

Kahuna Production Switcher Family

24 M/E, 12 M/E and 4 M/E Multiformat Switchers with Maverik Control Surface

Fully-featured live production at 4K UHD, HD and SD — for both IP and SDI operations.

With a worldwide heritage in live production switchers — from designing the first true multiformat switcher to the creative power and flexibility of switchers that offer all formats from SD to 4K UHD, and connectivity allowing you to mix traditional SDI and IP — Grass Valley brings you the Kahuna family of production switchers.

The Kahuna 4800, Kahuna 6400 and Kahuna 9600 offer more firepower and flexibility in the Kahuna family than ever before, including 4K UHD and HDR capabilities across all Kahuna switchers.

Together with Kahuna Maverik — Grass Valley's Kahuna family switcher control surface — the Kahuna family provides a large feature set, including more power for M/E functionality and enhanced DVE resize engines.

Whatever your live television application, be it sports, news, light entertainment, music or house of worship, the Kahuna family provides the ultimate power, creativity, flexibility and built-in Grass Valley reliability so you can create your productions, your way.

The three switchers in the Kahuna family provide more power and flexibility than ever before.

Kahuna 9600

- Up to 24 M/Es
- 48 keyers

The most powerful switcher in the Kahuna family, the Kahuna 9600 is an enterprise-class switcher offering an unmatched feature set to meet the needs of the highest caliber of productions.

Kahuna 6400

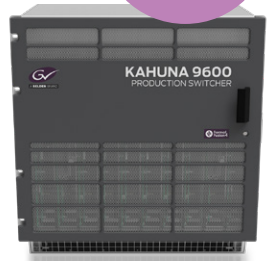
- Up to 12 M/Es
- 24 keyers

The Kahuna 6400 delivers huge power and flexibility to the widest range of applications including regional news, sports production, houses of worship and magazine programs.

Kahuna 4800

- Up to 4 M/Es
- 16 keyers

Offering superb value for money, the Kahuna 4800 is an immensely capable and well-engineered mid-level production switcher.



Kahuna Production Switcher Family

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KEY FEATURES

Creativity

- Freedom in combining mixers, keyers and DVE effects to create any on-air style
- Built-in intelligence allows the switcher to handle the mundane, freeing you to create great productions

Productivity

- Dramatically reduce the overhead of show setup times
- Advanced file workflow tools enable you to turn around content in seconds

Reliability

- Designed for mission critical operations with a hot-swappable architecture
- Innovative automated features provide even greater on-air confidence

Flexibility

- Unique Make M/E technology allows users to select available switcher resources to create a tailor-made M/E for specific requirements
- FormatFusion3 enables true multiformat operations, supporting any combination of SD, HD, 1080p (level A & B) and 4K UHD. This eliminates the need for external conversion, reducing capital outlay, removing system timing issues and saving engineering setup time

- New FormatFusion4 technology raises the bar again, bringing seamless HDR capabilities to Kahuna. All inputs and outputs can independently handle HLG, PQ and S-Log3 for color spaced BT709 SDR and BT2020 HDR for workflows in 4K UHD and HD. The core of the switcher can also be set to the desired EOTF and WCG setting
- Kahuna supports HD SDI, IP and 12 Gb/s SDI single-link across the entire range. For productions from 4K UHD through to HD, Kahuna has an unmatched feature set. Now all that switcher power can be deployed in the new and emerging IP workflows or 12 Gb/s SDI single link plants without any creative compromise

The creative power of Kahuna, including 2.5D and 3D DVEs, chromakey and key layer capabilities ensures you have all the tools to create the very best live TV.

The unbeatable power of a Kahuna M/E — Each Kahuna 9600 and Kahuna 6400 M/E has 12 key layers (6 key layers per M/E for Kahuna 4800). These are divided into SuperKeyers and eKeys — 4 of each.

The four full SuperKeyers perform linear, luma and chromakeying and all come with their own 2.5D resize engine. The four eKeys are downstream of the SuperKeyers and have been designed to bring even more graphics to an M/E.

SuperKeyers

- Lin/luma/chroma key border generator
- 2x mask generators
- 2.5D resize engine (2 per SuperKeyer)
- Dual Tile mode

eKeys

- (DSK) lin/luma/chroma key

Compositing power of a Kahuna M/E

eKey 1080i bug

1080p background

eKey 1080i

eKey chromakey

4 SuperKeyers providing 8 key layers with 2.5D resize engines (all independently controlled)

eKey 1080i lower-third

St. Lucia Package Last 4 remaining! \$1,399pp

7 nights, all inclusive, 4* hotel, includes flights.

Next to drop: City break to London, 10 day African Safari, Great Barrier Reef Australia

Price Drop LIVE

More creativity for your live productions. The 3D DVE provides an unmatched level of performance, offering unique show branding and world leading creativity.

The technical director/operator has the flexibility to assign powerful channels of 3D DVE to any M/E. All programming setups are fast, efficient and easy to store and recall. All DVE parameters can be included in a timeline and seamlessly transferred between multiple Kahuna systems.

One board provides source-based and bus-based modes

- 4 channels of 3D DVE effects (4:2:2:4)
- Combiner section combining all channels
- Intersecting planes
- Produces single key and fill output
- Large model library

Linear effects

- Nonlinear effects
- Surface effects

Examples of just some of the 3D DVE effects available with the Kahuna family of switchers



The Kahuna family feature set at a glance — perfect for every sports, news, light entertainment, music or house of worship application.

	Kahuna 4800	Kahuna 6400	Kahuna 9600
Number of M/Es & keyers	2-4 full M/Es each with 4 keyers	1-3 full M/Es each with 8 keyers	1-6 full M/Es each with 8 keyers
Max number of M/Es with Make M/E	N/A	12	24
Number of inputs	48 or 60	Up to 60	Up to 120
Number of SuperKeyers	8	12	24
Number of eKeys (all with chromakey functionality)	8	12	24
Number of key layers	24	36	72
Number of outputs	24 as standard, upgrade to 32	Up to 32	Up to 64
3D DVE (Up to 4 channels per board)	✓	✓	✓
Internal ClipStore	10 outputs	10 outputs	20 outputs
FormatFusion3 on all inputs	✓	✓	✓
Fusion3 on all outputs (in groups of 8)	✓	✓	✓
Programmable outputs	1 per M/E	8 per M/E	8 per M/E
RGB Color correction (input and all outputs)	✓	✓	✓
Multipanel operation	Up to 3 panels	Unlimited	Unlimited
Third-party integration	✓	✓	✓
4K UHD ready	✓	✓	✓

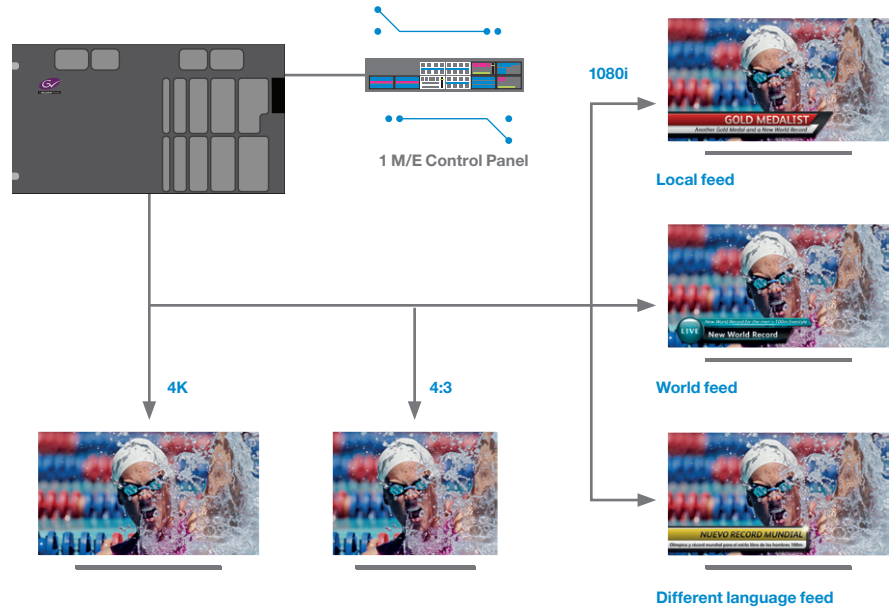
Multiple formats and productions

Multiformat outputs from a single M/E

Kahuna M/Es, combined with FormatFusion3 technology is unique in the switcher world, giving you more capability to provide effects and branding for multiple audiences.

- User selected backgrounds
- User selected key buses
- Each output with dedicated FormatFusion3 engine for different outputs

The example on the right shows a 1 M/E switcher driving five outputs, all with different needs, all timed together.

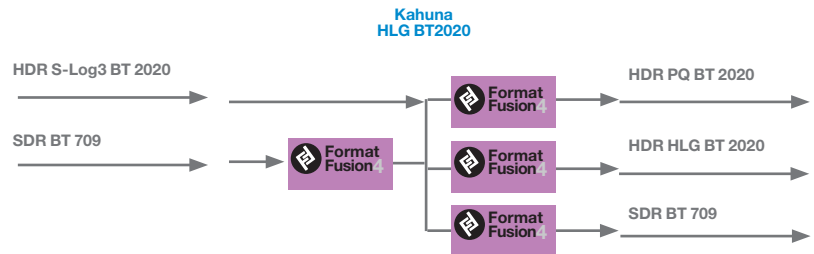


Seamless HDR productions (4K UHD and HD) with FormatFusion4

FormatFusion4 brings HDR capabilities to all inputs and outputs on Grass Valley's Kahuna production switchers. The technology seamlessly handles SDR and HDR in parallel for sports, news and light entertainment productions. FormatFusion4 supports the Electrical Optical Transfer Functions (EOTF) for:

- Real-time control of Perceptual Quantizer (PQ)
- Real-time control of Hybrid Log Gamma (HLG)
- Sony S-Log3 profile

FormatFusion4 also includes color space support for Wide Color Gamut (BT.709 and BT.2020) in all formats (1080i, 1080p and 4K UHD).

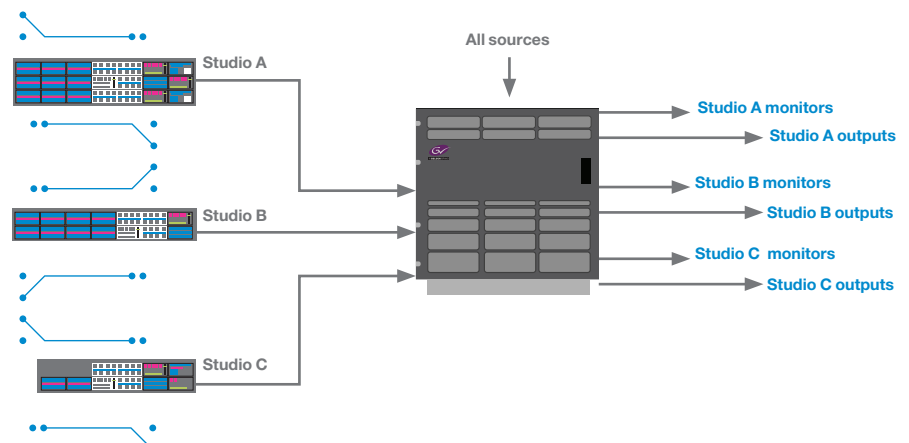


FormatFusion4 is completely transparent to a customer's live production workflow and requires no additional engineering or external equipment, even in 4K UHD.

Multiple productions made easy

Multiple productions can be handled simultaneously from a single frame. Each production output can be controlled by a separate switcher panel, with each of these having up to 120 inputs, transition effects, keyers and allocated DVE effects.

The diagram shows three studios all using the same Kahuna frame for all of their outputs and studio/on-set monitors, saving space and costs.



Unique Make M/E technology

Share resources to get even more from your switcher.

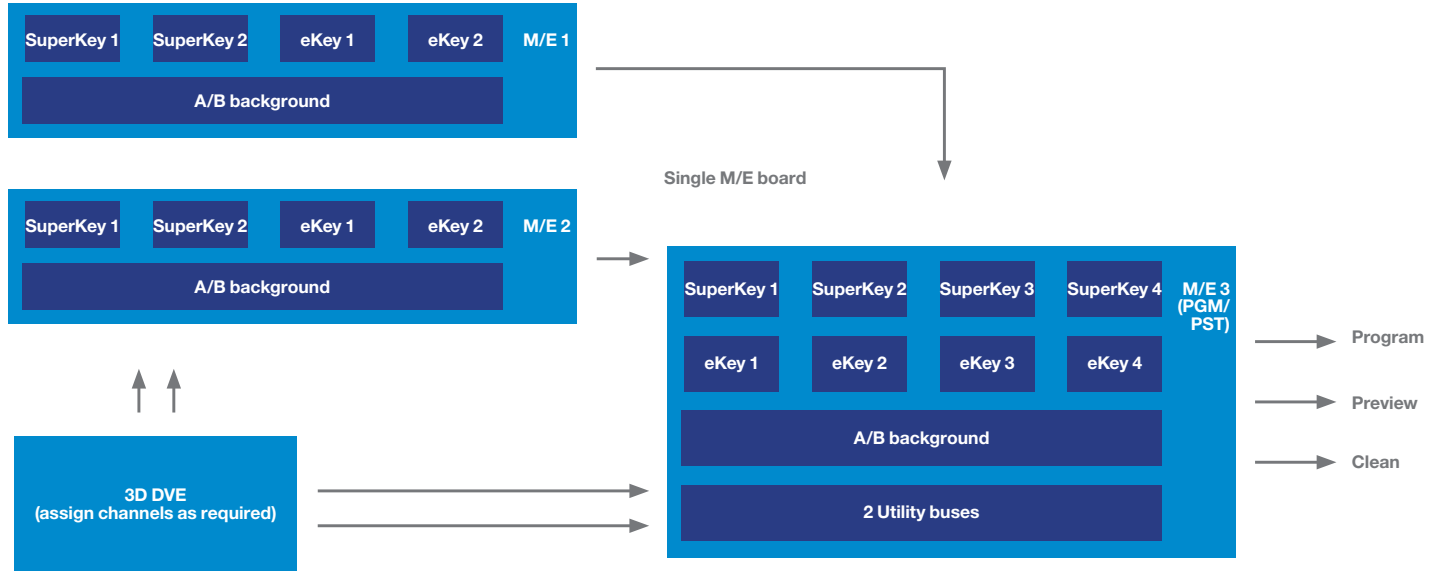
Unique Make M/E technology provides the ultimate flexibility for any live TV requirement.

The example below shows how a powerful 3 M/E switcher can be created from a 2 M/E Kahuna 6400 with Make M/E, maximizing switcher resources for additional space and cost savings.

In today's dynamic environments, requirements can change in an instant, making flexibility essential. The Kahuna family offers a powerful feature set with a unique adaptability that lets the operator support multiple simultaneous productions for a range of delivery platforms.

Unique Make M/E technology in the Kahuna 9600 and Kahuna 6400 allows users to select available switcher power to create a tailor-made M/E for specific requirements — i.e., select inputs, keyers, stores, DVE and outputs — freeing up resources for other creative/editorial productions.

Single M/E board



This powerful approach allows operators to custom build their own M/E feature set as well as run multiple productions simultaneously from a single mainframe for both HD and 4K UHD.

- Produce multiple feeds from any M/E
- Group up backgrounds, key and output buses to create multiple M/Es — Up to 4 M/Es from a single full M/E board
- Assign any M/E output to any aux bus
- Full keyer and background transitions on any aux output saving resource

M/E 1
World feed
2 Keys

M/E 2
FX M/E
2 Box
2 Keys

M/E 3
Replay M/E
2 Keys

M/E 4
Output M/E
6 Keys

Maverik control surface panel.

Innovative software tools extend control capabilities, streamline workflows and save valuable set-up time.

Third-party integration

The Kahuna family features an extensive protocol list enabling the control of a large number of third-party external devices and single-person gallery/control room operation for efficient production. Third-party devices include:

- Production Servers
- Audio Mixers
- Robotic Camera Control
- Graphics Engines
- Tally Systems
- Multiviewers
- News Automation Systems

On-air confidence for every operator

Among the many innovations in the Kahuna family is Source Safe. This clever technology senses a signal on an input and sets up the correct processing for that signal — without the need for operator intervention. With this capability, the system can detect the source format of signals coming through the plant to production and ensure that they can be brought smoothly into the workflow.

Yet another Grass Valley innovation is EPP (Enhanced Progressive Processing), which provides unparalleled video processing quality. The Kahuna family does not simply support 1080p high definition — it ensures that this super high quality remains uncompromised at every stage of the production process and is reflected in every output form, irrespective of delivery mechanism to the end viewer.

On-board ClipStore with 20 outputs

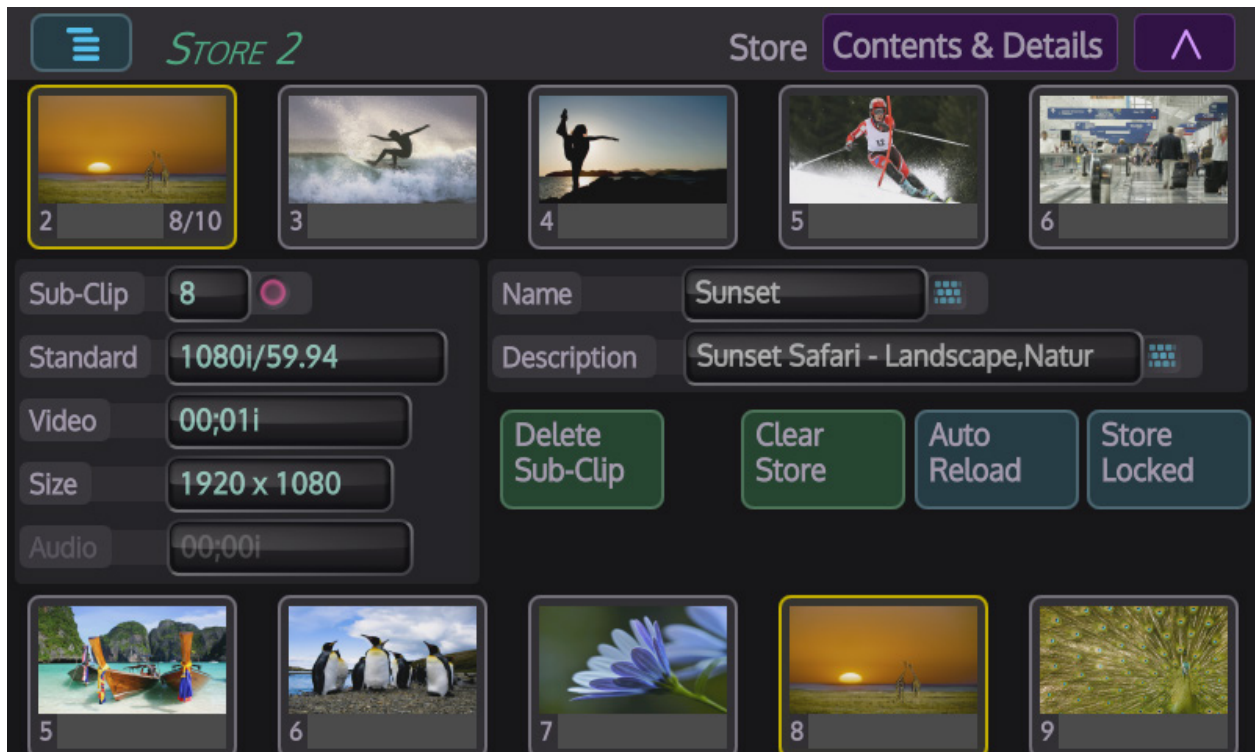
- Up to 64 GB RAM — (8 minutes of HD)
- Instant access to any content and selected on any bus
- Holds both audio and video
- Used for animated clip transitions
- On-board clip editor
- Use in any memory or macro recall
- Easy management and export with K-Watch
- Grab live incoming video or file via USB or network
- Backed up with RAID 1 TB HDD

K-Manager

K-Manager is a free software program that enables the conversion of files such as jpg, bmp, tga, avi and wav files into Kahuna native files to import to the Kahuna. It also allows the conversion to jpgs, etc. from the Kahuna native file format (sws).

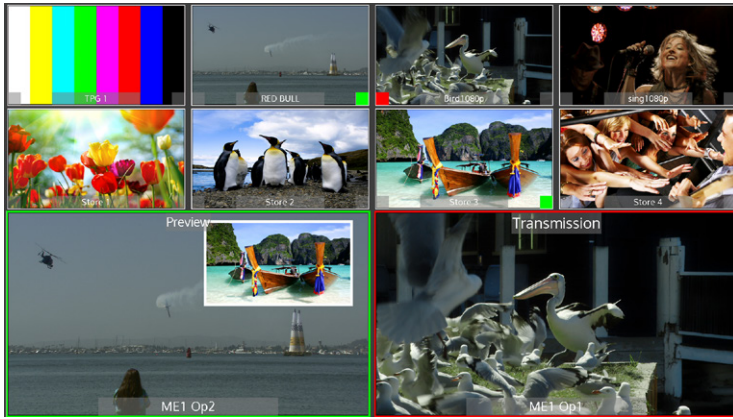
K-Manager also allows you to resize and change the still/clip standard whether you need 525i59.94 or 1080i59.94 or even 720p60.

Internal ClipStore holds up to 71,200 frames/40 minutes of uncompressed SD or 8 minutes of HD



Screenshot showing ClipStore.

Format-independent multiviewer included as standard



Typical multiviewer output layout.

Kahuna Multiviewer

The format-independent multiviewer provides great flexibility with preselected, user-defined layouts and is ideal for small to mid-size productions. It's also an excellent choice to supplement larger scale production monitoring requirements.

The format independent multiviewer is a standard feature with the Kahuna 4800, Kahuna 6400 and Kahuna 9600 production switchers.

Features

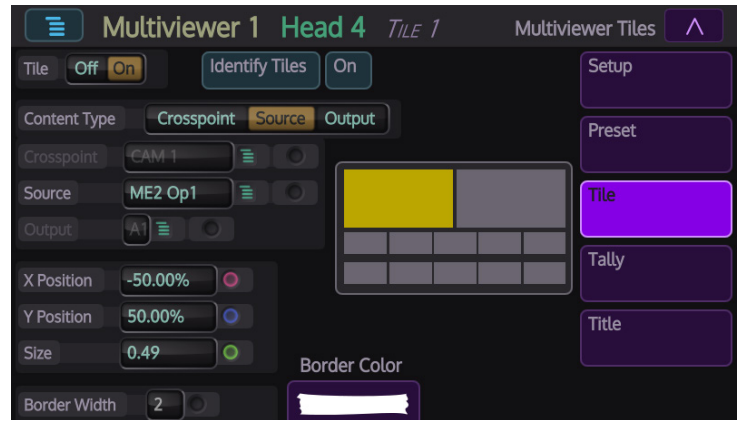
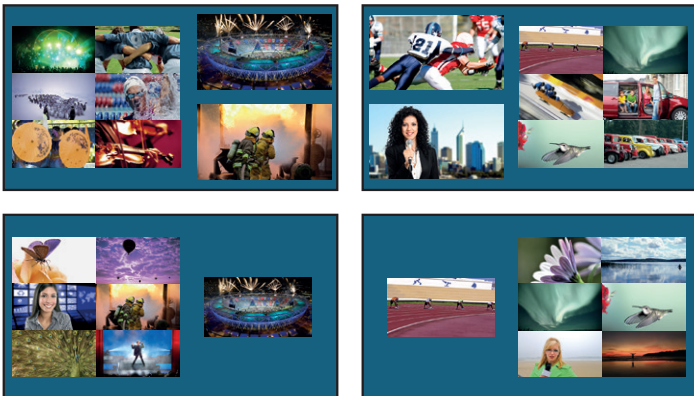
- Up to 8 flexible output heads
- Up to 24 windows
- All external and internal sources selectable to all heads and all windows
- Instant preselect layouts
- Clear and follow-through labeling
- Red and green tallies
- Assign to any output
- Format independent
- Memorize and recall layouts as part of a show setup

Live production you can rely on

Built to Grass Valley's exacting engineering standards and backed up by 24x7 customer support, Grass Valley Kahuna live production switchers can be relied upon in even the most demanding of live TV environments.

- Redundant power supplies
- Hot-swappable boards
- Completely integrated hardware solution incorporating all DVEs, ClipStores and interfaces for third-party control within the mainframe

Preset Layout Types Available



Kahuna multiviewer GUI.

Flexible, modular architecture

The financial realities of today can often place constraints on a business' capital investment. The Kahuna 9600 and Kahuna 6400 switchers help to alleviate this pressure with their modular architecture. This lets you buy what you need today and expand over time as and when requirements grow.

4K UHD-capable throughout the Kahuna family

As industry professionals explore the practicalities of 4K UHD production and how it can evolve, the production switcher element is already solved by Grass Valley.

The Kahuna family is already 4K UHD capable, so you can install and use the Kahuna 9600, 6400 or 4800 in this new arena of television production.

HD and 4K UHD can be mixed together as backgrounds and key layers on the M/E. The output can also be in 4K UHD or scaled down to HD.

- Each 4K UHD M/E has 4x 4K UHD keyers
- 30x 4K UHD inputs and 16x 4K UHD outputs
- Supports wipes on all 4K UHD M/Es
- Native internal ClipStore for 4K UHD animations
- Transparent operation for TD/operator

IP and 12 Gb/s SDI Connectivity

Kahuna supports HD-SDI, IP and 12 Gb/s SDI single link across the entire range.

The uniquely flexible input/output architecture ensures a smooth transition from HD-SDI to IP or 12 Gb/s infrastructures.

Hybrid solution future

Today the latest generation of the Kahuna 9600 range is globally installed and working with 3 Gb/s, 1.5 Gb/s and 270 Mb/s productions. The flexible input and output approach allows mixed configurations of all fin types with new and installed Kahuna 9600, 6400 and 4800 systems.

HD-SDI, IP and 12 Gb/s SDI can all coexist in the one frame without losing any functionality or purchasing outboard equipment.

Professional productions over IP

IP connectivity is available over interchangeable rear fins that will support uncompressed and compressed video formats.

Kahuna inputs and outputs stages are compliant with the latest developments in video over IP.

SMPTE ST 2110-10/20/30, SMPTE ST 2022-6, SMPTE ST 2022-7, TR03 and TR04 are supported along with SMPTE ST 2042 (VC-2) and TICO.

Kahuna IP fins are available as 10 GbE, 40 GbE and 50 GbE IP, giving you the flexibility to work in any mode or combination.

Kahuna, like any edge device, is connected directly to the switch at the heart of the IP plant. Kahuna can receive up to 120 IP inputs and broadcasts the switcher outputs on to the video network.

12 Gb/s SDI single-link connectivity (SMPTE ST 2082-10)

4K UHD production is increasing, especially in sports, and Kahuna is found in the control room/gallery and truck. As the move into 4K UHD is underway, a means of 12 Gb/s SDI over a single coaxial cable or fiber is required. Similar to the IP approach, the 12 Gb/s SDI inputs and outputs are supported by an interchangeable fin.

Kahuna Benefits

- Easy connectivity management for IP and 12 Gb/s SDI environments
- Future proofed for transitions to IP or 12 Gb/s SDI single link
- Hybrid configuration in the same frame
- Evolves with standards



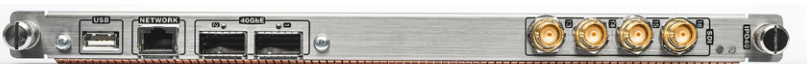
Input 50 GbE fin order code 9669900



Output 50 GbE fin order code 9669910



Input 40 GbE fin order code 9669880



Output 40 GbE fin order code 9669890



Input 10 GbE IP fin order code 9669840



Output 10 GbE IP fin order code 9669850



Input 12 Gb/s fin order code 9669860



Output 12 Gb/s fin order code 966987

Fiber Fins

Fiber is now a vital element in helping to streamline high-quality signal transmissions over greater distances without compromising the picture quality. Therefore, Kahuna has expanded its support by offering fiber directly on both inputs and outputs making it more flexible, scalable and dynamic.

Input fins enable you to use dual single-mode fiber SFP modules or coax SFP modules, or even both simultaneously.



The FDI input fin supports 12 inputs over 6 SFP cages.



Output fins offer a hybrid option accommodating for BNCs and fiber. Each output fiber SFP module is a single-mode fiber dual transmitter allowing for any future innovations and requirements.



The FDO output fin supports 16 outputs over 3 SFP cages and 10 HD-SDI BNCs.



Kahuna 9600

Production Switcher with up to 24 M/Es and 48 Keyers

The most powerful switcher in the Kahuna range, the Kahuna 9600 is an enter-prise-class switcher offering an unmatched feature set to meet the needs of the highest caliber of productions.

Suited for larger scale 4K UHD and 1080p environments, Kahuna 9600 supports the most complex productions including multiple studio operations. Along with the advanced 3D DVE, the Kahuna 9600 features new 2.5D resize engines, giving more power at the M/E level. The Kahuna 9600 provides up to 24 M/Es, 48 keyers and 72 key layers, which can be shared across multiple studios.

Powered by Grass Valley innovation, Kahuna 9600 has a feature set that has never been possible until now and offers a completely scalable path to

all functionality and format requirements.

For sporting events, light entertainment shows, news production and presentations — either in the studio control room, mobile vehicle or flyaways — the Kahuna 9600 possesses the flexibility, adaptability and creativity to differenti-ate your program output.



KEY FEATURES

- Up to 6 full M/Es
- Make M/E for creating up to 24 M/Es for main or aux outputs
- Every M/E has 8 keyers per M/E regardless of format
 - SuperKeyers with linear, luminance, chroma key
 - 8 resize engines with 2.5D DVE manipulation
 - eKeys with linear, luminance and chroma key
- Up to 120 inputs (12 inputs as standard, upgrade in groups of 12)
- Up to 64 fully assignable outputs (8 outputs as standard, upgrade in groups of 8)
- Internal multiviewer
- FormatFusion3 available on all inputs and outputs
- 3D DVE suite of effects with flexible combiners
- Large internal ClipStore with 20 outputs supporting 8 minutes of uncompressed HD video
- RGB color correction available on all inputs and outputs
- Programmable outputs
- Large external integration capacity with third-party equipment such as servers, routers, multiviewers, audio mixers, robotic cameras and graphics devices
- Supports fiber inputs and outputs
- Controlled with Kahuna Maverik panel
- K-Watch and K-Mirror application software also available

SPECIFICATIONS

TV Standards

2.97 Gb/s Video Standards (1080p)

1080p59.94 SMPTE ST 424

1080p59.94 SMPTE ST 425/Level A

1080p59.94 SMPTE ST 425/Level B

1080p50 SMPTE ST 424

1080p50 SMPTE ST 425/Level A

1080p50 SMPTE ST 425/Level B

1.485 Gb/s Video Standards (HD)

1080i60 SMPTE ST 274(4), SMPTE ST 292(D)

1080i59.94 SMPTE ST 274(5), SMPTE ST 292(E)

1080i50 SMPTE ST 274(6), SMPTE ST 292(F)

1035i60 SMPTE ST 260, SMPTE ST 292(A)

1035i59.94 SMPTE ST 260, SMPTE ST 292(B)

1080PsF30

1080PsF29.97

1080PsF25

1080PsF24

1080PsF23.976

1080p30 SMPTE ST 274(7), SMPTE ST 292(G)

1080p29.97 SMPTE ST 274(8), SMPTE ST 292(H)

1080p25 SMPTE ST 274(9) SMPTE ST 292(I)

1080p24 SMPTE ST 274(10), SMPTE ST 292(J)

1080p23.976 SMPTE ST 274(11), SMPTE ST 292(K)

720p60 SMPTE ST 296(1), SMPTE ST 292(L)

720p59.94 SMPTE ST 296(2), SMPTE ST 292(M)

720p50 SMPTE ST 296(2), SMPTE ST 292(M)

270 Mb/s Video Standards (SD)

576i 16:9

576i 4:3

480i 16:9

480i 4:3

Reference

Analog genlock high-definition tri-level sync signal or SD 1V blackburst

Frame

Video Signal Inputs

Up to 120, HD/SD-SDI: Grouped in 12 off SD/HD/1080p (270 Mb/s / 1.485 Gb/s / 2.97 Gb/s)

Serial digital interface: As REC601/ SMPTE ST 292/SMPTE ST 424 via BNC connectors. Genlock reference 4 off analog sync (loop A and B through)

Video Signal Outputs

Up to 64 HD/SD-SDI: Grouped in 16 off, programmable via BNC connectors

2 independent sync O/P: With adjustable phase off set per reference fin (4 in total)

Control Interfaces

120 tally/GPO outputs:

Isolated contact closures via 25-way D-type (12 per input fin)

96 GPI TTL-level I/P

Via 25-way D-type connectors (2 x 48) per reference fin

120 GPO tally/GPO O/P: Isolated contact closures via 25-way D-type (12 per input fin)

16 10/100/1000base-T: With additional XLR security

RJ45 Ethernet connectors fixings (2 x 8) per network fin

12 RS-422 control ports: (2 x 6) per RTR card

2x USB

Power

Kahuna Frame: Auto sensing 100-250 VAC power supply 50/60 Hz nominal. Two fully independent hot swappable PSU modules, with separate mains power feeds via 2x 16A IEC-C20 socket. Dual redundant requires two more fully independent PSU modules; with separate mains power feeds via 2x 16A IEC socket 3 kW maximum with all power consumption options fitted

Temp range: 5 to 40°C (41 to 104°F) noncondensing operating.

Mechanical

11 RU

Height: 488 mm (19.21 in.)

Depth: 647 mm (25.57 in.)

Weight: 70 kg (154.3 lbs.)

18 input/output and control fin slots

10x 12 input fin slots

4x 16 output fin slots

2x control fin slots

Front fitting processing PCBs & PSUs

ORDERING

Pre-configured Frames with 2 Channels of 3D 3VE

Number of Full M/Es	2	3	4	5
Order Code	9664321	9664322	9664323	9664324

Pre-configured Frames

Number of Full M/Es	2	3	4	5
Order Code	9664326	9664327	9664328	9664329

All Include:

- RGB input and output color correction
- Programmable outputs
- External control
- Redundant frame power supplies
- Internal multiviewer

Base Frames

Number of Full M/Es	1	2	3	4	5	6
Order Code	9664331	9664332	9664333	9664334	9664335	9664336

Frame Options

M/Es of FormatFusion3 (all inputs)	Order Code
6	9669602
5	9669582
4	9669562
3	9669542
2	9669522
1	9669502

Outputs FormatFusion3	Order Code
8	9669718
16	9669728
24	9669738
32	9669748
40	9669758
48	9669768
56	9669778
64	9669788

Inputs (10 max. for 120 inputs, any combination)

Input (SDI)

9669795	SD/HD/3G-SDI input fin. Supports 12 inputs
9669860	4K UHD 12G-SDI input fin. Supports 3x12 Gb/s inputs

Inputs (IP)

9669900	50 GbE IP input fin. Supports 12 inputs: SMPTE ST 2110, 2022-6/7, TR-03 + VC-2
9669880	40 GbE IP input fin. Supports 12 inputs: SMPTE ST 2110, 2022-6/7, TR-03 + VC-2
9669840	10 GbE IP input fin. Supports 12 inputs: SMPTE ST 2110, 2022-6/7, TR-03 + VC-2

IP Input Fin – TICO

9678845

Inputs (Fiber)

9669820	Fiber input fin
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Outputs

9664337	1 to 16 outputs
9664338	1 to 32 outputs
9664339	1 to 48 outputs
9664340	1 to 64 outputs

Output Fins (4 max. for 64 outputs, any combination)

Outputs (SDI)

9669790	SD/HD/3G-SDI output fin. Supports 16 outputs
9669870	4K UHD 12G output fin. Supports 4x12 Gb/s outputs

Outputs (IP)

9669900	50 GbE IP output fin. Supports 12 outputs: SMPTE ST 2110, 2022-6/7, TR-03 + VC-2
9669890	40 GbE output fin. Supports 12 outputs: SMPTE ST 2110, 2022-6/7, TR-03 + VC-2
9669850	10 GbE IP output fin. Supports 12 outputs: SMPTE ST 2110, 2022-6/7, TR-03 + VC-2

IP Output Fin – TICO

9678855

Output (Fiber)

9669800	Fiber output fin
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NOTE: SFP is not included.

Other Options

9664595A	Upgrade DVE to 3 channels
9664596A	Upgrade DVE to 4 channels
9668855	Input color correction
9668890	External control protocols
9668891	Camera interface
9668859	Programmable outputs
9668856	Output color correction
9668892	Audio mixer interface
9668893	News production interface
9668810	10 output ClipStore – 32 GB
9668840	20 output ClipStore – 64 GB
9668850	Cliptrax

Application Software

9648697	K-Watch
9648698	K-Mirror

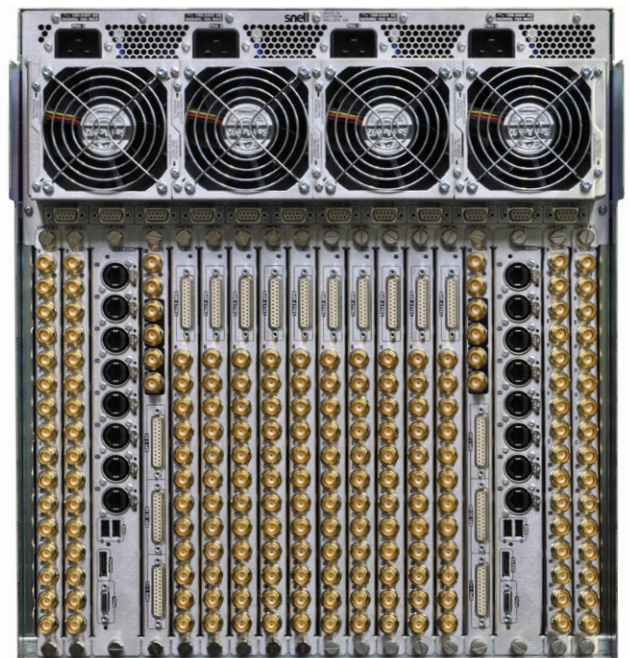
FormatFusion4 Order Codes and Upgrades

Input FormatFusion3 Upgrade to FormatFusion4 with HDR	Order Code
6 M/E FormatFusion3 to FormatFusion4 with HDR	9664620
5 M/E FormatFusion3 to FormatFusion4 with HDR	9664621
4 M/E FormatFusion3 to FormatFusion4 with HDR	9664622
3 M/E FormatFusion3 to FormatFusion4 with HDR	9664623
2 M/E FormatFusion3 to FormatFusion4 with HDR	9664624
1 M/E FormatFusion3 to FormatFusion4 with HDR	9664625

Input FormatFusion4 with HDR	Order Code
6 M/E FormatFusion4 with HDR	9669603
5 M/E FormatFusion4 with HDR	9669583
4 M/E FormatFusion4 with HDR	9669563
3 M/E FormatFusion4 with HDR	9669543
2 M/E FormatFusion4 with HDR	9669523
1 M/E FormatFusion4 with HDR	9669503

Output FormatFusion3 Upgrade to FormatFusion4 with HDR	Order Code
8 O/Ps FormatFusion3 to 16 O/Ps FormatFusion4 with HDR	9664626
16 O/Ps FormatFusion3 to 16 O/Ps FormatFusion4 with HDR	9664627
24 O/Ps FormatFusion3 to 16 O/Ps FormatFusion4 with HDR	9664628
32 O/Ps FormatFusion3 to 32 O/Ps FormatFusion4 with HDR	9664629
40 O/Ps FormatFusion3 to 32 O/Ps FormatFusion4 with HDR	9664630
48 O/Ps FormatFusion3 to 48 O/Ps FormatFusion4 with HDR	9664631
56 O/Ps FormatFusion3 to 64 O/Ps FormatFusion4 with HDR	9664632
864 O/Ps FormatFusion3 to 64 O/Ps FormatFusion4 with HDR	9664633

Output FormatFusion4 with HDR	Order Code
8 Output FormatFusion4 with HDR	9669719
16 Output FormatFusion4 with HDR	9669729
24 Output FormatFusion4 with HDR	9669739
32 Output FormatFusion4 with HDR	9669749
40 Output FormatFusion4 with HDR	9669759
48 Output FormatFusion4 with HDR	9669769
56 Output FormatFusion4 with HDR	9669779
64 Output FormatFusion4 with HDR	9669789



Kahuna 9600

Kahuna 6400

Production Switcher with up to 12 M/Es and 24 Keyers

The Kahuna 6400 delivers huge power to the widest range of applications including regional news, sports production, houses of worship and magazine programs. With the ability to work in all environments including 4K UHD, Kahuna 6400 redefines what's possible in the mid-size production arena.



Along with the advanced 3D DVE, the Kahuna 6400 features new 2.5D resize engines, giving more power at the M/E level. The Kahuna 6400 provides up to 12 M/Es, 24 keyers and 36 key layers, shared across multiple productions.

For sporting events, light entertainment shows, news production and presentations either in the studio control room, mobile vehicle or flyaways, the Kahuna 6400 offers an elegant, reliable solution in a well engineered package that is understood the world over.

KEY FEATURES

- Up to 3 full M/Es
- Make M/E for creating up to 12 M/Es for main or aux outputs
- Every M/E has 8 keyers per M/E, regardless of format:
 - 4 SuperKeyers with linear, luminance, chroma key
 - 8 resize engines with 2.5D DVE manipulation
 - 4 eKeys with linear, luminance and chroma key
- Up to 60 inputs (12 inputs as standard, upgrade in groups of 12)
- Up to 32 fully assignable outputs (8 outputs as standard, upgrade in groups of 8)
- Internal multiviewer
- FormatFusion3 available on all inputs and outputs
- 3D DVE suite of effects with flexible combiners
- Large internal ClipStore with 10 outputs supporting 4 minutes of uncompressed HD video
- RGB color correction available on all inputs and outputs
- Programmable outputs
- Large external integration capacity with third-party equipment such as servers, routers, multiviewers, audio mixers, robotic cameras and graphics devices
- Supports fiber inputs and outputs
- Controlled with Kahuna Maverik panel
- K-Watch and K-Mirror application software also available

SPECIFICATIONS

TV Standards

2.97 Gb/s Video Standards (1080p)

1080p59.94 SMPTE ST 424
1080p59.94 SMPTE ST 425/Level A
1080p59.94 SMPTE ST 425M/Level B
1080p50 SMPTE ST 424
1080p50 SMPTE ST 425/Level A
1080p50 SMPTE ST 425/Level B

1.485 Gb/s Video Standards (HD)

1080i60 SMPTE ST 274(4), SMPTE ST 292(D)
1080i59.94 SMPTE ST 274(5), SMPTE ST 292(E)
1080i50 SMPTE ST 274(6), SMPTE ST 292(F)
1035i60 SMPTE ST 260, SMPTE ST 292(A)
1035i59.94 SMPTE ST 260, SMPTE ST 292(B)
1080PsF30
1080PsF29.97
1080PsF25
1080PsF24
1080PsF23.976
1080p30 SMPTE ST 274(7), SMPTE ST 292(G)
1080p29.97 SMPTE ST 274(8), SMPTE ST 292(H)
1080p25 SMPTE ST 274(9), SMPTE ST 292(I)
1080p24 SMPTE ST 274(10), SMPTE ST 292(J)
1080p23.976 SMPTE ST 274(11), SMPTE ST 292(K)
720p60 SMPTE ST 296(1), SMPTE ST 292(L)
720p59.94 SMPTE ST 296(2), SMPTE ST 292(M)
720p50 SMPTE ST 296(2), SMPTE ST 292(M)

270 Mb/s Video Standards (SD)

576i 16:9
576i 4:3
480i 16:9
480i 4:3

Reference

Analog genlock high-definition tri-level syncs signal or SD 1V blackburst

Frame

Video Signal Inputs

Up to 60x HD/SD-SD: Grouped in 12 off SD/HD/1080p (270 Mb/s / 1.485 Gb/s / 2.97 Gb/s)

Serial digital interface: As REC60/SMPTE ST 292/SMPTE ST 424 via BNC connectors. Genlock reference 4 off analog sync (loop A and B through)

Video Signal Outputs

Up to 32 HD/SD-SDI: Grouped in 16 off, programmable via BNC connectors

2 independent sync O/P: With adjustable phase offset

Control Interfaces

60 tally/GPO outputs: Isolated contact closures via 25-way D-type (12 per input fin)

48x GPI TTL-level I/P: Via 25-way D-type connectors

8x 10/100/1000base-T: With additional XLR security

RJ45 Ethernet connectors fixings (2x8) per network fin

6x RS-422 control ports on the RTR card

2x USB

Power

Kahuna Frame: Auto sensing 100-250 VAC power supply 50/60 Hz nominal. Two fully independent hot swappable PSU modules, with separate mains power feeds via 2x 16A IEC-C20 socket. Dual redundancy supplied by the second PSU

Temp range: 5 to 40°C (41 to 104°F) noncondensing operating

Mechanical

6 RU

Height: 266 mm (10.47 in.)

Width: 484.5 mm (19.07 in.)

Depth: 630.1 mm (24.81 in.) (incl. door)

Weight: 40 kg (88.2 lbs.)

ORDERING

Pre-configured Frames with 2 Channels of 3D 3VE

Number of Full M/Es	2
Order Code	9663311

Pre-configured Frames

Number of Full M/Es	1	2	3
Order Code	9663312	9663313	9663314

All Include:

- RGB input and output color correction
- Programmable outputs
- External control
- Redundant frame power supplies
- Internal multiviewer

Base Frames

Number of Full M/Es	1	2	3
Order Code	9663315	9663316	9663317

Mainframe Options

M/Es of FormatFusion3 (all inputs)	Order Code
3	9669542
2	9669522
1	9669502

Outputs FormatFusion3	Order Code
8	9669718
16	9669728
24	9669738
32	9669748

Inputs (5 max. for 60 inputs, any combination)

Input (SDI)

- 9669795 SD/HD/3G-SDI input fin. Supports 12 inputs
- 9669860 4K UHD 12G input fin. Supports 3x12 Gb/s inputs

Inputs (IP)

- 9669900 50 GbE IP input fin. Supports 12 inputs: SMPTE ST 2110, 2022-6/7, TR-03 + VC-2
- 9669880 40 GbE IP input fin. Supports 12 inputs: SMPTE ST 2110, 2022-6/7, TR-03 + VC-2
- 9669840 10 GbE IP input fin. Supports 12 inputs: SMPTE ST 2110, 2022-6/7, TR-03 + VC-2

IP Input Fin – TICO

9678845

Inputs (Fiber)

- 9669820 Fiber input fin

Outputs

- 9664337 1 to 16 outputs
- 9664338 1 to 32 outputs

Outputs Fins (2 max. for 32 outputs, any combination)

Outputs (SDI)

- 9669790 SD/HD/3G-SDI output fin. Supports 16 outputs
- 9669870 4K UHD 12G output fin. Supports 4x12 Gb/s outputs

Outputs (IP)

- 9669900 50 GbE IP output fin. Supports 12 outputs: SMPTE ST 2110, 2022-6/7, TR-03 + VC-2
- 9669890 40 GbE output fin. Supports 12 outputs: SMPTE ST 2110, 2022-6/7, TR-03 + VC-2
- 9669850 10 GbE IP output fin. Supports 12 outputs: SMPTE ST 2110, 2022-6/7, TR-03 + VC-2

IP Output Fin – TICO

9678855

Output (Fiber)

- 9669800 Fiber output fin

NOTE: SFP is not included.

Other Options

- 9664595A Upgrade DVE to 3 channels
- 9664596A Upgrade DVE to 4 channels
- 9668855 Input color correction
- 9668890 External control protocols
- 9668891 Camera interface
- 9668859 Programmable outputs
- 9668856 Output color correction
- 9668892 Audio mixer interface
- 9668893 News production interface
- 9668810 10 output ClipStore — 32 GB
- 9668850 Cliptrax

Application Software

- 9648697 K-Watch
- 9648698 K-Mirror

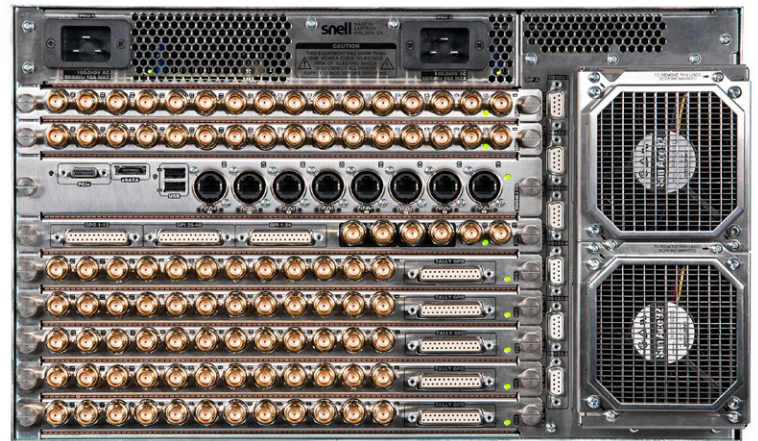
FormatFusion4 Order Codes and Upgrades

Input FormatFusion3 Upgrade to FormatFusion4 with HDR	Order Code
3 M/E FormatFusion3 to FormatFusion4 with HDR	9664623
2 M/E FormatFusion3 to FormatFusion4 with HDR	9664624
1 M/E FormatFusion3 to FormatFusion4 with HDR	9664625

Input FormatFusion4 with HDR	Order Code
3 M/E FormatFusion4 with HDR	9669543
2 M/E FormatFusion4 with HDR	9669523
1 M/E FormatFusion4 with HDR	9669503

Output FormatFusion3 Upgrade to FormatFusion4 with HDR	Order Code
8 O/Ps FormatFusion3 to 16 O/Ps FormatFusion4 with HDR	9664626
16 O/Ps FormatFusion3 to 16 O/Ps FormatFusion4 with HDR	9664627
24 O/Ps FormatFusion3 to 16 O/Ps FormatFusion4 with HDR	9664628
32 O/Ps FormatFusion3 to 32 O/Ps FormatFusion4 with HDR	9664629

Output FormatFusion4 with HDR	Order Code
8 Output FormatFusion4 with HDR	9669719
16 Output FormatFusion4 with HDR	9669729
24 Output FormatFusion4 with HDR	9669739
32 Output FormatFusion4 with HDR	9669749



Kahuna 6400

Kahuna 4800

Production Switcher with up to 4 M/Es and 16 Keyers

Kahuna 4800 is a hugely capable, and well-engineered entry-level production switcher. Offering superb value for money, the Kahuna 4800 provides HD operation while supporting 1080p and 4K UHD as soon as your operation is ready.



A fantastic feature set, including new 2.5D resize engines, provides more power at the M/E level. Kahuna 4800 provides 2 M/E to 4 M/Es, up to 16 keyers and 24 key layers (in a 4 M/E frame).

KEY FEATURES

- Up to 4 M/Es
- SD/HD/1080p/4K UHD production switcher:
 - 4 keyers per M/E regardless of format
 - 2 SuperKeyers with linear, luminance, chroma key
 - 4 resize engines with 2.5D DVE manipulation
 - 2 eKeys with linear, luminance and chroma key
- Up to 60 inputs
- Up to 32 outputs
- Internal multiviewer
- FormatFusion3 available on all inputs and outputs
- 3D DVE suite of effects with flexible combiners
- Large internal ClipStore with 10 outputs supporting up to 4 minutes of uncompressed HD video
- RGB color correction available on all inputs and outputs
- Programmable outputs
- Large external integration capacity with third-party equipment such as servers, routers, multiviewers, audio mixers, robotic cameras and graphics devices
- Supports fiber inputs and outputs
- K-Watch and K-Mirror application software also available

SPECIFICATIONS

TV Standards

2.97 Gb/s Video Standards (1080p)

1080p59.94 SMPTE ST 424
 1080p59.94 SMPTE ST 425/Level A
 1080p59.94 SMPTE ST 425/Level B
 1080p50 SMPTE ST 424
 1080p50 SMPTE ST 425/Level A
 1080p50 SMPTE ST 425/Level B

1.485 Gb/s Video Standards (HD)

1080i60 SMPTE ST 274(4), SMPTE ST 292(D)
 1080i59.94 SMPTE ST 274(5), SMPTE ST 292(E)
 1080i50 SMPTE ST 274(6), SMPTE ST 292(F)
 1035i60 SMPTE ST 260, SMPTE ST 292(A)
 1035i59.94 SMPTE ST 260, SMPTE ST 292(B)
 1080PsF30
 1080PsF29.97
 1080PsF25
 1080PsF24
 1080PsF23.976
 1080p30 SMPTE ST 274(7), SMPTE ST 292(G)
 1080p29.97 SMPTE ST 274(8), SMPTE ST 292(H)
 1080p25 SMPTE ST 274(9), SMPTE ST 292(I)
 1080p24 SMPTE ST 274(10), SMPTE ST 292(J)
 1080p23.976 SMPTE ST 274(11), SMPTE ST 292(K)
 720p60 SMPTE ST 296(1), SMPTE ST 292(L)
 720p59.94 SMPTE ST 296(2), SMPTE ST 292(M)
 720p50 SMPTE ST 296(2), SMPTE ST 292(M)

270 Mb/s Video Standards (SD)

576i 16:9
 576i 4:3
 480i 16:9
 480i 4:3

Reference

Analog genlock high-definition tri-level syncs signal or SD 1V blackburst

Frame

Video Signal Inputs

Up to 60x HD/SD-SDI: Grouped in 12 off SD/HD/1080p (270 Mb/s / 1.485 Gb/s / 2.97 Gb/s)

Serial digital interface: As REC601/ SMPTE ST 292/SMPTE ST 424 via BNC connectors. Genlock reference 4 off analog sync (loop A and B through)

Video Signal Outputs

Up to 32 HD/SD-SDI: Grouped in 16 off, programmable via BNC connectors

2 independent sync O/P: With adjustable phase offset

Control Interfaces

60 Tally/GPO Outputs: Isolated contact closures via 25-way D-type (12 per input fin)

48x GPI TTL-level I/P: Via 25-way D-type connectors

8x 10/100/1000base-T: With additional XLR security RJ45 Ethernet connectors fixings (2x8) per network fin

6x RS-422 control ports: On the RTR card

2x USB

Power

Kahuna 4800 Frame: Auto sensing 100-250 VAC power supply 50/60 Hz nominal. Two fully independent hot swappable PSU modules, with separate mains power feeds via 2x 16A IEC-C20 sockets. The second PSU is for redundancy

Temp range: 5 to 40°C (41 to 104 °F) noncondensing operating

Mechanical

6 RU

Height: 266 mm (10.47 in.)

Width: 484.5 mm (19.07 in.)

Depth: 630.1mm (24.81 in.) (incl. door)

Weight: 40 kg (88.2 lbs.).

ORDERING

Pre-configured Frames with 3D 3VE

Number of Full M/Es	2	3	4
Order Code	9663401	9663402	9663403

Pre-configured Frames

Number of Full M/Es	2	3	4
Order Code	9663405	9663406	9663407

All Include:

- RGB input and output color correction
- Programmable outputs
- External control
- Redundant frame power supplies
- Internal multiviewer

Inputs (5 max. for 60 inputs, any combination)

Input (SDI)

- 9669795 SD/HD/3G-SDI input fin. Supports 12 inputs
- 9669860 4K UHD 12G input fin. Supports 3x12 Gb/s inputs

Inputs (IP)

- 9669900 50 GbE IP input fin. Supports 12 inputs: SMPTE ST 2110, 2022-6/7, TR-03 + VC-2
- 9669880 40 GbE IP input fin. Supports 12 inputs: SMPTE ST 2110, 2022-6/7, TR-03 + VC-2
- 9669840 10 GbE IP input fin. Supports 12 inputs: SMPTE ST 2110, 2022-6/7, TR-03 + VC-2

IP Input Fin – TICO

9678845

Inputs (Fiber)

- 9669820 Fiber input fin

Outputs

- 9664337 1 to 16 outputs
- 9664338 1 to 32 outputs

Outputs Fins (2 max. for 32 outputs, any combination)

Outputs (SDI)

- 9669790 SD/HD/3G-SDI output fin. Supports 16 outputs
- 9669870 4K UHD 12G output fin. Supports 4x12 Gb/s outputs

Outputs (IP)

- 9669900 50 GbE IP output fin. Supports 12 outputs: SMPTE ST 2110, 2022-6/7, TR-03 + VC-2
- 9669890 40 GbE output fin. Supports 12 outputs: SMPTE ST 2110, 2022-6/7, TR-03 + VC-2
- 9669850 10 GbE IP output fin. Supports 12 outputs: SMPTE ST 2110, 2022-6/7, TR-03 + VC-2

IP Output Fin – TICO

9678855

Output (Fiber)

- 9669800 Fiber output fin

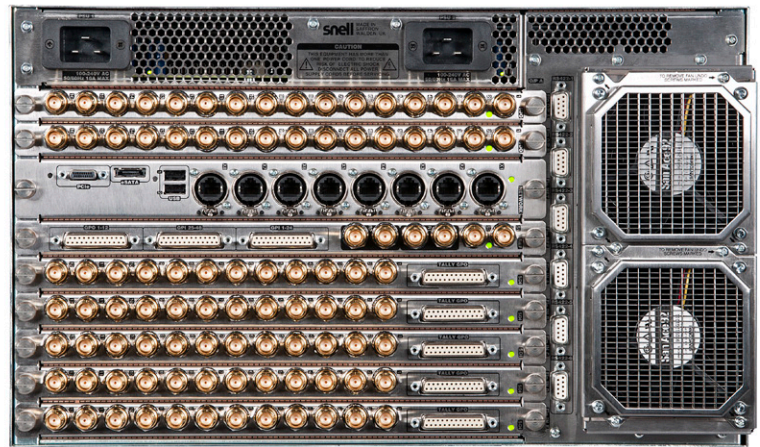
NOTE: SFP is not included.

Kahuna 4800 Options

- 9664524 60 input upgrade
- 9664413 32 output upgrade
- 9669562 4 M/E FormatFusion3 (all inputs)
- 9669542 3 M/E FormatFusion3 (all inputs)
- 9669522 2 M/E FormatFusion3 (all inputs)
- 9669718 8 outputs FormatFusion3
- 9669728 16 outputs FormatFusion3
- 9669738 24 outputs FormatFusion3
- 9669748 32 outputs FormatFusion3
- 9668800 Internal ClipStore upgrade – 16 GB
- 9668810 Internal ClipStore upgrade – 32 GB
- 9668850 Cliptrax
- 9664595 3D DVE 3rd channel upgrade
- 9664596 3D DVE 4th channel upgrade
- 9668890 External control protocols
- 9668891 Camera interface
- 9668892 Audio mixer interface
- 9668893 News production interface

Application Software

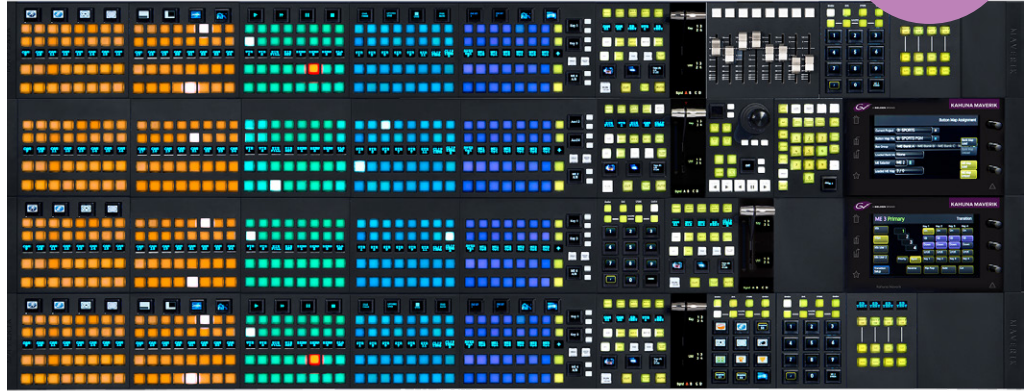
- 9648697 K-Watch application software
- 9648698 K-Mirror application software



Kahuna 4800 Rear

Kahuna Maverik

Production Switcher Control Surface



Kahuna Maverik offers a new way of thinking for switcher control and the first control surface to allow total customization on a huge scale. It has been designed with the Director and Technical Director in mind and for producing any television genre or event with outstanding results.

Whether it's news, sports, light entertainment, music, events or house of worship programming, Kahuna Maverik from Grass Valley can be set out exactly the way you need — for effortless productions and maximum functionality in minimal space.

Kahuna Maverik operates and controls all switchers in the Kahuna range.

MAV MODULES

A wide range of Mav modules are available, allowing you to design a Maverik panel specifically tailored to your requirements.



MAV-GUI

Configure your entire panel with easy touchscreen navigation and selectable preferences to create your complex effects fast and with ease. Choose your own shortcut hotkeys for even faster operations.

Mav Designation	MAV-GUI	
Order Code	MAV-GUI	
Dimensions	Width	Depth
	220 mm (8.66 inches)	140 mm (5.15 inches)
Connection	10 x RJ45	
Power	2 x external DC blocks auto sensing 100 – 250 VAC 50/60 Hz	



MAV TRANS

The Mav Trans module gives you easy smooth transitions of backgrounds with identification direction light. Take your keys to air with the T-bar or use the independent key transitions or simply use your hot keys to add or remove key layers promptly. The Mav Trans also gives you three OLED buttons to assign any effect you need.

Mav Designation	MAV-TRANS	
Order Code	MAV-TRANS	
Dimensions	Width	Depth
	160 mm (6.29 inches)	140 mm (5.15 inches)
Connection	2x RJ45	
Power	(POME) Power over Maverik Ethernet	

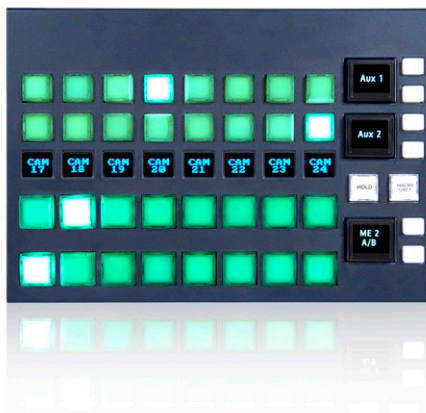
MAV MODULES

A wide range of Mav modules are available, allowing you to design a Maverik panel specifically tailored to your requirements.

**MAV 8Xpt DEL OB**

The same crosspoint Mav module as the Mav 8Xpt del FS but with the additional OLED buttons, to give you full control of macros, memory recall and effects. High-quality crystal OLED displays for bespoke graphical identification.

Mav Designation	MAV-8Xpt-DEL-OB	
Order Code	MAV-8Xpt-DEL-OB	
Dimensions	Width	Depth
	200 mm (7.87 inches)	140 mm (5.15 inches)
Connection	2 x RJ45	
Power	(POME) Power over Maverik Ethernet	

**MAV 8Xpt DEL FS**

A crosspoint Mav module built in 8 button sets for ergonomic operations. Select any backgrounds, keyers or auxes via the push buttons to access all your resources quickly.

A powerful Mav module that gives you access to all of your M/Es which gives you the possibility of designing any size panel.

Mav Designation	MAV-8Xpt-DEL-FS	
Order Code	MAV-8Xpt-DEL-FS	
Dimensions	Width	Depth
	200 mm (7.87 inches)	140 mm (5.15 inches)
Connection	2 x RJ45	
Power	(POME) Power over Maverik Ethernet	

**MAV 8xpt OB**

8 crosspoint Mav module select as above but with the addition of the crystal clear OLED buttons across the top of each Mav for instant access to macros, memories and effects.

Mav Designation	MAV-8Xpt-OB	
Order Code	MAV-8Xpt-OB	
Dimensions	Width	Depth
	160 mm (6.29 inches)	140 mm (5.15 inches)
Connection	2 x RJ45	
Power	(POME) Power over Maverik Ethernet	

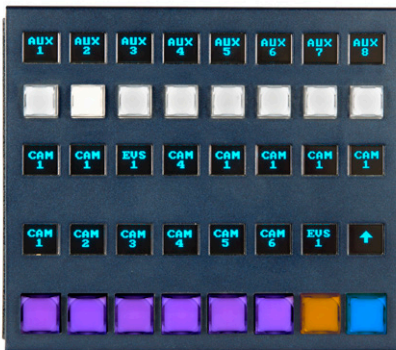
MAV MODULES

A wide range of Mav modules are available, allowing you to design a Maverik panel specifically tailored to your requirements.

**MAV 8xpt FS**

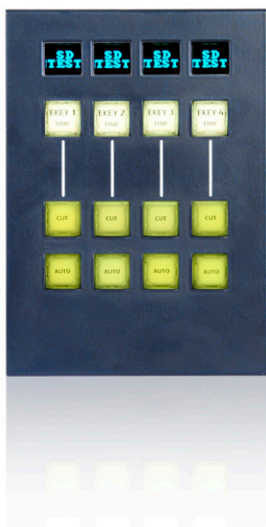
8 crosspoint Mav module selector, to access any of your sources and feeds with confidence. Identify each source with up to 4 lines of characters. Connect as many Mav 8xpt FS modules as you desire, there are no limits.

Mav Designation	MAV-8Xpt-FS	
Order Code	MAV-8Xpt-FS	
Dimensions	Width	Depth
	160 mm (6.29 inches)	140 mm (5.15 inches)
Connection	2 x RJ45	
Power	(POME) Power over Maverik Ethernet	

**MAV-AUX**

Include a Mav Aux module to your Maverik for dedicated & confident control of aux bus switching with three levels of mnemonics showing source name, aux bus name and the switched source, perfect for in-vision productions.

Mav Designation	MAV-AUX	
Order Code	MAV-AUX	
Dimensions	Width	Depth
	160 mm (6.29 inches)	140 mm (5.15 inches)
Connection	2 x RJ45	
Power	(POME) Power over Maverik Ethernet	

**MAV DSK**

The Mav DSK module gives operators instant access to the DSKs on the assigned M/E. It allows for fast operations to take and remove keys off and on air.

Mav Designation	MAV-DSK	
Order Code	MAV-DSK	
Dimensions	Width	Depth
	100 mm (3.93 inches)	140 mm (5.15 inches)
Connection	2 x RJ45	
Power	(POME) Power over Maverik Ethernet	

MAV MODULES

A wide range of Mav modules are available, allowing you to design a Maverik panel specifically tailored to your requirements.

**MAV-KEYER**

Design and manipulate effects on key layers fast with the Mav Keyer module. Resize your keys, build effects, change their priority layers with an easy to reach selection Mav tool.

It is the perfect direct and accurate key parameter control for any M/E keyer delegated to the keyer Mav.

Mav Designation	MAV-KEYER	
Order Code	MAV-KEYER	
Dimensions	Width 160 mm (6.29 inches)	Depth 140 mm (5.15 inches)
Connection	2 x RJ45	
Power	(POME) Power over Maverik Ethernet	

**MAV JOY**

The Mav Joystick can be used for multiple functions, whether you're resizing key effects, moving keyers, creating timelines, or even adjusting camera heads.

The Mav Joy can be used across the Maverik panel for any M/E, giving the operator easy access for simple operations.

Mav Designation	MAV-JOY	
Order Code	MAV-JOY	
Dimensions	Width 100 mm (3.93 inches)	Depth 140 mm (5.15 inches)
Connection	2 x RJ45	
Power	(POME) Power over Maverik Ethernet	

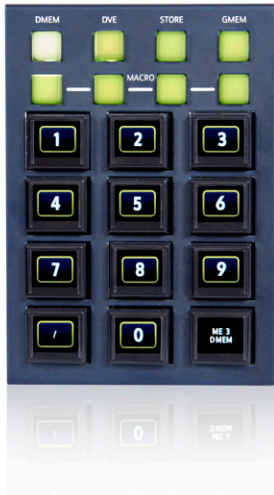
**MAV KEYPAD**

Whether you need to save memories such as Dmems and Gmems or recall them, manipulate resize parameters for key layers, the Mav Keypad is an easy to access number pad, making operations fast and effective.

Mav Designation	MAV-KEYPAD	
Order Code	MAV-KEYPAD	
Dimensions	Width 100 mm (3.93 inches)	Depth 140 mm (5.15 inches)
Connection	2 x RJ45	
Power	(POME) Power over Maverik Ethernet	

MAV MODULES

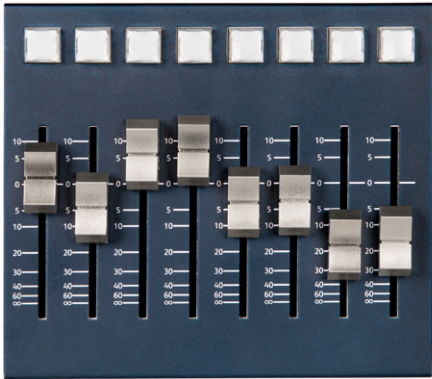
A wide range of Mav modules are available, allowing you to design a Maverik panel specifically tailored to your requirements.

**MAV UFBPAD**

A powerful module giving you multiple layers of macros for any type of memory recall, macro activation, clip/store load, or even operational commands.

The User Function Pad Mav module can be assigned and designated any way you want for your production.

Mav Designation	MAV-UFBPAD	
Order Code	MAV-UFBPAD	
Dimensions	Width	Depth
	100 mm (3.93 inches)	140 mm (5.15 inches)
Connection	2 x RJ45	
Power	(POME) Power over Maverik Ethernet	

**MAV AUDIO FADER**

Extend the control of the Audio Mixer to a single control point with the production switcher in the control room using the Mav Audio Fader.

This Mav module can be placed anywhere within a desired Maverik control surface. Fitted with motorized faders, the Mav Audio Fader works with memories as well as normal audio operation control.

Mav Designation	MAV-AUDIO-FADER	
Order Code	MAV-AUDIO-FADER	
Dimensions	Width	Depth
	160 mm (6.29 inches)	140 mm (5.15 inches)
Connection	2 x RJ45	
Power	(POME) Power over Maverik Ethernet	

**MAV-AUTO**

Customize your production easily and take your visuals to air fast and immediate with the MAV-AUTO module. It has been designed to make operations easy and fast with customizable full color OLED macro buttons and a source selection row.

The MAV-AUTO module is the perfect solution for automated productions or even as a large shotbox function to trigger any combination of effects when you need them.

Mav Designation	MAV-AUTO	
Order Code	MAV-AUTO	
Dimensions	Width	Depth
	160 mm (6.29 inches)	140 mm (5.15 inches)
Connection	2 x RJ45	
Power	(POME) Power over Maverik Ethernet	

MAV MODULES

A wide range of Mav modules are available, allowing you to design a Maverik panel specifically tailored to your requirements.

BLANK MAV MODULES

Blank Mav modules are used in all panel designs to use space to its maximum while designing any layout. Mav Blanks are deployed like any Maverik Module, anywhere.

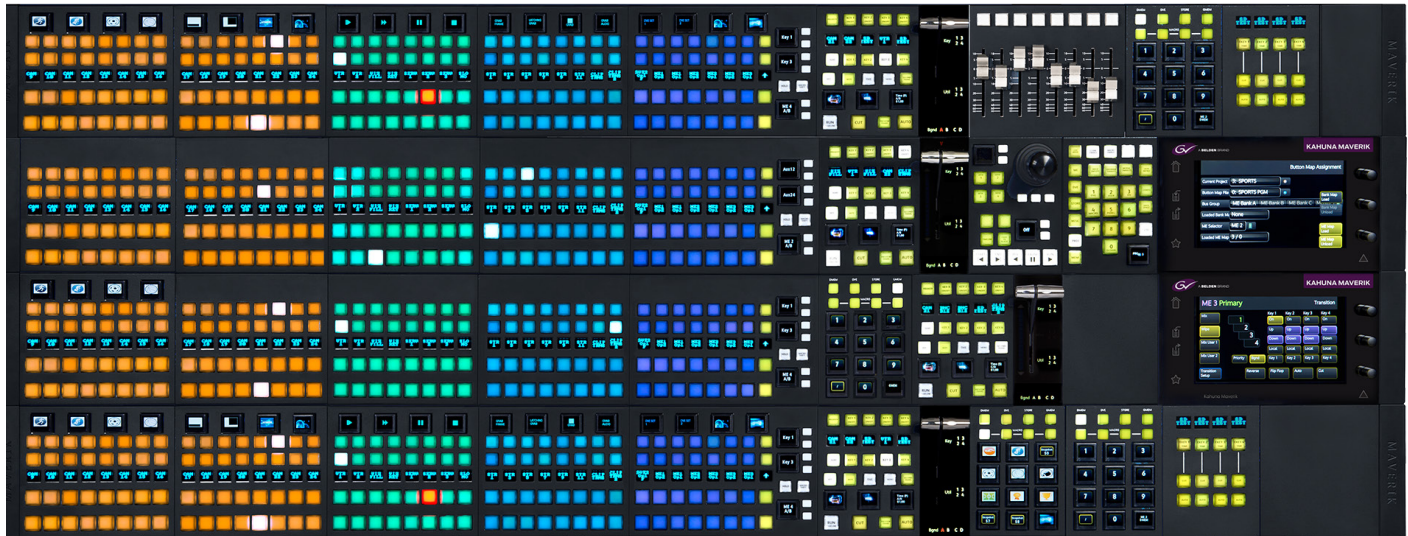
MAV Blank Size	Order Code
MAV - Blank - 20	MAV-BP-20
MAV - Blank - 40	MAV-BP-40
MAV - Blank - 60	MAV-BP-60
MAV - Blank - 80	MAV-BP-80
MAV - Blank - 100	MAV-BP-100
MAV - Blank - 120	MAV-BP-120
MAV - Blank - 140	MAV-BP-140
MAV - Blank - 160	MAV-BP-160
MAV - Blank - 180	MAV-BP-180
MAV - Blank - 200	MAV-BP-200
MAV - Blank - 220	MAV-BP-220

MAVROWFRAME

MavRowFrame Racking system for all Maverik Mav Modules. Available lengths in multiples of 20 mm. MavRowFrames start at 100 mm and go through to 1560 mm widths.

Multiple MavRowFrames can be connected together and increase the depth of a panel that provides the basis of any Maverik panel layout.

For flyaway kits and other rack-mounted applications, a 19"/420 mm MavRow frame with rack ears is also available.



The switcher control surface that doesn't conform to the norm.

A totally new innovation in switcher control for the World leading Kahuna range. Maverik is perfect for every studio and mobile TV production. It allows unprecedented freedom in panel design so you can throw away the rule book and create your productions in exactly the way you want.

Extensive training & support

Extensive training and support services ensure you get the very best out of your Grass Valley Kahuna live production switcher.

Kahuna Care service

Grass Valley's customer service offers first class solutions for optimizing your operations, through world-leading technical support and fast responsiveness during the life of your product.

Kahuna Care is a premium support package that offers professional services 24 hours a day all year round. Benefiting from advance parts replacement service, your mission critical system will always be maintained to the highest standard both quickly and effectively.

Grass Valley also offers health checks, repair services, training and spare parts packages, giving you total peace of mind throughout the life of your product.

Grass Valley's customer services are here to help and support you. For further information about Kahuna Care contact your Grass Valley sales representative.

Club K

Club K is an on-line community for Grass Valley Kahuna production switcher users, where information and ideas can be shared between users and owners, and where Grass Valley can easily communicate with users.

The Club K website provides all Kahuna user contacts with a 24-hour, 365-day-a-year, one-stop resource, featuring customer support, information on the latest product news, upgrades (options, spares and customer service contracts), special offers and discussion forum.

Training

Training before and after a system purchase is available worldwide at customer premises, Grass Valley offices or an alternative third-party location. The duration of these training sessions will depend on user requirements.

Courses are available for basic as well as advanced operations, technical support, maintenance and familiarization. They can be custom-designed to meet specific requirements.

Kahuna customer services at a glance

	In Warranty	Out of Warranty (without Kahuna Care)	Out of Warranty (with Kahuna Care)
9-to-5 phone support	✓	✓	✓
Online support resources	✓	✓	✓
Advanced part replacement (next-day service)	✓	✗	✓
24x7x365 phone support	✓	✗	✓
Repair service	not required	✓	not required
Health check	as needed	as needed	as needed

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