AVENUE™

Including 4K Products

Signal Processing and Infrastructure Gear for Broadcast

WARRANTY 5 YEARS WARRANTY

ENSEMBLE DESIGNS

Purveyors of Fine Video Gear—Loved by Engineers Worldwide

Avenue Signal Integration System

Before you take the next step in your transition to HD, 3G, or 4K call us for a hands-on demo. We'll gladly visit you and bring a demo of proven and reliable HD up/downconverters, frame syncs, audio embedders, video converters, multiviewers, logo inserters, protection switches and sync pulse generators. Plus, you can relax knowing that each product has a full five-year warranty, and free software upgrades for life.

Avenue 3RU frame holds 10 signal processing modules. Touch screen front door is an option.

The Avenue system makes the transition to digital and 3G easy for broadcast and post facilities. Avenue is an expandable, modular, tray-based signal integration system housed in a 1RU or 3RU frame. Avenue allows 4K, 3G, 1.5 Gb/s HD video, SD video, analog, DVB-ASI, SMPTE 310M, and audio modules in the same frame. These proven and reliable modules include: up/downconverters, video converters, embedders, frame syncs, routers, sync pulse generators, protection switches, multiviewers and more.

Built-in networking lets you tie your Avenue system together, streamlining control and monitoring. Frames and modules in the system can be accessed from multiple locations in a facility, including remote locations via the internet. Comprehensive management and control is achieved by using any combination of Avenue Control Panels and/or Avenue PC software. Front edge or local controls are also available for each module.

Clearly, Ensemble wants to be in the broadcast equipment business. It's so rare anymore to find a company of this caliber that has not been gobbled up by a large corporation. They are privately held so they don't have to please the money people. They really put their efforts into building products and working with customers.

I'm really happy with the Avenue products and Ensemble's service, and even more important my engineers are happy. We've continued to upgrade the product and add more cards. We will be rebuilding our production control room and we will use Avenue again.

Don McKay, Vice President Engineering
Oregon Public Broadcasting

See It. Take It.

Avenue Integrated Routing System

A Router Revolution

The Avenue modular digital video router is the most flexible, technologically advanced small router available today. It's ideal for QC monitoring, master control bypass switching, ENG trucks, edit suites, and a host of other applications. Ease of expansion, user-defined input/output port geometry, exclusive video thumbnails, built-in test signal generation and optional clean and quiet switching on multiple outputs make it perfect for your next project or upgrade.

Exclusive Live Thumbnail Display

Realtime video thumbnails travel over Ethernet to the Router Control Panel where they are displayed on a compact, high-resolution display. This enables the operator to visually verify source content before performing any switching operations.

Highly Flexible Matrix

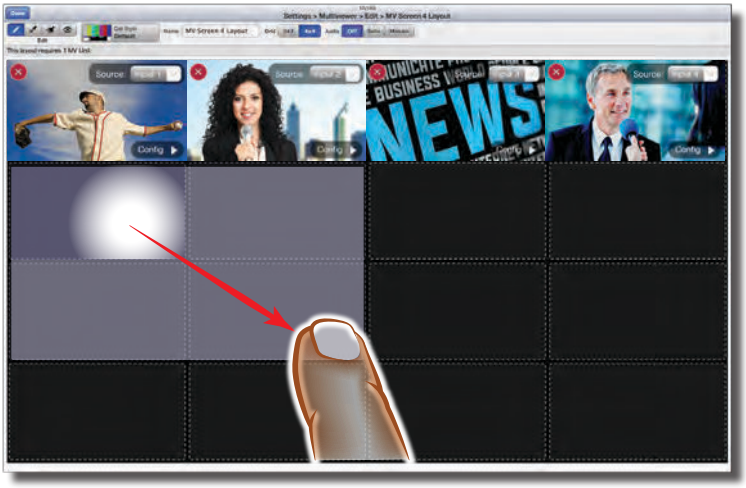
The new flexible matrix design allows you to configure the router to the perfect size for your facility. The basic size is 8x2. You can add user-configurable input or output ports all the way up to 28x2 (or 8x22) and any size in between. The design allows the router to be easily reconfigured to a different matrix size at any time.

Routing, Keying, Multiviewing Combined

The Avenue Layering Engine provides two independent linear keyers, program/preset background transitions, and audio mixing and breakaway to your Avenue Flexible Matrix Router. Any router sources can feed the Layering Engine and the program/preview outputs can be routed to any router destination. The intuitive iPad control interface gives you full control over the mix/effect while the new Layering Engine Control Panel provides a hard surface control interface of keyers and background transitions.

Adding the Avenue 9480 Multiviewer sub-module option provides routable multiviewer functionality to your Avenue Flexible Matrix Router. Its sophisticated authoring interface ensures sources are sized perfectly with Ensemble's proprietary scaling algorithms. You'll see stunning detail in every position, even when the same source appears multiple times. Configuration is super simple with the click-to-fill function, snap-to grids and intuitive menus. Labels, borders, audio meters, tally, and alarms are configured with a web browser on your computer or iPad. An exclusive User Mode allows changing multiviewer layouts on the fly quickly and easily – even during production!

MV82 and MV164
Multiviewers



Finally, a Multiviewer that Makes Sense!

Monitoring all your sources couldn't be easier with Ensemble Designs' MV82 and MV164 Multiviewers. Simple intuitive set-up, powerful display options, and incredible image quality with no latency are just the start. Whether you're displaying a simple quad split, or designing an entire control room wall, the Avenue Multiviewers are the right solution at the right price.

Avenue Multiviewers give you an offline mode for creating screen layouts, alarms for ensuring signal integrity, fast authoring tools with eyedropper and paste functions, closed caption support, and countdown clocks.

Features

- **Configure in minutes and start monitoring your video sources right away**
- **Independent Edit and Control modes give operators and engineers just the controls they need**
- **Audio Solo mode for monitoring any audio channel**
- **Scaling technology that delivers stunning image quality**
- **Video always displayed at full frame rate**
- **Zero latency between sources, from the top of the screen to the bottom**
- **Straight forward setup with click-to-fill configuration and snap-to cell alignment**
- **Fast, desktop style layout tools including eyedropper and paintbrush**
- **Design layouts offline while Multiviewer is in use**
- **Configurable alarms to check signal integrity**
- **Dual level tally**
- **Closed caption support**
- **Countdown clocks and timers**
- **Packages available for ease of ordering**

Set up an entire system in minutes from your PC, Mac or iPad. Configuration is easy with the click-to-fill function, snap-to grids and intuitive menus. The preview window lets you see sources and includes thumbnails of each source.

P9425
Avenue Layering Engine

Features

- **Multi layer keying and background transitions**
- **Linear, Luminance, and Additive Modes**
- **Internal LogoStore**
- **Built-in frame syncs on every input**
- **Audio breakaway and AFV**
- **Supports 16 channels of embedded audio**
- **Channel branding, small master control, centralcasting, fly-pack, remote truck**
- **EAS and downstream keyer option**
- **Hard surface operator control panel**
- **Packages available for ease of ordering**
- **4K/UHD with model 1425 Layering Engine**

More Than a Mix Effect

Use Ensemble's Avenue Layering Engine for broadcast, live venues and presentation. With two, independent linear keyers, program/preset background transitions, and audio mixing and breakaway, it's an agile and flexible solution for combining audio and video content. Inputs can be driven by SDI signals from cameras, remote feeds, character generators, graphic and stillstore systems, and video servers. The full range of SDI signals from SD to HD and 3G formats are supported. Realtime processing and low latency make it easy to integrate – even in complex signal chains.

Looking for 4K support? Check out the Avenue 1425 4K/UHD Layering Engine.

You have complete control over the configuration and operation of this powerful Layering Engine with a web interface, operation control panel, TCP/IP and serial control

The P9425 uses just one module slot in an Avenue 3RU frame.

9430 and 9440

3G/HD/SD/ASI Flexible Matrix Router

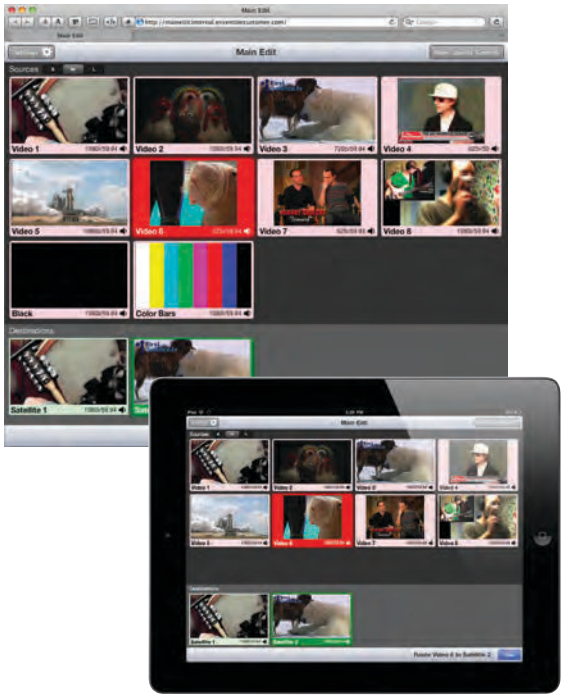
The Avenue modular digital video router is the most flexible, technologically advanced small router available today. It's ideal for QC monitoring, master control bypass switching, ENG trucks, edit suites, and a host of other applications. Ease of expansion, user-definable input/output port geometry, exclusive video thumbnails, built-in test signal generation, and optional clean and quiet switching on multiple outputs make it perfect for your next project or upgrade.

Highly Flexible Matrix

The flexible matrix design allows you to configure the router to the perfect size for your facility. The basic size is 8x2. You can add user-configurable input or output ports all the way up to 28x2 (or 8x22) and any size in between. The design is future-proof, allowing the router to be easily reconfigured to a different matrix size at any time.

Features

- **Use this router for master control bypass, QC monitoring, off-site news bureaus and radio shows, mobile trucks, helicopters**
- **Realtime video thumbnails of every SDI source and destination**
- **Highly configurable – Flexible I/O for exactly the matrix size you need**
- **Clean and quiet switch option has full frame sync**
- **Multiviewer option**
- **Look-ahead preview**
- **Signal diagnostics and reporting with indicators for synchronicity and timing, audio, closed captions, timecode and AFD**
- **Built-in internal black and bar generator. No need for external generators. Saves router inputs**
- **Control choices include the Router Control Panel, iPad, Mac and PC from a web browser, serial protocols via TCP/IP, RS-232 and SNMP**
- **Supports every type of signal you need – HD, SD, 3G SDI, ASI and 310M. It's multi-format, use any mix of signal types**
- **Packages available for ease of ordering**



Complete control is available from a web browser, Router Control Panel, TCP/IP and serial control.

Realtime video thumbnails travel over Ethernet to the Router Control Panel where they are displayed on a compact, high resolution display. Built-in signal diagnostics show synchronicity and timing, line and frame rate, embedded audio presence or absence, closed caption information, and timecode data.

Everything In A Single Module

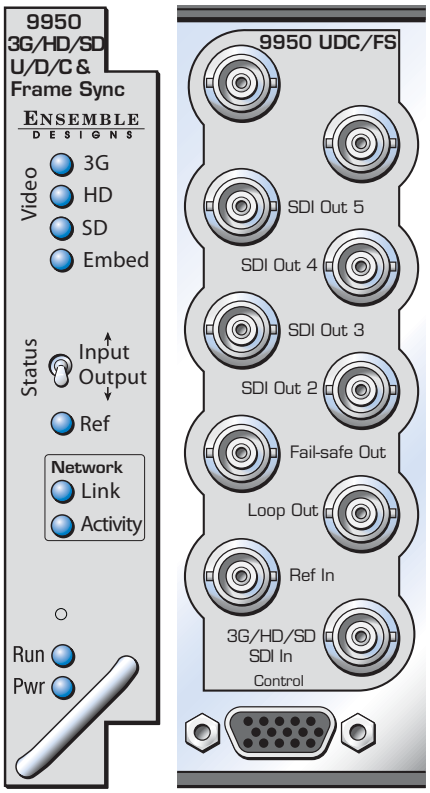
The 9950 is a configurable and flexible 3G, HD and SD SDI frame synchronizer and up, down, and cross converter. Excellent for on-air use, the 9950 is equally at home in a 3G island, in an HD signal ingest installation, or in a production application. Embedded audio will have automatic delay compensation, dutifully retaining lip sync.

It's Really Smart – Set and Forget

The 9950 can be configured to continually output your facility's preferred HD or SD format. Just connect any 3G, HD or SD SDI signal to the input and the 9950 will convert it to the appropriate format for output – fully synchronized.

Features

- **High-quality upconverter, downconverter, cross converter, aspect ratio converter**
- **3G, HD and SD SDI I/O**
- **Smart auto-config – set output, then feed any input**
- **Proc amp with video, chroma, setup and hue adjustments**
- **Built-in bars, black and tone**
- **Passes embedded audio with proper delay compensation and lip sync preservation**
- **Supports four groups of embedded audio**
- **Full frame sync – accepts asynchronous signals**
- **Reference input – output is timeable**
- **Automatically adjusts between SD/HD color space**
- **AFD detection and insertion**
- **16 bit processing**
- **Built-in noise reduction**
- **Passes closed captioning**
- **3:2 pulldown**
- **Local and remote control**
- **Memory registers**



9600

3G Embedder, Disembedder and Data Inserter

The 9600 module is a sixteen-channel audio embedder or disembedder for 1.5 and 3 Gb/s high definition video signals or 270 Mb/s standard definition signals. Eight AES ports automatically configure as inputs or outputs depending on whether the module is configured as mux or demux. The 9600 includes a full-featured, sixteen-channel audio mixer. Delay is adjustable up to one second.

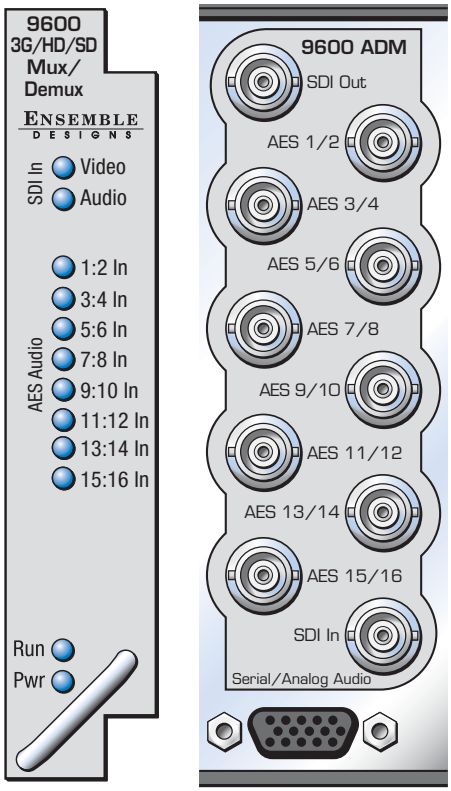
Configurable Mux or Demux

When configured as a multiplexer, the 9600 has one serial digital video input and eight AES audio inputs. These eight AES streams are embedded into the video stream. AES inputs are sample rate-converted, allowing the use of asynchronous audio. The output of the module is a digital stream that contains the original video signal and eight AES pairs, or sixteen channels.

When configured as a demultiplexer, audio signals present in the incoming video signal are extracted and delivered as standard AES digital audio streams.

Features

- **Audio embedder or disembedder for 3G, HD or SD signals**
- **Handles 8 AES streams/16 channels**
- **Analog audio I/O**
- **Dolby encoding and decoding options**
- **Up to one second of delay**
- **In-line processor for embedded audio**
- **Audio automatic gain control option**
- **Built-in audio mixer**
- **Phase inversion selectable on a channel basis**
- **Built-in sample rate converters accept asynchronous inputs**
- **26 bit processing resolution**
- **Data mux and demux as per SMPTE 337M**
- **Memory registers**



9550
3G Video Processing Frame Sync

The 9550 HD Processing Frame Sync accepts a 3 Gb/s or 1.5 Gb/s high definition video or standard definition video signal for processing, synchronization and timing.

Flexible Synchronization

An infinitely adjustable timing system genlocks to your house reference. The 9550 genlocks to either composite video (PAL or NTSC) or to Tri-Level Sync. The module can lock to the frame's master reference or reference can be connected directly to the module's external reference BNC. The serial output timing can be set anywhere within a frame of the selected input reference, which can be the module's external BNC reference or the frame's master timing reference.

Upon loss of signal, the 9550 provides freeze frame or black until the signal is recovered. In freeze mode, audio can be muted or passed as desired.

Uncompromised Pictures

The HD or SD SDI input is carried at full, uncompressed bandwidth throughout the entire module.

Complete Proc Amp Functions

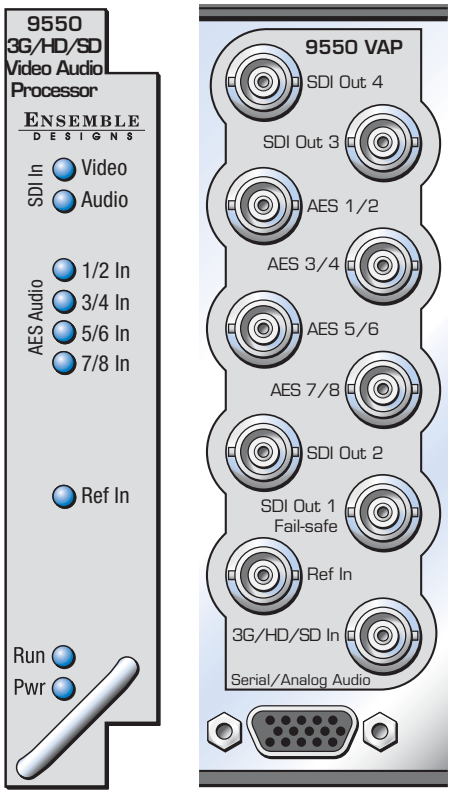
The 9550 has a full-featured Proc Amp for adjustment of every signal parameter. Proc controls include Video and Chroma Gain, NTSC-style hue rotation, Black Balance, and Pedestal.

Audio Support

The 9550 includes a full-featured, sixteen-channel audio mixer. The channel swap and shuffle capability allows you to completely rearrange and remix audio channels. It provides precise control over audio level, with up to 12 dB of gain to compensate for low level sources. Delay is adjustable up to one second. The audio mixer can be used for embedded audio and for audio sourced from the AES or analog inputs. The 9615 AES and analog audio I/O software key option is required if you want to use the AES or analog inputs and outputs. The 9615 provides four AES input/output ports for eight channels of I/O and also provides four channels of analog audio I/O.

Features

- **3G, HD or SD SDI I/O**
- **Full-featured frame synchronizer with adjustable delay**
- **Comprehensive proc amp controls**
- **External genlock reference input**
- **Internal color bar generator**
- **Passes embedded audio**
- **AES option for 4 streams/8 channels**
- **Analog audio I/O option**
- **Data mux and demux as per SMPTE 337M**
- **Dolby encoding and decoding options**
- **Audio loudness control AGC option**
- **Memory registers**



9455 and 7435
Clean and Quiet Protection Switches

A Clean Switch That's Glitch-Free

The 9455 module is a clean and quiet protection switch for critical broadcast and satellite feeds. It switches cleanly between asynchronous sources which means it can be used live to air. The module has a full video frame synchronizer, rather than a line delay, ensuring perfect alignment of mis-timed and non-synchronous SDI sources.

Clean and quiet switching between sources requires that they be synchronous and precisely timed to each other. The 9455 accomplishes this automatically with integral frame synchronization of the inputs, allowing operation with both synchronous and asynchronous (wild) sources. This frame synchronization feature not only means that the output of the 9455 will always be stable and glitch-free, but it also means that in the event of a total loss of both inputs, consistently timed color black will still be output.

These internal frame synchronizers can be genlocked to an external reference signal so that the output of the 9455 is synchronous to local sources. Alternately, in teleports, headends, and other multi-service facilities where there is no logical common reference, the 9455 will internally generate an accurate reference.

The delay through the 9455 can be adjusted from one to eight frames, with independent control for the Primary and Secondary input paths. By operating with several frames of delay, the fault detection algorithms are given enough time to detect a failure in an input signal and switch to the backup before the fault has actually appeared on-air.

Perfect Audio

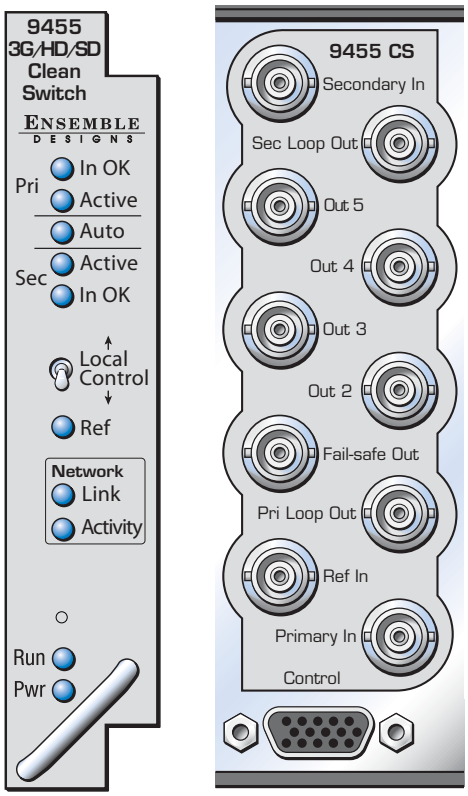
Glitch-free, quiet switching of embedded audio signals is achieved with the 9455's precise synchronization and alignment of audio sources. Digital audio is de-embedded, and if it is linear PCM, sample rate converted, switched, and re-embedded. Encoded audio streams such as Dolby™ E are de-embedded and re-embedded but not processed in any way. PCM audio is supported with asynchronous sources, operation of encoded audio requires all sources to be synchronous, but not necessarily in time.

Don't Need 3G?

For all of the same great capabilities without 3G, choose the 7435 Clean and Quiet Protection Switch.

Features

- **Clean and quiet switch for 3G, HD and SD SDI signals**
- **Use for clean switching of asynchronous sources for critical, live feeds**
- **Full frame synchronizer with adjustable delay**
- **Quiet audio switching**
- **Passes embedded audio**
- **External genlock reference input**
- **GPIs and TCP/IP for automation control**
- **Fail-safe bypass in case of power failure**
- **Local and remote control**
- **Memory registers**



Reliable and Easy To Use

The 9400 3G/HD/SD Sync Generator and Test Signal Generator is a stable timing source that is perfect for local reference generation in broadcast, remote trucks and post. HD SDI, SD SDI, analog composite, Tri-Level Sync, timecode, AES audio and analog audio reference outputs are generated.

The 9400 can operate from an internal precision frequency reference as a stand-alone Master Sync Generator or lock to a video reference or 10 MHz precision reference. Alternately, the 7400-GPS option can be used. If the external reference is lost, the 7400's softlock provides a graceful transition to the internal TCXO, ensuring consistent reference output.

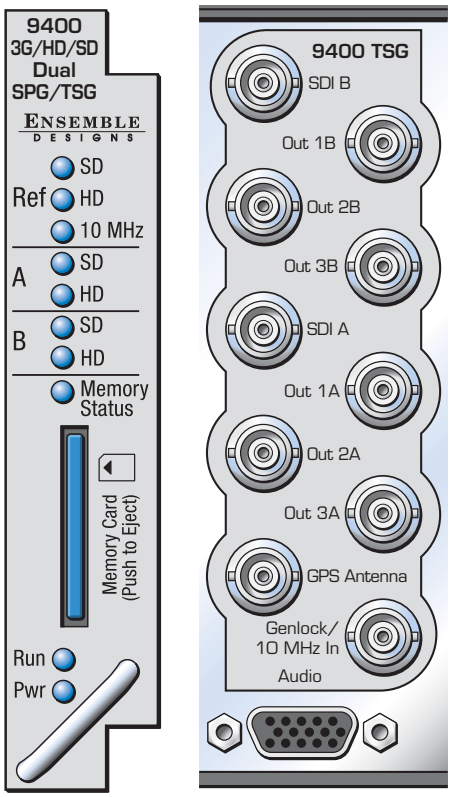
The 9400 can output multiple formats of Tri-Level Sync, 3 Gb/s and 1.5 Gb/s HD SDI test signals, SD SDI and composite test signals, and color black reference. The 9400 can simultaneously deliver both 525 (NTSC) and 625 (PAL) based signals. Color framing tracks the reference signal. All of the video outputs are derived from the same time base and can be timed with respect to each other.

The 9400 has two identical generators, Generator A and Generator B, each with a variety of outputs. Each set of outputs can be timed with respect to the reference to any point in the television frame. All of the outputs from a particular generator must be selected within the same frame rate family.

The Avenue Frame features a retainer bar to ensure that modules remain properly seated even in the most demanding mobile environments.

Features

- **Use as master sync gen or lock to external reference or GPS**
- **Can output SD SDI, 1.5 Gb/s HD SDI, 3 Gb/s HD SDI, composite, timecode and audio simultaneously**
- **Softlock provides graceful transition to internal TCXO if external reference is lost, ensuring consistent reference output**
- **Outputs can be independently timed**
- **Generates 30+ test signals**
- **Generates closed caption test sequence to test for compliance**
- **Dual Link test patterns**
- **Flash memory card for making custom test patterns**



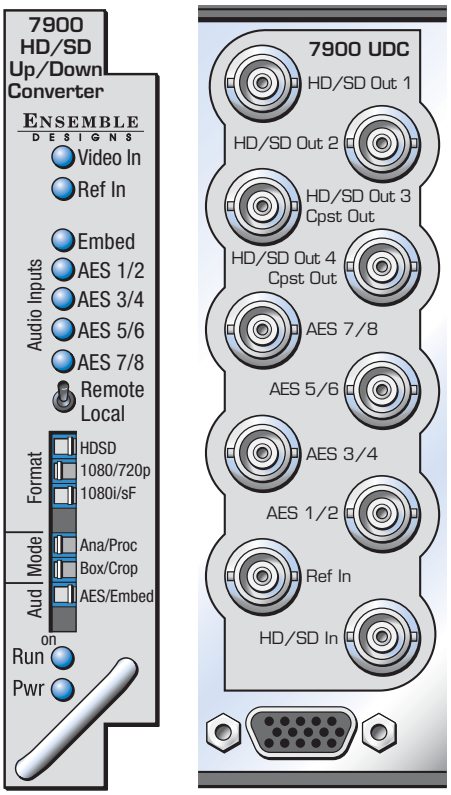
7900
HD Up/Down/Cross Converter

Do It All with One Module

The 7900 is a flexible, configurable up and downconverter for use in broadcast and post. It can process SD signals into HD, downconvert HD signals into standard definition, and perform format and aspect ratio conversion on both SD and HD signals. The 7900 and one of the optional audio sub modules together occupy only one slot in an Avenue frame – now that's efficient use of space.

It's Smart – No Need for Configuration

The 7900 can be configured to continually output your facility's preferred HD format. Just connect any HD or SD signal to the input and the 7900 will convert it to the appropriate format for output. And, if the 8415 audio option is installed, the audio will have automatic delay compensation.



Features

- **Upconverter**
- **Downconverter**
- **Cross converter**
- **Aspect ratio converter**
- **Smart auto-config – set output, then feed any input**
- **Proc amp and frame sync**
- **Audio mux/demux optional**
- **Audio automatic gain control optional**
- **Add audio sub module option for delay and processing**
- **All internal processing performed on 4:4:4 progressive signals**
- **Accepts asynchronous signals**
- **Reference input – output is timeable**
- **Automatically adjusts between SD/HD color space and gamma**
- **16 bit processing**
- **Edge and motion adaptive noise reduction**
- **Picture detail enhancement**
- **Anti-alias filter**
- **Passes closed captioning**
- **Auto detection of input standard and frame rate**
- **3:2 pulldown**
- **Built-in test pattern and tone**
- **Local and remote control**

Avenue 4K/UHD Modules

4K/UHD • Layering Engine • Protection Switch • Test Signal Generator

Layering Technology for 4K Broadcast, Live Venues and Presentation

Mix and Cut between 4K/UHD sources, key from external video or the built-in LogoStores. The 1425 makes it easy to work with quad-link signals, with support for both SQ (Square Division) and 2SI (Two Sample Interleave) pixel formatting.

Easy Control from Web, Control Panel or Automation

You have complete control over the configuration and operation of this powerful 4K layering engine with a web interface, operation control panel, TCP/IP and serial control.

1425 4K/UHD Layering Engine Features

- **Multi-layer keying and background transitions**
- **Supports SQ and 2SI quad-link formats**
- **Linear, luminance, and additive modes**
- **Internal LogoStore**
- **Built-in frame syncs on every input**
- **Supports 16 channels of embedded audio**
- **Channel branding, small master control, centralcasting, fly-pack, remote truck**
- **Intuitive iPad interface and serial control**
- **Hard surface operator control panel**

1455 4K/UHD Protection Switch Features

- **Detects signal faults and switches automatically to back up path**
- **Quad-link interface in SQ or 2SI format**
- **Clean and quiet switch for 4K signals**
- **Use for clean switching of asynchronous sources for critical, live feeds**
- **Full frame synchronizer with adjustable delay**
- **Quiet audio switching**
- **Passes embedded audio**
- **External genlock reference input**
- **GPIs and TCP/IP for automation control**
- **Fail-safe bypass in case of power failure**

Finally, a 4K Clean Switch That's Glitch-Free!

The Avenue 1455 ACO is a clean and quiet protection switch for critical 4K broadcast and satellite feeds. The 1455 uses sophisticated user-programmable parameters to detect signal failure in the primary or secondary quad-link inputs. In the event of a failure, the 1455 switches seamlessly to the backup – viewers downstream will never see the switch.

Flexible 4K/UHD Test Signal Generator

The P9400-4K SPG/TSG is a full featured Sync Pulse and Test Signal Generator supporting 4K/UHD standards, along with legacy SD and HD signals. Taking just two positions in an Avenue Frame, it's the perfect solution for broadcast, post, MCR, and remote applications. Operate from internal precision reference, or lock to external reference or GPS. It includes support for AES, Analog, and Embedded audio; ATC, DVITC, VITC, and LTC timecode; and CEA 708 Caption Testing. Quad Link outputs support Square Division (SQ) or Two Sample Interleave (2SI) sample distributions. Fully configurable through the Avenue control system.

P9400-4K Test Signal Generator

- **Flexible 4K/UHD Test Signal Generator**
- **4K/UHD/3G/HD/SD SPG & TSG**
- **Genlock or stand-alone operation**
- **Generates 30+ test signals**
- **GPS option**
- **Full 16 channels of audio embedding**
- **Customizable patterns with user logos**
- **Quad Link SQ or 2SI**

Avenue Signal Integration System Modules

4K Modules

1425	4K/UHD Layering Engine
1455	4K/UHD Protection Switch
P9400-4K	4K/UHD/3G/HD/SD Test Signal Generator

3 Gb/s Modules

MV82	Multiviewer 8 x 2
MV164	Multiviewer 16 x 4
3750	3G/HD/SD/ASI Electrical to Optical Converter
3760 `	3G/HD/SD/ASI Optical to Electrical Converter
9110	3G/HD/SD/ASI Reclocking DA
9125	3G/HD/SD/ASI Dual Reclocking DA
9400	3G Sync Pulse Generator and Test Signal Generator
P9425	Avenue Layering Engine
9430	3G/HD/SD/ASI Flexible Matrix Router
9440	Router Expansion Module with 10 Configurable I/O Ports
9455	3G Clean and Quiet Protection Switch
9465	3G Sync Changeover
9480	Multiviewer sub module option for 9430 Router
9550	3G Video Processing Frame Sync
9600	3G Embedder, Disembedder and Data Inserter
9950	3G Up/Down/Cross Converter and Frame Sync

Up/Down/Cross Converters

7900	HD Up/Down/Cross Converter
7910	HD Upconverter and Cross Converter
7920	HD Downconverter
7925	Dual HD Downconverter
7930	HD Cross Converter
7940	SD Aspect Ratio Converter
9950	3G Up/Down/Cross Converter and Frame Sync

Routers

5830	Router Control Panel with LCD Preview Display
9430	3G/HD/SD/ASI Flexible Matrix Router
9440	Router Expansion Module with 10 Configurable I/O Ports

Mix Effects and Logo Inserters

1425	4K/UHD Layering Engine
5420	SD Logo Inserter
5825	Layering Engine Control Panel with LCD Display
7420	HD/SD Logo Inserter
P9425	Avenue Layering Engine
9425-XK	DSK and EAS Inserter sub module option for P9425 Layering Engine

Multiviewers

MV82	Multiviewer 8 x 2
MV164	Multiviewer 16 x 4
9480	Multiviewer sub module option for 9430 Router

Protection and Clean Switches

1455	4K/UHD Protection Switch
4450	SMPTE 310M Protection Switch
4455	ASI Protection Switch
5160	SD Protection Switch and DA
5455	SD Protection Switch
7160	HD/SD Protection Switch and DA
7435	HD/SD Clean and Quiet Protection Switch
7450	HD Protection Switch
7455	HD/SD/ASI/310M Protection Switch
7465	Sync Changeover
9455	3G Clean and Quiet Protection Switch
9465	3G Sync Changeover

Sync Pulse and Test Signal Generators

P9400-4K	Test Signal Generator
7400	HD/SD Sync Pulse Generator and Test Signal Generator
7410	Quad Tri-Level Sync Generator
9400	3G Sync Pulse Generator and Test Signal Generator
9465	3G Sync Changeover

Audio Loudness and Compliance

9670	LevelTrack™ Audio Loudness Control AGC Software
9690	Audio Compliance and Monitoring Software

Audio and Dolby™ Embedding, Delay and Processing

6230	AES and Analog I/O sub module for 5230
6330	AES and Analog I/O sub module for 5330
7600	HD/SD Embedder and Disembedder
7610	8 Channel Audio Processor sub module for 7900
7615	Dolby E, Dolby D and AC-3 Decoder sub module and Software Key Option
7630	Dolby E Encoder sub module and Software Key Option
7635	Dolby D and AC-3 Encoder sub module and Software Key Option
7660	HD/SD Embedder, Disembedder and Data Inserter
8415	8 Channel Audio Processor sub module
8510	4 Channel Audio Processor sub module
9600	3G Embedder, Disembedder and Data Inserter
9615	AES, Analog Audio, and Data I/O Software Key Option

Audio Conversion, Distribution and Delay

5150	DA for Analog Video, AES and Tri-Level Sync
5155	Dual DA for Analog Video, AES and Tri-Level Sync
6010	Analog to AES Converter
6020	AES to Analog Converter
6230	AES and Analog I/O sub module for 5230
6330	AES and Analog I/O sub module for 5330
6600	Analog Audio DAs and Frame – Models 6601, 6601R and Frame 6600
7610	8 Channel Audio Processor sub module for 7900 series
7615	Dolby E, Dolby D and AC-3 Decoder sub module
7630	Dolby E Encoder sub module and Software Key Option
7635	Dolby D and AC-3 Encoder sub module and Software Key Option
8415	8 Channel Audio Processor sub module
8510	4 Channel Audio Processor sub module
9615	AES, Analog Audio, and Data I/O Software Key Option

Video Conversion, Frame Syncs and Legalizers

5130	Reclocking Serial DA with Composite Monitor Outputs
5230	SD Digital to Analog with Component, Y/C or Composite, Genlock
5330	Analog to SD Digital Converter with Component and Composite Inputs, TBC/Frame Sync
5350	4 Channel Analog to SD Digital Converter with TBC/Frame Sync
5355	4 Channel Analog to SD Digital Converter
5360	4 Channel Analog to SD Digital Converter and Embedder with TBC/Frame Sync
5365	4 Channel Analog to SD Digital Converter and Embedder
5385	Analog Composite to SD Digital Converter
7550	HD Legalizer
7555	HD/SD Video Processing Frame Sync
8500	Composite/SD Legalizer and Video Processing Frame Sync
9550	3G Video Processing Frame Sync
9950	3G Up/Down/Cross Converter and Frame Sync

Avenue Signal Integration System Modules (continued)

Proc Amps and Noise Reducers

5470	SD Proc Amp and Legalizer
5475	Digital Noise Reducer for 5470
7455	HD/SD/ASI/310M Protection Switch
7550	HD Legalizer
7555	HD/SD Video Processing Frame Sync
8500	Composite/SD Legalizer and Video Processing Frame Sync
8520	Digital Noise Reducer sub module
9550	3G Video Processing Frame Sync

DVB-ASI Modules

3750	3G/HD/SD/ASI Electrical to Optical Converter
3760	3G/HD/SD/ASI Optical to Electrical Converter
4110	ASI/310M DA
4150	ASI/310M Relay Point DA with CRC Support
4455	ASI Protection Switch
4500	ASI/310M Converter and MPEG Transport Processor
4505	Dual ASI/310M Converter and MPEG Transport Processor
7455	HD/SD/ASI/310M Protection Switch
9110	3G/HD/SD/ASI Reclocking DA
9125	3G/HD/SD/ASI Dual Reclocking DA
9430	3G/HD/SD/ASI Flexible Matrix Router
9440	Router Expansion Module with 10 Configurable I/O Ports

SMPTE 310M Modules

4110	ASI/310M DA
4150	ASI/310M Relay Point DA with CRC Support
4450	SMPTE 310M Protection Switch
4500	ASI/310M Converter and MPEG Transport Processor
4505	Dual ASI/310M Converter and MPEG Transport Processor
7455	HD/SD/ASI/310M Protection Switch

Fiber Optic Modules

3750	3G/HD/SD/ASI Electrical to Optical Converter
3760	3G/HD/SD/ASI Optical to Electrical Converter

Distribution Amplifiers

4110	ASI/310M DA
5120	Dual Digital Video DA
5125	Reclocking Dual Digital Video DA
5130	Reclocking Serial DA with Composite Monitor Outputs
5140	Analog Video EQ DA
5150	DA for Analog Video, AES and Tri-Level Sync
5155	Dual DA for Analog Video, AES and Tri-Level Sync
5160	SD Protection Switch and DA
6600	Analog Audio DAs and Frame – Models 6601, 6601R and Frame 6600
7130	HD DA and Downconverter
7160	HD/SD Protection Switch and DA
9110	3G/HD/SD/ASI Reclocking DA
9125	3G/HD/SD/ASI Dual Reclocking DA

GPI/Serial Interface Modules

5820	GPI/Serial Interface