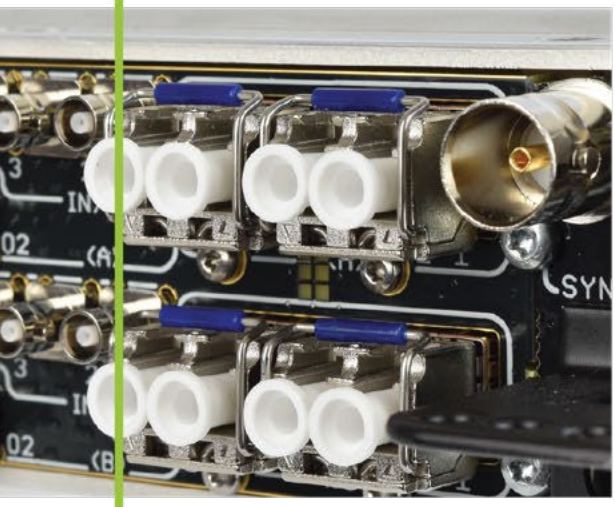
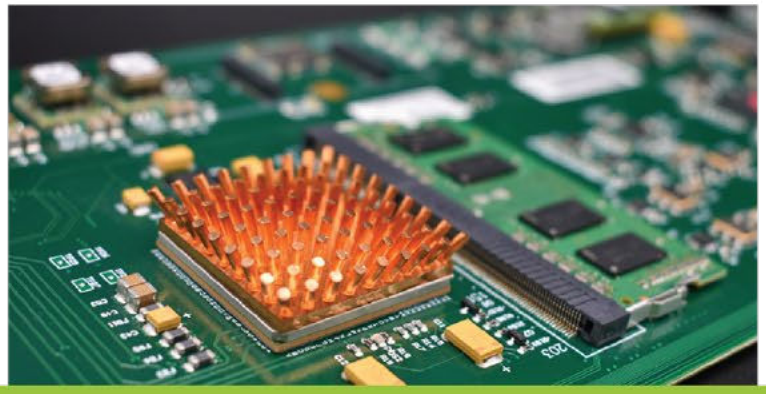
Utah Scientific





Product Guide

2024

What's Inside

Table of Contents

New Products

UTAH-100 UHD DA

Fully configurable 12G distribution amplifier

Configure 1.5G, 3G, or UHD signals in a 16x32 matrix. Each output port can be assigned to any input port allowing for complete operational flexibility.

Features

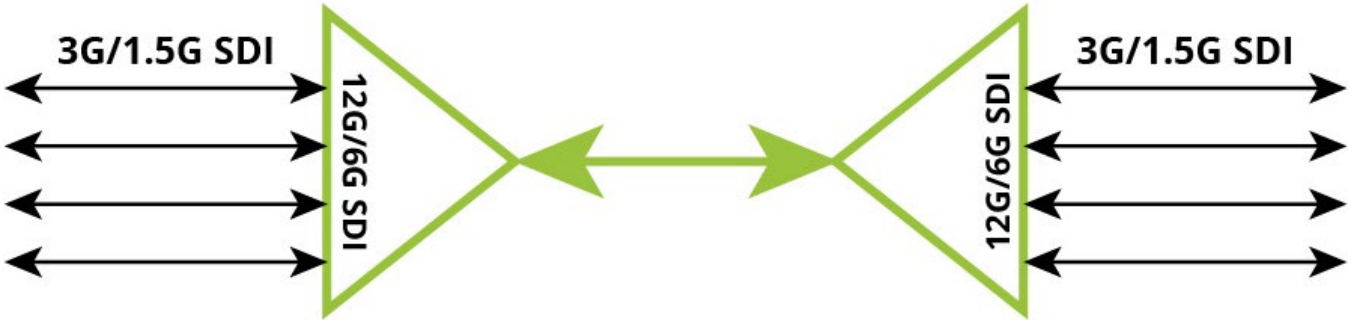
- Fully configurable via included native web server
- Redundant power supply option
- Configure any combination of 1.5G, 3G, and 12G video signals
- Reclocking of compatible signals
- Compatible with DVB-ASI (270 Mbps)
- Compact 1RU frame (19x3.5")
- Power consumption <30W

Includes a 10-year hardware warranty!

MAXMUX Multiplexing System

Combine up to 80 discrete 3G signals in one 2RU system

Stack individual 3G or 1.5G SDI signals into one uncompressed 12G or 6G data stream for more cost-effective transport. MAXMUX is ideally suited for fiber applications, increasing the maximum number of 3G/1.5G channels over CWDM from 18 to 72.



Features

- Combine up to 4 discrete 3G signals into one 12G stream
- Can be used as a standard UHD Quad Link converter for 12G-3G and 3G-12G conversion
- Uses existing SDI or fiber network for simplified installations
- Supports standard resolutions of 12G, 3G, HD, 720p
- Refresh rates of 23.98Hz to 60Hz
- Up to 80 discrete 3G/1.5G signals per chassis

Includes a 10-year hardware warranty!

Flex I/O Card

Mix and match I/O signal formats for ultimate flexibility

The Flex I/O card is designed to receive and drive individual differential pair data streams ranging from analog video to 3G video standards, as well as non-SMPTE standards such as DVB-ASI and AES-3 audio signals.

The output card contains clock and data recovery circuits that operate on these standard SMPTE video frequencies and work to remove jitter from the signal. If a signal is not a standard SMPTE video frequency, it will bypass the reclocking circuit and simply pass the signal through.

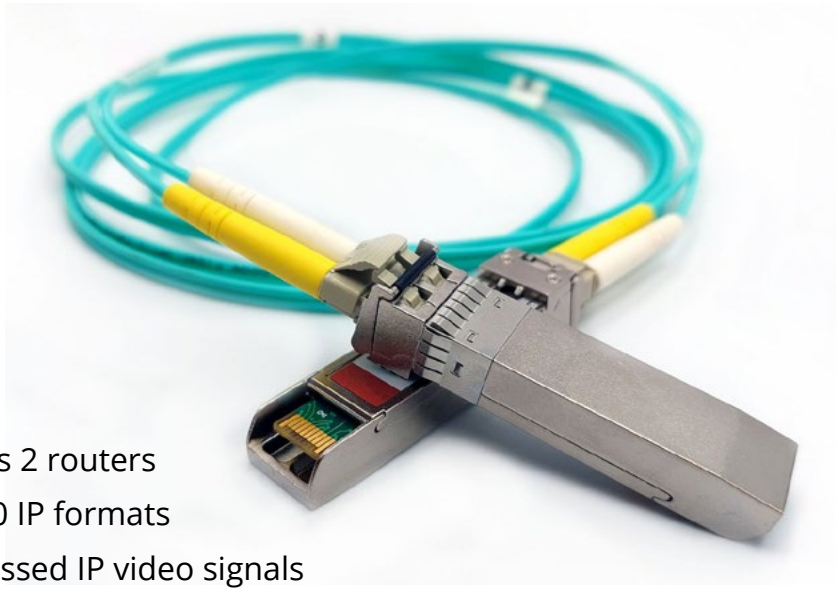
Features

- Mix and match formats on 6 dual SFPs (12 signals total) in UTAH-400 Series 2 routers
- Also available in UDS/UHD routers (8 dual SFPs, 16 signals total)
- Supports fiber inputs & outputs
- Supports SMPTE ST 2110, SMPTE ST 2022-6 in UTAH-400 Series 2 routers
- Distributes full range of 3G SDI video in UDS/UHD routers
- Distributes up to 2160p60 in UHD routers
- Fiber embedding SDI input expansion available in UTAH-400 Series 2 routers
- Fiber disembedding SDI input expansion available in UTAH-400 Series 2 routers

Flex IP for Series 2 Routers

From SDI to IP or IP to SDI

The Flex IP conversion system provides signal conversion from SDI to IP (or vice versa), which allows users to connect signal equipment of various types with ease. Flex IP can reside within a Utah 400 Series 2 router, or can be deployed outside the router in a standalone chassis, providing the ultimate in flexibility.



Features

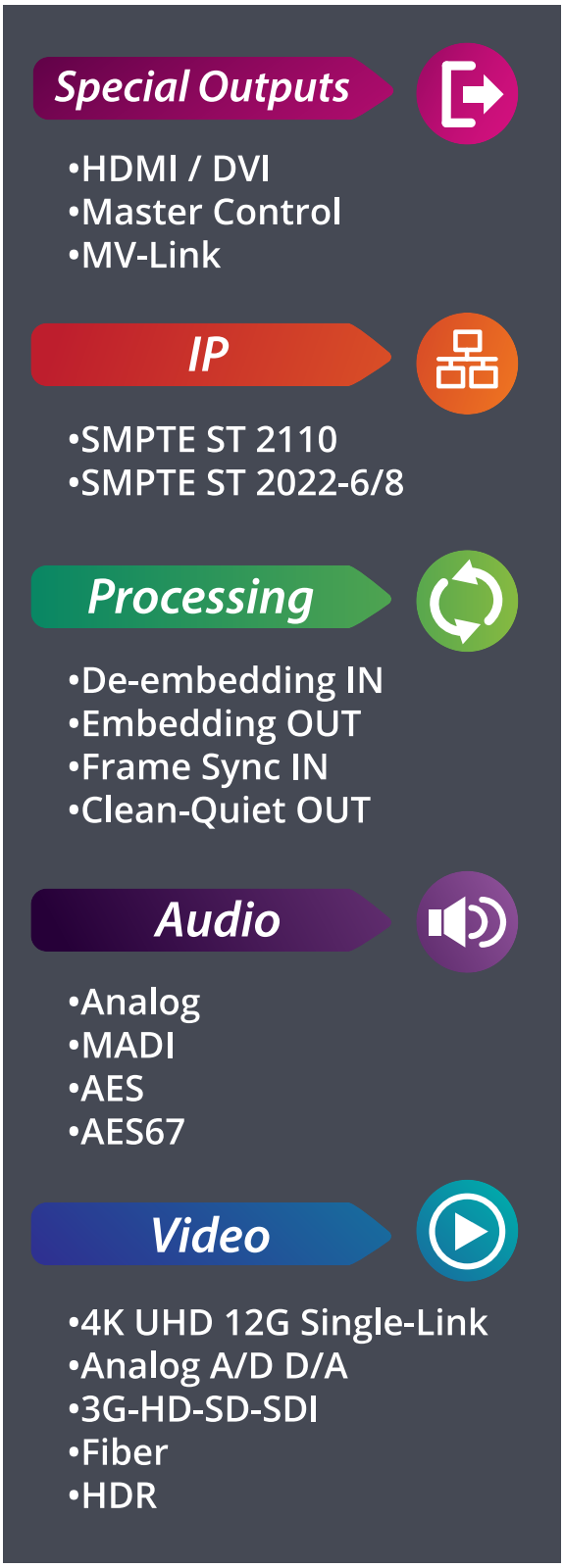
- Supports 12 SD/HD/3G inputs & outputs
- Fully compatible with all UTAH-400 Series 2 routers
- Supports SMPTE 2022-6 and SMPTE 2110 IP formats
- Convert up to 12 3G SDI to 12 uncompressed IP video signals
- Convert up to 12 uncompressed IP to 12 3G SDI video signals
- Mix and match 2022 and 2110 formats in a single input/output slot
- Utilizes SDI or standard 10G fiber networking for simplified installations
- Fully compatible with routing control systems including the SC-4, SC-40, and SC-400

Just Ask US

UTAH 400 Series 2

Hybrid Routing Systems

The New Hybrid 400 Series 2 - A Mix of SDI and Next-Generation IP



The UTAH-400 Series 2 router unifies all signal formats, including IP network formats, onto a single platform. Its unique hybrid architecture tackles even the most demanding signal management environments. Robust switching and processing tools empower you with a **complete, integrated, and flexible system** for the facilities of today and the future.

Simplify your system design with Utah Scientific's advanced modules. They pack a wide range of router functionality into a single frame, **eliminating the need for external equipment.** Manage SDI, decode and multiplex SMPTE ST-2022-6/8 IP, synchronize incoming signals to a common reference, clean-quiet switch on specific outputs, shuffle audio, embed and de-embed audio, access AES and MADI, and even support fiber and analog connections. Plus, the UTAH-400 Series 2 offers a **common set of I/O cards for any frame size,** giving you even more flexibility.

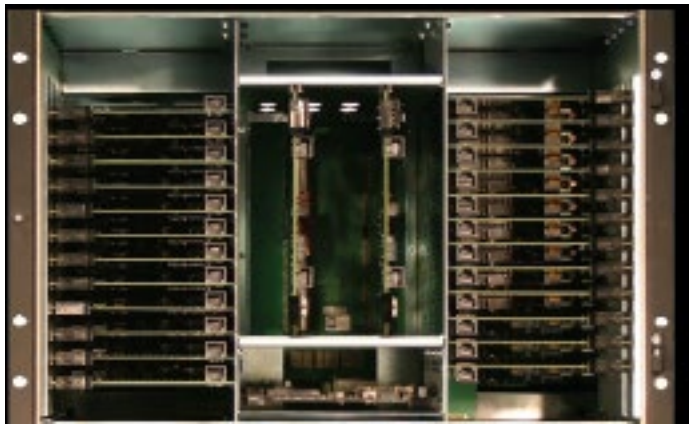
Modular and hot swappable from the front, the cards **reduce physical space requirements and power consumption dramatically** for increased efficiency and long-term scalability in your operation.

UTAH-400 Series 2 routers are readily scalable from **72 x 72 to 1056 x 1056,** offering frame sizes of 72 x 72, 144 x 144, 288 x 288, 528 x 528, and 1056 x 1056.

Available Frames

72 Frame

- Two models available
- 72 inputs and 72 outputs fixed
- Non-square sizes from 12 x 132 to 132 x 12, with any size in between
- Small 4-RU footprint
- Low 150-watt power consumption
- Handles all I/O module options
- Built-in MADI input and output ports
- Redundant power feeds to all modules
- Standard internal monitor matrix
- Internal audio crosspoint available
- Crosspoint redundancy available

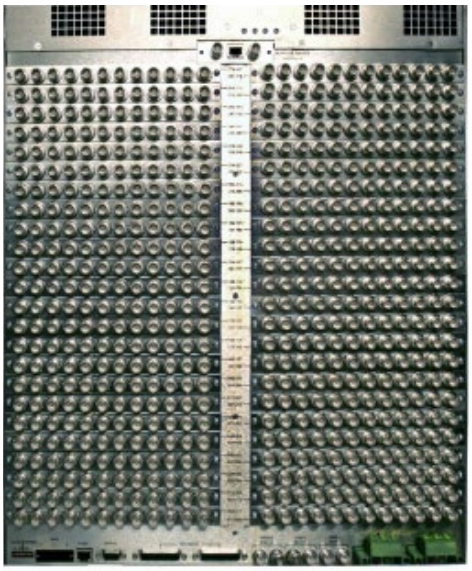


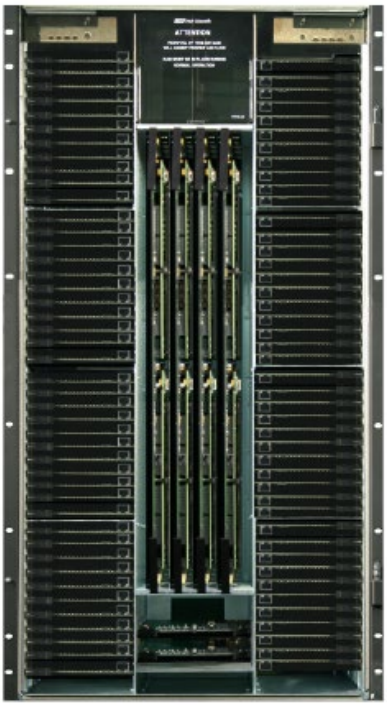
144 Frame

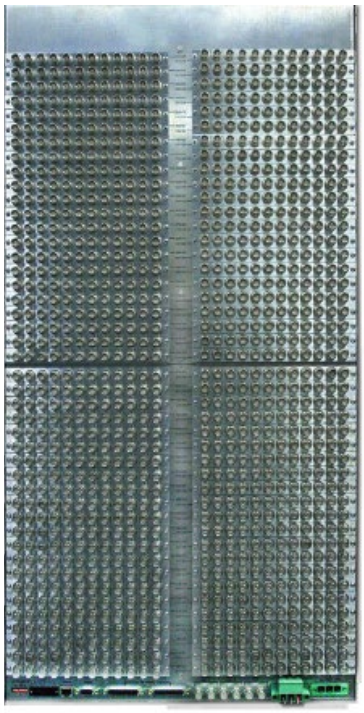
- 144 inputs and 144 outputs
- Small 8-RU footprint (including 1RU PSU)
- Low 300-watt power consumption
- Handles all I/O module options
- Redundant power feeds to all modules
- Standard redundant power supply frame
- AC and DC options
- Standard internal monitor matrix
- Internal audio submodule available
- Crosspoint redundancy available

288 Frame

- 288 inputs and 288 outputs
- Small 13-RU footprint
- Low 600-watt power consumption
- Handles all I/O module options
- Redundant power feeds to all modules
- Standard redundant power supply frame
- AC and DC options
- Standard internal monitor matrix
- Internal audio submodule available
- Crosspoint redundancy available





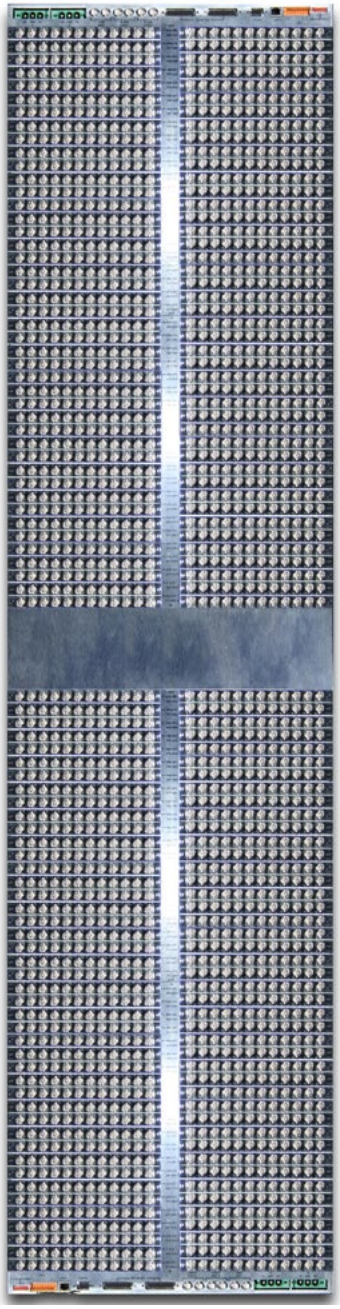


528 Frame

- 528 inputs and 528 outputs
- Small 21-RU footprint (including 1RU PSU)
- Low 1,300-watt power consumption
- Handles all I/O module options
- Crosspoint redundancy available
- Redundant power feeds to all modules
- Standard redundant power supply frame
- AC and DC options
- Standard internal monitor matrix
- Internal audio submodule available

1056 Frame

- 1056 inputs and 1056 outputs
- Small 42-RU footprint (including 2RU PSU)
- Low 2,600-watt power consumption
- Handles all I/O module options
- Redundant power feeds to all modules
- Standard redundant power supply frame
- AC and DC options
- Standard internal monitor matrix
- Internal audio submodule available



System Architecture With Highest Redundancy

Video Crosspoint Cards

Crosspoint cards receive inputs from the input cards and apply these signals to the crosspoint array. Crosspoint cards are controlled by the system controller, and the outputs of the crosspoint array are passed onto output cards by the output bus.

TDM Audio Sub-Router

UTAH-400 Series 2 routers offer a powerful set of tools for switching audio signals when coupled with the optional internal 3K x 3K TDM audio sub-router.

The capability of treating extracted or discrete audio in exactly the same manner as other signals allows for even greater operational flexibility.

Input and Output Cards

The input card carries 12 identical circuits that bring input signals from the rear panel into the matrix and deliver them to the crosspoint board. The output card carries 12 circuits that buffer the signals from the output bus and present them to the connectors at the rear panel of the frame. Each I/O circuit has a signal presence detector for alarm reporting and automated troubleshooting.

Internal Monitor Matrix

Each UTAH-400 Series 2 chassis is equipped with an internal monitor matrix for monitoring any of the output busses carried in that chassis.

Redundant Power Supplies

An external 1-RU power supply frame with dual redundant rectifier units is standard equipment on every UTAH-400 Series 2 chassis. The 72 frame provides dual internal power supplies.

The frame can be fed directly for applications in which 48VDC power is available from an external source, eliminating the need for the 1-RU rectifier frame.

Crosspoint Redundancy

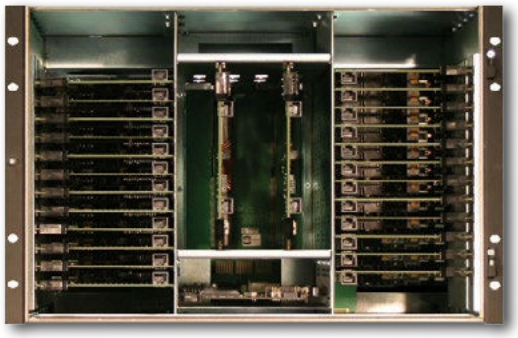
Crosspoint redundancy is enhanced with an optional crosspoint card that provides full backup against an internal path failure in the matrix.

Redundant, Isolated Power Busses

Each UTAH-400 Series 2 router includes two fully isolated and redundant busses to feed each individual module including input, output, and crosspoint cards. With a second power supply rectifier, every module can receive voltage from the A or B bus for an additional level of redundancy inside the router frame.

Frame Controller Redundancy

The frame controller module coordinates all switching and reporting functions from the control system. Redundant frame controllers are installed to ensure the highest level of redundancy.



UTAH-400 Series 2 - 144 Chassis

Features

- Exceptional reliability
- Common I/O modules in all frames
- Signal presence detection on I/O modules
- Internal audio submodule
- Crosspoint redundancy
- Redundant power feeds to all modules
- Standard redundant power supplies
- Standard internal monitor matrix
- Standard redundant frame controllers
- Low power consumption

Available Modules

3G SDI Input / Output Card

This card provides 12 inputs or outputs for SDI formats, supporting signals from 3Mbps all the way up to 3G including SD-SDI, HD-SDI, 3G-SDI, dual- or quad-link 4K, and DVB/ASI. Reclocking is provided as standard for the best possible signal quality on all SMPTE-standard formats.

Features

- 12 inputs or outputs per card
- Digital video from 3Mbps to 3Gbps
- Supporting 4K dual or quad links
- Standard reclocking circuitry

PassThrough Card

The Utah Scientific PassThrough card is a revolutionary way of providing signal conversion from SDI to IP, allowing users to migrate at their own pace. The PassThrough card can reside within the input or output card slots of a Utah 400 Series 2 router and can also be deployed outside the router giving the ultimate in flexibility.

Features

- Supports 12 3G/HD/SD-SDI inputs
- All 12 signals are simultaneously copied and encapsulated in uncompressed IP
- Supported IP formats: SMPTE ST 2022-6/8 and SMPTE ST 2110
- Two 40Gb, QSFP+ ports on the card provide the signal output of the copied and converted signals
- Copy up to 12 SDI to 12 uncompressed IP video/audio signals (Input: 12 SDI, Output: 12 uncompressed IP and 12 SDI)

PassThrough Card

Frame Sync and De-embedding Input Card

This card provides 12 SDI inputs with a submodule that handles four independent streams. Up to three submodules can be fitted on a single input card, providing 4, 8, or 12 simple frame syncs with AES audio de-embedders.

Each frame sync input provides delay adjustments and Proc Amp control including Y/Cr/Cb gain, saturation, and hue. The card also provides audio shuffling for 16 audio channels in each signal. The signals align to the chassis reference and feature a normal pass-through signal path if the reference is disrupted.

Each de-embedding input extracts up to 16 audio channels from each of the video signals on the card, creating a combined 192 TDM stream that is fed to the audio subrouter. Once received the AES can be routed as 16 monaural signals providing up to a full 3072 x 3072 AES router. Full audio routing allows channels to be switched to any of the audio functions installed in the router, including embedding, AES, analog audio, and MADI.

Features

- Frame sync, audio shuffling, and de-embedding on a single card
- 12 SDI inputs supporting 3G, HD, or SD
- 4 independent channels per submodule
- 3 submodules per card for 4, 8, or 12 channels
- Simple Proc Amp controls
- Full audio routing after de-embedding

Available Modules

Clean-Quiet and Embedding Output Card

This module provides 12 SDI outputs within a submodule that supports four independent streams. Up to three submodules can be included in a single chassis, providing clean-quiet and embedding outputs for 4, 8, or 12 streams.

Each clean-quiet output is rebuilt on the line on which the switch occurred, performing an audio V-Fade to prevent any disruptions in the audio signal and then to reserialize the resulting signal with correct CRCs. This ensures that downstream equipment does not indicate errors due to the router switch. The module also provides audio shuffling for the 16 audio channels in each signal. The signals align to chassis reference and feature a normal pass-through signal path if the reference is disrupted.

Each embedding output receives up to 16 audio channels for every video signal on the card, fed from a 192 TDM stream that comes from the audio subrouter. Capabilities include embedding from any of the available audio installed in the router, de-embedding, AES, analog audio, and MADI.

Features

- Clean-quiet, audio shuffling, and embedding on a single card
- 12 SDI outputs supporting 3G, HD, or SD
- 4 independent channels per submodule
- 3 submodules per card for 4, 8, or 12 channels
- Video rebuilt on the line on which the switch occurred
- Audio V-Fade to prevent audio pops and clicks
- Full embedding of any audio in the router

Hybrid Card

Fiber, Analog Video, HDMI, and DVI Input/Output Card

Combining Utah Scientific's award-winning flex cards with SFPs, the UTAH-400 Series 2 routers support fiber, A-D analog video, D-A analog video, HDMI, and DVI formats. You can mix and match any of the SFPs to create up to 12 inputs or outputs (in pairs) of mixed formats.

The card's fiber inputs receive optical signals and convert them to SDI; conversely, the outputs take SDI and convert it to optical signals. Both single-mode and multimode fiber is supported, making this capability especially useful on long cable runs.

The card can also convert composite analog video input signals to SDI, and the outputs can convert SDI signals to composite. This is especially valuable when switching a small amount of analog video.

In the same manner, the card converts HDMI and DVI input signals to SDI and the outputs can convert SDI to HDMI or DVI. This is useful for adding monitors to the router.

With these capabilities, together with Utah Scientific's XFD fiber and coax distribution products, the router becomes the hub of a complete optical routing system.

Features

- Award-winning flexible inputs and outputs
- Up to 12 signals on inputs or outputs
- Mix fiber, analog video, HDMI, and DVI
- Small form factor using removable SFPs
- Convenient way to switch multiple formats on a single card

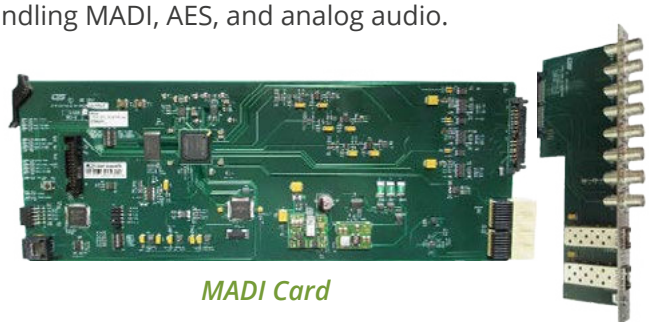
Available Modules

Triple MADI Input/Output Card

This card provides three MADI (multichannel audio digital interface) input or output ports that can carry up to 64 channels of audio on a single cable. With the optional audio submodule installed, each input port can extract 64 mono AES signals for a total of 192 on all ports. Likewise, each output port combines 64 mono AES signals within a single MADI port for a total of 192 mono AES outputs.

MADI enables a greater number of audio channels to be transported on a small amount of cable. Capabilities include full audio routing (with optional subrouter) that allows channels to be switched to any of the available cards including embedding, AES, analog audio, or MADI. Coax and fiber connections are available.

Together with Utah Scientific's MADI Translator companion product, the router can provide a complete set of tools for handling MADI, AES, and analog audio.



MADI Card

Features

- Three MADI input or output ports per card
- 64 mono AES on a single wire for up to 192 AES on just three wires
- Coax BNC or fiber SFP connections
- Convenient way to transport audio to router
- MADI can be decoded to embedded, AES, or analog audio outputs
- MADI Translator companion product enables conversion from AES or analog audio to and from MADI, offering a convenient way to transport audio to the UTAH-400 Series 2 router

AES Input/Output Card

This module provides 12 AES pairs of inputs or outputs for external audio signals that can be used for a small amount of audio routing. When the audio submodule is present, the AES is switched as mono streams for added flexibility for embedding the signal into the video stream or sending it to MADI or analog audio outputs.

Unbalanced and balanced connections are available. Optional balanced breakout panels are available to convert Sub-D connectors to a terminal block.

Features

- Provides mixed signal routing
- 12 AES pairs of inputs or outputs per card
- Unbalanced and balanced connections
- AES can be routed to embedded, MADI, or analog audio outputs

A-D and D-A Analog Audio Input/Output Card

This card provides 12 stereo analog audio inputs or outputs for external audio signals that can be used for a small amount of audio routing. Each stream provides conversion from analog audio to AES or AES to analog audio, making this module perfect for switching mixed audio formats without requiring external conversion. When the audio submodule is present, the analog audio is switched as mono streams for added flexibility for embedding the signal into the video stream or sending it to MADI or AES outputs.

Balanced connections are available. Optional balanced breakout panels are available to convert Sub-D connectors to a terminal block.

Features

- Provides mixed signal routing
- 12 analog audio inputs or outputs per card
- Analog audio can be routed to embedded, MADI, or AES outputs

Specifications

Digital Video Standards

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

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 per card
Reclocking:	Automatic for all standard signal rates including 270Mbps, 1.485Gbps, 2.970Gbps, DVB-ASI.
	Automatic bypass for non-standard signal rates including 3Mbps-2.970Gbps
Equalization:	Automatic 300m at 270Mbps, 150m at 1.485Gbps, 100m at 2.970Gbps 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

PassThrough Card Standards

SMPTE ST 2022-6/8, SMPTE ST 2110

Configured as input or output card

PassThrough Card Inputs and Outputs

Formats:	12 Auto-detect 3G/HD/SD-SDI
Connector:	12 HD-BNC SDI Inputs, Dual 40GigE SFP+ 10GigE SFP, Ethernet for configuration
Inputs:	12 3G/HD/SD-SDI
Outputs:	12 Uncompressed SMPTE ST 2022-6/8 or SMPTE ST 2100. Supports VLAN Tagging, IGMP, AMWA IS-04, IS-05, and IS-06

Flex Input and Output Card

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

Fiber Inputs and Outputs

Connector:	Dual LC SFP

HDMI/DVI Inputs and Outputs

Formats:	HDMI v1.4 and DVI 1.0, up to 1920 x 1080p, 3G-SDI, HD-SDI, SD-SDI
Connector:	Single-latch Type D connector for SFP (uses dual-SFP cage)

Specifications

MADI Standards

MADI/AES10

MADI Inputs and Outputs

Connector:	BNC 75 ohm 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%

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 ohm
Balanced Impedance:	110 ohm
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 With Respect to DARS Input:	± 2.5% (± 9º) of frame interval

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 ohm
Frequency Response:	20-20kHz ± .05dB
Max Input Level:	24dBu
Input Impedance:	200k ohm, strappable to 600 ohm
THD:	@24dBu, 20-20kHz .05%
IMD:	@24dBu, 20-20kHz .05%
Hum and Noise: 2	0-15kHz -85dBu
Crosstalk:	@20kHz 0dB
Gain Uniformity:	± .05dB
Common Mode Rejection:	@50/60Hz 70 dB

Specifications

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

72 frame:	150 watts max
144 frame:	300 watts max
288 frame:	600 watts max
528 frame:	1,300 watts max
1056 frame:	2,600 watts max

All supplies are UL-listed and IEC950-approved

Physical

Width:	19” (48.26cm)
Depth:	18.5” (47cm)
Height:	72 frame – 4-RU, 7” (17.78cm), including internal power supplies
	144 frame – 7-RU, 12.25” (31.11cm)
	288 frame – 12-RU, 21” (53.34cm)
	528 frame – 20-RU, 35” (88.9cm)
	1056 frame – 40-RU, 70” (177.8cm)
	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%, noncondensing

Warranty

10-year limited warranty, 24/7 service support
Specifications are subject to change without notice.

Ordering Information

Frames

VA-72S2R	72 x 72 frame. Includes single crosspoint and redundant internal power supplies.
VA-72S2RX	Variable input and output frame with up to 144 total I/O. Combinations of 12 inputs or 12 outputs. Includes single crosspoint and redundant internal power supplies.
VA-144S2R	144x144 frame. Includes single crosspoint and redundant power supply frame.
VA-288S2R	288 x 288 frame. Includes single crosspoint and redundant power supply frame.
VA-528R	528 x 528 frame. Includes single crosspoint and redundant power supply frame.
VA-XL	1056 x 1056 frame. Includes single crosspoint and two redundant power supply frames.

Crosspoint Cards

VX-400S2/72RS	Redundant standard crosspoint card for 72R frame
VX-400S2/72XRS	Redundant extended crosspoint card for 72RX frame
VX-400S2/144RS	Redundant crosspoint card for 144R frame
VX-400/528RS	Redundant crosspoint card for the 528R frame
TDM-400/72S	TDM audio crosspoint card for 72R and 72XR frames
TDM-400S	TDM audio submodule for V-144R and larger frames

Input Cards

HI3-400/12S	3G SDI 12 input card
HI3E-400/12S	3G SDI 12 input card with de-embedding
AHI-400/12S	3G SDI advanced input card for adding up to 3 submodules
SDIMOD-400S	3G SDI 4 input submodule for frame sync, audio shuffling, and de-embedding
IPI-400/12S	IP SMPTE 2022 input card
FI-400/12S	3G SDI 12 flex input card for adding SFPs
MI3-400/12S	3-stream MADI input card
AI-400/12S	AES 12 input card
ADC-400A/12S	A-D stereo analog audio input card

Output Cards

HO3-400/12S	3G SDI 12 output card
HO3E-400/12S	3G SDI 12 output card with embedding, audio shuffling
AHO-400/12S	3G SDI advanced output card for adding up to 3 submodules
SDIMOD-400S	3G SDI 4 output submodule for clean-quiet, audio shuffling, and embedding
IPO-400/12S	IP SMPTE 2022 output card
FO-400/12S	3G SDI 12 flex output card for adding SFPs
MO3-400/12S	3-stream MADI output card
AO-400/12S	AES 12 output card
DAC-400A/12S	D-A stereo analog audio output card

Ordering Information

SFPs

FOI-400S	Dual-channel, 1310nm single-mode HD/SD SFP fiber receiver LC
FOI-400MMS	Dual-channel, 850nm multi-mode HD/SD SFP fiber receiver, LC
EB30HD2R-LNRS	Dual-channel, 3G SDI coax SFP receiver, long reach with reclocker, HD-BNC
EB30HD2R-LNS	Dual-channel, 3G SDI coax SFP receiver, long reach, HD-BNC
EB30HD2R-MNS	Dual-channel, 3G SDI coax SFP receiver, medium reach, HD-BNC
EB34TD1R-SN	Single-channel, DVI receiver with 6-foot DVI cable
EB34TD1R-SN	Single-channel, HDMI receiver with 6-foot HDMI (A) cable
EB30HDS2R-ANS	Dual-channel, composite coax NTSC/PAL SFP decoder, HD-BNC
FOO-400S	Dual-channel, 1310nm single-mode HD/SD SFP fiber transmitter, LC
FOO-400MMS	Dual-channel, 850nm multi-mode HD/SD SFP fiber transmitter, LC
EB30HD2T-LNRS	Dual-channel, 3G SDI coax SFP transmitter, long reach with reclocker, HD-BNC
EB30HD2T-LNS	Dual-channel, 3G SDI coax SFP receiver, long reach, HD-BNC
EB34TD1T-SN	Single-channel, DVI transmitter with 6-foot DVI Cable
EB34TD1T-SN	Single-channel, HDMI transmitter with 6-foot HDMI (A) Cable
EB30HD2T-ANS	Dual-channel, composite coax NTSC/PAL SFP encoder, HD-BNC

Breakout Panel

BDA-400S2	Audio breakout panel that converts 72 input and/or output connections from 37 pin “D” to terminal block. Includes three 3’ routing switcher-to-BDA cable assemblies

UTAH 100 UHD

Enterprise Routing Systems

The First Single-Link Router for UHDTV

The demand for UHD content is skyrocketing, and enterprise broadcasters face the challenge of keeping up. They need solutions to leverage their existing SDI infrastructure immediately, allowing them to transport real-time, full-bandwidth 4K UHDTV video signals. Traditional 3G routers fall short, as they can only handle 4K signals through multiple paths.

At Utah Scientific, we get that – and it's why we designed the all-new UHD-12G digital routing switcher. The UHD-12G is the industry's first enterprise-class router to receive, route, and distribute the full range of SDI video signals over a single-link interconnect.

Here's a router that can handle data rates from SD up to 2160p60 and everything in between, over the same industry-standard coax cabling on which you've always depended. That means simplified installations for signal transport that take up less rack space, need fewer cables to process 4K signals, and reduce operating expenses.

Looking for a 12G SDI single link solution with redundant crosspoint cards? Your search ends with the Utah Scientific UHD-160R router.

Perfect for live UHDTV content acquisition, the UHD-12G is fully compliant with SMPTE standards for SDI video. It works seamlessly with the full line of Utah Scientific products including previous-generation SDI routers – further protecting your facility's investment.

The UHD-12G can be controlled by any of our current routing control systems.

And of course, the UHD-12G is backed by Utah Scientific's four-decade track record of delivering the industry's finest router switching technology. Utah Scientific is still the only manufacturer to offer a 10-year hardware warranty.

Key Features and Benefits

- Single-link interconnect for 4K-resolution signals
- Uses existing SDI network for simplified installations
- Distributes full range of SDI video up to 2160p60
- Supports SMPTE ST 2081 and ST 2082 standards
- Comes in enterprise-class frame configurations: 32 x 32, 144 x 144, 160 x 160, 288 x 288
- Fully compatible with routing control systems including the SC-4, SC-40, and SC-400
- Includes Industry Leading 10-Year Hardware Warranty
- No Annual Maintenance Fees
- Supports 12G/6G/3G/HD
- HD-BNC Connectors
- Optional Redundant Power Supply
- Web Control Via Java Enabled Browser

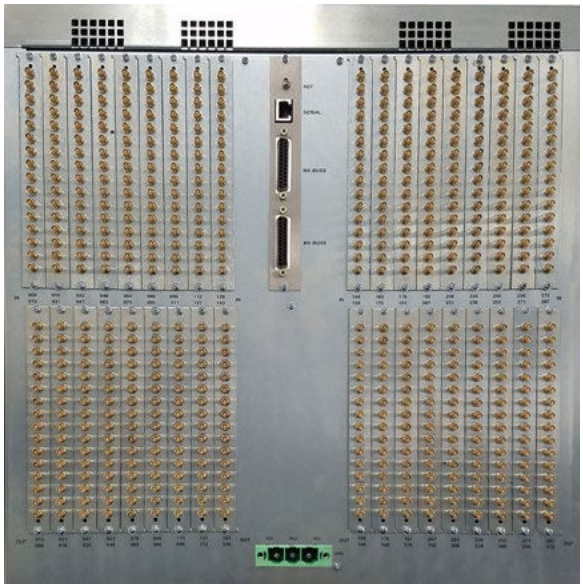
Available Frame Sizes

16x16, 32x32

144x144

160x160R Redundant Crosspoints

288x288



Specifications

Multi-Rate Digital Input Card

Number of ports per card: 16

Formats supported: From 18 Mbps up to 12 Gbps

Connector Type: HD-BNC

Multi-Rate Digital Output Card

Number of ports per card: 16

Formats supported: From 18 Mbps up to 12 Gbps

Reclocking: All SDI rates up to 12 Gbps Connector Type: HD-BNC

Conforms to SMPTE 259C, 292, 424, 2081-1 and 2082-1

Frame Specifications

Width: 19” Rack Mount

Sizes: 1 RU – Capacity: 32 inputs, 32 outputs
Power Consumption: <30W
Depth: 3.5”

5 RU - Capacity: 144 inputs, 144 outputs
Power Consumption: <100W
Depth: 3.5”

10 RU - Capacity: 288 inputs, 288 outputs
Power Consumption: <400W
Depth: 6.0”

Digital Video Specifications

Jitter conforms to SMPTE 259, 292, 424, 2081-1, 2082-1

Reclocked data rates 270 Mbps, 1485 Mbps, 2970 Mbps, 5.94 Gbps, and 11.88 Gbps

Input return loss < -15 dB to 1.5 Ghz, -10dB to 3Ghz, -7dB to 6Ghz, -5dB to 12Ghz

Output return loss < -15 dB to 1.5 Ghz, -10dB to 3Ghz, -7dB to 6Ghz, -5dB to 12Ghz

Belden 4794R cable > 300 M @ 270 Mbps
> 150 M @ 1.485 Gbps
> 100 M @ 2.970 Gbps
> 80 M @ 11.8 Gbps

UTAH 100 UDS

Compact Routing Systems

UTAH-100 UDS Routers

The UTAH-100/UDS combines the flexibility of multi-rate digital switching with the economy of a simple distribution amplifier. This signal distribution application can be used in any type of facility.

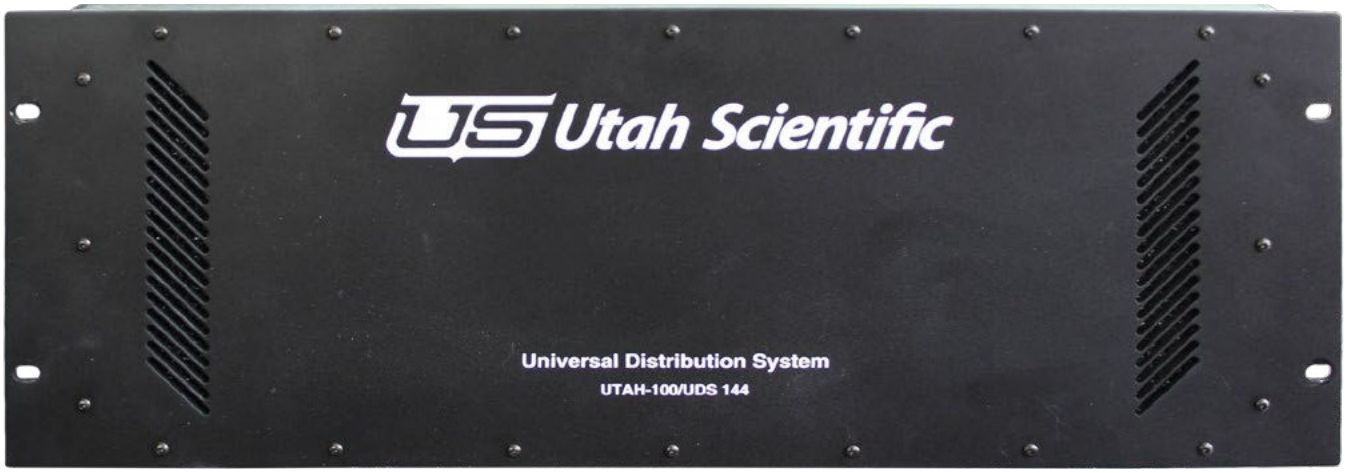
This modular system is based on I/O modules with 16 ports that are interconnected by a crosspoint fabric which allows any input signal to feed as many output ports as needed. The economical design of the modules make it possible for a 4RU frame to feed 144 output ports at a fraction of the cost and power consumption typically found on other DA packages. In addition, **the UTAH-100/UDS also enables you to assign signals to each output individually.**

This amazing unit's flexibility doesn't stop there either. Through the use of our FLEX-I/O modular system you select the signal format of each I/O port from a complete range of options. These options include: analog video, 3G, DVI, HDMI and even IP- encapsulated DVB-ASI streams.

UDS 32x32

UDS 64x64

UDS 144x144



UDS Compact Routing

The UDS Compact Series offers smaller-scale operations a powerful and versatile solution without sacrificing functionality, features, or durability. The series consists of SDI 8x32 configurable distribution amplifier, SDI 10x10, as well as 20x20 routers. Two optional router control panels are available for users who desire additional hardware control: CP Button Control Panel and XY Full Matrix Display Control Panel.

Built for mission-critical performance, the UDS Compact Series packs big capabilities into a compact 1RU design. This makes it ideal for diverse applications and environments, including:

Broadcast
Mobile Trucks
Flypacks
Rental Houses
Production
Post-Production
Corporate Installations

Effortlessly integrate the UDS Compact Series into your existing workflow with industry-standard Utah Scientific RCP-1 Serial and RCP-3 Ethernet protocols.

Uncompromised Performance:

- Supports all current broadcast signal formats: SDI, HD-SDI, 3G-SDI, DVB-ASI
- Handles both 4K Dual Link and Quad Link configurations for versatile input and output options
- Signal equalization and reclocking ensure pristine signal quality
- Automatic reclocking bypass adapts to non-standard formats
- Local control panel with dual-color illuminated buttons for easy source and destination labeling

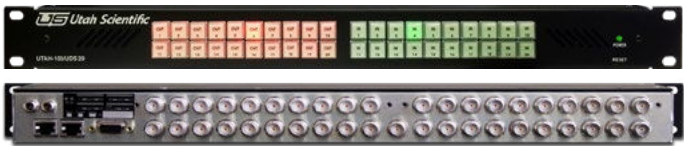
The UDS Compact series also includes a native internal web server accessible through standard web browsers (no additional software required). This web server empowers you with advanced features:

- Naming of sources and destinations
- User management & password protection
- Custom user views for efficient operation
- Salvos & Macros for automation
- Destination grouping & locking
- User-selectable interface customization
- Logging & status monitoring

The UDS Compact Series minimizes your rack space footprint while maximizing performance. Intuitive controls build seamless workflow integration and provide exceptional value with advanced features.

UDS 10

SDI 10 input by 10 output router.

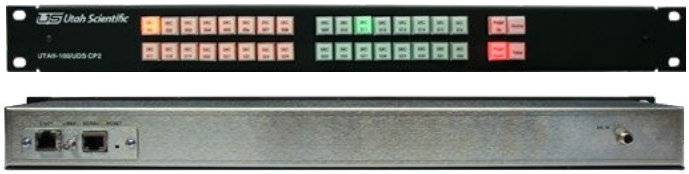


UDS 20

SDI 20 input by 20 output router.

UDS DA

Distribution amplifier with 8 configurable input ports and 32 output ports.



UDS CP2

Optional button control Hardware panel.

UDS XY

Optional full-matrix control hardware panel.

UDS GPIO

Optional 16 GPI and 16 GPO unit

UDS Compact Series - Specifications

Video Standards:

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

Embedded Audio: 20- bit synchronous 48 khz to SMPTE 272M-C
24-bit synchronous 48 khz to SMPTE 299M

Video Inputs & Outputs

Formats:	Auto select for simultaneous operations of SD, HD,3G SDI, 2k & DVB-ASI
Connector:	BNC, 1 per input and output
Reclocking:	Automatic for all standard signal rates 270Mbps, 1.485Gbps, 2.970Gbps, DVB-ASI Automatic bypass for non-standard signal rates 18 mbps-2.970Gbps
Equalization:	Automatic 400, at 270Mbps,220m at 1.485Gbps,200m at 2.970Gbps with Belden 1694A or quivalent cable.

Reference Input: (1) BNC: Analog PAL, NTSC, or HD tri-level

Control

(1) Rj-45:	10/100 Ethernet- embedded web server- Utah Scientific RCP-3 Ethernet Protocol
(1) Rj-45:	Diagnostic port
(1) 422/232:	DB-9f Subminiature - Utah Scientific RCP-1 serial protocol

Power 90-240VAC 50/60Hz external +12V DC- (2) Captive nut fastener
Power consumption 30watts max

Physical

Width:	19” (48.26cm)
Depth:	DA & Routers 4.25” (10.80cm)- Panels 3.75” (9.53cm)
Height:	1RU, 1.75” (4.45cm)
Weight:	DA & Routers 4.8lb (2.1kg)- CP 3.8lb (1.7kg)- XY4lb (1.8kg)

Environmental: Operating temperature 32-104 °F (0-40 °C)
Relative humidity range: 0-90% non-condensing

Control Panels

Hardware and Software

Hardware Panels

UCP-LC Series

Utah Scientific's UCP-LC family features dynamic labeling of high-resolution LCD switches to provide a completely "soft" user interface. These panels are driven by a unique configurable menu system that offers a very powerful, yet user friendly means of controlling any routing system. The flexible, 32-menu layering structure provides fast access to a variety of panel configurations. All buttons are fully programmable for any function such as source, destination, salvos, level mapping, audio attributes, protect/lock, paging, and breakaways.

UCP-LC16

22 user-programmable, high-resolution, multicolor LCD display buttons

UCP-LC32

38 user-programmable, high-resolution, multicolor LCD display buttons

UCP-LC80

80 user-programmable, high-resolution, multicolor LCD display buttons

UCP-36/E/U

With 36 buttons, the UCP-36/E is typically configured as a button-per-source panel for direct switching up to four destinations and multi-level breakaway. This panel is generally used in applications that require fast, simple access to a limited number of sources. For special applications, the UCP-36's buttons can be programmed as source, destination, salvo, or level-select buttons. This allows the panel to be set up for any combination of 44 selections.

UCP-MMA

The UCP-MM/A/E is a full-matrix X-Y panel used to route any source to any destination, with full, 16-level breakaway. The panel's four touchscreen LCD display panels offer highly legible read-out of levels, sources, destinations, or router status, and the 16 selector buttons each have an eight character LCD display.

In the X/Y mode, the panel offers two LCD displays giving page views of destinations. Multiple pages are available, with each page containing 12 user-assignable destinations. Takes can be made directly in these displays, with scroll-up and scroll-down buttons for easy navigation. The panel also features a button-per-source mode for switching sources quickly to the selected destination. Multiple pages are available, with user-assignable sources using the scroll buttons.

Software Panels

Soft-LC

Bring modern UCP-LC control features to a PC near you

Soft-LC is a software-based, virtual control panel for personal computers. Want to add modern, flexible UCP-LC panels to your router control system? Do your conference rooms and newsroom have all the routing control they need? Easily move to the newest control panel designs with 16, 32, or 80 button capabilities!

Features

- Organize sources and destinations by categories or group
- Allows users to put various devices in custom named categories of their choice
- Allow users to place devices in preconfigured groups like SAT, CAM, MON, etc.
- Enables custom direct button programming for sources and destinations
- Custom display and button colors
- Import custom button icons
- No annual maintenance fees

Specifications

- Runs on Windows10 PC, 1GHz or faster processor, 2GB RAM, 100MB Disc Space, DirectX 9 or later with WDDM 1.0 driver
- Available as a site license
- Can be used with or as an upgrade to Utah Scientific SoftPanel 2

SoftPanel-2 GUI Control Panel System

SoftPanel-2 is a software-based, virtual control panel for personal computers. Users can create custom, virtual control panels with the panel creation toolkit. With the free-form toolkit, users can create their own layouts and choose background and button colors, button sizes, and a variety of other attributes. SoftPanel-2 also includes templates that emulate the Utah Scientific UCP Series hardware control panels.

Using the Player module, virtual panels created with SoftPanel-2 can be operated from network computers connected to the Utah Scientific control system. Router definitions and source/destination tables are fully synchronized with the Utah Scientific controller, ensuring that labeling in the SoftPanel-2 panels matches the labels that appear on the hardware control panels. Virtual control panels can be installed on any computer in a facility, and they can be operated using touch screen monitors for added flexibility.

SoftPanel-2 Features

- Free-form panel creation
- Replicates hardware control panels for traditional control panel operation
- Linked with Utah Scientific controllers for full synchronization
- Multiple license packages available

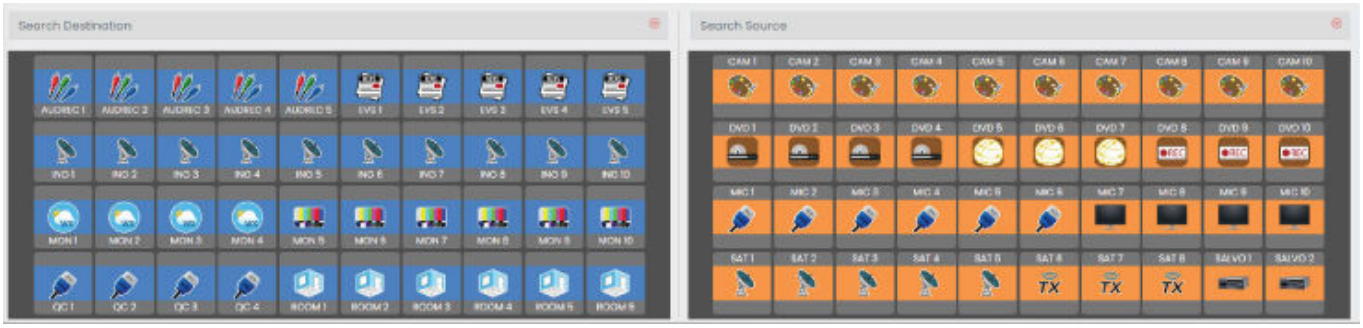
WebPanel

Router Control From Anywhere In The World

Need to control your facility routing from a distant location? Bring worldwide flexibility to your router operations with Utah Scientific's WebPanel. Simply install the Linux WebPanel server and configure your users and their access rights from your browser.

Features

- Our most readily deployed control solution
- Browser based--Chrome, Edge, Safari
- Auto-populates based on router configuration
- Source and destination search functions
- Customizable button icons, colors, text
- OS independent
- Password enabled



Specifications

- Installation includes a 2RU Linux server with redundant power supplies and hard drives
- Administrator control of user access and rights
- Multiple router controller capable

Specifications

Hardware Panel Specifications

Connection

(1) RJ-45:	10/100 Ethernet
(2) RJ-45:	Looping U-Net (Utah Scientific control network)
(1) 422/232:	DB-9F Subminiature Utah Scientific RCP-1 serial protocol
(1) RJ-45:	Diagnostic port
(1) RJ45:	Can Exp port - panel expansion

Power

100-240VAC 50/60Hz
Power consumption less than 15 watts

Physical Rack Mount

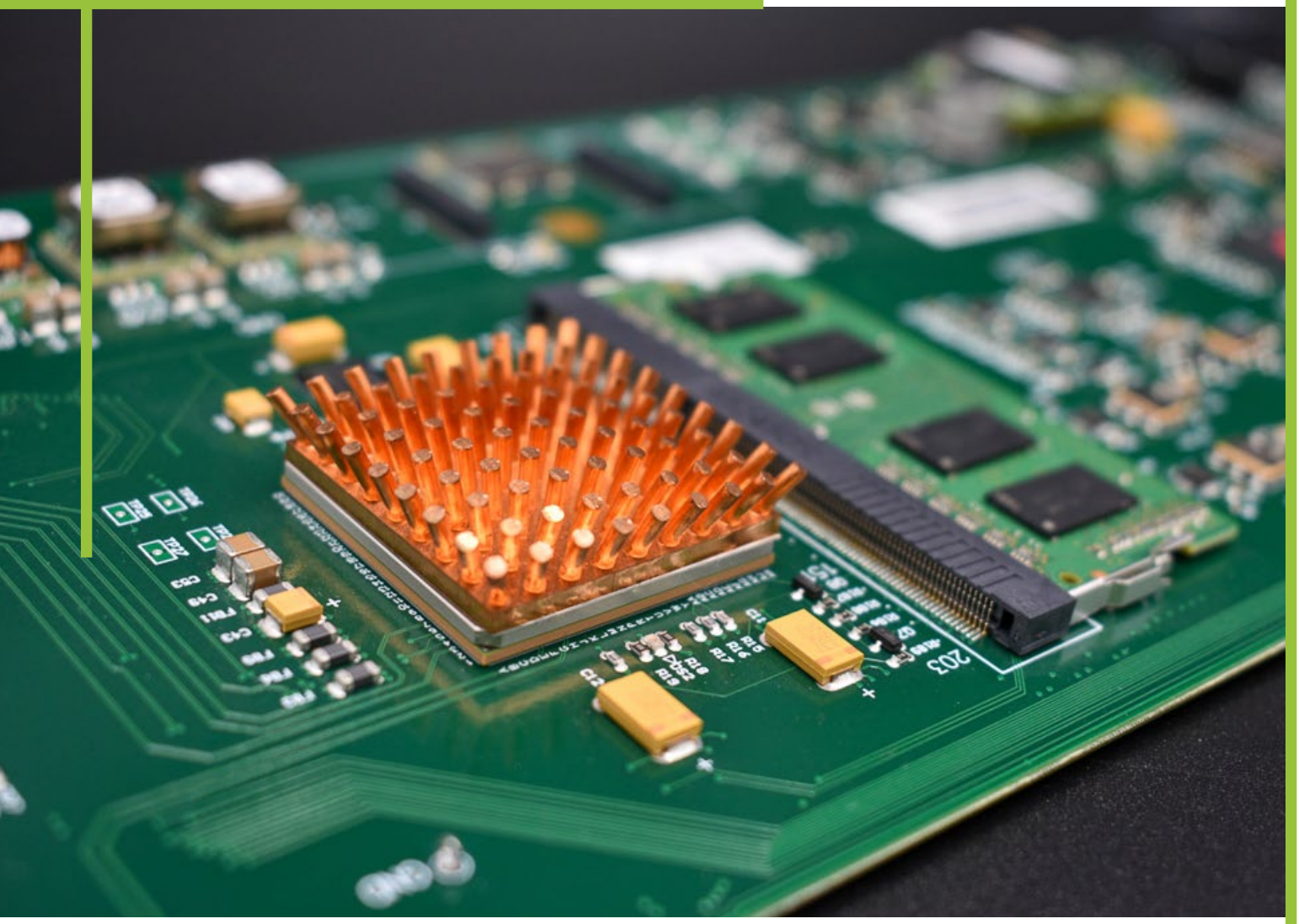
Width:	19” (48.26cm)
Depth:	5.5” (14cm)
Height:	1RU, 1.75” (4.45cm) 2RU, 3.5” (8.9cm)
Weight:	1RU, 3.5lb (1.6kg) 2RU, 5lb (2.27kg)

Environmental

Operating temperature 32-104 degrees F (0-40 degrees C)
Relative humidity range: 0-90%, non-condensing

SoftPanel-2 Specifications

Operating System	Windows 10
RAM	8MB
Display	1920x1080 (Recommended)
Ethernet	10/100 Megabit



Control Systems

Monitoring, Translation, Cards and GUI

Router Control Systems

The Utah Scientific Control Systems are powerful control processors designed to provide state-of-the-art functionality in configuring, managing, and operating Utah Scientific Routing Switchers, Master Control systems and third party equipment. User interface for the controllers is provided by a suite of software utilities that are specifically designed to allow the user to easily take full advantage of the sophisticated capabilities of these controllers.

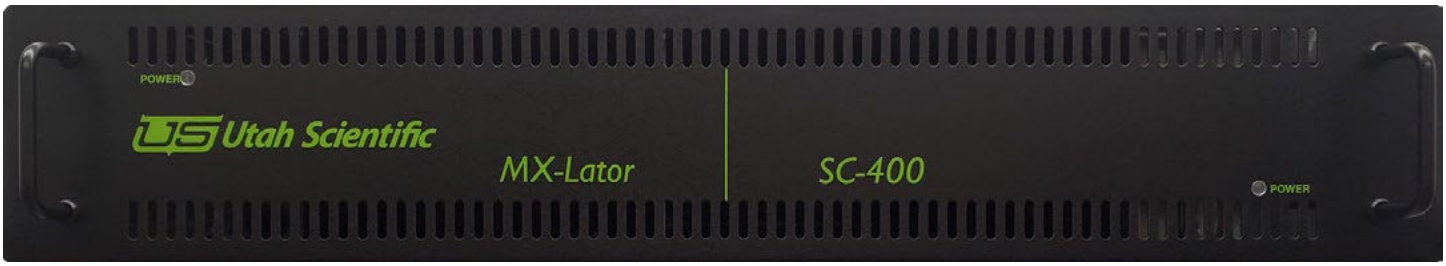
Designed on the Linux platform with virtually instant boot time, our controllers provide exceptional reliability and are backed by our industry leading 10 year warranty.

A broad range of interfaces to third party routers, automation systems, multiviewers, production switchers and tally control systems provides seamless integration of your facility operations.

SC-4E

SC-40E

SC-400E & MX-Lator

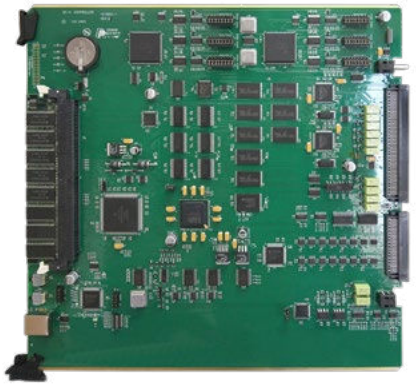


SC Controller Series

The SC Controller series has both the control and power to reliably manage Utah Scientific's routers and master control switchers with every enhanced feature for the modern broadcast facility.

All of Utah Scientific's controllers include the GUI software suite for configuration, monitoring, comprehensive SNMP support, tie-line management, system salvos, support for countless panels and multiple routing switchers. Together it all provides an entire package for the ultimate in system control. With the optional redundant control card providing mirrored redundancy, you can have a complete back up and protected operation for mission critical functionality.

With our large selection of control operations using the UCP Series hardware and Softpanel-2 GUI panels we can handle any routing switcher application needs.



SC-4E Control Card

SC-400E Control Card

Utah Scientific offers three versions in the SC controller series that are tailered to fit any budget or need.

The 2RU SC-4E enterprise controller is the most flexible and comprehensive controller in the series with multiple ethernet, serial, U-Net and sync reference inputs. This functionality is why the SC controller series is a primary choice for TV station and truck systems.

The 2RU SC-400E provides a more economical controller for customers with simplified routing and connection needs.

The 1RU SC-40E is our most cost effective controller. The SC-40E is designed to fit nicely with our economic UDS and UHD routing series while still providing all of the functionality and features our SC-400 mid range controller has.

The SC-4E and SC-400E controllers include standard redundant power supplies and the SC-40E provides room for an optional redundant power supply. DC powered versions are available on most models for customers who require 48DC Facility operation.

Features

- **Exceptional Reliability**
- **Linux Platform with Instant boot time**
- **Standard GUI software Suite**
- **Retains settings upon power restoration**
- **Uninterrupted system operation during panel configuration**
- **Standard SNMP monitoring support**
- **Standard Tie-line management**
- **Standard system salvos**
- **Supports hundreds of control panels**
- **Supports multiple virtual router layers**
- **Broad range of integration for 3rd party devices**
- **Redundant controller card with mirrored redundancy***
- **Standard redundant power supply on SC-4E and SC-400 E**

* Optional feature

Router Control Systems

MX-Lator and UCI-400 Translator Series

The MX-Lator and UCI-400 Translator Series are designed to provide a simple, reliable and cost effective way to integrate third party devices into the SC controller series. When bringing an external device under the Utah Scientific controller as the controlled or controlling device it is sometimes necessary to provide a translation of the control commands between the control architecture and the remote control port provided by the external device. This job is handled by control translation units.

A broad range of interfaces that work with popular 3rd party routers, production switchers and other 3rd party devices provide seamless integration of your facility operations. In addition to this we offer custom developed interface protocals as well.

MX-lator Translator Card

With the optional redundant MX-Lator translator card, mirrored redundancy provides a complete back up and protected operation for mission critical situations. The MX-Lator includes a standard redundant power supply.

Utah Scientific offers two versions in the Translator series to accomodate any need. The 2RU MX-Lator enterprise translator is the most flexible and comprehensive translator in the series with multiple serial ports for 3rd party connections, single ethernet and sync reference input making it a primary choice for TV and truck systems.

The MX-Lator frame also offers the support for dual SC-400E controller boards where both control and translation are needed.

The 1RU UCI-400 provides a cost efffective translator with simplified interface operations and limited connection needs.

Features

- Exceptional reliability
- Linux platform with instant boot time
- Retains settings upon power restoration
- Broad range of integration to 3rd party devices
- Redundant controller card with mirrored redundancy option
- Standard redundant power supply on MX-Lator model
- Custom Developed interface protocols available upon request

System Control Overview

Controllers

Control Elements

Control Panels

Ucon Config, rMan Monitoring & GUI's

3rd party Control

Device Elements

Routers
(Current & Legacy)

Multiviewers

Master Control

Translators

3rd party hardware

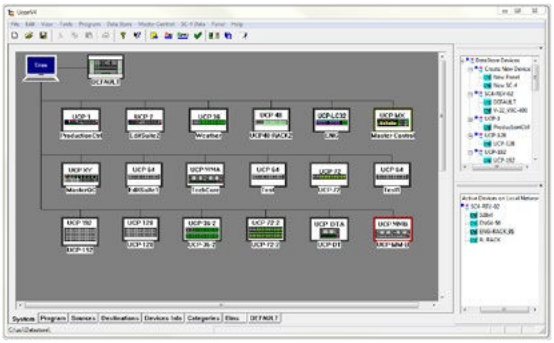
Ucon GUI Configuration Software

Setup for all of the Utah Scientific SC Controller Series and control panels is accomplished using the intuitive Ucon graphically-based software that is provided standard with all systems. Ucon provides all the tools to define the system configuration and to make changes very simple for your operation.

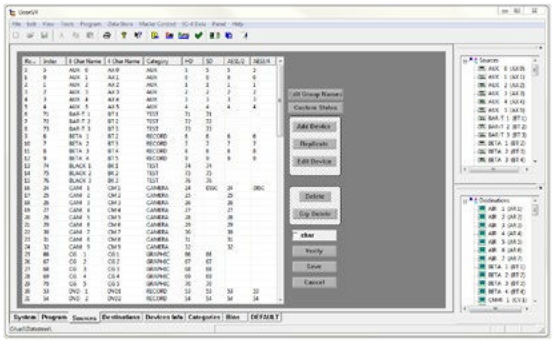
Using familiar functions such as drag and drop, copy, paste, and replicate, Ucon provides an easy learning curve similar to other software programs throughout the world.

Ucon also provides useful tools that assist in the configuration such as auto-discovery of connected devices, unlimited duplication of devices, and auto-replicate. Multiple databases with different setups can be stored and recalled when needed, a helpful feature for mobile, sports, or production venues.

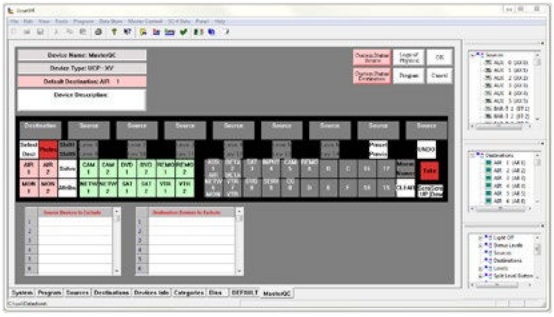
Editing can be done anytime without disrupting normal operations. A single push of a button reprograms the panels and controllers or only program a single panel. Programming is quick and only takes a matter of seconds for each panel, allowing all other panels in the system to remain operational. Program status is provided on the panels and in the software.



Ucon System Overview



Ucon Source Entry List



Ucon Panel Program Screen

Features

- **Easy to use GUI for configuration**
- **Familiar functions, drag and drop, copy and paste**
- **Single button push for system program**
- **Multiple stored configurations for future recall**
- **Global source and destination list**
- **Offline configuration**
- **Never needs power cycle**
- **128 system salvos**
- **Advanced tie-line configuration with pools**
- **Simple virtual level mapping of single router**
- **Free software upgrades**
- **No service contracts for assistance**
- **Remote assistance for training**
- **Auto-discovery of connected devices**
- **Add devices ahead of installation**
- **Unlimited duplication of devices**
- **Auto replicate devices**
- **Limit sources and destinations per panel**
- **Product view of each device**
- **Custom status names**
- **Program screen showing status**
- **Ucon can be shutdown without affecting system**

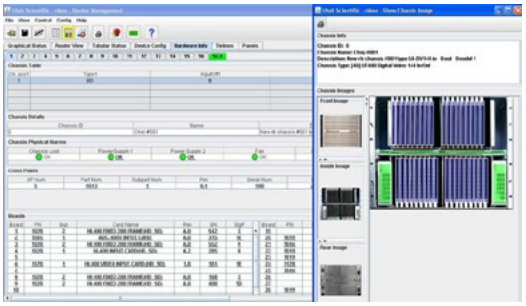
Router Control Systems

rMan GUI Monitoring Software

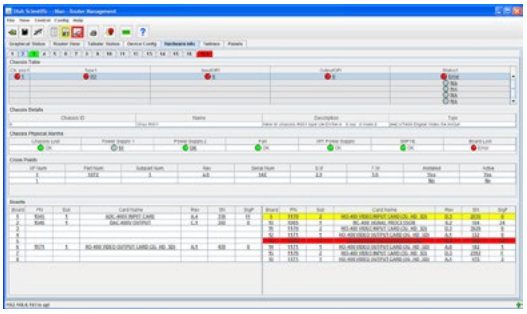
Included with each Utah Scientific controller is our rMan graphically-based software management tool for routers, controllers and panels, offering effective status and maintenance of the system. Designed to give the engineers and operators real-time status of the system, with a full range of features to keep up to date on possible conflicts or quick action in the event of a failure.

Providing status of the system includes a comprehensive suite of alarms for power supplies, fans, temperature, and cards. Convenient graphical views of the controllers, routers and panels make system management extremely simple.

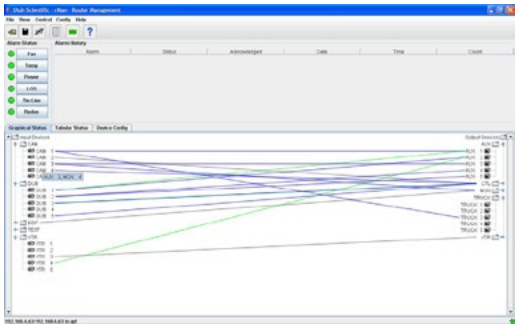
Along with hardware management, rMan also provides the capability to view router connections, loss of signal, status output protect and locks with set and clear, status and threshold alarming of tie-lines, event log for approximately a week of operation and capability to locate hardware panels, all the resource management required for today's facilities.



rMan System Overview



rMan Source Entry List



rMan Panel Program Screen

Features

- **Easy to use GUI for system management**
- **Physical view of controllers, routers, and panels**
- **Real-time status of router I/O connections**
- **Comprehensive suite of alarms**
  - **-Power Supplies**
  - **- Fans**
  - **-Temperature**
  - **-Voltages**
  - **-Controller Cards**
  - **-Input and output cards**
  - **-Crosspoint cards**
  - **- Loss of Signal**
  - **-Tie-lines threshhold**
- **Tie-line status connections and usage**
- **View, set and clear output protect and locks**
- **Simple web panel for full matrix switching**
- **Color code for normal and alarm conditions**
- **System event log with 1 week storage**
- **System hardware alarm log**
- **Status of software and firmware versions**
- **Status of revisions, part and serial numbers**
- **Free software upgrades**
- **No service contracts for assistance**
- **Remote assistance for training**

Specifications

SC-4E Control System

Reference Input
(6) Video BNC looping Analog PAL, NTSC, or tri-level (3) Separate reference signals
Used to switch on vertical interval

Ethernet
(2) RJ-45 10/100 Ethernet CAT5 cable
(2) Separate network ports
Operates all Utah software and UCP Series panels
Utah RCP-3 Ethernet protocol

U-Net
(8) RJ-45 10/100 CAT5 cable
(8) Separate panel ports, 32 panels per port
Cable length 1000 feet per port
Operates all UCP Series panels

Control
(6) RS-232/422 DB-9F Subminiature
Remote control of third party devices
Utah Scientific RCP-1 serial protocol

Party Line
(4) BNC - Operates all legacy CSP Series panels

MX
(2) MX-Bus looping DB-25F Subminiature
Cable length 300 feet
Connects controller to all UTAH Series routing switchers

Alarm
(1) DB-9F Subminiature
SMPTE 269M

GPI/O
Non-Functional

Timecode
(1) Phoenix
Syncs front panel time display
Timecode values for logging messages

Power
(2) 90-240 VAC, 50/60 Hz

SC-400E Control System

Reference Input
(2) Video BNC looping Analog PAL, NTSC, or tri-level
Used to switch on vertical interval

Ethernet
(1) RJ-45 10/100 Ethernet CAT5 cable
Operates all Utah software and UCP Series panels
Utah RCP-3 Ethernet protocol

U-Net
(1) RJ-45 10/100 CAT5 cable
32 panels
Cable length 1000 feet
Operates all UCP Series panels

Serial
(2) RS-232/422 DB-9F Subminiature serial
Remote control of third party devices
Utah Scientific RCP-1 serial protocol

MX
(2) MX-Bus looping DB-25F Subminiature
Cable length 300 feet
Connects controller to all UTAH Series routing switchers

Alarm
(1) DB-9F Subminiature
SMPTE 269M

GPI/O CHGO/Reset
Non-Functional

Timecode

(1) Phoenix
Timecode values for logging messages
Power
(2) 90-240 VAC, 50/60 Hz

Specifications

SC-40E Control System

Reference Input
(2) Video BNC looping Analog PAL, NTSC, or tri-level Used to switch on vertical interval

Ethernet
(1) RJ-45 10/100 Ethernet CAT5 cable
Operates all Utah software and UCP Series panels Utah RCP-3 Ethernet protocol

U-Net
(1) RJ-45 10/100 CAT5 cable
32 panels
Cable length 1000 feet
Operates all UCP Series panels

Serial
(2) RS-232/422 DB-9F Subminiature
Remote control of third party devices
Utah Scientific RCP-1 serial protocol

MX
(2) MX-Bus looping DB-25F Subminiature
Cable length 300 feet
Connects controller to all UTAH Series routing switchers

Alarm
(1) DB-9F Subminiature
SMPTE 269M

GPI/O CHGO/Reset
Non-Functional

Power
90-240VAC 50/60Hz external +12V DC
(2) Captive nut fastener

MX-Lator Translator System

Reference Input
(2) Video BNC looping Analog PAL, NTSC, or tri-level Used to switch on vertical interval

Ethernet
(1) RJ-45 10/100 Ethernet CAT5 cable
Utah RCP-3 Ethernet protocol

Serial
(6) RS-232/422 RJ-45
Control of third party devices
Utah Scientific RCP-1 serial protocol

SC
(2) DB-9F Subminiature
Control of Utah legacy AVS-2 and DDS-2 routers

AVS-1
(2) DB-15M Subminiature
Control of Utah legacy AVS-1 routers

MX
(2) MX-Bus looping DB-25F Subminiature
Cable length 300 feet
Connects controller to all UTAH Series routing switchers

Alarm
(1) DB-9F Subminiature
SMPTE 269M

Timecode
(1) Phoenix
Timecode values for logging messages

Power
(2) 90-240 VAC, 50/60 Hz

Specifications

UCI-400 Translator System

Ethernet
(1) RJ-45 10/100 Ethernet CAT5 cable
Remote control of third party devices
Utah RCP-3 Ethernet protocol

Comm
(4) RS-232/422 DB-9F Subminiature
Limited remote control of third party devices

Serial
(1) RS-232/422 DB-9F Subminiature
Limited remote control of third party devices

Diagnostic
(1) RJ-45
Factory diagnostic port

GPI/O
(8) Terminal block
Not used for this product

U-Net
(2) RJ-45
Not used for this product

Station Dipswitch
(1) 8 position
Not used for this product

Can-Exp
(1) RJ-45
Not used for this product

Power
(1) 90-240 VAC, 50/60 Hz

Series general Specifications

Power

SC-4E frame:	35 watts max
SC-400E/MX-Lator frame:	35 watts max
SC-40E frame:	20 watts max
UCI-400 frame:	25 watts max

Physical
Width: 19" (48.26cm)

Depth
SC-4E frame - 13" (33cm)
SC-400E/MX-Lator frame - 2RU, 3.5" (8.89cm)
SC-40E frame - 1RU, 3.5" (4.45cm)
UCI-400 frame - 1RU, 3.5" (4.45cm)

Height
SC-4E frame - 2RU, 3.5" (8.89cm)
SC-400E/MX-Lator frame - 2RU, 3.5" (8.89cm)
SC-40E frame - 1RU, 3.5" (4.45cm)
UCI-400 frame - 1RU, 3.5" (4.45cm)

Weight
SC-4E frame - 17lb (7.7kg)
SC-400E/MX-Lator frame - 18lb (8.16kg)
SC-40E - 12lb (5.2kg)
UCI-400 frame - 5.2lb (2.4kg)

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

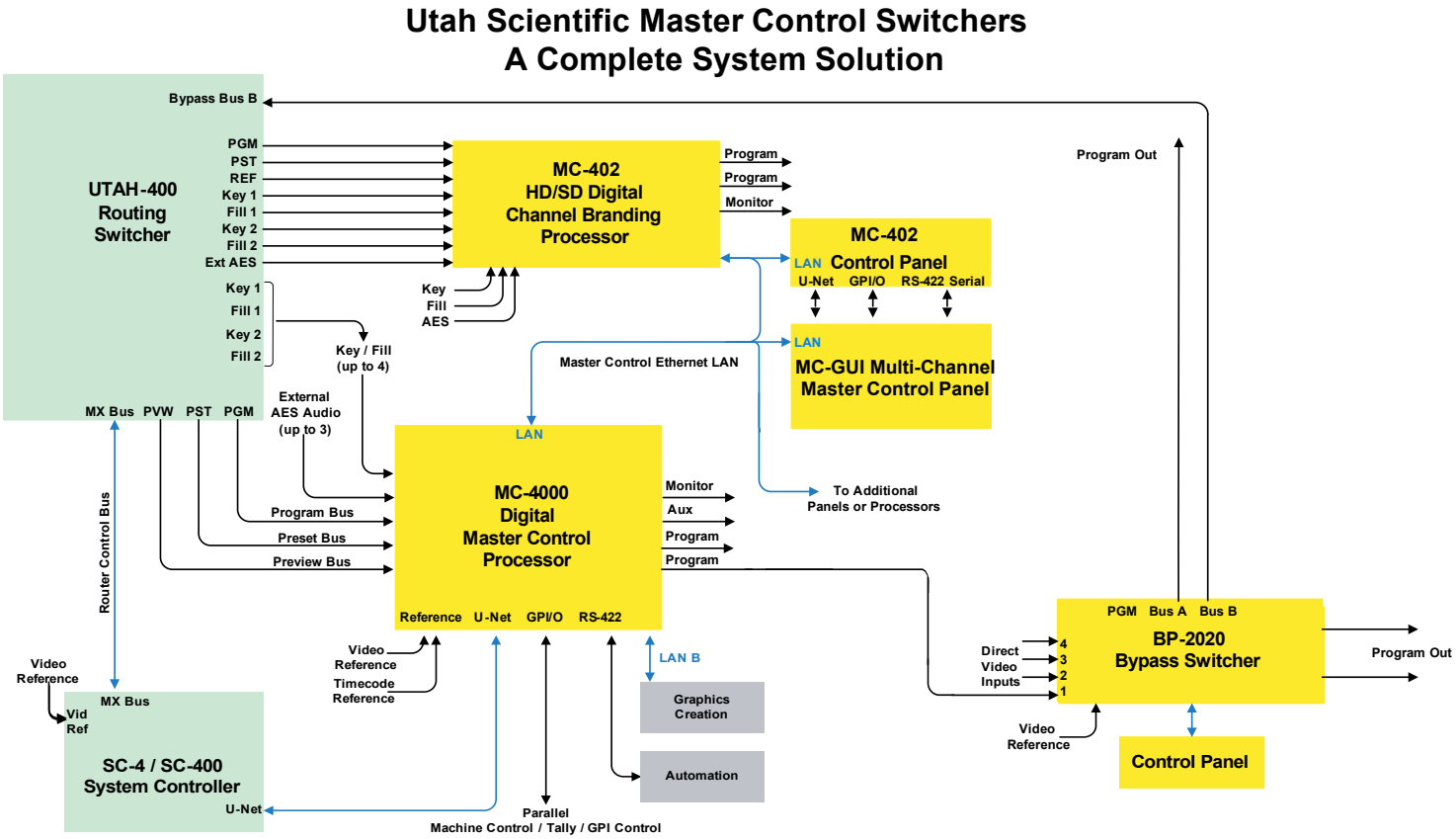
Master Control & Branding

MC-40E S2

The MC-40E Series 2 HD/SD Channel Branding System offers the full power of Utah Scientific's widely popular MC-402 system in a self-contained standalone package with complete functionality for live and automated master control applications. The MC-40E S2 can be used as a single channel system or as part of a multi-channel master control system.

Features

- Standalone master control system
- Full keying and EAS functionality
- Dual Keyers ability to switch between internal, external and Logo sources
- Embedded audio processing with external audio input and on-board audio clip storage
- 1RU and 2RU control panels that are fully compatible with Utah's MC control network, including MC-GUI
- Includes four additional 3G/SDI standard pass through router outputs
- Provides full automation control, as well as GPIO functionality

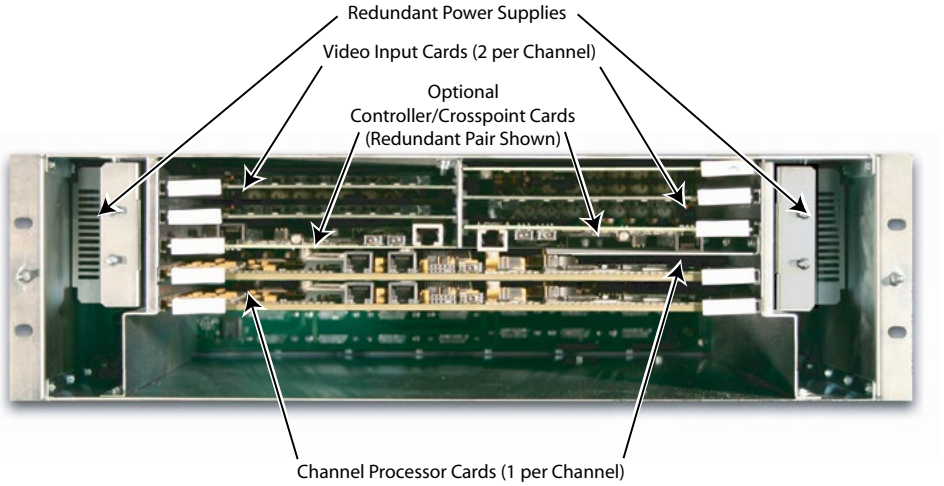


MC-4000

The MC-4000 Digital Master Control Processor is an integrated system for handling the most demanding on-air operations in live, automated, or automation-assisted operating environments. The MC-4000 offers a full range of built-in and optional capabilities to handle all of the most commonly required on-air operations, including still and animated logo presentations, audio clip playback, and reliable, foolproof EAS message presentation.

The 3RU MC-4000 Processor frame can hold two independent signal processing channels, each of which can be switched “on the fly” between SD and HD signal formats. All popular signal formats in both 50Hz and 60 Hz environments are supported.

The MC-4000 provides a full range of mixing and keying functionality with four built-in keyers. Each of the keyers can be fed by the external inputs, by a signal selected on a router bus or by the optional internal logo generator package.

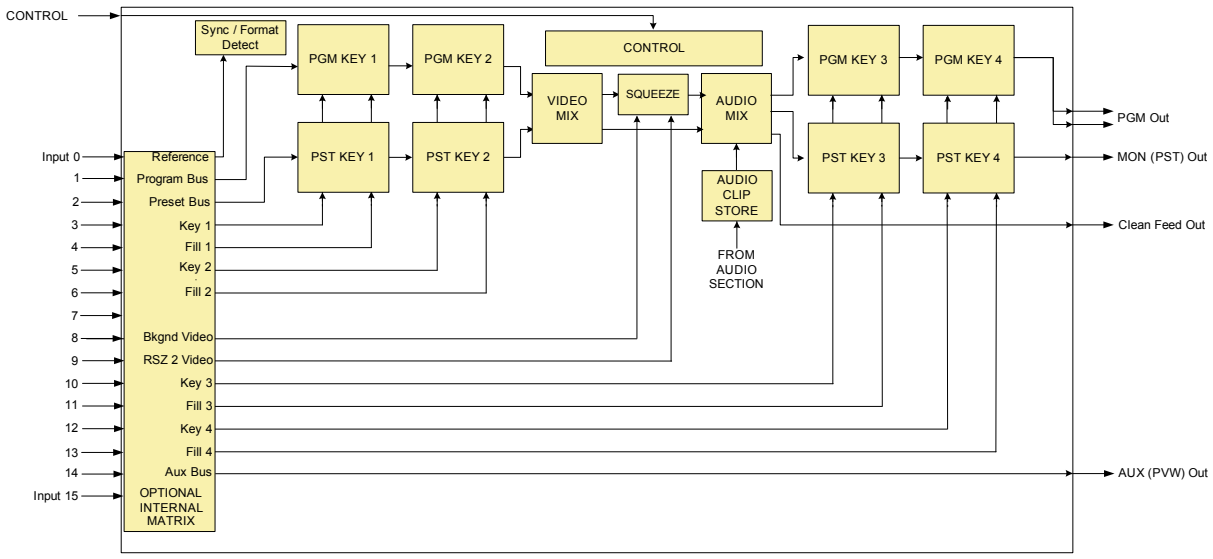


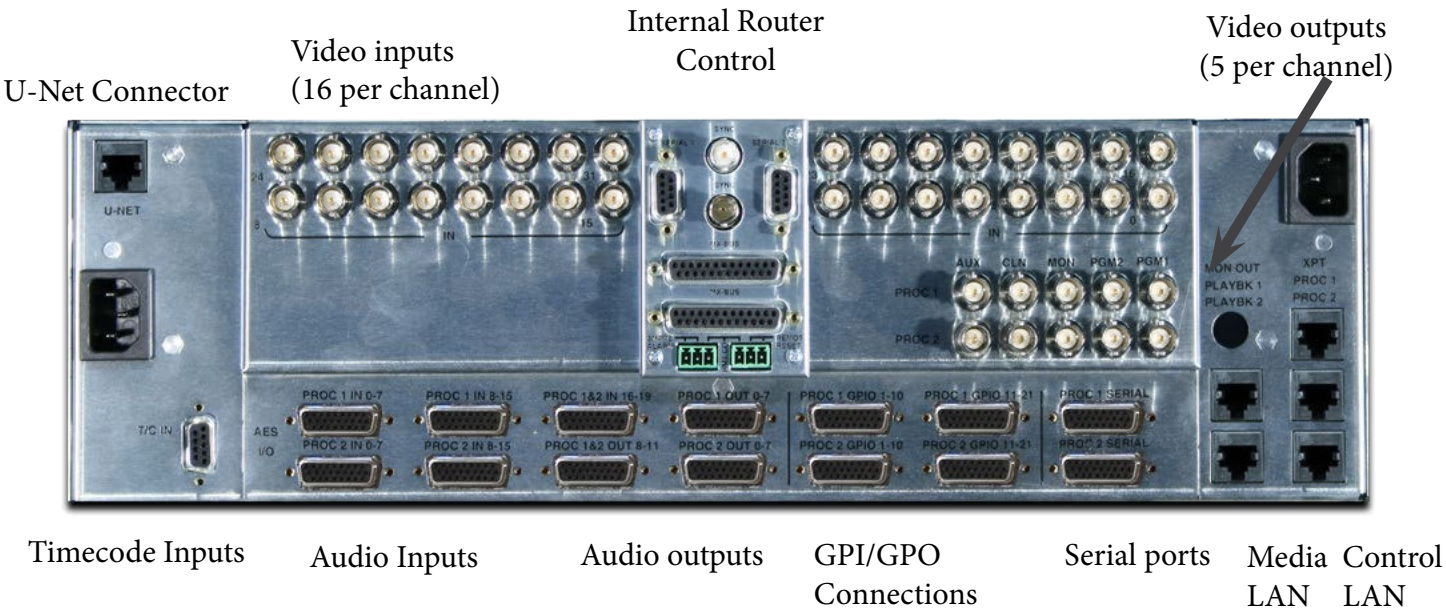
The MC-4000 processor provides full audio mixing facilities, using embedded audio or separate audio inputs. External audio inputs are also provided for voice-over mixing. An internal audio clip store provides online storage for promo tags and other frequently used audio clips, reducing the need for external audio playback devices.

SYSTEM DESCRIPTION

The MC-4000 processor features a three-bus architecture (PROGRAM, PRESET, and PREVIEW) with inputs selected by an external routing switcher or fed directly to the unit's optional internal router. There are four external key inputs (key and fill signals) and four external audio inputs for voice-over mixing.

A built-in video squeeze-back effects option provides DVE effects for inserting promo announcements or other material into the program stream.





Audio features such as master gain control, mix level control, channel swapping and mixing are all available in each MC-4000 processing channel. These functions work identically whether the audio inputs are provided as embedded signals, a separate signal layer, or a combination of the two.

Each MC-4000 channel offers a "Clean Feed" output that is fed with a signal that represents the mixed video program, after the insetion of Keys 1, and 2 and the mix, but before the insertion of keys 3 or 4.

SYSTEM CONTROL

Each MC-4000 channel offers four RS-232/422 serial ports, one of which can be defined as an automation port using the Utah Scientific TAS protocol, which is supported by most major automation system providers. The system offers machine control in either contact closure or serial communications to further assist the operator in manual operations.

To simplify multi-channel operation, the MC-4000 communicates over an Ethernet LAN. Using this LAN, up to eight individual signal channels can be controlled from a single panel or a number of panels with single-button access to any channel from any panel.

EAS MESSAGE HANDLING

The MC-4000 offers a sophisticated system for handling EAS events by putting the EAS message handling under the control of a single button. The operator is notified of an incoming message from the EAS receiver by a flashing EAS button on the control panel. When the operator pushes the EAS button, the channel is set up to play the audio message as a voice-over through the MC-4000's audio mixer, and the message text is displayed on the Program Output by the MC-4000's internal crawl generator. At the end of the message, the operator pushes the EAS button a second time to return the channel to its previous state. Further flexibility is gained by the MC-4000's ability to record and play audio clips. Using this feature, the system can be used to buffer the incoming EAS message so that the operator can play it back at the appropriate point in the channel's programming. The EAS event can also be set for automatic execution when the channel is operating unattended.

COMPLETE SYSTEM SOLUTION

The MC-4000 is part of the industry's most comprehensive family of products for master control applications. The Utah Scientific Master Control product line includes Bypass Switchers, Machine Control Interface Units, Panels, and Master Control Signal Processors for various specific requirements.

MC-4000 Features

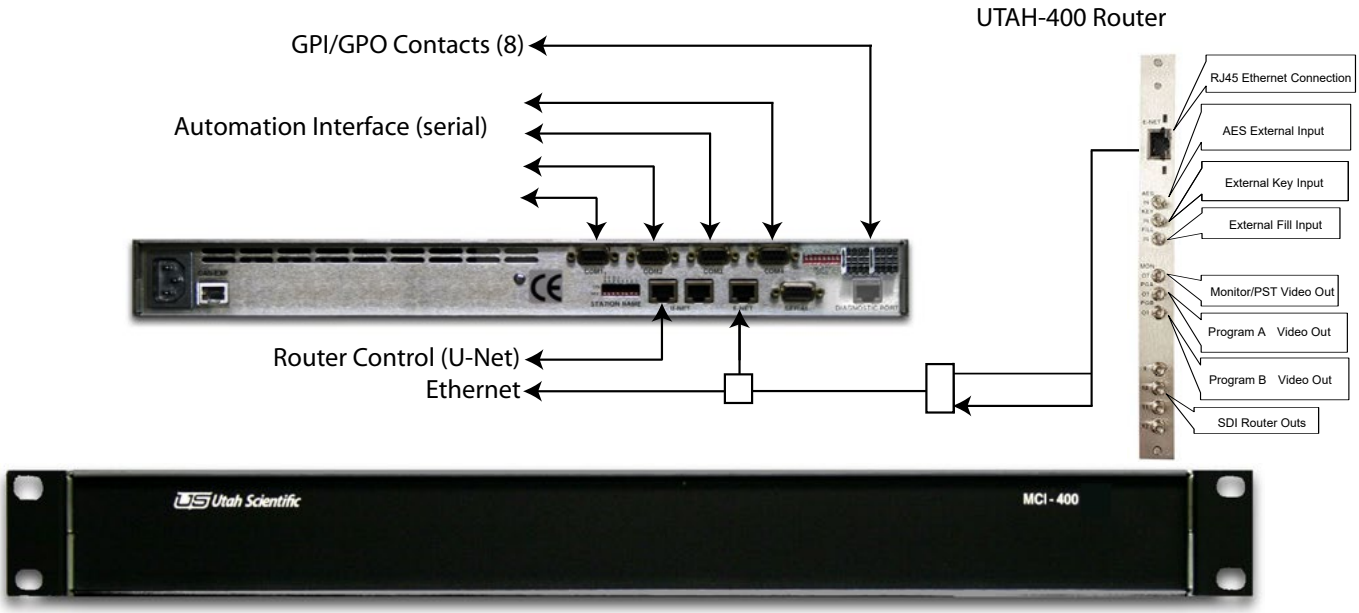
- **Dual channel processor in a compact 3RU package**
- **Able to swap between SD or HD operation for each channel**
- **Up to 4 keyers, all capable of switching between internal, external, and logo sources**
- **Discrete embedded, or mixed audio processing**
- **Optional built-in squeezeback effects unit**
- **Internal audio clip storage for frequently used material**
- **Optional internal EAS capability with audio and text crawl message generation**
- **Wide range of control options for manual or automated operation**

Technical Specifications

Mechanical Dimensions:		19”W x 18” D x 5.25”H (3RU EIA rack mount)
Connectors:	Video: Digital Audio: Serial I/O Ports:Re-lay Outputs: Serial Control Ports:	BNC DB-25F Subminiature 25-pin D connector with female pins. “ “ “ “ “ “
Environmental :	Temperature: Relative Humidity:	10-40°C 0-90% (non-condensing)
AC Power 110/240VAC	Chassis consumption is 100 VA max. (2 channels operating) Dual redundant power supplies are standard equipment	

MCI-400

The MC-400/402 HD/SD Channel Branding System is a high-end signal processing device for use in live and automated master control systems. The MC-400 can be used in a standalone system or as part of a multi-channel master control system under the control of an MCP-2020 network. The MC-400/402 can be switched between SD and HD operation, allowing the channel to be re-purposed for operation with various signal formats during the course of normal operations.



GS-4000

The GS-4000 is a full-featured graphics system designed to support all of the varied requirements for text and graphics in master control branding applications.

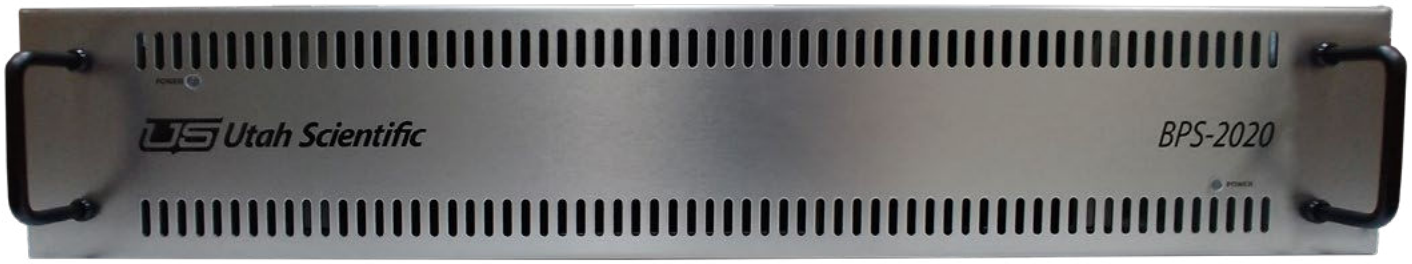
The GS-4000 graphics product is designed for standalone use or with the MC-4000 master control switching system. The GS-4000 is a rackmount PC that includes applications for managing and combining static or animated graphics, text and crawls into scenes which are saved and recalled when needed. The GS-4000 generates Key and Fill SDI output signals which are connected to one of the MC-4000 keyers. The MC-4000 system also connects to the GS-4000 through a serial port connection which allows master control to recall the graphic pages manually or through MC-4000 automation control.

The GS-4000 includes two primary applications, LogoMaster and CrawlMaster, that are used together to combine graphics and crawls into scenes that are saved for quick recall by the master control switcher. LogoMaster provides a method of managing and combining graphics into scenes and drives the GS-4000's Key and Fill outputs. The LogoMaster application also accepts crawls from the CrawlMaster application and combines it with its graphic pages.

BPS-2020 Digital Bypass Switcher Family

The BPS-2020 digital bypass switcher is an 8x1 switcher for digital video (SD or HD) and digital audio signals. Designed for use in conjunction with the Utah Scientific MC-2020 Master Control Switcher, the BPS-2020 provides a compact reliable means for switching alternate signals into the program feed. Therefore bypassing the various elements in the master control signal chain.

The optional clean-quiet switch module increases the usefulness of the BPS-2020 by ensuring that switch transitions between synchronous inputs are clean, preventing disruptions in downstream equipment. With this option installed, the BPS-2020 can be used anywhere that clean switching of SDI signals (SD or HD) is required.



Features

- **8 or 16 inputs with SD/HD Digital video and up to 4 AES levels**
- **Optional Clean-Quiet switch module**
- **Dual redundant power supplies are standard equipment**
- **Optional input loop-through feature (8 input model only)**
- **Space saving 2RU package**
- **Multiple options for remote control**
- **Hard bypass relay ensuring signal passage in the event of power loss**

The BPS-2020 is housed in a 2RU frame with redundant power supplies. The BPS-2020 frame holds the 8-input video switcher board with on-board control logic, an optional video DA board to provide looped copies of each input if required, and one or two audio switch boards, each of which will handle two AES signal streams.

VIDEO

The video switcher section will handle digital video streams at any rate from 1.5Mbps to the full HD rate of 1.485Gbps. The inputs have cable equalization for up to 1,000 ft of cable at 270Mbps. There are two re-clocked video outputs provided, one for the main program feed and one for monitoring.

The optional Video DA board provides actively regenerated loop-though connections for each of the 8 inputs on the main switch board. A second switch board is available for installation in place of the DA board to extend the unit's capacity to 16 inputs.

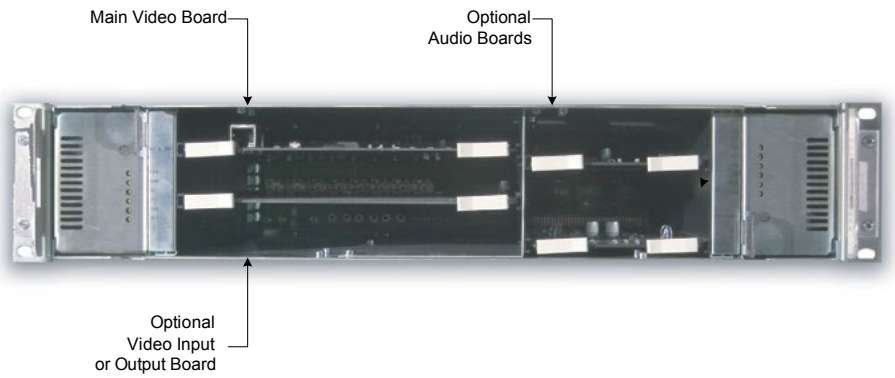
The BPS-2020 also includes a hard bypass relay on Input 1 to ensure signal passage in the event of power disruption. Input 1 is sent directly to the output BNC when the bypass mode is enabled.

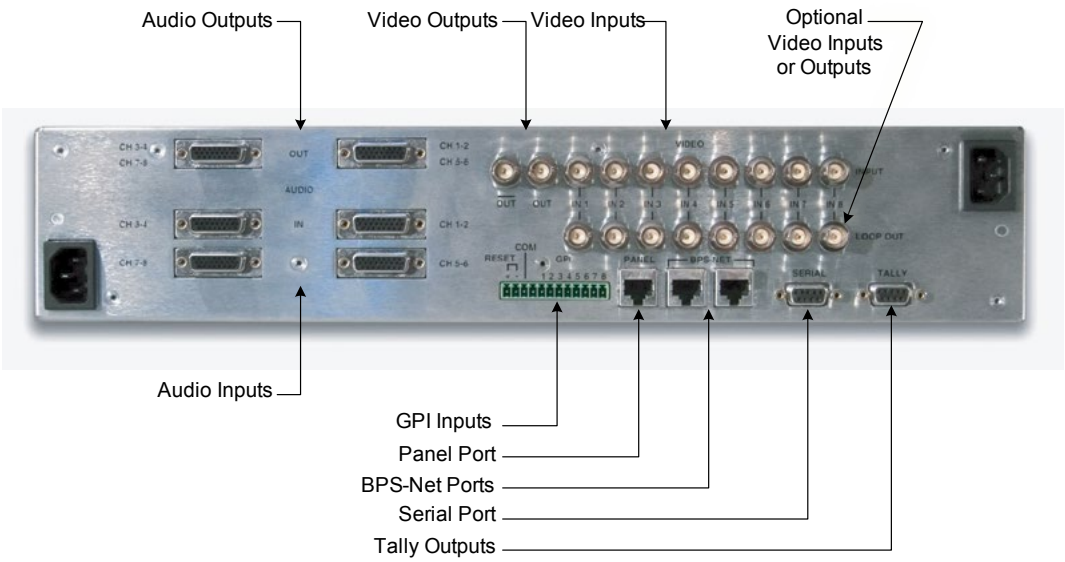
CLEAN-QUIET SWITCH OPTION

The CQ Logic Module can be installed on the main video switch board to ensure clean-quiet switching on switch transition between synchronous input signals. This unit prevents disconnection in the output data stream, eliminating disruptions to downstream equipment that can be caused by switch transitions.

AUDIO

The main audio switcher board has eight inputs for two levels of AES/EBU digital audio signals. The optional second audio switch board provides switching for two additional AES/EBU levels or extension of the fi rst two audio levels to 16 inputs. A soft-switch option provides quiet transitions between synchronous audio signals. The input and output connections are 110 Ohm balanced. Utah Scientific offers several different models of breakout panels to simplify wiring to the BPS-2020's I/O connectors or to provide unbalanced I/O signal connection capability.





CONTROL

There are a number of options available for control of the BPS-2020. For dedicated single channel systems, a simple 8-button control panel is available. This panel is designed to mount adjacent to the associated MC-2020 control panel.

For multi-channel systems, an 8-channel panel allows the operator to select the channel to be controlled by the eight source select buttons on the panel. This panel can also be used as a single-channel panel in 16-input systems.

To support custom-built control panels, two assignable GPI contacts are available for selecting the sources by a simple contact closure, and eight Tally (GPO) closures are provided to drive indicators showing the active source selection.

A serial port is also provided for connecting external control devices to the switcher, selecting sources through a very simple serial control protocol. Both Utah's RCP-1 and the GVG-10XL protocols are supported for communicating with this port.

Specifications

Video Inputs:	8 or 16 (per SMPTE259 or SMPTE292)
Video Return Loss:	<15dB at 1.485Gbs
Switch Point Timing: signal	Referenced to the vertical interval of the current output
Video Outputs:	2 each (PGM) 8 regenerated loop-throughs of the inputs (optional)
Digital Audio Inputs:	110 Ohm, Balanced 8 per level, 2 AES/EBU levels per switch card
Digital Audio Outputs:	110 Ohm, Balanced 1 per level
Mechanical Specifications:	19”W x 13” D x 3.5”H (2RU rack mount)

Connectors

Control Panel Port:	RJ-45 (CAN-Bus)
Inter-frame Control:	RJ-45 (RS-422)
Serial Port:	DB-9F Subminiature 9-pin D connector with female pins.
Tally Connections:	DB-9F Subminiature 9-pin D connector with female pins.
GPI Control:	Terminal Strip w/ removable mating block.
Video Connections:	BNC
Audio Connections:	DB-25F Subminiature 25-pin D connector with female pins.

Environmental

Temperature:	**10-40°C**
Relative Humidity:	**0-90% (non-condensing)**

AC power:

	Chassis consumption is 35 VA max.
110/240VAC	Dual redundant power supplies are standard equipment.
50/60HZ	

Software Panels

MC-GUI Virtual Control Panel

Use with MC-40, MC-400, MC-4000

A multi-channel master control panel Graphical User Interface (GUI) representation of the MCP-2020

Features

- Network operation allows local or remote access
- Control as many as 8 channels on any single soft panel
- Expand to more than 8 channels using additional MC-GUI applications
- Duplicates all control capabilities provided by MCP-2020 hardware panel
- Fully functional with MC-40, MC-400 and MC-4000

Specifications

- Runs on customer supplied Windows 10 PC
- Runs on standard Ethernet connectivity for local or network applications
- Operates with mouse or touch screen displays

Edge Devices

Frames and Accessories

UTAH-400 Utility Frame

The Utah-400 Series 2 Utility chassis is a 2 RU assembly, containing redundant AC power supplies whose purpose is to house Series 2 routing switcher input and output cards to create point solutions for specific needs. The chassis installs into a standard 19" equipment rack and consumes 2RU (3.5"). A removable front cover allows access to the cards and their indicators.

The power supplies and Passive Crosspoint card are standard with the chassis, while the two pairs of input and output cards are user customizable depending on the intended function of the chassis. The power supplies are auto-switching 90-230VAC 50/60 HZ, and operate in a redundant configuration.

Several different applications can be created using the various cards available for the Utah-400 Series 2 router. Several possibilities include:

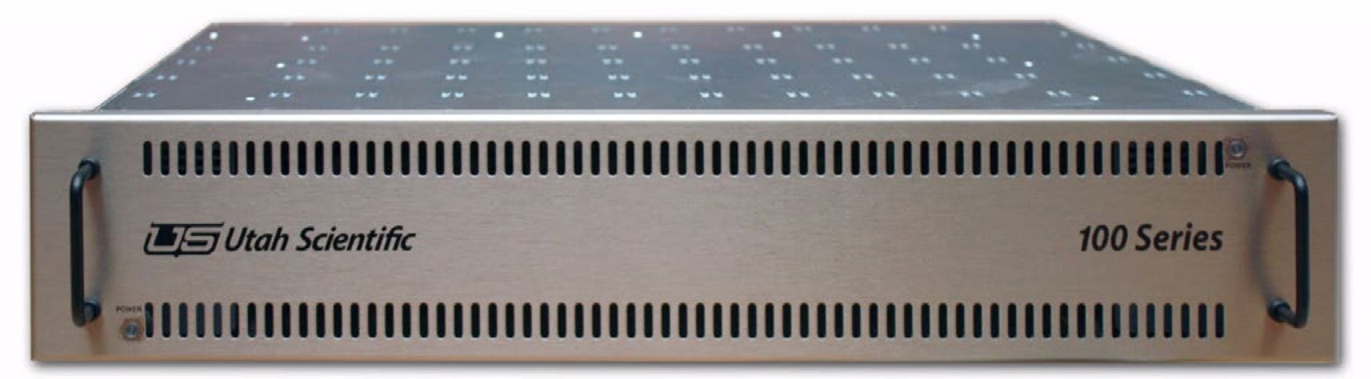
- SDI to SMPTE 2022 conversion, 12 or 24 channels.
- SMPTE 2022 to SDI conversion, 12 or 24 channels.
- Clean/Quiet processing of SDI signals, 12 or 24 channels.
- Frame Sync processing of SDI signals, 12 or 24 channels.
- Dis-embedding of audio signals from SDI, output on MADI, 12 or 24 channels.
- Embedding of audio signals onto SDI, 12 channels.
- Copper to Fiber SDI conversion, 12 or 24 channels.
- Fiber to copper SDI conversion, 12 or 24 channels.

Note: Some of these functions can be combined in one chassis.

UTAH-100/3 Modular Distribution Amplifier

The UTAH-100/3 family of Distribution Amplifiers provide an economical but highly reliable means of creating multiple copies of both analog and digital video signals.

The 2 RU frame holds dual power supplies for maximum reliability and up to ten DA modules. Each module is supplied with a rear panel assembly to match the module's configuration.



Several different applications can be created using the various cards available for the Utah-100 router. Examples of the available module configurations include:

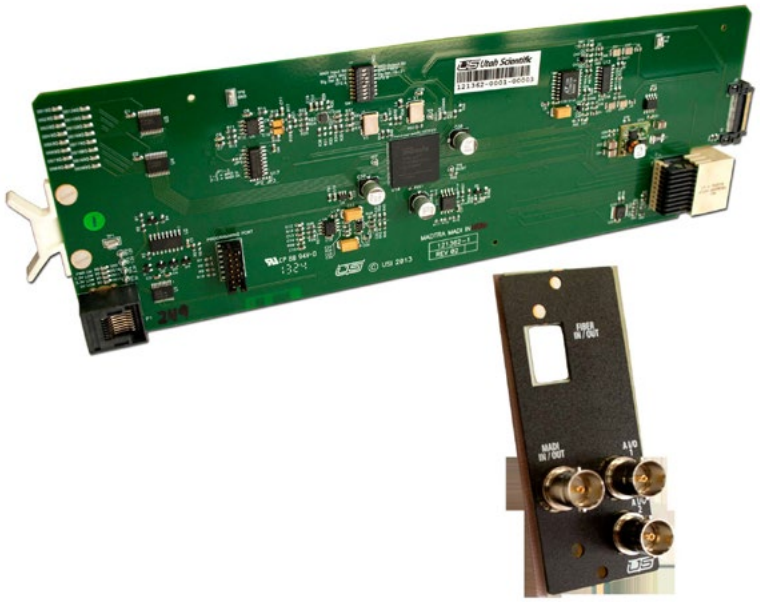
SD Digital Video Single 1×8 with Equalization and Optional Reclocking
Dual 1×4 with Equalization and Optional Reclocking
Triple 1×2 with Equalization and Optional Reclocking
HD/3G Digital Video Single 1×8 with Equalization and Optional Reclocking
Dual 1×4 with Equalization and Optional Reclocking
Triple 1×2 with Equalization and Optional Reclocking
Analog Audio Single 1×8 with Balanced I/O
Dual 1×4 with Balanced I/O

UTAH-100/3 MADI Terminal

The UTAH-100/3 MADI Terminal Multiple Audio Digital Interface (MADI, or AES-10) offers a simple and reliable means of audio signal transport for high-density installations in studio and mobile production applications. The terminal functions as a compact, flexible, and cost-effective means of converting audio signals, both analog and digital, to and from the MADI signal format.

Each 2-RU frame can house one or two MADI channels, and each channel can carry up to 64 individual audio signals (32 AES or stereo pairs) with full 24-bit, 48KHz resolution.

The UTAH-100/3 MADI Terminal frame includes internal power supplies and optional redundancy, with a controller card that accepts a DARS reference signal for synchronizing the audio elements. The frame includes two bays for the installation of MADI card sets. Each card set consists of four cards that provide connection for one MADI stream (in coax or optical format) and 32 AES signals (balanced or unbalanced). Analog card sets are also available, providing A-to-D or D-to-A conversion for 64 mono signals or 32 stereo pairs.



Features

- Able to transport 32 stereo pairs on a single cable
- Companion audio terminal for Utah Scientific video routers
- Balanced and unbalanced AES combinations
- Analog audio support with built-in A-D and D-A conversion
- Fiber and coax MADI connections
- Redundant power supply option
- Compact 2-RU frame

Fiber Transport

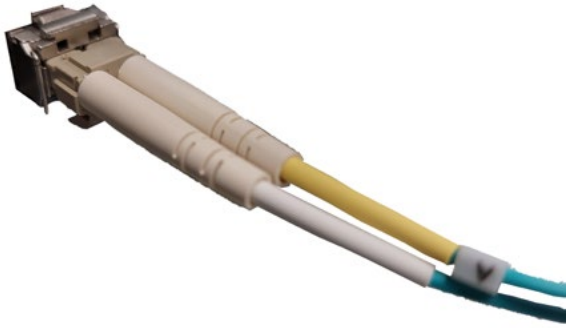
Frames, Transponders, and Interfaces

XFD Fiber Distribution Platform

The UTAH-200/XFD Fiber Distribution Platform provides a uniquely flexible solution for conversion and distribution of digital video signals.

UTAH-200/XFD-1RU-2-0

Compact UTAH-XFD-1RU-2-1



A Format-Flexible Solution

The XFD platform supports the full range of video and audio formats found in today's operations, including 4K/12G-SDI, dual and quad-link 4K, 3G-SDI, HD-SDI, SD-SDI, RS422, GPIO, DVB-ASI, MADI, AES audio, analog video, HDMI input, HDMI output, Gigabit Ethernet, intercom, AES, and Sony optical/electrical remote CCUs.

Only From Utah Scientific: AutoSFP®

Utah Scientific's exclusive AutoSFP® technology is built into the core fabric of the XFD platform, adding versatility and flexibility. The AutoSFP® technology is integrated into the Optical Interface card hardware and software, and leverages the full range of SFPs to offer an immensely powerful platform for system design. Plus, AutoSFP® offers an intuitive, easy, and automatic way of setting the UTAH-200/XFD up for a particular operation. Unique to Utah Scientific, this innovation provides immense cost-savings and enables highly efficient fiber distribution workflows.

Massive Signal Distribution

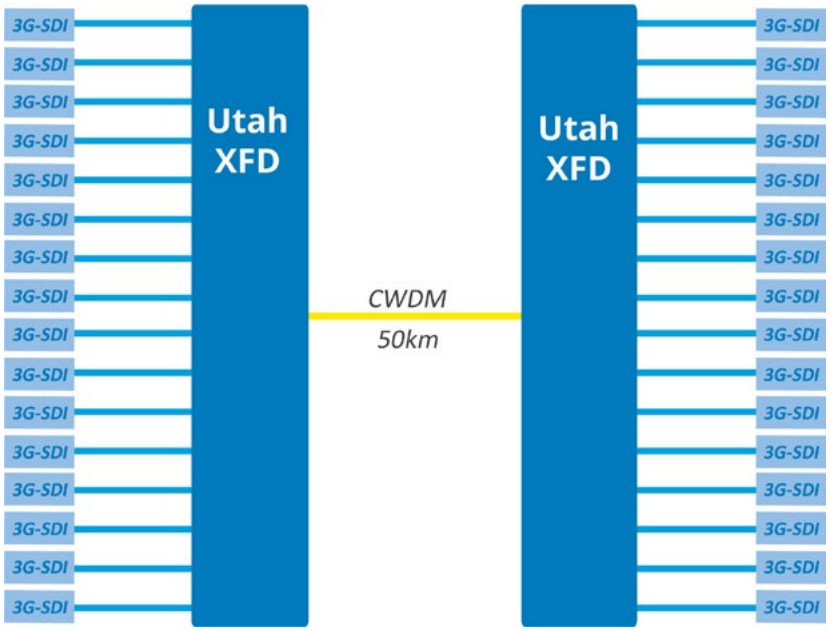
The UTAH-XFD platform offers the highest density in today's market for frame- and card-based systems. Compared to other 2-RU systems, the UTAH-XFD systems can provide 32 reclocked, point-to-point 3G-SDI signals in 1RU. The UTAH-XFD excels at handling mixed signals, all within an easy-to-maintain platform. Add in Utah Scientific's exclusive AutoSFP® technology, and you've got a flexible and easy way to distribute and redistribute signals to change signal direction in seconds.

Multiple-Format CWDM Signal Distribution

Course Wave Division Multiplexing (CWDM) offers a viable and less-costly alternative to fiber. The UTAH-200/XFD support up to 16 CWDM channels, delivering uncompressed signal quality and minimal latency at a competitive price point.

The XFD platform can be easily adapted to support different signal formats without removing the main optical cards (but the cards can be easily removed from the front of the unit for maintenance). Change signal configuration on the fly by swapping the SFP types and letting the AutoSFP® technology reconfigure the signal automatically. The configurations are endless, protecting your investment and allowing for cost-effective scaling.

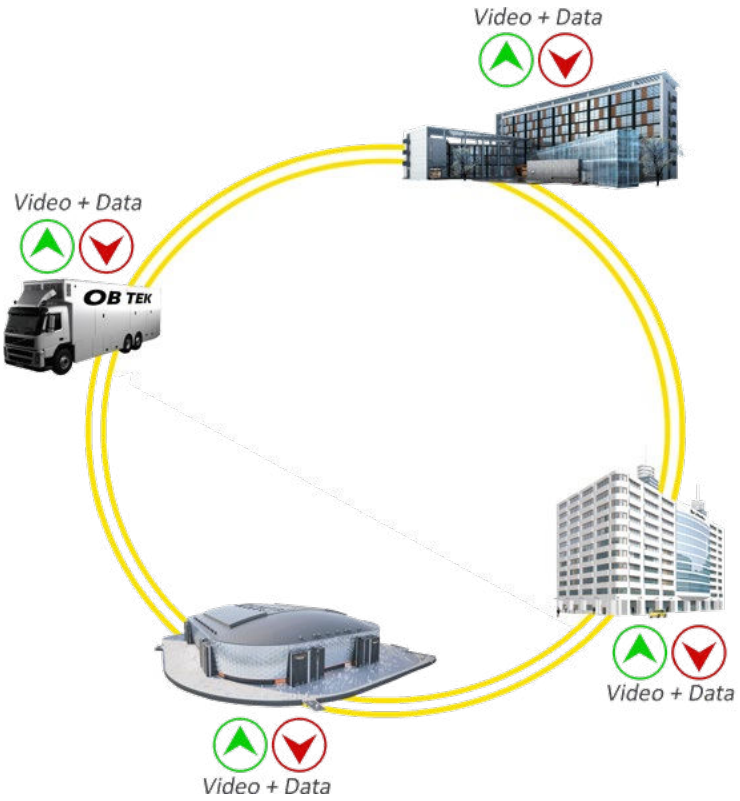
16 SDI
on
1 Fiber

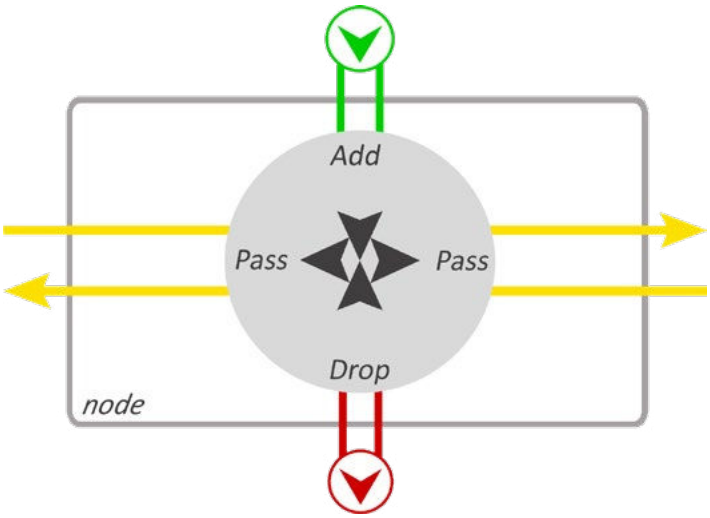


Effortless Fiber Rings

Using the Utah Scientific UTAH-200/XFD platform, you can design and implement ring-based networks with add, drop, and pass circuits for more complex applications such as metro ring systems, inter-building networks, or stadiums.

These optical ring structures can provide optical redundancy on two fibers and incorporate CWDM structures to minimize costs. Use the system's optical changeover function to manage the network easily.





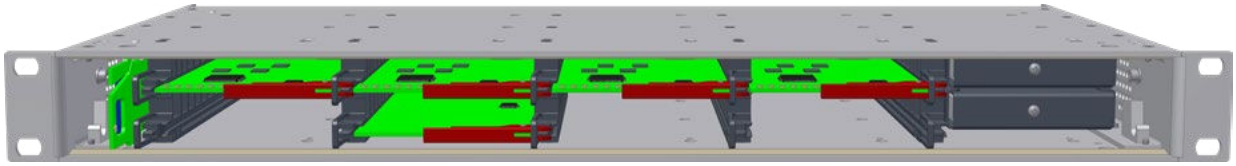
The Add/Drop/Pass function is a standard feature of the Optical Interface card (OC-4B-SDI). The UTAH-200/XFD node will allow you to add or drop signals coming from another node in the ring, and you can also decide to simply pass the signal through a node as required.

The same UTAH-200/XFD optical distribution system is also ideal for remote production and streamlining of cable systems for cameras.

The Utah Scientific Optical Interface Card (OC-4B-SDI)

Utah Scientific's Optical Interface card is the industry's most versatile card for fiber optical distribution, supporting everything from point-to-point links to multiple links for optical distribution, optical transponding, add/drop networking, Ethernet, RS422, GPIOs, and optical/electrical changeover.

The Optical Interface card is a truly innovative multipurpose tool for any outside-venue broadcaster, fiber network operator, or broadcast production station. In seconds, you can use the AutoSFP® functionality to configure the Optical Interface card for new applications. In a single card, you can configure more than 200 combinations, each of which can be easily adapted in the field.



The Utah-200/XFD can hold up to eight OC-4B-SDI cards.

Exclusive Card Locking System

Utah Scientific's Click & Go card locking gives you peace of mind that your signal path will not be interrupted by cards accidently slipping during transportation or coming loose over time. You'll know the card is securely positioned when you hear the single "click."

Web and Data Interface

Utah Scientific's RCONmini mkII is the web and data interface for the UTAH-200/XFD system. RCONmini mkII is included with the UTAH-XFD frames and provides a robust control and monitoring platform independent of the Optical Interface card's operations. Software upgrades are also free.

SNMP Support

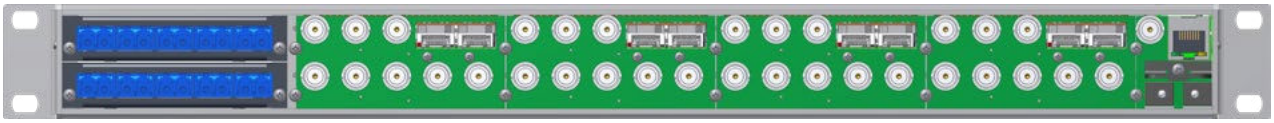
The UTAH-200/XFD platform is SNMP-enabled via the RCONmini. SNMP comes as an integrated function in all UTAH-XFD frames and is also available for users that have existing systems. A simple, no-cost upgrade is available on RCONmini.

Expansion Slot for RS422/GPIOs

The UTAH-XFD frames have a single expansion slot for special applications, located under Card 2 in the sub-rack. The expansion slot is a unique way of interfacing signals onto a fiber connection. For example, you can insert the EX-8B-422 card to provide double RS422 and add eight GPIs or eight GPOs to the Optical Interface card (OC-4B- SDI) installed in the upper card slot. The EX-8B-422 card can be also optioned for TCIP transfers through the RCONmini for GPIO connections.

Optical Changeover

The Optical Changeover card is available in three options — 2 x 1, 2 x 2, and 2 x 1 with optical signal-level detection. The changeover card can be used for redundancy in CWDM systems or for protecting fiber circuits in bypass mode.



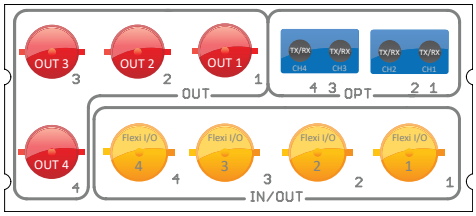
Optical Passive Modules

The UTAH- XFD 1-RU 4-2 frames include options for two optical passive modules — extending the possibilities of the platform even further by giving users the ability to add multiple four-channel CWDM filters, two eight-channel CWDM modules, or an 18-channel filter. Options are also available for up to 40 dense wavelength division multiplexing (DWDM) channels.

You can install other passive optical products, such as WDM and optical splitters, to bring even more flexibility to the UTAH-XFD platforms. You can change your point-to-point UTAH-XFD fiber system into a CWDM system by adding CWDM SFPs and a CWDM multiplexer, while preserving the rest of your investment. You can choose between four-channel and 8/16/18-channel CWDM systems or change up to DWDM.

In addition to the standard range of CWDM filters, the UTAH-XFD ultra-low loss multiplexers are perfect for extended-distance applications or high-loss fiber circuits.

Utah Scientific provides a full suite of multiplexers including an 18-channel version and a multimode version for specialized applications.



A Range of Power Options

A robust power supply solution has been designed into the UTAH-XFD system to bring ultimate flexibility, stability, and reliability to critical fiber networks. All UTAH-XFD systems include a single external supply with the option of a second supply. One supply is enough for a fully populated frame to operate while still running at 70 percent of its capacity.

Two supply inputs are accessible from the rear of the unit with each input totally independent in the event of a short circuit. Utah Scientific offers a full range of power units from +12Vdc to +24Vdc, enabling users to choose the power plan that meets their specific requirements — whether it's a DC battery supply or a common plant DC supply. Utah Scientific also offers an optional rack-mountable frame to house external power supplies.

A cable retention bracket comes standard with the UTAH-XFD to ensure that the power cable is not disconnected accidently during operation. An LED light on the front of the UTAH-XFD sub-rack indicates single- or dual-supply operation.

Frame and Power Options

With flexibility designed into the UTAH-XFD systems, Utah Scientific offers a range of frame and power options that are designed to suit the needs of today's most mission-critical broadcast and telecommunications applications. All frames can be powered redundantly and independently to allow for fault-proof operation and easy change-out. The UTAH-XFD platforms can be powered via solutions ranging from battery and third-party systems to Utah Scientific's own robust power offerings.

A Frame for Every Requirement

Utah-XFD-1RU-2-1 **UTAH-XFD-1RU-2-1**

The XFD 1RU-2-1 Fiber Transport frame is a half-width, 1 rack unit frame that holds up to 2 cards and 1 CWDM-8 mux.

Utah-200/XFD **UTAH-200/XFD-1RU-8-2**

The Utah-200/XFD platform is a high end system that withstands rigorous environments. Features such as "Click& Go" card locking system is standard and provides operational continuity in harsh conditions that require mission critical performance.

Flexible Power Options

24Vdc External Power Supply (10653)

Designed specifically for the UTAH-100/XFD, this professional-grade 24Vdc power supply includes a 90-264V AC input with 60W capacity for use in applications worldwide. The power supply offers a mean time before failure (MTBF) of 200,000 hours and is certified to all relevant specifications.

1-RU Power Sub-Rack

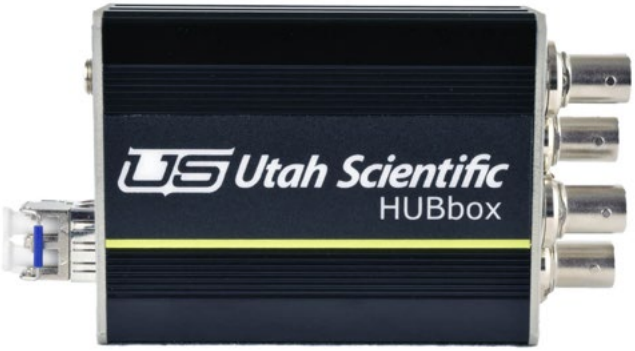
Utah Scientific's sturdy 1-RU power supply frame houses up to six 10653 24Vdc external power supplies, with mechanisms for clamping of DC and AC power cables. An optical LED indicator on the front of the frame shows the status of each power supply.

Other Power Options

Because the UTAH-100/XFD frame is designed with standard and redundant 24V inputs, you can choose from a wide range of third-party external power options. Information about these is available from the Utah Scientific sales team.

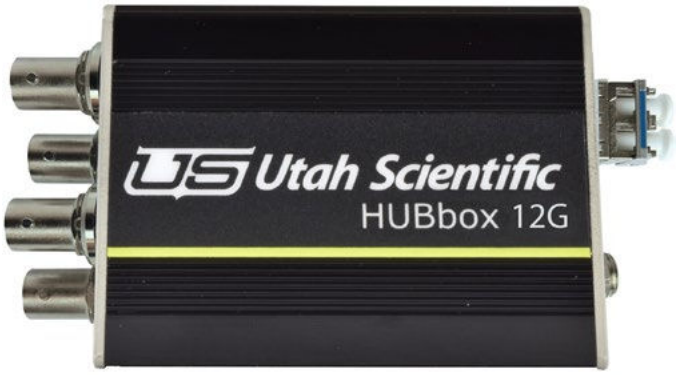
HUBbox Optical Fiber Converters

The HUBbox is ideal for remote locations or as a stand-alone solution when 1 or 2 signals are required. Housed in a compact and durable aluminum casing, the HUBbox is equipped with AutoSFP® functionality for ultimate flexibility. Simply by replacing the SFP, it can easily be changed into a dual receiver, dual transmitter or a transceiver. Dual BNCs per channel have been added to the design, providing dual outputs or loop-through.



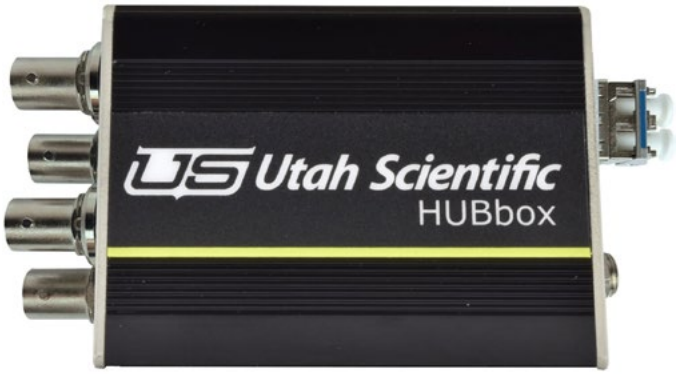
HUBbox NV120-R14-R14

The HUBbox 12G NV120-R14-R14 Dual Optical Fiber Converter supports 12G-/6G-/3G-/HD-/SD-SDI with support for data rates from 270Mbps to 11.88Gbps.



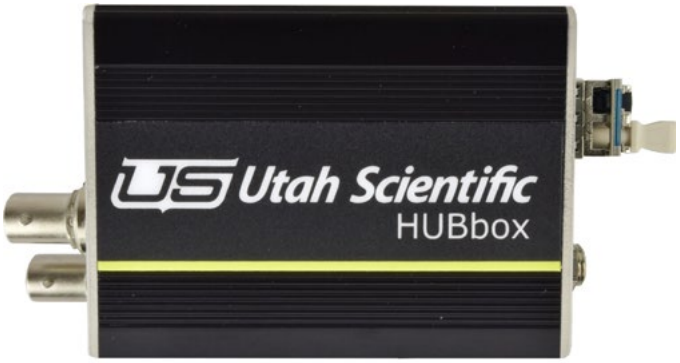
HUBbox NV30-R17-R17

The HUBbox NV30-R17-R17 Dual Optical Fiber to SDI converts 3G-/HD-/SDSDI and DVB/ASI to optical fiber signals, with support for data rates from 2Mbps to 3Gbps.



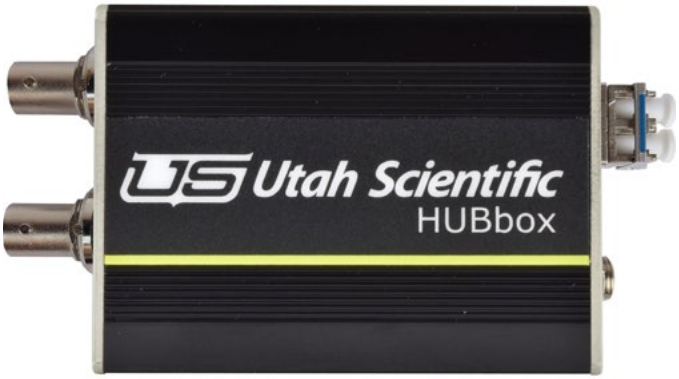
HUBbox HB-T1310

The HubBox HB-T1310 optical transmitter converts single SDI signals to optical fiber, with support for data rates from 2Mbps to 3Gbps. The system supports 3G-, HD-, and SD-SDI as well as DVB/ASI.



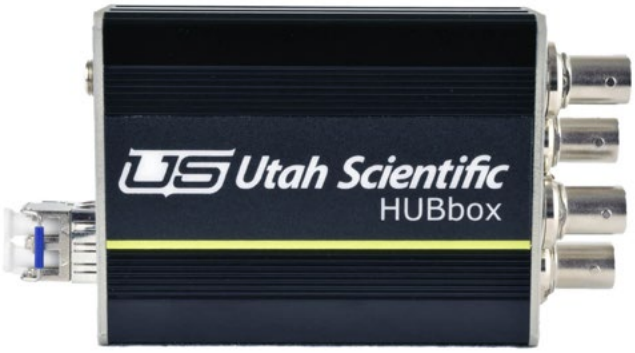
HUBbox HB-T1310-T1310

The HubBox HB-T1310-T1310 optical transmitter converts single or dual SDI signals to optical fiber, with support for data rates from 2Mbps to 3Gbps. The system supports 3G-, HD-, and SD-SDI as well as DVB/ASI.



HUBbox NV30-R17

The HUBbox NV30-R17 Optical Fiber to SDI converts 3G-/HD-/SDSDI and DVB/ASI to optical fiber signals, with support for data rates from 2Mbps to 3Gbps



HUBbox NV120-T1310-R14

The HUBbox NV120-T1310-R14 Optical Fiber Converter converts 12G-/6G-/3G-/HD-/SD-SDI to optical fiber signals, with support for data rates from 270Mbps to 11.88Gbps.

The Utah Scientific SFP Family

Utah Scientific offers a wide range of SFPs at various performance and pricing levels, so you can choose the best possible solution for your critical applications. All Utah Scientific SFPs come standard with Utah Scientific's exclusive AutoSFP® technology built in.

Every Utah Scientific SFP has undergone extensive testing and has passed a rigorous quality control process, including measurement and documentation of testing procedures, to ensure the highest-possible quality.

HDMI INPUT **NV30-HDMI-IN**
HDMI OUTPUT **NV30-HDMI-OUT**

Application: HDMI Input SFP that enables encoding onto optical fiber for distribution via a fiber circuit. The HDMI output SFP can be paired with a cost-effective, high-definition PC monitor and used for proof monitoring, or it can send HDMI-formatted signals via a fiber circuit.

ANALOG VIDEO INPUT **NV03-COMP-2-IN**
ANALOG VIDEO OUTPUT **NV03-COMP-2-OUT**

Application: The Analog Video Input SFP is a dual SD-SDI-to-analog composite video convertor for delivering analog output from a fiber circuit. The Analog Video Output SPF is a dual composite video-to-SD-SDI convertor for distribution of analog video over a fiber circuit. Supported analog standards include NTSC M, NTSC J, NTSC 4.43, PAL B/G/H/I/D, PAL M, PAL N, PAL 60.

GIGABIT ETHERNET **ND12-GBE1000**

Application: Gigabit Ethernet distribution over optical fiber. When paired with an optical transceiver, this SFP enables distribution over one fiber using the BiDi SFP or two separate fibers using a transceiver.

MADI OPTICAL **ND01-T1300-R30-MM**

Application: Conversion between multimode optical MADI sources to incorporate them into the correct level matching for inclusion in a single-mode fiber system or for frequency shifting to a CWDM system.

BiDi OPTICAL **ND12-T1310-R20-BiDi**

Application: Built-in WDM filter that allows for Gigabit Ethernet distribution over one fiber. This SFP can be paired with ND12-T1550-R20-BiDi for WDM operation.

DUAL OPTICAL RECEIVER **NV30-R20-R20**

Application: A dual-optical SFP for receiving two channels from a point-to-point or CWDM system. (The CWDM application requires CWDM TX SFPs and multiplexers). This SFP is also available in a single-channel version.

DUAL OPTICAL TRANSMITTER **NV30-T1310-T1310-10**

Application: Dual TX SFP for point-to-point optical systems. Also available in a single-channel version.

OPTICAL TRANSCEIVER **NV30-T1310-R20-10**

Application: Two-channel SFP including TX and RX optical functions in a single package. Ideal for bidirectional distribution.

CWDM DUAL OPTICAL TRANSMITTER **NV30-CXXXX-CXXXX-40**

Application: Dual CWDM TX SFP for CWDM-based optical systems. Ideal for point-to-point systems, this SFP is available in nine different pairs of frequencies.

CWDM TRANSCEIVER **NV30-CXXXX-R20**

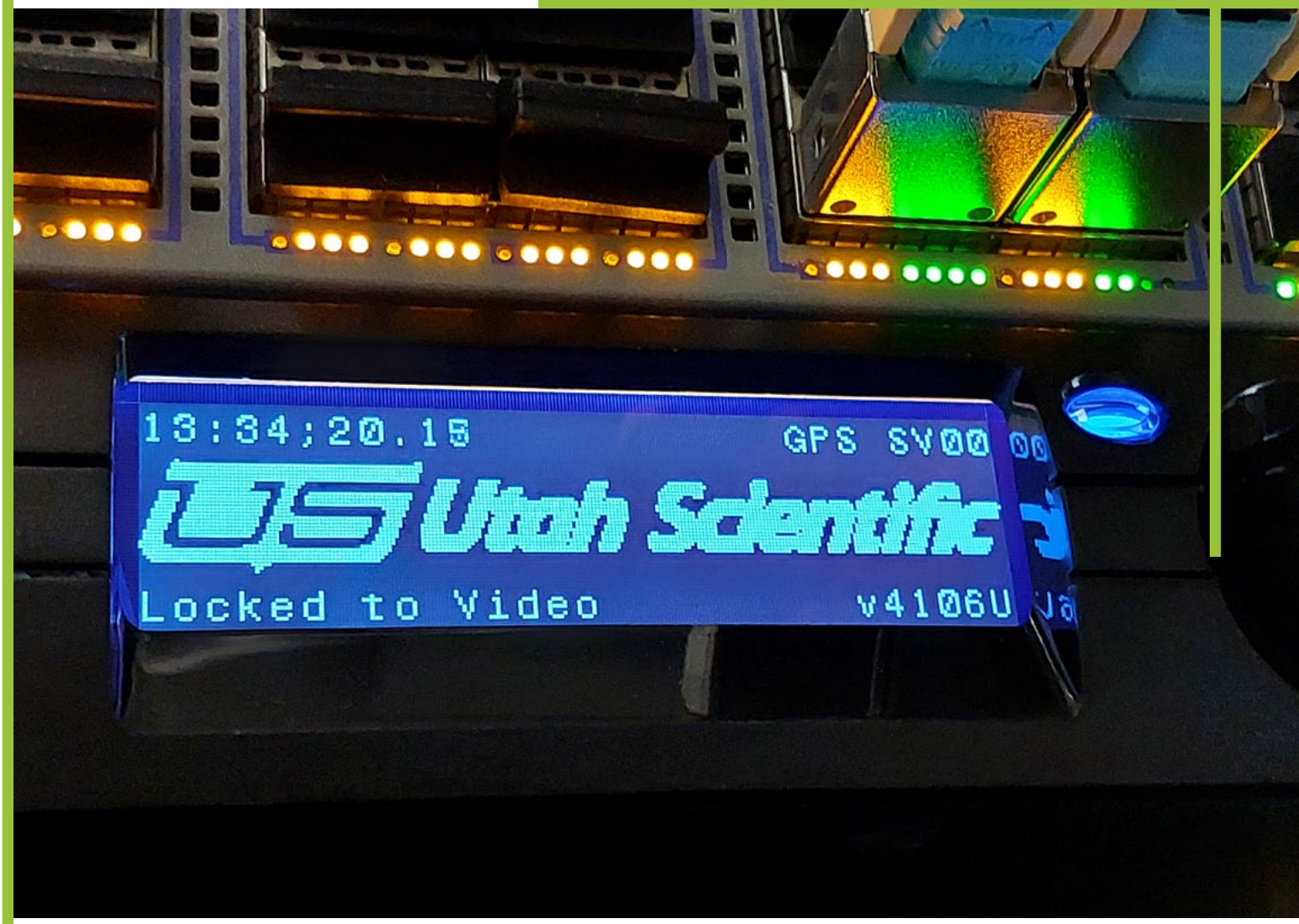
Application: ATX/RX SFP for CWDM-based optical systems. This SFP can be used for point-to-point systems and is available in 18 different frequencies.

DWDM TRANSCEIVER **NV30-DXX-R27-40**

Application: DWDM TX/RX SFP for DWDM-based optical systems. This SFP can be used for point-to-point systems and is available in 40 different frequencies.

Other Specialized SFPs

Utah Scientific also provides specialized SFPs on a project application basis. RS422, GPOs, and GPIs are also available for interface onto optical distribution via the EX-88-422 card.



Sync Generators

Frames, Transponders, and Interfaces

TSG-460 Universal SPG/TPG & Time Reference

The TSG-460D is the ultimate sync, test pattern & time reference generator designed to satisfy all needs of broadcast serial digital (Standard, High Definition, 3G & 4K UHD), IP and mixed/hybrid, post-production, Studio, OB and other operational environments. It provides all the reference (color Black, Tri-Level Sync), timing and test signals, including LTC and VITC, together with analog audio, AES audio & Wordclock, needed to satisfy any application in PAL, NTSC, SD-SDI, HD-SDI, 3G-SDI, 4K-UHD, IP and hybrid installations. It also provides time reference signals, NTP (Network Time Protocol), and can simultaneously be an IEEE 1588 PTP (Precision Time Protocol) Grandmaster or Follower.
The unit is supplied with dual “hot swap” redundant power supplies for maximum security.

The TSG-460D is designed for use either as a Master or, when externally locked, as a Follower SPG. Where it is critical to have a backup SPG, the TSG-465A auto changeover unit complements the TSG-460D. This can be user configured to monitor and changeover analog video, digital video, timecode and AES/EBU digital audio signals.

FEATURES

- Outstanding performance, stability and reliability
- PAL/NTSC/625/525 switchable
- Comprehensive range of test patterns for all analog and digital applications
- ±4 field (PAL) / ±2 field (NTSC) timing range
- Multiple & independently configurable reference outputs (PAL/NTSC/Tri-Level Sync in all HD formats)
- 4 LTC (standard and offset) or pulse outputs (User programmable)
- VITC on all SD outputs (User Select) analog stereo tone output with programmable interrupt
- Embedded audio
- Lock time to VITC on genlock ref input
- User programmable & animated text idents (3) (independent on each test out)
- 10Mhz reference input
- Genlock to color Black
- 2 pairs independent SD (std), HD, 3G, 4K SDI color black and test patterns (with embedded tone/silence) AES digital tone, Silence, Wordclock
- Remote control, SNTP Server & Client over
- Ethernet – including remote control via Ross Video Dashboard
- GPS receiver option – lock time to UTC, lock frequency & phase to GPS 10Mhz
- IEEE1588 PTP v2 Grandmaster – locked to GPS reference or free run when not. PTP and baseband outputs aligned and in sync. IEEE1588 PTP v2 Follower – locks to external PTP Grandmaster reference.

CO-465 Universal SPG Changeover Switch

The CO-465 is a universal automatic SPG changeover unit intended for use with the Utah Scientific range of SPG, Test Pattern & Time reference generators. It can be configured as 6 or 12 measured channels in a 1RU rack. All channels measure both the “primary” and “backup” signals. The standard unit is supplied with two hot-swappable power supplies for maximum redundancy. The power supplies are directly accessible from the front panel.

To allow for mixed format requirements and offer maximum flexibility, each channel can be set to measure analog color black, standard definition SDI video, hight definition SDI video, high definition 3G video or AES/EBU audio (75Ω).
Each channel has a primary input, a backup input and a common output and a relay that switches one of the input channels to the common output.

FEATURES

- Choose either 6 or 12 channels in 1U
- Front panel visual fault indication
- Manual override facility
- All channels can measure analog color black, SD & HD SDI, 3G SDI, HD Tri-level sync, Timecode, & AES/EBU Audio
- Dual redundant hot swappable PSU’s
- All channels user configurable
- Clear fault indication on front panel LCD
- All channels will switch if one channel fails

Specifications

Conforms to relevant EBU, CCIR or SMPTE specifications.

Video Inputs (BNC)
75 Ohm looping reference
10 MHz terminating reference

Video Outputs (BNC)
Analog composite test (2) standard
Analog color black (2) standard
Color black/tri-level (3 independent pairs)
SDI (SD (std)/HD or 3G) color black with embedded silence (2 independent pairs)
SDI (SD (std)/HD or 3G) test pattern with embedded tone (2 independent pairs)

Balanced Audio/AES/LTC Outputs Molex Microclasp 30 pin connector

Unbalanced AES Audio
AES (2) standard
DARS (1) standard

WordClock
(TTL) 2 BNC standard

Controls and Indicators
LCD display, rotary knob & switch

Ethernet
100BaseT RJ45 standard
GbE RJ45 TSG460D-PKG/02.

GPS Antenna Input
SMB jack

Timecode Outputs
LTC 4 (user select) standard
VITC (user select) standard

Color Black Outputs
Fsc stability: ±1 Hz over temperature range SCH phase: 0 degrees ±5 degrees
Return loss: >35dB to 5 Mhz

Sync Pulse Generator Subcarrier Output
NTSC or PAL

Pulse and Pattern Outputs
Signals: meet or exceed relevant EBU, CCIR and SMPTE specifications

Genlock
H range: ±4 fields (PAL). Moves all timing relative to the reference input.
Subcarrier: 0 to 360 degrees
Resolution: <0.5 degrees of subcarrier

Mechanical
Height: 1 rack unit
Width: 19” rack mounting
Depth: 16" (overall)
Weight: 13.25 lb (unpacked)

Voltage
Auto ranging 100 to 240V AC, 50/60Hz

Power
21 Watts maximum

Ordering Information
TSG-460D: SPG/TPG & Time Ref Dual PSU
TSG-460D-PKG/01: HD + 3G SDI package
Includes TSG-460/03 & TSG-460/04
TSG-460D-PKG/02: PTP Ready package
Includes PTP Hardware (not enabled)
TSG-460/02: 2 additional SDI outputs - Option
TSG-460/03: HD SDI outputs – Option key
TSG-460/04: 3G SDI outputs – Option key
TSG-460/05: NTP – Option key
TSG-460/06: GPS receiver/antenna – Option
TSG-460/09: 4K UHD – Option key TSG-460/ GbE PTP – Option key

Find the Perfect Solution for Managing a Hybrid SDI/IP Environment With Utah Scientific

Trust the company that's been delivering you innovations in video routing and signal distribution since 1977. We can show you how to build on your existing infrastructure to ease into the IP world one step at a time. Our video routing hardware will give you the peace of mind that comes with the broadcast industry's only no fee 10-year warranty.

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