



Kayenne & Karrera Video Production Centers



1. How scalable are production switchers from Grass Valley, a Belden Brand?

The Grass Valley K-Frame processing systems are scalable from 1 M/E to 9 M/Es with two different frames:

Compact Frame:

- 6 RU + 1 RU for power supply
- Up to 80 inputs, 48 outputs
- Can accommodate 2 Dual M/E boards (in addition to the controller M/E):
 - Up to 5 M/Es (equivalent to traditional 10 M/Es with DoubleTake split M/E option)
- Up to 2 input boards (32 inputs, 8 GPI inputs, 32 GPI output and tally per board)
- Up to 2 output boards (16 dual outputs per board)
- Up to 4 I/O additional modular boards (Smart I/O card with 4 in/4 out)
- Up to 8 iDPMs assigned as floating iDPM or an eDPM

Standard Frame:

- 13 RU + 1 RU for power supply
- Up to 192 inputs, 96 outputs
- Can accommodate 4 Dual M/E boards (in addition to the controller M/E):
 - Up to 9 M/Es across 2 suites with 5 maximum in either suite (equivalent of traditional 18 M/Es with DoubleTake split M/E option)
- Up to 5 input boards (32 inputs, 8 GPI inputs, 32 GPI output and tally per board)
- Up to 4 output boards (16 dual outputs per board)
- Up To 8 I/O additional modular boards (Smart I/O card with 4 in/4 out)
- Up to 16 iDPMs assigned as floating iDPM or an eDPM

2. What are the operating panel choices for the production switcher systems?

Three different configurations are available:

Kayenne: Modular Control surface which includes a Panel Control Unit, Menu system and Local Aux bus panel

- 1 M/E with 15 Buttons
- 2 M/E with 25 or 35 Buttons
- 3 M/E with 25 or 35 Buttons
- 4 M/E with 25 or 35 Buttons

Karrera: Fixed control surfaces with optional menu system and remote AUX panel

- 2 M/E with 25 Buttons
- Compact 2 M/E with 25 Buttons
- 3 M/E with 35 Buttons

KSP Software Panel: Runs on separate PC with touchscreen display as an option

- 1 M/E with 15 Buttons together with a dedicated custom keyboard

3. Can multiple panels be used with the same frame?

Yes. Multiple panels can share the resources of a single frame. In addition, the powerful Suites Mode gives the capability to share frame resources between two control areas and prevent any conflicts on-air. Each suite can have two control surfaces running in collaborative mode.

4. Which video formats are supported?

3G Mode (SMPTE 424M-2006):

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

HD Mode (SMPTE 292M-1998):

- 1080i 29.97 Hz SMPTE 274M
- 1080i 30 Hz SMPTE 274M
- 1080i 25 Hz SMPTE 274M
- 720p 50 Hz SMPTE 296M
- 720p 59.94 Hz SMPTE 296M
- 720p 60 Hz SMPTE 296M

SD Mode (SMPTE 259M-1997 ITU-R BT.656):

- 525i 29.97 Hz
- 625i 25 Hz

Note: Support for segmented frame rates includes 23.98, 24.0, 29.9 and 30 Hz

5. Is it possible to manage multiple formats in the same switcher?

Yes. With an optional software license and modular smart I/O boards (4 in/4 out), the system can synchronize, upconvert, crossconvert, or downconvert sources (Match Def) to match the frame's sync rate, and output (Set Def) in any HD or SD format at the same vertical rate as the frame's sync setting.

6. What is unique about the M/E capabilities?

The M/Es feature:

- 6 full frame signal busses (A, B, C, D, Utility 1, and Utility 2)
- 7 outputs (A, B, C, D program outputs for use in Clean Feeds, Preview A, Preview and an optional M/E Viewer)
- DoubleTake and Programmed Clean Feed to double the number of M/Es and provide complex Clean Feeds
- Wipe generators per keyer with 2 for Primary and Secondary transitions
- Border key in every iDPM

Each M/E can be associated with 6 keyers. Each keyer has its own 2D DPM and internal two-page Key Stores which hold freezes on key and fill. Each keyer, except those in the Controller M/E, can use any of the floating iDPM channels.

7. What is the DoubleTake mode?

DoubleTake allows the user to split every M/E into two partitions (primary and secondary) with two different background buses each and a user defined assignment of keyers. This mode can enable:

- Management of the 2 partitions either as an independent pair of M/Es or as a chained pair
- Easy control of a 3D program with left and right signal in the same M/E
- Easy control of UHD/4K production (details to be found below)

8. What is the Controller M/E?

The Controller M/E is an M/E which needs no extra hardware, being resident on the control board. It has the same features as a full M/E (bus numbers, keyer numbers, and functionality) but the keyers cannot access the iDPM pool.

9. What is the difference between iDPM and eDPM?

Each iDPM (integrated Digital Picture Manipulator) can be allocated to an M/E keyer and doesn't consume a source as it is inserted directly in the keyer video and matte paths. The effects are stored as part of an M/E keyer's timeline.

An iDPM can also be used as an eDPM (expanded Digital Picture Manipulator) and provides a pseudo-external DVE compositing multiple channels to re-enter on one or more keyers with effects stored as a completely separate timeline. Feeds to the eDPM are made via Aux Buses in a more traditional way.

10. What is the difference between an iDPM, an eDPM, and a 2D DPM in terms of effects?

iDPMs or eDPMs each provides full digital manipulation capabilities including 3D (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 recursive).

2D DPMs provide a lower-cost alternative without compromising production values:

- 2D DPMs have no rotational effects
- 2D DPMs are useful for double-box effects, flying backgrounds and key transitions, without using full DPMs
- 6 2D DPMs are available per M/E, and are standard on all keyers

11. Can I manage each keyer independently?

Absolutely. Every keyer can be controlled separately from the transition panel module or directly by the hot key buttons in both status and priority. Every keyer has its own timeline programmable inside E-MEMs.

12. What is FlexiKey?

The FlexiKey option allows different keyers to be selected on four Clean Feed outputs to feed different outputs with different branding and graphics.

13. Can keyers be associated with specific background sources?

Yes. Source Rules permits this without using E-MEMs or macros. It enables forcing keyers on, off, or to be left alone as the background sources are cut, and includes easy over-rides for the user. Source Rules permits full Look-Ahead-Preview to be used at all times.

14. What is the difference between an E-MEM and a macro?

The different operational methods are the result of legacy implementations. They work in very different ways to achieve on-air effects recall.

Modern productions often use both approaches for more powerful and simple-to-manage on-air effects. Grass Valley Kayenne and Karrera switchers can support up to 1,000 E-MEMs and 999 Macros.

E-MEM drives the switcher from one state to another in a timeline sequence which is interpolated between states. Several sections of the switcher may be synchronized inside an E-MEM, and the granularity can be down to a single keyer, aux bus, or device.

Macros are a recording of a set of button presses or commands which may be set into a timed sequence using timed delays. Macros may recall E-MEMs and E-MEMs may call up macros, which delivers a highly flexible control regime.

15. How are switcher configurations saved?

Using the Show File concept, a complete user setup including preferences and effects is easily built and stored to internal drives. Four USB ports are available on the Menu panel to save or restore configurations of the switcher for a specific show or installation.

16. What is the difference between the ClipStore versus the Image Store?

Image Store is an internal module using high speed RAM to store stills or short movie sequences for near-instant recall:

- 10 video/key outputs
- 2 video/key inputs
- Separate CPU for processing
- 6 GB or 32 GB memory capability
- Internal hard disk drive for storage capacity
- Capacity of 1,800 stills or 30 seconds in 1080p
- Import files: JPEG, BMP, PNG for stills and MOV or AVI with alpha channels along with other standard files
- Export stills as PNG and movies as AVI

ClipStore is based on an external Grass Valley K2 Summit 3G video server with dedicated software to provide over 10 hours of video in HD:

- 4 video/key channels or 2 video/key with K2 Solo option
- Non-volatile storage
- Full access to file storage structure
- Full editing capability inside the switcher menu
- Provides a simple interface to Grass Valley live production tools for replay/highlights (K2 Dyno) and editing (EDIUS or third-party) as well as content management (GV STRATUS).

17. Is there an interface to cameras?

The GV Connect Gateway for LDX Series and LDX Compact cameras with dedicated switcher software provides:

- Ethernet tally interface with the camera control system
- Basic control of each Grass Valley camera (filter wheel, scene files, bars, auto black, etc...)

18. Is it possible to interface with a central routing switcher?

Yes. It is possible to manage a dedicated router output directly from the switcher application.

19. Is it possible to control third-party devices?

Yes. Multiple protocols are available:

- Serial BVW-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 connections
- VDCP for server control via Ethernet or serially
- Grass Valley native protocol for routing switchers/routing control systems (Trinix/Trinix NXT, Venus, Triton, and third-party routers, plus Jupiter and Encore router control systems)
- Ethernet tally
- Ethernet CPL to control Grass Valley external remote Aux Panels
- Grass Valley editor protocol for edit controllers and external control
- The Kayenne Device Control Module adds dedicated device motion control and a Q-MEM library

20. Is an M/E needed to manage a simple transition on an Aux Bus output?

No. The K-Frame system provides simple transitions on aux buses, which is particularly useful to feed an on-stage display feed or secondary output.

21. Is an external device needed for multiviewer capability?

One option is M/E View which provides a full set of preview outputs per M/E as a seventh M/E output. An upcoming version of K-Frame software will include another option for full multiviewer capability utilizing a video processor licensed with either the M/E or Controller M/E.

22. Are there any color correction functions?

There are two main options available: RGB or YUV on a source-by-source basis, M/E bus-by-M/E bus basis or an Aux Bus basis. Included in the YUV option is pixilation, posterize, solarize and color modulation.

23. What is Transition Chaining?

Transition Chaining permits a user to manage a transition across multiple M/Es, or multiple keyers within an M/E.

24. What is Bus Linking?

Bus Linking enables the selection of the same source on multiple busses simultaneously.

25. Are there provisions for managing a 3D or UHD/4K production?

There are a number of functions to make advanced production easy with K-Frame-based Kayenne or Karrera switchers.

DoubleTake permits a full M/E to manage the same transition across two different partitions, each dedicated to either left/right for 3D or two different quadrants for UHD/4K production and keyers. This means that within a 3D production up to five M/Es will be available — each with three stereo (L/R) keyers.

Using transition chaining, stereo transitions within an M/E or across M/Es are easily managed for 3D productions, and with two M/Es using DoubleTake mode, the content of four quadrants as four simultaneous 1080p 3G signals can be transitioned at once for UHD/4K programs.

By using Bus Linking with source tables, the selection of a source can be made to command alternative source selections on multiple buses. Therefore, the bus link may be used for left/right 3D sources or four quadrant UHD/4K sources.

DPMs can be used to position graphics or video elements across multiple UHD/4K video quadrant or 3D stereo views.

26. Is there redundancy for on-air security?

Yes. Power supply modules, M/E boards, and I/O boards are hot-swappable. Panel modules on Kayenne are also hot-swappable.

27. Are switchers SNMP compliant?

Yes. SNMP monitoring of K-Frame units is supported. The MIB is available through the Grass Valley service organization.

