Toner cable equipment, inc.

KULA IP Production Switcher

grass valley

The move to IP, which is becoming a reality for broadcasters and media organizations, is a massive shift for our industry and also a huge opportunity.

We're seeing our customers' technology models changing: many of them are looking to work with real-time audio and video transport over 10 GbE, 40 GbE and 100 GbE IP networks. This has led to the development of sev- eral real-time protocols such as uncompressed SMPTE ST 2022-6, SMPTE ST 2022-7 and VSF TR03/SMPTE ST 2110 to stream and enable interopera- bility across equipment in the production chain.

Enter the Kula IP, a new smart production switcher from Grass Valley, that delivers massive amounts of power and seamlessly connects with today's IP network infrastructures. Kula IP supports these real-time protocols for streaming video on inputs and outputs and works with networks switches of up to 100 GbE.

The Kula IP production switcher provides high-end effects and is available in 2 M/E and 3 M/E models, as well as a 1 M/E UHD model.

Applications

The new Kula IP is perfect for a broad range of applications within the IP environment:

Sports / Regional news / Magazine programs / Internet feeds
Outside/ remote broadcasts / Flyaway

Kula IP is uniquely positioned for media companies that need full IP I/O yet want a more cost-effective route into the IP domain. Of course it's crucial that customers still benefit from a premium level of production capabilities in a smaller, more efficient form factor.

Kula IP offers flexible M/E functionality and aux outputs, main program and in-vision outputs. Productions have never been so easy in IP.

Powerful M/Es

Kula IP offers the most powerful M/E on the market. Each M/E has four keyers with resize engines including Dual Tile mode offering eight key layers, a dedicated animated clip transition called a Mav Trans and an A/B background.

Additional Sub M/E Functionality

Kula IP provides additional Sub M/Es to the standard M/E functionality.* Each Sub M/E includes two linear/luminance/chroma keyers. One keyer can be assigned to a 2.5D DVE resize engine, offering an extra three key layers plus an A/B background for creative productions without burning M/E resources.

Assignable Downstream Keyers

Four floating DSKs are available within the Kula IP. They can be inde- pendently assigned to any output or used downstream of any M/E. They have resize engines and can create eight key layers.

Capability of Delivering Multiple Outputs

Kula IP can output multiple standards simultaneously using the Kahuna tech- nology FormatFusion3*, opening up more functionality across the delivery of HD, 1080p and 4K.

Multiviewer Matching Kahuna's High Performance

Kula IP's internal multiviewer offers flexibility with configurable one to four heads and 16 tiles to build preview windows to prepare for professional live productions. When more monitoring is required, M/E 2 can be reallocated to become a 2nd configurable multiviewer with up to 12 tiles across one to four heads.

Largest ClipStore

The Kula production switcher has the largest internal ClipStore in its class: it provides ten ClipStore outputs with 16 GB of RAM, which gives up to two minutes of uncompressed HD video.

Large Input and Output

With 36 IP inputs and 12 IP outputs, the Kula IP is a practical production switcher. For more flexibility, Kula IP has an extra four SDI inputs and two extra bi-directional SDI ports assignable as an input or output.

Control Surface that Supports Direct Control and Macro Allocation

Kula IP has several panels in the one, two and three M/E range. It offers up to 16 or 24 crosspoint buttons, separate key control and transition oper- ations and assignable macro buttons with OLED displays for crystal clear identification. Kula IP can connect to up to eight extra modules to the panel from the Kahuna Maverik modular panel range.

* Sub M/Es functionality is either Sub M/Es or FormatFusion3 or FormatFusion4 engines. The 2 M/E and 3 M/E Kula will support 4K UHD, however at the same feature specification as the 1 M/E 4K UHD Kula.

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KEY FEATURES

- Up to 3 M/Es
- Up to 32 key layers
- Up to IP 50 GbE interface + 50 GbE packet redundancy

- Supports 36 inputs and 12 outputs over RTP streams SMPTE ST 2022-6, SMPTE ST 2022-7 & TR03 uncompressed video
- 6 x SDI BNCs
- Supports 1080i/720p/1080p & UHD

- FormatFusion3 or FormatFusion4
- Internal ClipStore
- Internal multiviewer up to 28 tiles
- Easy operation

Input/Output Tables with SMPTE ST 2022-6, SMPTE ST 2022-7 & VSF TR03/SMPTE ST 2110

Kula IP	3 M/E	2 M/E	1 M/E UHD
Inputs			
IP over 4x 50 GbE QSFP28	36	36	9
3/1.5G or single-link 12G SDI inputs over BNC	4	4	1x 12G or 4x HD
Outputs			
IP over 4x 50 GbE QSFP28	12	12	3
Bidirectional I/O			
3/1.5G assignable in or out BNC	2	2	2

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 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)

IP Connectivity
Duplex signals supported over RTP streams via 2x SFP+ 28 cages.

SMPTE ST 2022-6, SMPTE ST 2022-7, VSF TR03/SMPTE ST 2110
36 inputs – 1.485 Gb/s format sources
36 inputs – 2.970 Gb/s format sources
9 inputs 4K UHD in SMPTE ST 2110
12 outputs – 1.485 Gb/s format sources
12 outputs – 2.970 Gb/s format sources
3 outputs 4K UHD in SMPTE ST 2110

Ethernet Signals
QSFP28 optical x2
Conforms to IEEE 802.3ba – 100 GbE

SDI Signals
2x bidirectional
4x SDI BNC Inputs – 1.485 Gb/s format sources and 2.970 Gb/s format sources OR 1x 12G-SDI (SMPTE ST 2082) single link BNC connector

Genlock
Genlock reference 2 off analog sync via BNC connectors

Control Interfaces
66 GPI tally/GPO outputs assignable GPI/GPO isolated contact closures via 3x 25-way D-Type. Assignable as GPI or GPO
16 10/100/1000base-T 3x RJ45 Ethernet connectors fixings.
2x RS-422 control ports
2x USB

Power

Kula IP 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 13A IEC – 320-C14 socket
Power consumption: <400W
Temperature range: 5 to 40°C (41 to 104°F) noncondensing operating

Mechanical
2 RU
Height: 87 mm (3.42 in.)
Depth: 604.8 mm (23.81 in.)
Weight: Approx. 14 kg (30.3 lbs.)