



National Park Service Photo

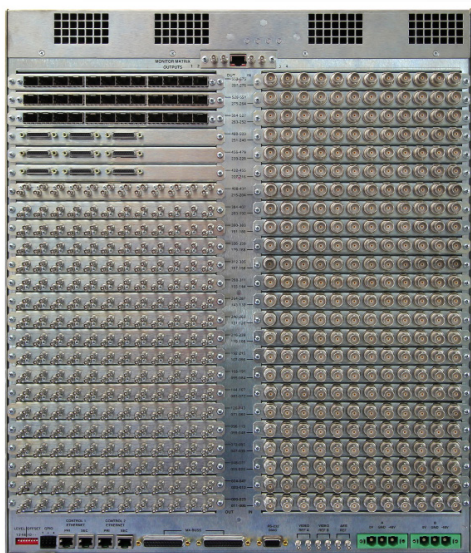
# 400 Series 3 Hybrid Digital Router Engines

IP + SDI = Hybrid Studio Engine



## The New Hybrid 400 Series 3 - a Mix of SDI and Next-Generation IP

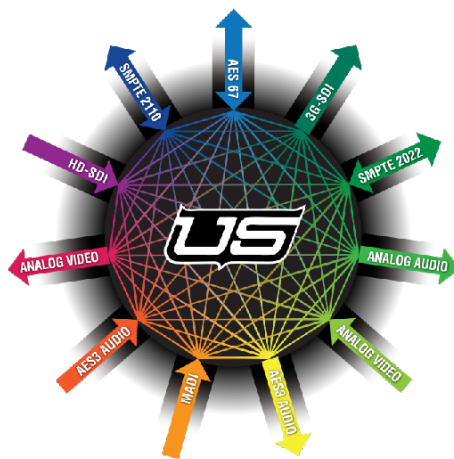
With all the buzz surrounding studio video over IP and the next-generation SMPTE ST-2110 standard, there's still the reality of everyday SDI workflows. Utah Scientific's new 400 Series 3 platform is the perfect choice for high-density SDI coupled with the ability to create high-density IP signals from the same central frame. Backed by our renowned support and legendary reliability, the 400 Series 3 can handle any number of IP and SDI professional video signal formats along with a number of audio and data formats.



### IP and multiviewer connectivity

The Utah Scientific 400 Series 3 is not just another router — it's designed as a purpose-built hybrid router that includes not only SDI but IP signals. From standard-definition and analog signals all the way up to 3G and HD resolutions, the Utah Scientific 400 Series 3 can handle both SMPTE ST-2022 as well as the new SMPTE ST-2110. And, of course, the 400 Series 3 has audio covered with support for analog, digital AES3, MADI, TDM, and the new AES67 formats. Combine that with advanced signal processing for embedding and de-embedding, and the 400 Series 3 is truly a router like no other. And moving forward, Utah Scientific will continue to evolve the 400 Series 3 to support future signal formats, further protecting your investment.

The first purpose-built hybrid router of its kind, the 400 Series 3 offers the flexibility of using both IP and SDI for all 288 inputs and outputs along with a variety of various audio formats. The router also has the ability to convert every signal to SMPTE 2110 or 2022 IP and back to SDI. With its ability to fit in any operational workflow, the 400 Series 3 has a feature set that's found nowhere else in the market. And just like every Utah Scientific product, the 400 Series 3 is backed by a four-decade track record of delivering the industry's only 10-year warranty — giving operators the lowest total cost of ownership in the market.



The 400 Series 3 can handle any number of IP, SDI, audio, and data formats

## Digital Video Standards

SMPTE 259M-C, SMPTE 292M, SMPTE 425M-A, SMPTE 425-B, SMPTE 310M, DVB-ASI compliant

## Digital Video Inputs and Outputs

Formats:	Auto select for simultaneous operations of SD, HD, 3G-SDI, 2K, and DVB-ASI
Connector:	Standard card - BNC, Hybrid card - HD-BNC and Ethernet port
Inputs:	12 per card
Outputs:	12/24 per card
Reclocking:	Automatic for all standard signal rates, 270 Mbps, 1.485 Gbps, 2.970 Gbps, DVB-ASI Automatic bypass for non-standard signal rates, 3 Mbps-2.970 Gbps
Equalization:	Automatic 300m at 270M bps, 150m at 1.485 Gbps, 100m at 2.970 Gbps with Belden 1694A or equivalent cable
Signal Level:	800mV p-p ±10%
Jitter:	Conforms to SMPTE 259-C, 292M, 425-A, 425-B
Return Loss:	< -15 dB to 1.5 GHz, -10dB to 3 GHz Output Return Loss

## Fiber Inputs and Outputs

Connector:	Dual LC SFP
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## HDMI / DVI Inputs and Outputs

Formats:	HDMI v1.4 and DVI 1.0, up to 1920x1080p, 3G-SDI, HD-SDI, SD-SDI
Connector:	Single latch Type D connector SFP (*uses dual SFP cage)

## MADI Standards

MADI/AES10

## MADI Inputs and Outputs

Connector:	BNC 75 ohms or optional SFP
Inputs:	3 MADI streams
Outputs:	3 MADI streams
Cable Length:	100m with Belden 1694A or equivalent cable
Output Return Loss:	< -15 dB to 125MHz
Output Amplitude:	800mV +/- 10%

## IP Standards

SMPTE ST-2022-5/6/7 and SMPTE ST-2110

## IP Inputs & Outputs

Formats:	Auto detect six 1.5 Gbps or three 2.970 Gbps
Connector:	Dual 10GigE SFP, dual HD-BNC SFP for monitor, Ethernet for configuration
Inputs:	2 per card
Outputs:	2 per card
Modes:	Configurable for FEC or low latency non-FEC modes Supports VLAN tagging, IGMP

## Flex Input and Output Card

Inputs:	6 dual SFP cages - up to 12 inputs
Outputs:	6/12 dual SFP cages - up to 12/24 outputs

## Analog Video Standards

NSTC M, NTSC J, NTSC 4.43, PAL B, PAL G, PAL H, PAL I, PAL D, PAL M, PAL N, PAL 6

## Analog Video Inputs and Outputs

Formats:	10-bit composite to SD-SDI video SD-SDI to composite 10-bit video
Connector:	Dual HD-BNC SFP

## Analog Audio Inputs and Outputs

Formats:	48 kHz 16 - 24 Bit, AES / EBU; AES-3
Modes of Operation:	A-D and D-A stereo analog audio
Connector:	Dual D-SUB 37 balanced
Inputs:	12 per card
Outputs:	12 per card
Balanced Impedance:	110 ohms
Frequency Response:	20-20kHz ± .05dB
Max Input Level:	24dBu
Input Impedance:	200k ohms, strappable to 600 ohms
THD:	@24dBu, 20-20kHz .05%
IMD:	@24dBu, 20-20kHz .05%
Hum and Noise:	20-15kHz -85dBu
Crosstalk:	@20kHz 0dB
Gain Uniformity:	± .05dB
Common Mode Rejection:	@50/60Hz 70 dB

## AES Audio Standards AES3id

### AES Inputs and Outputs

Formats:	48 kHz 16 - 24 Bit, AES / EBU; AES-3
Modes of Operation:	Synchronous and Asynchronous
Connector:	BNC unbalanced or D-SUB 37 balanced
Inputs:	12 per card
Outputs:	12 per card
Unbalanced Impedance:	75 ohms
Balanced Impedance:	110 ohms
Input Level:	Minimum: 200 mV p-p, maximum: 7 V p-p
Sample Rate:	48 kHz
Common Mode Range:	± 7V (DC + Peak Signal)
Nominal Rise/Fall Times:	25 nanoseconds
Common Mode Rejection:	>30 dB, DC to 6 MHz
Intrinsic Jitter:	< 0.025 UI Peak, w/700 Hz. HPF applies to discrete AES outputs
Output Phasing Respect DARS Input:	± 2.5% (± 9°) of frame interval

### Reference Input

- (2) Video A BNC Looping:  
Analog PAL, NTSC, or tri-level
- (2) Video B BNC Looping:  
Analog PAL, NTSC, or tri-level
- (2) AES BNC Looping:  
AES3-id DARS, AES3-id (required for audio  
submodule)

**Power** 90-240 VAC, 50/60 Hz  
288 frame: 600 watts max  
All supplies are UL-listed and IEC950 approved

### Physical

Width: 19" (48.26cm)  
Depth: 18.5" (47cm)  
Height: 288 x 288 frame – 12 RU, 21" (53.34 cm)  
528 x 528 frame – 20 RU, 35" (88.9 cm)  
Plus AC power supply rectifier frame - 1 RU,  
1.75" (4.45cm)

### Environmental

Operating temperature 50-104 degrees F, (10-40° C)  
Relative humidity range: 0-90%, non-condensing

Specifications are subject to change without notice

**10**  
Year  
Warranty

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