



### FormatFusion™

FormatFusion enables Kahuna to offer total format freedom with any broadcast format for inputs and outputs. Any of the 80 inputs are free to be assigned to be SD or HD with no restriction. Working as part of each M/E, this provides flexibility to create powerful compositions made up of SD and HD sources, plus provide SD and HD outputs.

FormatFusion completely eliminates the need for external conversion boxes. This not only reduces cost and complexity, but results in a low latency infrastructure with significantly fewer timing errors.

## Kahuna™ Mainframes

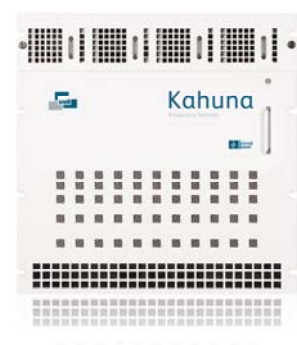
The Production Switcher that Defies Definition™



**Offering breakthrough multiformat performance, Kahuna is the world's first production switcher to enable simultaneous standard and high definition operations in the same mainframe on the same control surface.**

Powered by Snell's exclusive FormatFusion signal processing technology, Kahuna breaks the video format barrier enabling seamless real-time mixing of SD and HD video, in any format, without compromise or loss of quality. Designed for live mobile, studio and news production, Kahuna offers a familiar user interface while delivering superior multiformat picture quality in busy, fast-paced, live production environments. Never before has such advanced and innovative signal processing technology been combined in a single, versatile production switcher.

Kahuna offers a clear and planned transition path in upgrading to new media technologies. The switcher can be installed initially with SD only capability and later updated for multiformat operation through a simple software upgrade. Kahuna allows a gradual, controlled transition to HDTV, putting the broadcast customer in total control of when to transition to the next generation of television technology.

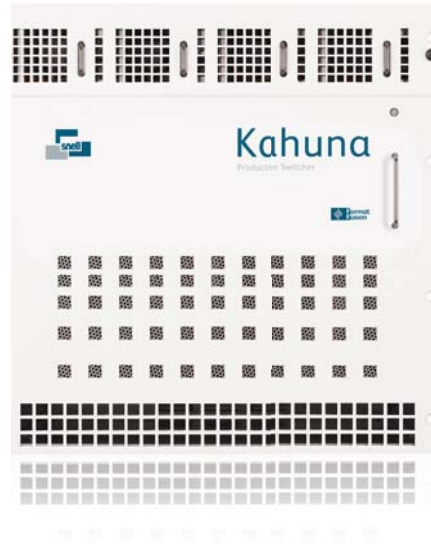


Kahuna delivers:

- A wide range of solutions for fast paced, live production
- FormatFusion™ SD/HD operation included in a powerful feature set
- Multiple, easy-to-use panels offering the ultimate in flexibility
- A wealth of must-have creative tools including 3D DVE effects
- Simple to install, maintain and integrate with 3rd party equipment, including audio and robotic cameras
- Easy expansion as business needs change

### Kahuna Mainframes

#### 11RU



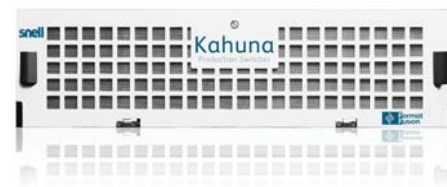
**Size** 11RU  
**Height** 19.2 inches ~ 488mm  
**Width** 19 inches nominal ~ 485mm including brackets  
**Depth** 21.9 inches nominal ~ 558.1mm including connectors  
**Weight** 105.8lbs ~ 48kg

#### 6RU



**Size** 6RU  
**Height** 10.47 inches ~ 266mm  
**Width** 18.98 inches nominal ~ 482mm including brackets  
**Depth** 22.19 inches nominal ~ 563.7mm including connectors  
**Weight** 72.7lbs ~ 33kg

### 3RU Front Panel



**Size** 3RU  
**Height** 5.2 inches ~ 132.3mm  
**Width** 19.0 inches ~ 482.6mm  
**Depth** 23.4 inches ~ 594.8mm  
**Weight** 40lbs ~ 18kg

## Technical Specification

### 11RU, 6RU and 3RU

#### TV Standards (Options)

625/525	4:3
625/525	16:9
1080i	60Hz SMPTE-274M(4), -292M(D)
1080i	59.94Hz SMPTE-274M(5), -292M(E)
1080i	50Hz SMPTE-274M(6), -292M(F)
1035i	60Hz SMPTE -260M,-292M(A)
1035i	59.94Hz SMPTE-260M,-292M(B)
1080p	30Hz sF
1080p	29.97Hz sF
1080p	25Hz sF
1080p	24Hz sF
1080p	23.976Hz sF
1080p	30Hz SMPTE-274M(7) -292M(G)
1080p	29.97Hz SMPTE-274M(8) -292M(H)
1080p	25Hz SMPTE-274M(9) -292M(I)
1080p	24Hz SMPTE-274M(10) -292M(J)
1080p	23.976Hz SMPTE -274M(11) -292M(K)
720p	60Hz SMPTE-296M(1), -292M(L)
720p	59.94Hz SMPTE-296M(2), -292M(M)
720p	50Hz
Analog genlock	High definition tri-level syncs signal or SD 1V B and B
Input return loss	>15 dB to 750 MHz >12 dB to 1500
Maximum input	Exceeds SMPTE292
Cable length	Recommendations >= 100 m of Belden 8281 cable
Video signal output	>15 dB to 750 MHz
Return loss	>12 dB to 1500
<b>Internal Processing</b>	
Pb and Pr data rate	37.125/6.75 MHz or (/1.001) MHz (4:2:2) @12bit
Resolution	10 bits. Output
Luma and key data rate	74.25/13.5 MHz or (74.25/1.001) MHz @12bit

### 11RU Mainframe

#### Video Signal Inputs

80 SD/HD	270Mbit/s/ 1.485Gbit/s
Serial digital	Serial digital interface as REC601/ SMPTE 292M via BNC connectors
Genlock reference	2 off Analog Sync (loop A and B through)

#### Video Signal Outputs per ME

4 programmable	4 via 8 BNC connectors HD/SD-SDI (2 feeds per output)
4 timed aux	4 via 8 BNC connectors HD/SD-SDI (2 feeds per output)
Analog sync out	Timing Adjustable Sync Output

#### Control Interfaces Per M/E

External interfaces	2 x freely-assignable RS422 each via 1 x 9-way D-type
Diagnostics	RS232 (DCE) via 1 x 9-way D-type connector

#### Control Interfaces Shared

GPI inputs	48 x TTL-level inputs via 25-way D-type connectors Tally/GPO Outputs 84 x isolated contact closures via 25-way D-type connectors
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Six 10/100 base	Six RJ45 connectors. T Ethernet connections Used for panel control, FTP, Offline download
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#### Control Interfaces (Control Surface)

	1 x 25-way D-type connector to GUI display
	1x 15 Way D-type on Panel for Master Aux Panel, Micropanel or ShotBox

#### Control Interfaces (GUI)

Mainframe	10/100 base T via 1 x RJ45 Connector GUI 25-way D-type connector display and main panel (with Power 3m)
3 USB ports	USB 1.1/2.0 Ports (2 on rear, 1 on front of GUI) 2 x 15 Way D-type on rear
Aux control port	RJ45 Daisy chain for 1U AUX panels
Main aux	15 Way D-type
Micropanel	15 Way D-type
ShotBox	15 Way D-type

#### Power

Kahuna mainframe	Auto sensing 100-250 VAC 50/60 Hz nominal
Power supply	Two fully independent hot swappable PSU modules, with separate mains power feeds via 2 x 16A IEC-C20 socket. Dual Redundant requires two more fully independent PSU modules; with separate mains power feeds via 2 x 16A IEC socket
Kahuna 11RU mainframe	1200 W Maximum with all Power Consumption options fitted Auto sensing 100-250 VAC 50/60 Hz nominal
Control panel	
Power supply	2ME, 2ME compact and compact with trackerball, 3ME, 3ME compact, 4ME and 32 panel
	Two fully independent PSU modules, with separate mains power feeds via 2 x 10A IEC-C14 sockets. A single PSU is standard the second PSU is an option 100W Maximum Power Consumption

#### Control panel

1ME control panel, micropanel and shotbox	Each have Auto sensing 100-250 VAC 50/60 Hz nominal. Provision for two fully independent external PSU's giving dual redundant operation
Control panel	50W Maximum Power Consumption

#### Mainframe

Temp range	41 to 95 ° F, 5 to 35° C non condensing operating
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#### Control Surfaces and Ancillary Panels

Temp range	41 to 95 ° F, 5 to 35° C non condensing operating
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### 6RU Mainframe

#### Video Signal Inputs

40 SD/HD	270Mbit/s / 1.485Gbit/s
Serial digital	Serial digital interface as REC601/ SMPTE 292M via BNC connectors
Genlock reference	2 off Analog Sync (loop A&B through)

#### Video Signal Outputs per ME

4 programmable	4 BNC connectors HD/SD-SDI (2 feeds per output)
4 timed aux	4 BNC connectors HD/SD-SDI (2 feeds per output)
Analog sync out	Timing Adjustable Sync Output

#### Additional Video Signal Outputs

8 source aux	8 BNC connector HD/SD-SDI
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## Technical Specification cont...

### Control Interfaces Per ME 2 M/E Max

External interfaces	2 x freely-assignable RS422 each via 1 x 9-way D-type
Diagnostics	RS232 (DCE) via 1 x 9-way D-type connector

### Control Interfaces Shared

GPI inputs	24 x TTL-level inputs via 25-way D-type connectors
Tally/GPO outputs	48 x isolated contact closures via 25-way D-type connectors
Three 10/100 base T	3 x RJ45 connectors. Used Ethernet connections for panel control, FTP, Offline download

### Control Interfaces (Control Surface)

	1 x 25-way D-type connector to GUI display
	1x 15 Way D-type on Panel for Master Aux Panel, Micropanel or ShotBox

### Control Interfaces (GUI)

Mainframe	10/100 base T via 1 x RJ45 Connector GUI 25-way D-type connector display and main panel (with Power 3m)
3 USB ports	USB 1.1/2.0 Ports (2 on rear, 1 on front of GUI) 2 x 15 Way D-type on rear
Aux control port	RJ45 Daisy chain for 1U AUX panels
Main aux Micropanel ShotBox	15 Way D-type 15 Way D-type 15 Way D-type
<b>Power</b>	
Kahuna mainframe Power supply	Auto sensing 100-250 VAC One fully independent hot-swappable PSU module, with a single mains power feed via 1 x 16A IEC-C20 socket. Dual Redundancy requires one more fully independent PSU module; with separate mains power feed via 1 x 16A IEC-C20 socket
Kahuna 6RU mainframe	900 W Maximum with all Power Consumption options fitted Auto sensing 100-250 VAC 50/60 Hz nominal
Control panel Power supply	2ME, 2ME compact and compact with trackerball, 3ME, 3ME compact, 4ME and 32 panel
Control panel	Two fully independent PSU modules, with separate mains power feeds via 2 x 10A IEC-C14 sockets. A single PSU is standard the second PSU is an option 100W Maximum Power Consumption
1ME control panel, Micropanel and shotbox	Each have Auto sensing 100-250 VAC 50/60 Hz nominal. Provision for two fully independent external PSU's giving dual redundant operation
Control panel	50W Maximum Power Consumption
<b>Mainframe</b>	
Temp range	41 to 95 °F, 5 to 35° C non condensing operating
<b>Control Surfaces and Ancillary Panels</b>	
Temp range	41 to 95 °F, 5 to 35° C non condensing operating

### 3RU Mainframe

<b>Video Signal Inputs</b>	20 SD/HD serial digital	270Mbit/s/1.485Gbit/s serial digital interface as REC601/SMPTE 292M via BNC connectors
Genlock reference A and B	2 x Analog Sync (loop through)	
<b>Video Signal Outputs</b>	Programmable HD/SD-SDI	4 x BNC connectors (1 feed per output)
Timed aux HD/SD-SDI	4 x BNC connectors (1 feed per output)	
1x analog sync out	Timing Adjustable Sync Output	
<b>Additional Video Signal Outputs</b>	Source aux HD/SD-SDI	8 x BNC connectors
<b>Control Interfaces</b>		
External interfaces	2 x freely-assignable RS422 each via 1 x 9-way D-type	
Diagnostics	2 x RS232 (DCE) via 1 x 9-way D-type connector	
<b>Control Interfaces Shared</b>		
GPI inputs	14 x TTL-level inputs via 1 x 15-way D-type connectors	
Tally/GPO outputs	24 x isolated contact closures via 2 x 25-way D-type connectors	
10/100 base T ethernet connections (reserved for slot 2)	1 x RJ45 connectors. Used for panel control, FTP, Offline download. NOT Auto – MDX/MDXI on RJ45 connector	
<b>Control Interfaces on Ancillary Panels</b>		
Mainframe	1 x 10/100 base T via 1 x RJ45 connector (to GUI). NOT Auto – MDX/MDXI on RJ45 connector	
GUI (graphical user display)	25-way D-type connector (to Control Surface)	
3 USB ports	USB 1.1/2.0 Ports (2 on Rear 1 on front of GUI)	
Aux control port	RJ45 Daisy chain for 1U AUX panels	
Main Aux, shotbox or micropanel	15 Way D-type on Main Panel and GUI (with Power 3m)	
Spare control to:	15 Way D-type on GUI (ShotBox or Micropanel)	
<b>Power</b>		
Kahuna mainframe power supply	Auto sensing 100-250 VAC 50/60 Hz nominal. One fully independent hot-swappable PSU module, with a single mains power feed via 1 x 10A IEC-C20 socket. The mainframe will function normally using only one PSU, Dual Redundancy requires the use of the second PSU	
1M/E control panel power supply	+12V, 5A supplied by a 25-way D-type connector, using one or two external PSU modules	
Kahuna mainframe power consumption	No more than 450 W Maximum with all options fitted	
1M/E control panel power consumption	50W Maximum. Auto sensing 100-250 VAC 50/60 Hz nominal. Provision for two fully independent external PSU's giving dual redundant operation	
<b>Mainframe</b>		
Temperature range	5 to 35° C non condensing operating	
<b>Control Surfaces and Ancillary Panels</b>		
Temperature range	5 to 35° C non condensing operating	