Karrera Video Production Center

STREAMLINED POWER FOR FAST, EFFICIENT PRODUCTION SWITCHING

Karrera brings a new level of performance to mid-market productions with innovative features from both the Kayenne and Kayak switcher lines.

Karrera™ is Grass Valley's sleek, next-generation, mid-market switcher family that is primed to really tear up the track. Sporting high-performance features at a mid-range price, Karrera opens the door for previous Kayak™ users to experience a new level of powerful functionality. At the same time, its intuitive user interface ensures that running the Karrera will feel very familiar.

Streamlined Operation

The finely-tuned Karrera control panel makes TDs more efficient by bringing the most-used functions front and center without losing the ability to quickly access features in-depth through panel shift levels and the menu. The panel incorporates top-of-the-line features from the industry-leading Kayenne™ panel such as bright, crisp OLED displays for source and function names, and all pushbuttons have RGB LEDs which dynamically change for color-coding functions and source grouping.

Pre-production time and resources are reduced with Karrera's fast-access configuration and set up. Karrera's optional high-resolution, 1280x768 pixel touchscreen menu has a shallow menu structure with the History and Favorites features that users love so much, and context sensitive pull-down menus that put everything at their fingertips.

New Level of Performance

The Grass Valley™ Karrera brings a new level of performance to mid-market productions with innovative features from both the Kayenne and Kayak switcher lines.

DoubleTake™ split M/E mode takes advantage of the six keyers and four background buses per M/E to double the number of M/Es in the frame. Linked together with Transition Chaining, DoubleTake is very useful for multi-client feeds and for 3D production.

FlexiKey™ programmable clean feed option supports multi-client live programming with up to four outputs per M/E. Keyers can be assigned to any or all of the four outputs in any order.

KEY FEATURES

- Fully digital 10-bit 4:2:2 video switcher with up to 96 inputs and 48 outputs
- HD/SD SDI with optional up/down/crossconverters on multiple inputs and outputs
- Half-M/E option available with cut/mix transitions and six linear/luminance keyers
- Six keyers in every full M/E: four full-function keyers plus two linear/luminance keyers
- Each full-function keyer has two pages (frames) of video and key storage to free up Image Store outputs and reduce the number of external graphics sources
- Four internal DPMs (iDPMs) in each M/E with Kurl and Spektra
- Four independent channels of eDPM with primary and secondary combiner outputs are available in the 8 RU frame

- Optional DoubleTake split M/E mode effectively increases the number of M/Es (including half-M/E) to a total of up to 10 and now includes FlexiKey programmable clean feed mode for separately programmable configurations of keyers from four M/E outputs
- Integrated macro editor allows users to edit macros online or offline on a PC running the menu application
- Any partition can be placed into layered mode, providing composited video and key outputs from the M/Es
- Aux bus transitions for dissolves and wipes on aux bus outputs
- Interfaces with Grass Valley routers using Jupiter™, Encore™, and Prelude™ control systems as well as third-party routers
- Jupiter and Prelude router control of Karrera aux buses

- LDK Series camera control with Ethernet tally via LDK Connect Gateway
- Store and recall still images from an internal ImageStore—an 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
- RGB color correction on M/E buses and aux bus outputs
- System Control area with device control sub-sections, switched preview, aux bus delegation, and macro controls
- Low power consumption

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.

999 macros recalled in many new ways from the panel. Fine tune them with an integrated Macro Editor.

Delegation of macros, E-MEM, aux bus and router control to the Karrera panel's source-select rows ensures that controls are within reach when they are wanted. 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 23 sublevels per M/E for partial keyframing and allows assignment of non-M/E sublevels such as aux buses to M/Es for precision control when creating and running effects.

The Suites mode in Karrera 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.

Aux bus transitions allows the switcher to be fully utilized for every production. Karrera provides dissolves and wipes on aux bus transitions to enhance the look of in-studio, on-stage monitors.

Powerful Processing

Karrera brings you all the signal processing capability you would expect from the frontrunner in switcher manufacturing. Karrera frames are available with a half-M/E and scale from 1 to 2.5 M/Es in compact (4 RU) frames

and from 1 to 4.5 M/Es in standard (8 RU) frames. The compact frame has up to 48 inputs and 24 outputs and the standard frame has up to 96 inputs and 48 outputs.

Up to 20 DPM channels are accessible in Karrera with internal DPMs (iDPM) in each full-function keyer. The 8 RU frame also has the option of powerful expansion DPMs (eDPM).

So Many 3D DVEs Available

With four iDPMs per M/E, Karrera ensures there is always headroom for a high-end 3D effects channel to provide that finishing touch. The licensed iDPMs are floating resources, available on any of the full-function keyers in the switcher. A 4.5 M/E system has up to 30 keyers and 20 DPM channels. iDPM options include 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 effects in each of the full keyers. An optional eDPM for 8 RU frames provides an additional four video/key channels of DVE with primary and secondary combiner outputs. The eDPM acts as an HD Kaleidoscope/DVEous replacement 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.

Completely Self-Contained Multiformat Video Production

The SetDef output conversion, combined with MatchDef input conversion, allows complete, multiformat production with

up/down/crossconverting of HD input and output formats, including aspect ratio conversion on up to eight inputs and four outputs in the 4 RU frame, and 16 inputs and 8 outputs in the 8 RU frame.

These converters are not simple scalers but do full up/down/crossconversion with color space conversion and motion adaptation. 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 Karrera, sent to any output (including aux buses), and do not consume expensive resources such as entire mix/effects or other M/E resources.

The optional FlexiKey, DoubleTake, and split layered modes are available for all M/Es (including the half-M/E). Control is enhanced on the panel by dedicated primary and secondary partition buttons.

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

Live 3D Production

Live 3D production is as straightforward as 2D production using DoubleTake. With split and linked M/Es, left-eye and right-eye content is automatically switched in parallel, with all of the resources of Karrera's M/Es.

Transition Chaining simplifies operator configuration of M/E resources by setting up parallel background and keyer paths for this kind of application.

SPECIFICATIONS

Mechanical Specifications

Component	Depth	Width	Height	Weight	Rack Units
Control Panels					
KRR-PNL-200-25	362 mm (14.25 in.)	1248.6 mm (49.16 in.)	132 mm (5.20 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 (62.35 lbs.)	n/a
KRR-PNL-AUX-25	76.3 mm (3 in.)	603 mm (23.74 in.)	58 mm (6.22 in.)	TBD	n/a
KRR-PNL-AUX-35	76.3 mm (3 in.)	793 mm (31.22 in.)	158 mm (6.22 in.)	TBD	n/a
Frames					
KRR-FRM-x00C (4RU)	546.10 mm (21.5 in.)	482.60 mm (19 in.)	177.80 mm (7 in.)	17.69 kg (39 lbs.)	4
KRR-FRM-x00 (8RU)	522.73 mm (20.58 in.)	482.60 mm (19 in.)	441.96 mm (17.4 in.)	30.39 kg (67 lbs.)	8

*With all M/E boards, each weighing 1.36 kg (3 lbs.)

Frame	M/Es	Inputs	Outputs	GPI inputs	GPI/Tally Outputs	MatchDef Inputs	SetDef Outputs
1 M/E 4 RU	1	24-48*	12-24*	8-16*	32-64*	Up to 8*	2
1.5 M/E 4 RU	1.5	24-48*	12-24*	8-16*	32-64*	Up to 8*	2
2 M/E 4 RU	2	48	24	16	64	Up to 8	4
2 M/E 8 RU	2	48-96*	24-48*	16-32*	64-128*	Up to 16*	4
2.5 M/E 4 RU	2.5	48	24	16	64	Up to 8	4
2.5 M/E 8 RU	2.5	48-96*	24-48*	16-32*	64-128*	Up to 16*	4
3 M/E 8 RU	3	72-96*	36-48*	24-32*	96-128*	Up to 16*	6
3.5 M/E 8 RU	3.5	72-96*	36-48*	24-32*	96-128*	Up to 16*	6
4 M/E 8 RU	4	96	48	32	128	Up to 16	8
4.5 M/E 8 RU	4.5	96	48	32	128	Up to 16	8

*With optional I/O expansion

Video Standards

HD Mode:
- 1080i25/29.97/30
- 1080psf23.976/24/25
- 720p50/59.94/60

SD Mode:
- 525i59.94
- 625i50

Power

Video Processing Frame 4 RU:
- Line voltage: 100V-240 VAC ±10% autorange, power factor corrected. Automatic line-voltage sensing for 120V and 240V sources
- Line frequency: 50/60 Hz ±5%
- Power consumption: Max. 400W
- Leakage current: <2.5 mA

Video Processing Frame 8 RU:
- Line voltage: 100V-240 VAC ±10% autorange, power factor corrected. Automatic line-voltage sensing for 120V and 240V sources
- Line frequency: 50/60 Hz ±5%
- Power consumption: Max. 800W (1000W with EDPM)
- Leakage current: <2.5 mA

Control Panel
- Line voltage: 100V-240 VAC ±10% autorange, 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

Serial Digital Video Inputs

Formats:
- ITU-T R656
- SMPTE 259M, 270 Mb/s
- SMPTE 292M, 1.5 Gb/s

Return loss: >15 dB, 5 MHz to 1.5 GHz

Type of connector: 75Ω BNC (SMPTE 259M)

Interface:
- HD video formats SMPTE 292M-1998
- SD video formats SMPTE 259M-1997

Nominal amplitude: 800 mVp-p terminated

Channel coding: conforms to SMPTE 259M, SMPTE 292M

Ancillary data: blanked or passed (user selectable)

Embedded audio: blanked or passed (user selectable)

EDH: blanked

Input impedance: 75Ω

Max. cable length:
- HD video 100m (328 ft.) max. length using Belden 1694A type cable
- SD video 300m (984 ft.) max. length using Belden 1694A type cable

Serial Digital Video Outputs

Format:
- ITU-R601/656
- SMPTE 259M, 270 Mb/s
- SMPTE 292M, 1.5 Gb/s

Return loss: >15 dB, 5 MHz to 1.5 GHz

Type of connector: 75Ω BNC (SMPTE 259M)

Interface:
- HD video formats SMPTE 292M-1998
- SD video formats SMPTE 259M-1997

Nominal amplitude: 800 mVp-p across 75Ω

Rise and fall times: 400 to 1400 ps 75Ω termination between 20% and 80% amplitude

Timing jitter: ≤1 UI (HD, SD)

Alignment jitter: ≤.2 UI (SD), ≤1 UI (HD)

Output impedance: 75Ω

DC offset: <50 mV with 75Ω termination

Analog Reference Input

Video standard:
- For HD video: Tri-level sync, analog equivalent to the standard being used
- For SD video: color black, analog equivalent to the standard being used

Return loss: >40 dB, up to 5 MHz

Connectors: 2 each BNC loop-through for both HD and SD inputs

Impedance: 75Ω external termination

Communications

Connections:
- Panel to frame: LAN cable 100m (328 ft.) max. length
- Menu panel to frame: LAN cable 100m (328 ft.) max. length

Interoperability:
The Karrera Video Production Center is fully interoperable with the Encore, Jupiter, and SMS-7000 routing control systems; LDK Series cameras using LDK Connect Gateway; and with the K2 media server family (including the K2 Summit™ and K2 Solo™), legacy Profile® servers, M-Series™ iVDRs, Turbo™ iDDRs, and T2™ iDDRs. The Karrera Video Production Center supports Ethernet and serial AMP protocol (standard in all systems), BVW and Odetics protocols, as well as controlling devices using PBus II and GPIs

Supported Control Protocols
- VTRs (BVW-75)
- AMP (advanced media protocol) for Profile PVS, Profile XP Media Platform, K2, M-Series, Turbo iDDR, and T2 iDDR systems over Ethernet
- Routers/routing control systems (Trinix/Trinix NXT, Venus™, Triton™, and third-party routers; Jupiter and Encore router control systems)
- Serial tally requires third-party tally box such as Tally Display or Image Video
- Grass Valley external remote AUX Panels
- Edit controllers

Environmental Conditions

Storage temperature: -20 to 70℃ (-4 to 158℉)

Operating temperature: 0 to 40℃ (32 to 104℉)

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

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

powered by fusion

ORDERING INFORMATION

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

KRR-PNL-200-25

2 M/E 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 multi-function keypad and display sold separately.

KRR-PNL-300-35

3 M/E Karrera panel with 35 button source selectors, Includes two 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 multi-function keypad and display sold separately.
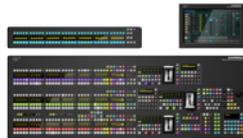
KRR-FRM-x00x

Video processor frames with CPU module, one to four M/E modules, power supply(ies), fan assembly, all control protocols, with 999 macros, 1000 E-MEMs, Source Rules, Panel Memory, six keyers per M/E, HD/SD switchable processing, four dual still stores per M/E, aux bus transitions, hot-swappable modules, and power supply.

OPTIONS

KRR-FRM-EDPM

Four video and key channel expansion digital picture manipulator module and software license. Not for the 4 RU frame. Includes Kurl and Spektra.

KRR-FRM-IMG-4

4 GB Image Store – Stills license with standard RAM capacity as follows: approx. frames/format = 850/1080i, 1900/720p, 4800/525i, 4100/625i.

KRR-FRM-IMG-UPG

4 GB upgrade to Image Store – Stills expansion option, doubling the RAM capacity as follows: approx. frames/format = 1700/1080i, 3800/720p, 9600/525i, 8200/625i.

KRR-FRM-IOXPND

Input/output expander module, adding 24 inputs, 12 outputs, eight GPI inputs, 32 GPI output/tally relay closures, optional four MatchDef inputs. One per empty M/E slot.

KRR-LIC-CHRO-xU

License enabling all chromakeyers in the system.

KRR-PNL-AUX-xx

The optional local aux bus control panel. Includes the power cable and short LAN cable.

KRR-PNL-MENU

Touchscreen menu panel and cable, for a menu panel with a Karrera main control panel, or standalone, or as a spare. Includes swing-arm mounting hardware and brick power supply with power cables. Requires the optional menu panel processor, KRR-MENU-CPU, or a customer supplied PC.

KRR-LIC-IDPM-xxx

License enabling two, four, eight, or all floating iDPM video and key channels. Includes Kurl and Spektra.

KRR-LIC-EDPM

License-only for enabling four video and key channel eDPM in the expansion slot in an 8 RU Karrera frame. Includes Kurl and Spektra.

KRR-LIC-DBL-FLX

License enabling the DoubleTake split M/E and FlexiKey programmable clean feed modes in all Karrera M/Es.

KRR-LIC-MATCHDEF

License for MatchDef dual video source format converter for matching two SD or HD sources to the production format, maximum of two options per M/E.

KRR-LIC-SETDEF

License enabling SetDef dual video source format converters for converting two outputs from the production format to another HD or SD format, both outputs of the same format, different aspect ratio settings allowed.

KRR-LIC-1ME-GUI

License allowing control of the Karrera video processor frame with the Karrera 1 M/E softpanel GUI on a customer supplied PC. Includes one KRR-PNL-1ME-KBD Karrera USB keyboard.

KRR-LIC-RGB

License for RGB color correction on all outputs. Up to thirty-two RGB color correctors on full M/E buses, eight per M/E, and on all aux outputs.

KRR-LIC-ME

License enabling an additional M/E. Does not include the M/E board.

KRR-LIC-ME50

License enabling the simple M/E with linear/luminance keyers, cuts, and mixes only.

KRR-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 and AppCenter Elite. All control is integrated into the Karrera menu.

KRR-MENU-CPU

Karrera menu panel processor including power and control cables.

KRR-PNL-PSU

Karrera spare power supply for the control panel.

KRR-PNL-1ME-KBD

Karrera keyboard for 1 M/E GUI with special keycap labels and colors for switcher control.

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-xU-EFRM

An empty video processor frame with power supply(ies), and fan assembly. Can be ordered to repurpose existing modules in a different frame size or as a spare.

KRR-FRM-PSU

Redundant power supply for frame. Redundant module slides inside the bottom of the frame.

KRR-FRM-ME

Adds one mix/effects module to the Karrera chassis including license enabling one more M/E. The M/E includes A/B and Utility 1 and 2 backgrounds and six keyers. Four full function keyers with two pages of video and key store, cut, mix and wipe transitions, two linear/luminance keyers with cuts and mixes, with six program, preview, and clean feed outputs.

KRRx-FRM-KIT

Karrera frame spares kit includes control processor and fan module

KRR-ME-KIT

Mix effects board as a spare

KRR-LIC-SNMP

License enabling the SNMP MIB functions to be used by various SNMP health monitoring systems

KAL-32AUXx

Single and multibus remote aux panels.

KRR-LIC-1ME-GUI provides a software and keyboard option for controlling Karrera.

MAXIMIZE AND OPTIMIZE YOUR INVESTMENT

With program production and distribution becoming ever more complex and affecting business issues on a daily basis, you need a trusted partner that understands those complexities and how to convert them into opportunities. Grass Valley Global Services' team of experienced engineers and system integrators can help you turn your challenges into opportunities in the most efficient and cost-effective way possible, from system design all the way through to commissioning. Global Services helps you to:

Define: We consult with you to help define your business and technology requirements and then design the right solutions to meet them.
Deploy: Our professional service organization, backed by proven project management methodologies, can take you from design through deployment, commissioning, and training.
Support: We offer a complete portfolio of support services to keep your systems running, and help manage your long-term maintenance needs.

For information about Grass Valley, please visit **www.grassvalley.com**.

Join the Conversation at **GrassValleyLive** on Facebook, Twitter, and YouTube.