

### Karrera Options

#### KRR-PRO-PS

Karrera PRO Performance Suite comprising: K-FRM-IMG-16GB, K-FRM-LIC-CHRO-2, K-FRM-LIC-FLEX and K-FRM-LIC-IDPM-2.

#### KRR-ELITE-25-PS

Karrera ELITE 25 Performance Suite comprising: K-FRM-IMG-32GB, K-FRM-LIC-IDPM-ALL, K-FRM-LIC-CHRO-ALL, K-FRM-LIC-FLEX, K-FRM-LIC-DBL and KRR-PNL-AUX-25.

#### KRR-ELITE-35-PS

Karrera ELITE 35 Performance Suite comprising: K-FRM-IMG-32GB, K-FRM-LIC-IDPM-ALL, K-FRM-LIC-CHRO-ALL, K-FRM-LIC-FLEX, K-FRM-LIC-DBL and KRR-PNL-AUX-35.

#### KRR-PNL-MENU-SET

Touchscreen menu panel set, for a complete menu panel configuration with a Karrera main control panel. Includes menu panel, menu CPU, menu power supply, swing arm mounting hardware for menu panel and menu CPU, 20 meter LAN cable, DVI cable, USB cable and power cables.

#### KRR-PNL-AUX-25

Optional 25 button local aux bus control panel for the Karrera panel series. Includes the power cable and short LAN cable.

#### KRR-PNL-AUX-35

Optional 35 button local aux bus control panel for the Karrera panel series. Includes the power cable and short LAN cable.

#### KRR-PNL-LAN-20

20 meter LAN cable for the Karrera main control panel or menu panel PC to the video processor frame, for replacements or spares.

### GV Korona Options

#### KOR-PNL-KIT

GV Korona critical spares kit for the KOR-PNL-xxx-xx main control panel models, including the controller board.

#### KOR-PNL-PSU

GV Korona power supply unit, for replacement or spares.

#### KOR-SPORT-PS

K-Frame Compact S-series SPORT Performance Package adds additional functionality to either the KOR-2-20-2M-KCS, KOR-1-15-1M-KCS or models.

DoubleTake capability (K-FRM-LIC-DBL)

Additional storage for the ImageStore (K-FRM-LIC-IMG-32GB)

Movies capability for the ImageStore

(K-FRM-LIC-IMG-RAMR)

#### KOR-PNL-LAN-20

20 meter LAN cable for the GV Korona main control panel to the video processor frame, for replacement or spares.



Touchscreen Menu Panel  
(KAYN-PNL-MENU)



Panel Control Unit  
(KAYN-PNL-PCU)



# SPECIFICATIONS

## Mechanical Specifications

Component	Depth	Width	Height	Weight	Rack Units
<b>Kayenne Control Panels</b>					
<i>Flat Support Structure Orientation</i>					
KAYN-PNL-100-15*	356.4 mm (14.03 in.)	758.3 mm (29.85 in.)	84.3 mm (3.32 in.)	14.5 kg (32.0 lbs.)	n/a
KAYN-PNL-200-25	488.4 mm (19.23 in.)	1341.7 mm (52.82 in.)	84.3 mm (3.32 in.)	29.9 kg (65.8 lbs.)	n/a
KAYN-PNL-200-35	488.4 mm (19.23 in.)	1533.7 mm (60.38 in.)	84.3 mm (3.32 in.)		n/a
KAYN-PNL-300-25	637.1 mm (25.08 in.)	1341.7 mm (52.82 in.)	84.3 mm (3.32 in.)		n/a
KAYN-PNL-300-35	637.1 mm (25.08 in.)	1533.7 mm (60.38 in.)	84.3 mm (3.32 in.)	44.7 kg (98.4 lbs.)	n/a
KAYN-PNL-400-25	746.3 mm (29.38 in.)	1341.7 mm (52.82 in.)	84.3 mm (3.32 in.)		n/a
KAYN-PNL-400-35	746.3 mm (29.38 in.)	1533.7 mm (60.38 in.)	84.3 mm (3.32 in.)	57.3 kg (126.2 lbs.)	n/a
KAYN-PNL-AUX-25	185.7 mm (7.31 in.)	621.7 mm (24.48 in.)	84.3 mm (3.32 in.)	6.1 kg (13.4 lbs.)	n/a
KAYN-PNL-AUX-35	185.7 mm (7.31 in.)	813.7 mm (32.04 in.)	84.3 mm (3.32 in.)	6.3 kg (13.8 lbs.)	n/a
KAYN-PNL-MENU	91.7 mm (3.61 in.)	417.85 mm (16.45 in.)	270.10 mm (10.63 in.)	6.2 kg (13.5 lbs)	n/a
<b>Kayenne PCU</b>					
KAYN-PNL-PCU	588.52 mm (23.17 in.)	482.60 mm (19 in.)	133.35 mm (5.25 in.)	16.06 kg (35.4 lbs.)	3
<b>Karrera Control Panels</b>					
KRR-PNL-200-25	362 mm (14.3 in.)	1248.6 mm (49.2 in.)	132 mm (5.2 in.)	18.71 kg (41.25 lbs.)	n/a
KRR-PNL-200-25-C	510 mm (20.08 in.)	1010 mm (39.77 in.)	178 mm (7.01 in.)	18.71 kg (41.25 lbs.)	n/a
KRR-PNL-300-35	510 mm (20.08 in.)	1440.6 mm (56.72 in.)	178 mm (7.01 in.)	28.28 kg (62.4 lbs.)	n/a
KRR-PNL-AUX-25	162 mm (6.38 in.)	610 mm (24.02 in.)	76 mm (3.00 in.)	3.07 kg (6.75 lbs.)	n/a
KRR-PNL-AUX-35	162 mm (6.38 in.)	800 mm (31.50 in.)	76 mm (3.00 in.)	4.08 kg (9.0 lbs.)	n/a
<b>GV Korona Control Panels</b>					
KOR-PNL-100-15	419.9 mm (16.5 in.)	667.9 mm (26.3 in.)	226.1 mm (8.9 in.)	13.6 kg (30.0 lbs.)	n/a
KOR-PNL-200-20	577.6 mm (22.7 in.)	764.5 mm (30.1 in.)	256.0 mm (10.1 in.)	18.1 kg (40.0 lbs.)	n/a
KOR-PNL-300-25	750.4 mm (29.5 in.)	860.6 mm (33.9 in.)	287.4 mm (11.3 in.)	23.6 kg (52 lbs.)	n/a
<b>Frames</b>					
K-FRM-100S (13 RU)	566.2 mm (22.29 in.)	482.8 mm (19 in.)	577.1 mm (22.72 in.)	55.1 kg (121.0 lbs.)	13
K-FRM-100C (6 RU)	558.8 mm (22.0 in.)	482.8 mm (19 in.)	266 mm (10.47 in.)	37.42 kg (82.5 lbs.)	6
K-FRM-100CS (6 RU)	558.8 mm (22.0 in.)	482.8 mm (19 in.)	266 mm (10.47 in.)	36.7 kg (81 lbs.)	6
K-FRM-100V (3 RU)	563.5 mm (21.2 in.)	482.6 mm (19.0 in.)	132.6 mm (5.2 in.)	28 kg (62 lbs.) (with one power supply)	3
K-FRM-PSU-FRAME (1 RU)**	492 mm (19.37 in.)	483.1 mm (19 in.)	44.0 mm (1.75 in.)	10.5 kg (23.0 lbs.)	1

Weights for the K-FRM-100S, K-FRM-100C, K-FRM-100CS and K-FRM-100V are with fully populated units.

\* w/o Local Aux module.

\*\* Frame weight is with two power supplies. A single supply weighs 2.5 kg (5.4 lbs.). The K-FRM-PSU-FRAME supports up to three power supplies.

Frame	M/Es	Inputs	Outputs	GPI Inputs	GPI/Tally Outputs	Mod I/O (MatchDef/SetDef)
Standard 13 RU	1 to 9*	32 to 160 plus up to 32 Mod I/O	16 to 64 dual plus up to 32 Mod I/O	8 per input board	32 per input board	Each Mod I/O card provides 4 inputs and 4 outputs with access to 4 up/down/cross-conversion (MatchDef/SetDef) capability
Compact 6 RU	1 to 5*	32 to 64 plus up to 16 Mod I/O	16 to 32 dual plus up to 16 Mod I/O	8 per input board	32 per input board	
Compact S-series 6 RU	1 to 6	32 to 64 plus up to 16 Mod I/O	16 to 32 dual plus up to 16 Mod I/O	8 per input board	32 per input board	
V-series 3 RU	1 to 5	8-32 SDI plus 1-4 Media Ports	4-16 SDI plus 2 Media Ports	8 per frame	32 per frame	Each CONV I/O card provides 8 SDI and 1 Media Port inputs and 4 outputs with 12 MatchDef/SetDef capability

### Board Count

Standard 13 RU	Up to 4 M/E boards (two M/Es per board)	Up to 5 input boards (32 inputs per board)	Up to 4 output boards (16 dual outputs per board)			Up to 8 I/O modules
Compact 6 RU	Up to 2 M/E boards (two M/Es per board)	Up to 2 input boards (32 inputs per board)	Up to 2 output boards (16 dual outputs per board)			Up to 4 I/O modules
Compact S-series 6 RU	Up to 2 M/E boards (three M/Es per board)	Up to 2 input boards (32 inputs per board)	Up to 2 output boards (16 dual outputs per board)			Up to 4 I/O modules
V-series 3 RU	Up to 1 M/E board (five M/Es per board)	Up to 4 input/output boards (8 SDI and 1 Media Port input and 4 SDI outputs per board)				Up to 4 I/O modules

\* Includes Controller M/E.

## SPECIFICATIONS (CONT.)

### Video Standards

#### 4K UHD Mode:

- 2-Sample-Interleave (2SI), 4x 1080p or TICO-compressed 4K 1-Wire
- Square Division Quad Split (SDQS), Quad Link

#### 3G Mode:

- 1080p 50 Hz SMPTE ST 425-1 section 4 - Level A
- 1080p 59.94 Hz SMPTE ST 425-1 section 4 - Level A
- 1080p 60 Hz SMPTE ST 425-1 section 4 - Level A
- 1080p 50 Hz SMPTE ST 425-1 section 5 - Level B
- 1080p 59.94 Hz SMPTE ST 425-1 section 5 - Level B
- 1080p 60 Hz SMPTE ST 425-1 section 5 - Level B

#### HD Mode:

- 1080i25/29.97/30
- 1080PsF23.976/24/25/29.97/30
- 720p50/59.94/60

#### SD Mode:

- 525i29.97
- 625i25

### Media Port Inputs & Outputs (V-series only)

#### SD:

- 720p (1440) x 480i 29.97 Hz
- 720p (1440) x 576i 25 Hz

#### HD:

- 1280x720p 50/59.94/60 Hz
- 1920x1080i 25/29.97/30 Hz
- 1920x1080p 50/59.94/60 Hz

### Serial Digital Video Inputs

#### Interface:

- 3G video formats SMPTE ST 424-2006
- HD video formats SMPTE ST 292-1998
- SD video formats SMPTE ST 259-1997 ITU-R BT.656

#### Return loss:

- >15 dB, 5 MHz to 1.5 GHz
- >10 dB, 1.5 GHz to 3.0 GHz

#### Type of connector:

75Ω BNC (SMPTE ST 259)

#### Nominal amplitude:

800 mVp-p terminated

#### Input impedance:

- Max. cable length: using Belden 1694A type cable
- 3G video 140m (459 ft.) typical
- HD video 200m (656 ft.) typical
- SD video 350m (1,148 ft.) typical

### Serial Digital Video Outputs

#### Interface:

- 3G video formats SMPTE ST 424-2006
- HD video formats SMPTE ST 292-1998
- SD video formats SMPTE ST 259-1997 ITU-R BT.656

#### Return loss:

- >15 dB, 5 MHz to 1.5 GHz
- >10 dB, 1.5 GHz to 3.0 GHz

#### Type of connector:

75Ω BNC (SMPTE ST 259)

#### Nominal amplitude:

800 mVp-p across 75Ω

#### Rise and fall times:

- 3G & HD video formats ≤ 135 ps between 20% and 80% amplitude
- SD video formats, 400 to 1400 ps between 20% and 80% amplitude

#### Timing jitter:

- 3G video formats ≤ 2.0 UI
- HD video formats ≤ 1.0 UI
- SD video formats ≤ 0.2 UI

#### Alignment jitter:

- 3G video formats ≤ 0.3 UI
- HD video formats ≤ 0.2 UI
- SD video formats ≤ 0.2 UI

### Output impedance:

75Ω

### DC offset:

<500 mV with 75Ω termination

### Ancillary and embedded data:

blanked or passed (user selectable)

### EDH:

blanked

### Analog Reference Input

Video standard: Analog Black or Tri-level sync

Return loss: >40 dB, up to 5 MHz

Connectors: 2 BNC loop-through

Impedance: 75Ω external termination

### Reference Output (V-series only)

Return loss: >40 dB, 0 to 5 MHz

Nominal amplitude: 1 Vp-p into a 75Ω load

### AES Audio Outputs (V-series only)

Interface: AES-3id (2 mono channels per output)

Sample rate: 48 kHz

Output level: 1 Vp-p ± 20% into 75Ω

Output return loss: <-15 dB, from 100 kHz to 6 MHz

Output connector: BNC, 75Ω

### Communications

#### Connections:

- PCU to video frame: LAN cable 100m (328 ft.) max. length
- Control panel to PCU: dedicated cables, choice of 7.5m or 15m
- Menu panel to PCU: dedicated cables, choice of 7.5m or 15m

**Interoperability:** The Video Production Centers are interoperable with the Encore, Jupiter, SMS-7000 and NV9000 routing control systems; LDK Series and LDX Series cameras using Connect Gateway; and with the K2 media server family (including the K2 Summit and K2 Solo), legacy Profile servers, M-Series iVDRs, Turbo iDDRr and T2 iDDRr.

### Supported Control Protocols

The Video Production Centers support Ethernet and serial AMP protocol (standard in all systems), serial BWV and Odetics protocols, as well as controlling devices using PBus II and GPIs

Serial BWV-75 for VTR control

AMP (advanced media protocol) for Profile PVS, Profile XP Media Platform, K2, M-Series, Turbo iDDR and T2 iDDR systems over Ethernet and serial

Grass Valley native protocol for routers/routing control systems (Trinix/Trinix NXT, Venus, Triton, NVISION and third-party routers; Jupiter, Encore and NV9000 router control systems)

Ethernet tally

Grass Valley remote Aux Panels via Ethernet

Grass Valley editor protocol for edit controllers and external control

VDCP Serial and Ethernet

RossTalk protocol support for direct control of XPression graphics engine

### Power

#### Video Processing Frame 3 RU:

- Line voltage: 100-240 VAC ±10% power factor corrected with automatic line-voltage sensing for 120V and 240V sources
- Line frequency: 50/60 Hz ±5%
- Power consumption: max. 500W
- Leakage current: <2.5 mA

#### Video Processing Frame 6 RU:

- Line voltage: 100V-240 VAC ±10% power factor corrected
- Automatic line-voltage sensing for 120V and 240V sources
- Line frequency: 50/60 Hz ±5%
- Power consumption: max. 900W (750W for "S-series" board set)
- Leakage current: <2.5 mA

#### Video Processing Frame 13 RU:

- Line voltage: 100V-240 VAC ±10% power factor corrected
- Automatic line-voltage sensing for 120V and 240V sources
- Line frequency: 50/60 Hz ±5%
- Power consumption: max. 1400W
- Leakage current: <2.5 mA

#### Kayenne Control Panel:

- Line voltage: 100V-240 VAC ±10% power factor corrected
- Automatic line-voltage sensing for 120V and 240V sources
- Line frequency: 50/60 Hz ±5%
- Power consumption: max. panel configuration 600W
- Leakage current: <2.5 mA

#### Karrera Control Panel:

- Line voltage: 100V-240 VAC ±10% power factor corrected
- Automatic line-voltage sensing for 120V and 240V sources
- Line frequency: 50/60 Hz ±5%
- Power consumption: max. 200W
- Leakage current: <2.5 mA

#### GV Korona Control Panel:

- Line voltage: 100-240 VAC ±10% power factor corrected with automatic line-voltage sensing for 120V and 240V sources
- Line frequency: 50/60 Hz ±5%
- Power consumption: max. 60W
- Leakage current: <2.5 mA

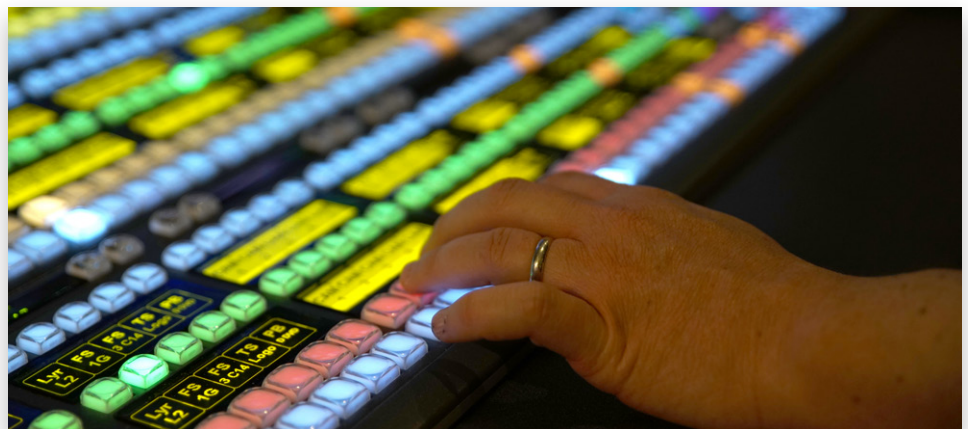
### Environmental Conditions

**Storage temperature:** -20 to 70°C (-4 to 158°F)

**Operating temperature:** 0 to 40°C (32 to 104°F)

**Relative humidity:** 0-95% (non-condensing)

**Electromagnetic environment:** E2 (according to EN55103-1, -2)



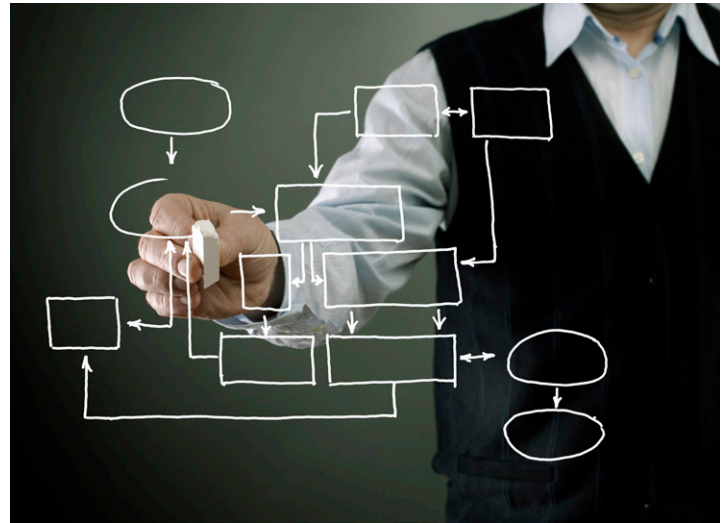
### Global Services

In a world of ever-increasing complexity and system distribution, broadcast producers inside a studio or outside in a vehicle need production control equipment suppliers who can provide industry-leading technical support. Personnel is but one part of the support equation. The other is a business infrastructure capable of deploying and cost-effectively supporting reliable solutions. Grass Valley Global Services has the depth of knowledge, industry experience and technical expertise to achieve this objective. The Global Services portfolio provides everything necessary to ensure maximum uptime and high velocity problem resolution.

Grass Valley Global Services delivers a comprehensive array of tangible value:

- A global network of field engineers with the experience, knowledge and skill to keep production switchers/vision mixers and associated equipment up to date, operational and optimized
- A worldwide parts distribution system that ensures rapid access to replacement parts
- A team of educators skilled in the nuances of production control and switcher operations
- Technical and operational training, provided on-site at Grass Valley facilities worldwide and online, that maximizes productivity through tailored learning paths
- Comprehensive support agreements that ensure every Grass Valley system remains in peak condition — all while supporting the enterprise's need for financial predictability

Grass Valley Global Services offerings deliver tangible value. The Global Services organization does this by providing the resources to ensure that users get the maximum value from an investment in Grass Valley production switchers — from initial startup through the entire in-service lifespan. Global Services empowers users to meet tactical day-to-day objectives while giving staff more time to focus on strategic business initiatives. A global presence, logistics expertise and world-renowned team of media professionals are here to help the achievement of financial performance objectives by reducing risk while boosting operational efficiencies.



#### GLOBAL SERVICES PROVIDES:

- Unequalled depth of industry knowledge and technical expertise
- Over 50 years of worldwide experience
- Complete set of services:
  - Strategic advice
  - System architecture
  - Workflow analysis and design
  - Project management
  - Integration and implementation
  - Performance optimization
  - Technical and operational training
  - Educational services
- Address today's challenges and prepare for tomorrow's opportunities



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