How to choose the best

Test Signal Generator
Sync Pulse Generator

for Your facility....

Trio Video's HD Tango Truck

What do I need for my transition to HD?

Do I need 3G?

What about Time Code?

I need multiple types of Tri-Level Sync at the same time. Can you do that?

Can I create custom test patterns just for my facility?

ENSEMBLE
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"**Which is the best Test Signal and Sync Pulse Generator for my facility?**"

Reliable Test Signal and Sync Pulse Generators with Every Kind of Reference Signal You Need.

BrightEye 57

When rack space is at a premium and you need a solid sync pulse generator with every signal imaginable – HD, 3Gb/s, SD, time code, AES and more – look to Ensemble Designs.

The Avenue 9400 SPG/TSG module is a stable timing source that is perfect for local reference generation in broadcast, remote trucks and post. 3G, HD SDI, SD SDI, analog composite, HD Tri-Level Sync, time code, AES audio and analog audio reference outputs are generated.

The 9400 SPG/TSG fits into an Avenue 3RU or 1RU frame. The 3 RU frame holds up to 10 modules including additional SPG modules, sync changeovers, DAs, up/downconverters and frame syncs. Other Avenue reference generator modules include the 7410 Four Channel Tri-Level Sync Generator, the 7400 SPG/TSG and the 7405 HD TSG.
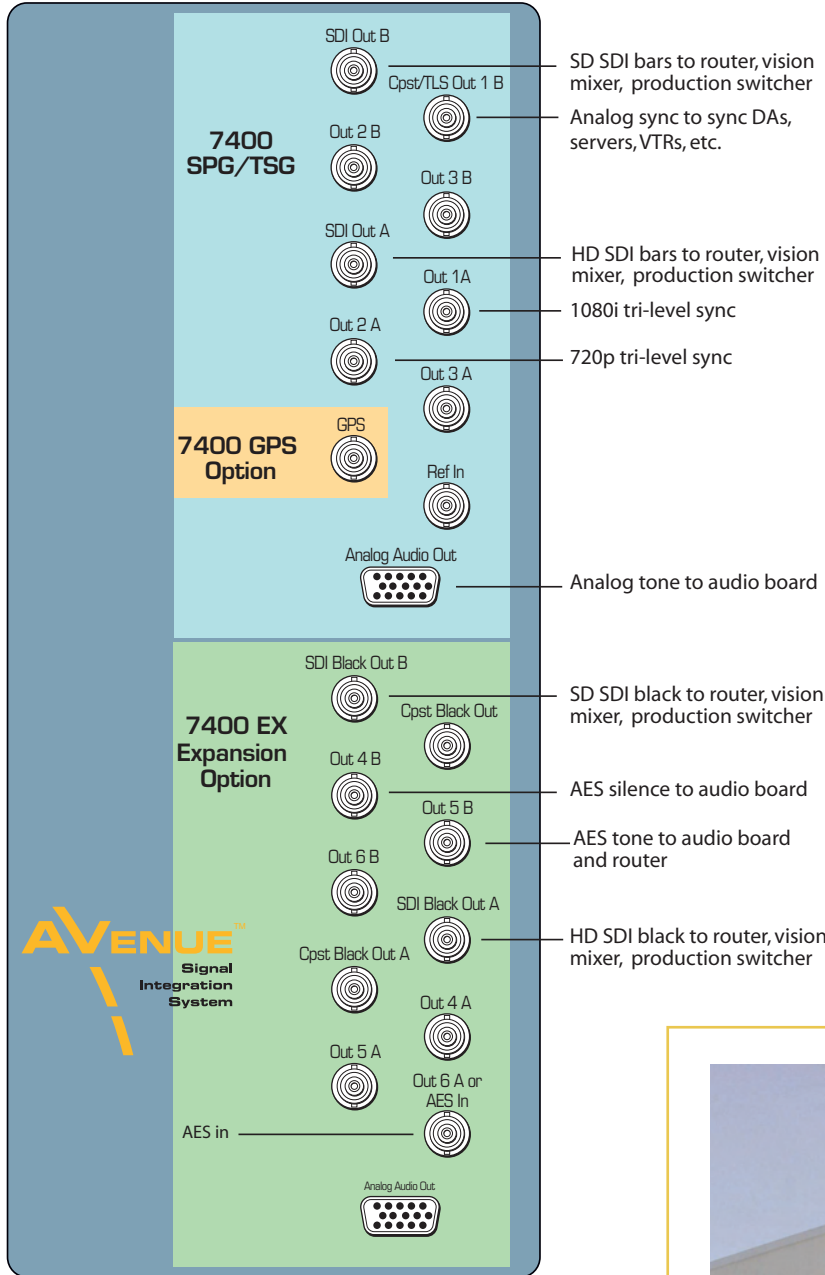
The BrightEye 57 is a palm-sized SPG/TSG with 3G, HD, SD, audio, and time code outputs. Other members of the BrightEye family include the BrightEye 56 HD/SD SPG/TSG and the BrightEye 55 SPG/TSG.

Currently used in TV stations, mobile trucks, news helicopters and flight packs world-wide, Avenue and BrightEye SPG/TSGs are rugged and reliable.

Avenue 3 RU Frame

Overview of Avenue and Sync Pulse Generator Products

	SD Test Signals & Black	HD Test Signals & Black	3G HD Test Signals	Tri-Level Sync	Embedded, AES and Analog Audio	LTC and VITC	Customizable Test Patterns & SD Card	Master Reference Generator	Integrated GPS	Redundant Power
Avenue 9400 HD/SD/Analog SPG/TSG	✦	✦	✦	✦	✦	✦	✦	✦	Option	Option
Avenue 7400 HD/SD/Analog SPG/TSG	✦	✦		✦	✦	✦	✦	✦	Option	Option
Avenue 7410 4 Channel Tri-Level Sync Gen				✦				✦		Option
Avenue 7405 HD TSG		✦								Option
Avenue 5400 HD/SD/Analog SPG/TSG	✦			✦	Option			✦		Option
Avenue 5405 Analog SPG								✦		Option
BrightEye 57 3G/HD/SD/Analog SPG/TSG	✦	✦	✦	✦	✦	✦	✦	✦		
BrightEye 56 HD/SD/Analog SPG/TSG	✦	✦		✦	✦	✦		✦		
BrightEye 55 HD/SD/Analog SPG/TSG	✦			✦	✦			✦		
BrightEye 54 HD/SD/Analog SPG/TSG	✦			✦	✦					

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Broadcast Application Configuration Example

```
                SDI Out B
                              Cpst/TLS Out 1 B
    7400          Out 2 B
   SPG/TSG                     Out 3 B
                SDI Out A
                                Out 1A
                  Out 2 A
                                Out 3 A
   7400 GPS       GPS
     Option                     Ref In

             Analog Audio Out


             SDI Black Out B
   7400 EX                   Cpst Black Out
  Expansion       Out 4 B
    Option                      Out 5 B
                  Out 6 B
                             SDI Black Out A
               Cpst Black Out A
                                Out 4 A
                  Out 5 A
                              Out 6 A or
     AES in                     AES In

                Analog Audio Out
```

SD SDI bars to router, vision mixer, production switcher

Analog sync to sync DAs, servers, VTRs, etc.

HD SDI bars to router, vision mixer, production switcher

1080i tri-level sync

720p tri-level sync

Analog tone to audio board

SD SDI black to router, vision mixer, production switcher

AES silence to audio board

AES tone to audio board and router

HD SDI black to router, vision mixer, production switcher

AVENUE™
Signal
Integration
System

The Avenue 7400 has every possible signal you could ever need for your TV station. Analog sync, SD bars and black, HD bars and black and audio reference are simultaneously available. You can even output multiple kinds of tri-level sync to support all of your HD equipment. Programmable outputs allow you to select the signals you need for your station. If you need to make a custom test pattern just for your facility you can do that too. Simply load the test pattern onto the 7400's Secure Digital memory card and insert it into the front of the 7400. You can include an associated audio clip too. An external AES source can be embedded into your test patterns as well. Sync changeover and redundant power options offer added security.
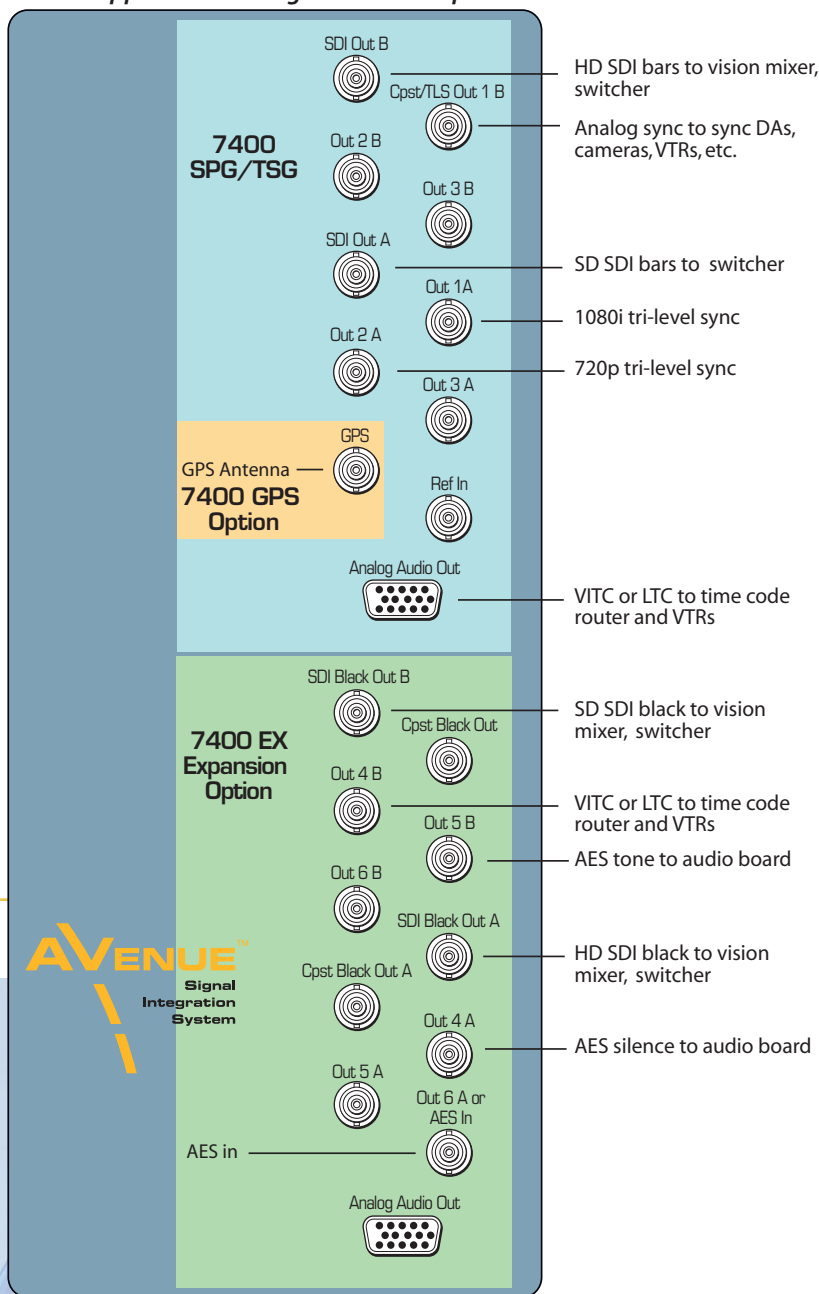
Avenue SPGs in the sync rack at WISC-TV in Madison, Wisconsin

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OB Vans   Remote Trucks   Helicopters   Ships

Mobile Application Configuration Example

All of the Avenue and BrightEye SPG/TSGs are rugged enough for use in mobile trucks, ENG and helicopters. The Avenue frame has a retainer bar on it that ensures modules in the frame are completely stable. Both the Avenue 7400 and BrightEye 57 have a wide range of test signals to choose from. Test patterns can have a moving element, so that you can be sure that a signal is not frozen in a frame sync somewhere in the signal chain. Time code is available on BNC and 15 pin D for your convenience. The 7400's GPS option is integrated nicely onto the main 7400. The GPS antenna connects to a BNC on the 7400 module providing precision timing accuracy along with time of day data.

7400 SPG/TSG

SDI Out B
Cpst/TLS Out 1 B — HD SDI bars to vision mixer, switcher
Out 2 B — Analog sync to sync DAs, cameras, VTRs, etc.
Out 3 B
SDI Out A — SD SDI bars to switcher
Out 1A — 1080i tri-level sync
Out 2 A
Out 3 A — 720p tri-level sync

7400 GPS Option
GPS Antenna — GPS
Ref In
Analog Audio Out — VITC or LTC to time code router and VTRs

7400 EX Expansion Option
SDI Black Out B
Cpst Black Out — SD SDI black to vision mixer, switcher
Out 4 B — VITC or LTC to time code router and VTRs
Out 5 B — AES tone to audio board
Out 6 B
SDI Black Out A — HD SDI black to vision mixer, switcher
Cpst Black Out A
Out 4 A — AES silence to audio board
Out 5 A
Out 6 A or AES In
AES in
Analog Audio Out

AVENUE Signal Integration System

Ensemble Designs SPGs are rugged enough to withstand vibration

Geneva Aviation

Avenue SPGs and signal processing modules in machine room

Nutmeg Audio Post in New York City

Post House Configuration Example

9400 SPG/TSG

- SDI Out B
- Cpst/TLS Out 1 B
- Out 2 B
- Out 3 B
- SDI Out A
- Out 1 A
- Out 2 A
- Out 3 A

7400 GPS Option
- GPS
- Ref In
- Analog Audio Out

- HD or 3G SDI black to router
- 625 color black
- 1080i 50 tri-level sync
- 1080p 50 tri-level sync
- SD SDI black to router
- 720p 50 tri-level sync
- Wordclock to audio rooms

9400 EX Expansion Option

- SDI Black Out B
- Cpst Black Out
- Out 4 B
- Out 5 B
- Out 6 B
- SDI Black Out A
- Cpst Black Out A
- Out 4 A
- Out 5 A
- Out 6 A or AES In
- Analog Audio Out

- HD or 3G SDI black to router
- 525 color black
- 1080i 59.94 tri-level sync
- 1080p 59.94 tri-level sync
- 720p 59.94 tri-level sync
- SD SDI black to router
- AES tone to audio board and router
- AES silence to audio board

AVENUE™ Signal Integration System

The Avenue 9400 can output multiple formats of tri-level sync at the same time, fitting the requirements of busy post production houses. At the same time, the 9400 will output 3G or HD SDI test signals, SD SDI test signals, composite and color black reference. All of these video outputs are derived from the same time base and can be timed with respect to each other. The 9400 can simultaneously deliver both 525 (NTSC) and 625 (PAL) based signals.

The 9400 provides extensive support for analog and digital audio. Because all of the video outputs can be locked to a common time base, the AES digital audio outputs are always synchronous with all of the video outputs — regardless of format. Multiple tone generators make it easy to identify multi-channel content. With the 9400-EX Expando option, an AES input is provided which can be fed by a multi-channel encoded bitstream. This bitstream will be included in the set of signals that can be embedded into the test signal outputs.

Multiple time code generators are another feature of the 9400 which make it a great choice for post. Time code is delivered as LTC (both 75 Ohm BNC and 110 Ohm Balanced), VITC, and DVITC. One generator can be configured to produce 525/59.94 drop frame time code while the other generator is making 1080sF/23.98.

Using the Secure Digital Card slot on the front of the 9400, users can load custom test patterns and video slates into the 9400. With simultaneous audio and video playback, its easy to have branded color bars available everywhere in the facility.

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9400 Test Signal and Sync Pulse Generator

9400 SPG/TSG – 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, HD 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.

The 9400 can output multiple formats of tri-level sync, 3 Gb/s and 1.5 Gb/s HD SDI test signals, SD composite and SDI 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.

Favorite Test Patterns

There are over 30 test signals including: Full and Split Field Bars at 75% and 100% with Pluge; Black; Flat Field; Pulse and Window; Ramp; Crosshatch; Safe Title; Blanking Markers; Cosite; Checkfield, Pathogenic, and 5 Step. The Cyclops feature adds a motion element to the selected video test signal to assist in locating a signal that might be frozen in a frame sync somewhere in the signal chain. An ID slate with user programmable text can overlay the test pattern.

Customizable Test Patterns

In addition to the standard suite of test patterns, users can create custom test patterns on a computer. Simply transfer test patterns to the included Secure Digital flash memory card using Avenue Logo software and a standard card reader, then insert the memory card into the 9400. Test patterns can include motion and an associated audio clip..

Audio Generators

The 9400 provides extensive support for analog and digital audio. Because all of the video outputs can be locked to a common time base, the AES digital audio outputs are always synchronous with all of the video outputs – regardless of format. Multiple tone generators make it easy to identify multi-channel content. With the 9400-EX Expando option, an AES input is provided which can be fed by a multi-channel encoded bitstream. This bitstream will be included in the set of signals that can be embedded into the test signal outputs.

The audio section of each generator supports sixteen audio channels. The content of each channel is independently programmable. Choices include adjustable frequency tone generators, tone sweeps, Silence, Timecode, Audio Clip playback from Secure Digital Card, and the external AES input. Left/Right Channel ID that synchronizes to the Cyclops feature can also be selected.

All sixteen of these channels can be embedded in the SDI outputs. Each AES output can select from any of the 8 pairs that make up these 16 channels. Similarly, the stereo analog output of each generator can be driven from any of these audio signal pairs.

Multiple Timecode Generators

Multiple time code generators make the 9400 convenient for post applications. Timecode is delivered as LTC both 75 Ohm BNC and 110 Ohm Balanced), VITC, and DVITC. One generator can be configured to produce 525/59.94 drop frame timecode while the other generator is making1080sF/23.98.

9400-EX Expando Module for Total Flexibility

If your facility seems to need every type of reference signal on earth, the 9400 module with the 9400-EX is just what you need. Two generators provide myriad reference signals including: 12 types of 3 Gb/s or 1.5 Gb/s HD SDI black and bars, SD SDI bars and black, composite bards and black, HD Tri-Level Sync, Word clock, AES and analog audio tone, and LTC. The two generators can be independent or one generator can be locked to the other. The control system lets you assign signal types to the 17 output BNCs and 2 high-density D connectors. The 9400-EX option can be installed in the field.

7400-GPS Option for the Ultimate Precision Reference

For the ultimate in precision, the 7400-GPS option can be used with the 9400 module. The purpose of this GPS option is to provide an extremely precise frequency reference. The oscillator on the 7400-GPS is more accurate than a typical internal precision standard and is equivalent in accuracy to an atomic standard. Increased frequency accuracy makes it possible to frame synchronize signals between different facilities with virtually no dropped or doubled frames. The GPS option also provides precise time of day information, which can be used to drive the 9400 module's internal timecode generators.

The 7400-GPS option seamlessly integrates into the Avenue system by plugging directly onto the 9400 module. It can be easily installed in the field. The 7400-GPS option consists of a compact, weatherproof antenna (with internal high-gain pre-amp) and a receiver sub module which mounts directly to the 9400 module. The included GPS antenna mounts onto standard 3/4" threaded pipe, metal or plastic. Connection from the F-style coaxial fitting on the antenna to the appropriate BNC on the Avenue Frame can be made with customer supplied standard 75 ohm cable. The coax cable can be routed through the center of the pipe for a completely waterproof installation. When low loss cable such as Belden 1694A is used, the antenna can be placed up to 200 feet (60 meters) from the frame. Ideally, the antenna is mounted outdoors where it has an unobstructed view of the sky.

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Description of Outputs

Generator A

SDI Out A – Outputs 3 Gb/s or 1.5 Gb/s HD or SD test signals. Select frame rate family for all of Generator A; 59.94, 50 or 60. Output can include 16 channels of embedded audio – tone, silence, external audio, or audio file. Can also include DVITC.

Programmable Out 1A – Outputs analog composite video (Bars, Black, or Test if Out A is SD), Tri-Level Sync Gen #1. Composite output can include VITC.

Programmable Out 2A – Outputs one of the following: Tri-Level Sync Gen #2, LTC, AES (any of 8 pairs), AES silence, Word clock, 6 Hz pulse, 10 MHz (only if locked to internal or GPS reference).

Programmable Out 3A – Outputs one of the following: Tri-Level Sync Gen #2, LTC, AES (any of 8 pairs), AES silence, Word clock, 6 Hz pulse, 10 MHz.

Analog Audio – stereo output, 1 of 8 pairs from the audio generator.

When the 7400-EX option is installed, the following additional outputs are available for **Generator A**

Cpst Black Out A – Outputs composite black, 525 or 625 as per the selected frame family for the Generator. Can include VITC. Independently timeable.

SDI Black Out A – Outputs digital black in the same standard and frame family as test signal SDI Out A – SD, HD 1.5 Gb/s or HD 3 Gb/s. Up to sixteen channels of embedded audio. Can include DVITC.

Programmable Out 4A – Outputs one of the following: Tri-Level Sync Gen #3, LTC, AES (any of 8 pairs), AES silence, Word clock, 6 Hz pulse, 10 MHz.

Programmable Out 5A – Outputs one of the following: Tri-Level Sync Gen #3, LTC, AES (any of 8 pairs), AES silence, Word clock, 6 Hz pulse, 10 MHz.

Programmable Out 6A – Outputs one of the following: Tri-Level Sync Gen #3, LTC, AES (any of 8 pairs), AES silence, Word clock, 6 Hz pulse, 10 MHz.

Expanded Analog Audio – provides an additional stereo output, 1 of 8 pairs from the audio generator.

Generator B

Has the same outputs as noted for Generator A. Generator B is completely independent from Generator A. Generator B can operate in a different frame rate family and its set of outputs can be timed independently.
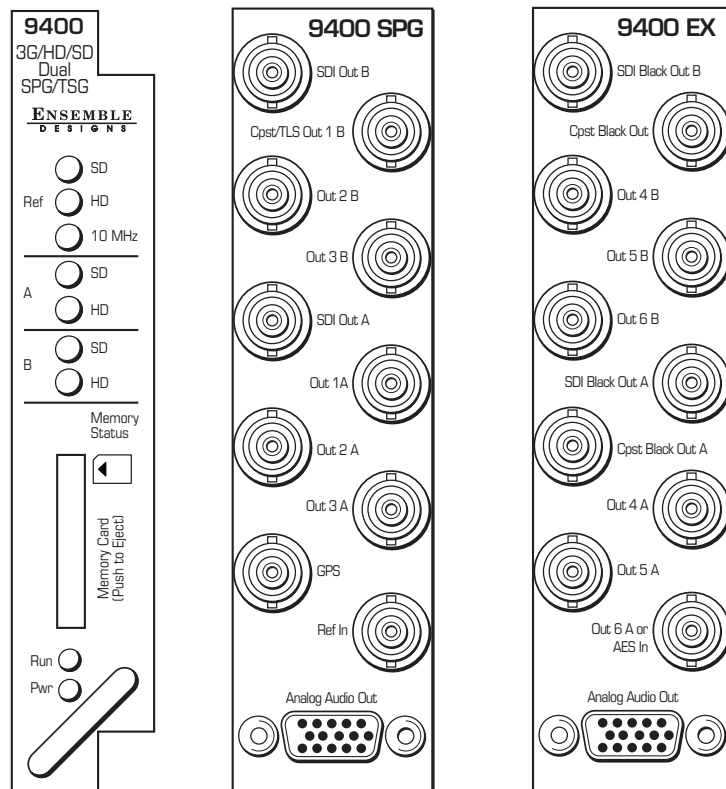
A Complete SPG and TSG System

The 9400 can be combined with other Avenue modules to create a complete sync pulse and test signal chain. The 7410 is a four channel HD Tri-Level Sync generator that can output four different types of Tri-Level Sync simultaneously and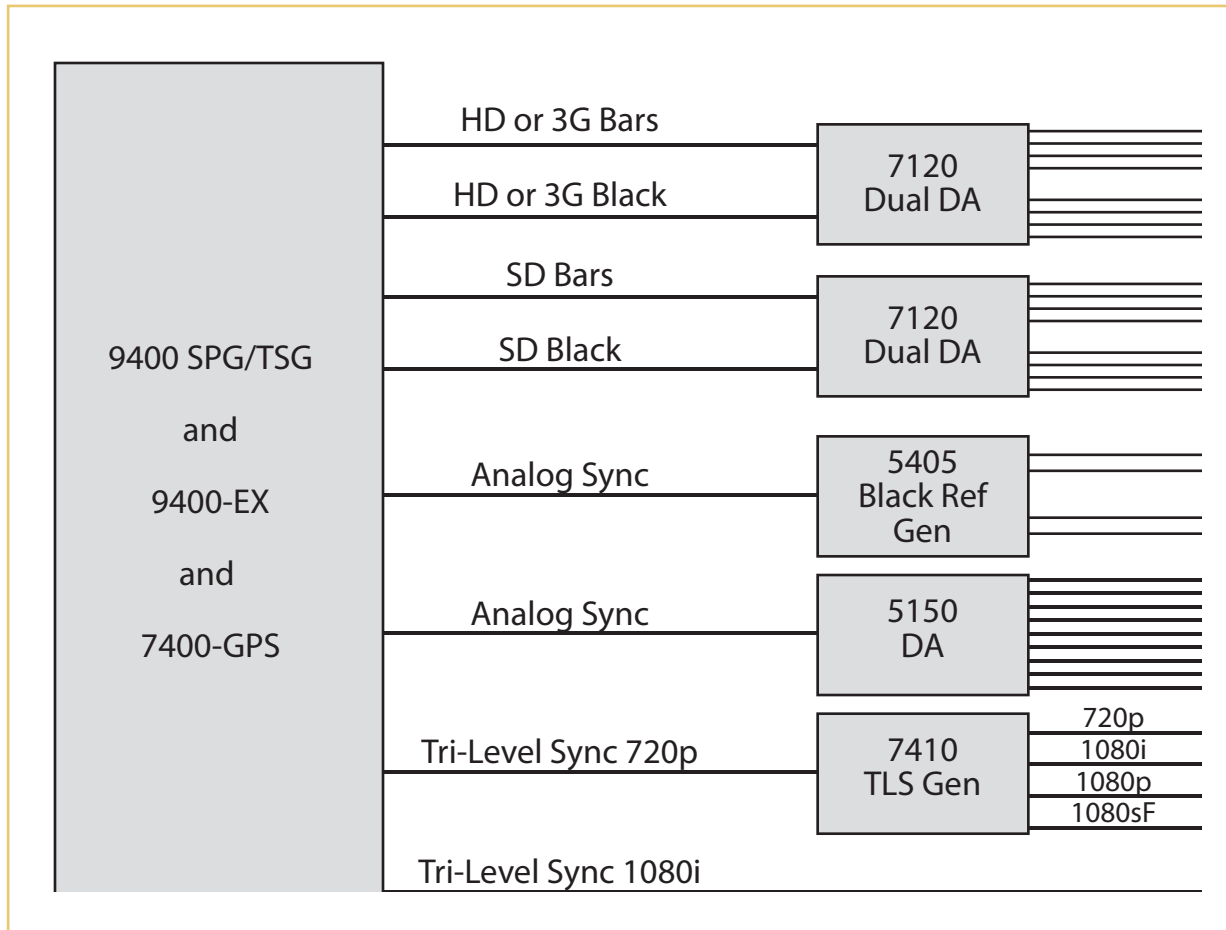 is very useful in post and hybrid facilities. When additional composite black is needed, the 5405 can be used to provide two independent pairs of composite outputs. The 5150 distribution amplifier can be used to distribute multiple copies of AES audio, Tri-Level Sync or composite black signals as needed. For HD test signal and black distribution, either the 7110 DA or 7125 DA are a good fit.

```
                          HD or 3G Bars
                                                    ┌──────────┐
                          HD or 3G Black            │  7120    │
                                                    │  Dual DA │
                                                    └──────────┘
                          SD Bars
                                                    ┌──────────┐
  ┌─────────────────┐     SD Black                  │  7120    │
  │                 │                               │  Dual DA │
  │  9400 SPG/TSG   │                               └──────────┘
  │                 │
  │      and        │     Analog Sync               ┌──────────┐
  │                 │                               │  5405    │
  │    9400-EX      │                               │ Black Ref│
  │                 │                               │   Gen    │
  │      and        │                               └──────────┘
  │                 │     Analog Sync               ┌──────────┐
  │    7400-GPS     │                               │  5150    │
  │                 │                               │   DA     │
  │                 │                               └──────────┘
  │                 │                                          720p
  │                 │     Tri-Level Sync 720p       ┌──────────┐ 1080i
  │                 │                               │  7410    │ 1080p
  │                 │                               │ TLS Gen  │ 1080sF
  │                 │                               └──────────┘
  │                 │     Tri-Level Sync 1080i
  └─────────────────┘
```

Features

♦ Use as Master Sync Gen or lock to external reference or GPS

♦ Can output SD SDI, HD SDI, composite, time code and audio simultaneously

♦ Outputs can be independently timed

♦ Generates 30+ test signals

♦ Flash memory card for making custom test patterns

Order Info:

9400 SPG/TSG Module
(Takes up one slot in Avenue frame)

9400-EX Expansion module to be used in conjunction with 9400
(Takes up one slot in Avenue frame)

7400-GPS GPS receiver option that plugs onto 9400 module
(Does not take up a slot in Avenue frame)

Standards Supported

1080i (SMPTE 274M -4,5,6) 50, 59.94 or 60 Hz
720p (SMPTE 296M -1,2,3) 50, 59.94 or 60 Hz
1080p (SMPTE 274M -9,10,11) 23.98, 24, 25 Hz
1080sF (RP211 -14,15,16) 23.98, 24, 25 Hz
3 Gb/s Level A or Level B (SMPTE 424M, 425M)
625i 50
525i 59.94
Composite PAL, NTSC

Frame Rate Families

Each 9400 has 2 identical Generators, each with a variety of outputs. All of the outputs from a particular Generator must be selected within the same frame rate family.

50 Hz (625) Derived Family: 1080i/50, 720p/50,1080p/25, 1080sF/25, 625i/50

59.94 Hz (525) Derived Family: 1080i/59.94, 720p/59.94, 1080p/23.98, 1080sF/23.98, 525i/59.94

60 Hz Derived Family: 1080i/60, 720p/60, 1080p/24, 1080sF/24

Reference Input

Number	Two: External or Frame Master Reference
Signal Type	PAL or NTSC composite video or HD Tri-Level Sync or 10 MHz 1V P-P sine or square
Return Loss	>40 dB (applies to external ref input)

Serial Digital Outputs

Type	HD Serial Digital 1.485 Gb/s SMPTE 274M, 292M or 296M HD Serial Digital 2.97 Gb/s SMPTE 424M, 425M or SD Serial Digital 270 Mb/s SMPTE 259M
Impedance	75 Ω
Return Loss	>15 dB to 1.485 GHz
Max Cable Length	270 Mb/s 300 meters 1.485 Gb/s 100 meters 2.97 Gb/s 70 meters Belden 1694A

Tri-Level Sync Outputs

Signal Type	HD Tri-Level Sync
Output DC	±50 mV
Return Loss	>30 dB to 30 MHz

Composite Outputs

Signal Type	NTSC / PAL
Impedance	75 Ω
Return Loss	>40 dB DC to 5.5 MHz
Frequency Response	±0.1 dB 0 to 5.0 MHz
Output DC	±50 mV
K Factor	<1.0%
Differential Phase	<1.0 degree
SCH Phase	±2 degrees
Delay	adjustable over full frame in sub degree steps
Color Framing	tracks ref

Accuracy

Internal Reference (TCXO)

Freq Error	$<10^{-7}$
	$< \pm 1$ Hz F_{sc}

GPS Option

Freq Error	$<10^{-12}$

Stability

Analog Jitter	<1 ns
Digital Jitter	<0.2 UI (0.13 UI typical)
AES Jitter	<1 ns

AES Audio Outputs

Type	AES3id tone, 50 Hz to 20 KHz, or silent
Resolution	24 bit

Analog Audio Outputs

Number	Two stereo pairs or four mono
Type	tone, 50 Hz to 20 KHz, or silent
Impedance	30 Ω, balanced
Reference Level	-10 to + 4 dBu, selectable

Additional Output Choices

Timecode	DVITC on the SDI outputs VITC on the composite outputs LTC on BNC unbalanced or on HD-15 balanced, 1 V P-P drop or non-drop for NTSC
6 Hz Pulse	
Word Clock	
10 MHz	when locked to internal or GPS reference

Flash Memory

Number	One
Type	Secure Digital SD Flash Memory Card
Size	1 GB card included

File Type

|	
Video	.tga
Audio	.wav, .mp3, .wma

General Specifications

Power Consumption	10 watts for 900 10 watts for 9400-EX
Temperature Range	0 to 40°C ambient (all specs met)
Relative Humidity	0 to 95%, noncondensing
Altitude	0 to 10,000 ft

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9400 Test Signal and Sync Pulse Generator

Generator A

Genlock Input will accept:
525 or 625 Composite
HD TLS
10 MHz 1V P-P Sine or Square

External
Reference
Input

Frame
Master
Reference

Sync
Separator

Sync
Reference
Selection

&

Timing
Adjustments

One
generator
can lock to
the other

Internal
Precision
Standard

Avenue 7400-GPS Option
10 MHz Out
In
GPS Receiver
Time

User Test Patterns loaded through
built-in Secure Digital Card Interface

Sync
Reference
Selection

&

Timing
Adjustments
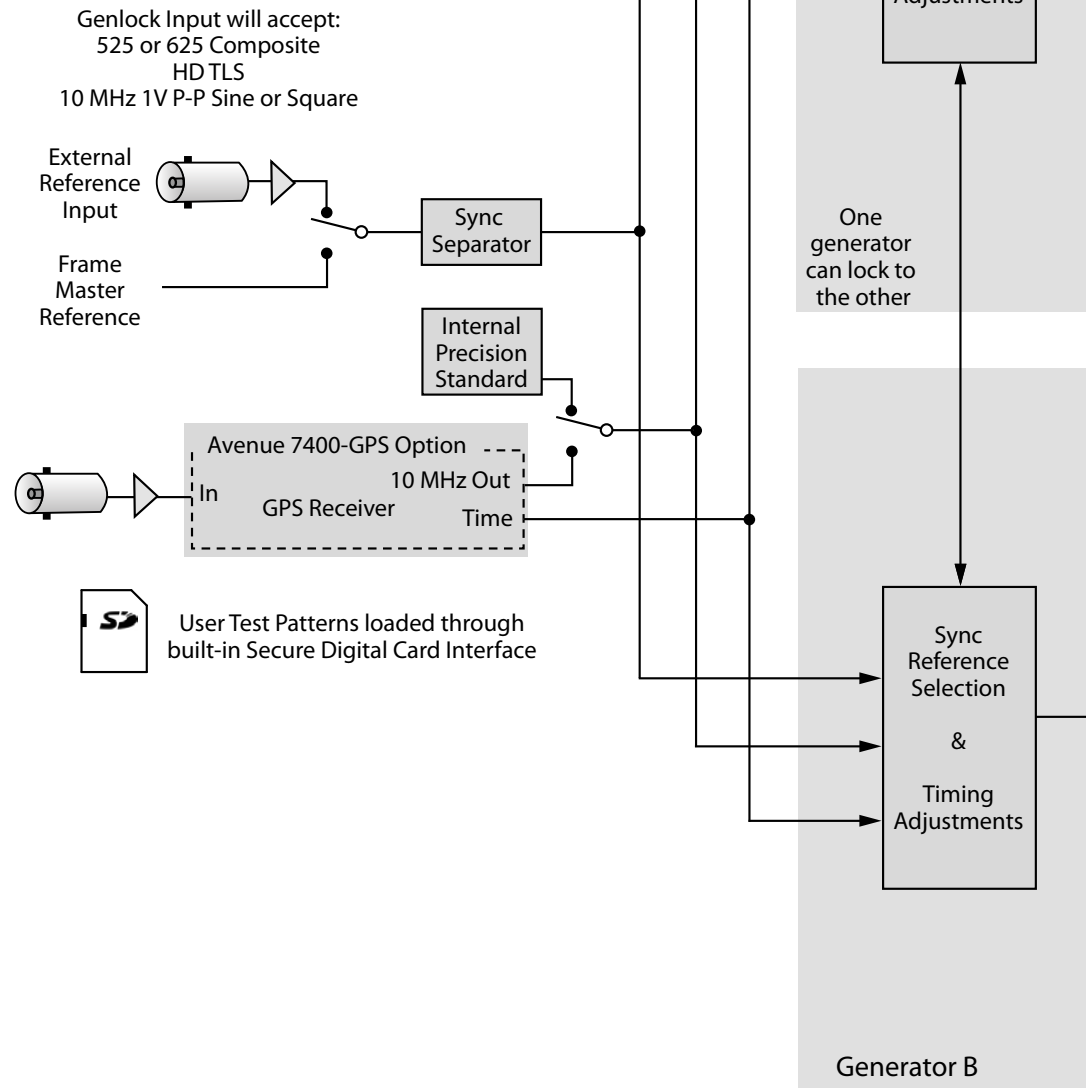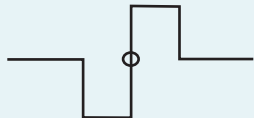
Generator B

Why Tri-Level Sync?

Tri-Level sync offers improved timing accuracy over traditional bi-level sync.
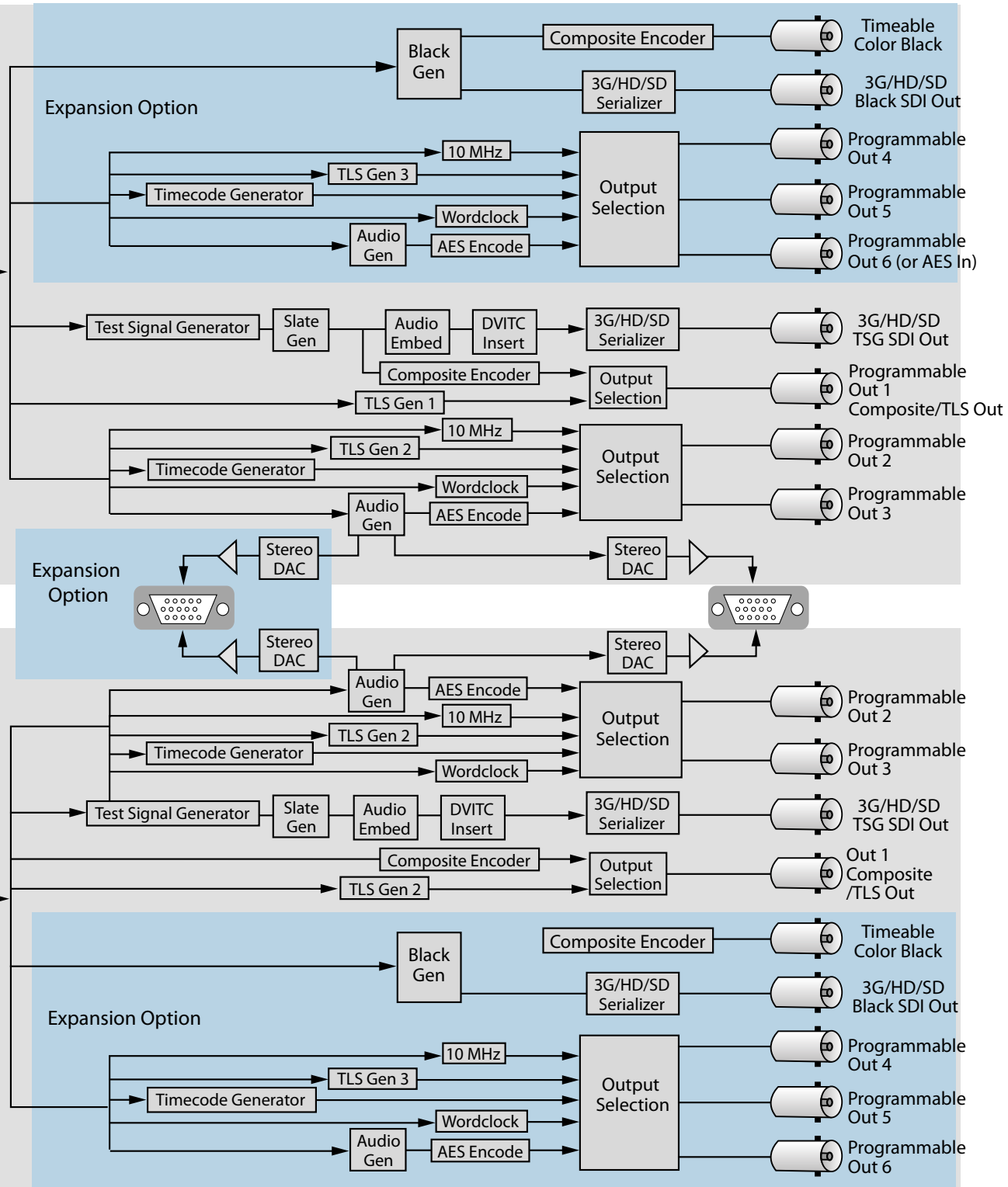
The analog output of a standard sync generator is bi-level sync. The timing reference is the 50% point of the leading edge.
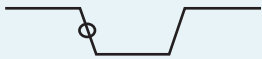
The relative timing of this point shifts with changes in gain, DC reference, and frequency response.

The timing reference in tri-level sync is also at the 50% point of the sync pulse, but because this pulse has both the positive and negative excursions, this point is the same as the DC ground reference. This symmetry makes the signal virtually immune to time shift from gain, DC and response errors. The zero point never drifts – the zero crossing is easy to detect every time which ensures timing accuracy.

Timeable
Color Black

Composite Encoder

Black
Gen

3G/HD/SD
Black SDI Out

3G/HD/SD
Serializer

Expansion Option

10 MHz

Programmable
Out 4

TLS Gen 3

Output
Selection

Programmable
Out 5

Timecode Generator

Wordclock

Audio
Gen

AES Encode

Programmable
Out 6 (or AES In)

Test Signal Generator

Slate
Gen

Audio
Embed

DVITC
Insert

3G/HD/SD
Serializer

3G/HD/SD
TSG SDI Out

Composite Encoder

Output
Selection

Programmable
Out 1
Composite/TLS Out

TLS Gen 1

10 MHz

Programmable
Out 2

TLS Gen 2

Output
Selection

Timecode Generator

Wordclock

Programmable
Out 3

Audio
Gen

AES Encode

Stereo
DAC

Stereo
DAC

**Expansion
Option**

Stereo
DAC

Stereo
DAC

Audio
Gen

AES Encode

Output
Selection

Programmable
Out 2

10 MHz

TLS Gen 2

Programmable
Out 3

Timecode Generator

Wordclock

Test Signal Generator

Slate
Gen

Audio
Embed

DVITC
Insert

3G/HD/SD
Serializer

3G/HD/SD
TSG SDI Out

Composite Encoder

Output
Selection

Out 1
Composite
/TLS Out

TLS Gen 2

Timeable
Color Black

Composite Encoder

Black
Gen

3G/HD/SD
Black SDI Out

3G/HD/SD
Serializer

Expansion Option

10 MHz

Programmable
Out 4

TLS Gen 3

Output
Selection

Programmable
Out 5

Timecode Generator

Wordclock

Audio
Gen

AES Encode

Programmable
Out 6

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BrightEye 57

3G /HD /SD /Analog Test Signal and Sync Pulse Generator

BrightEye 57 is a genlockable sync generator and test signal generator that can be used as either a slave or master reference generator. It can lock to house reference or it can lock to its own internal precision standard. BrightEye 57 is well suited for remote trucks, post, helicopters and fly packs.

1.5 Gb/s HD, 3 Gb/s HD or SD SDI test signals or black with embedded audio is output on the SDI BNCs. 3G Level A and Level B are supported. Composite, HD Tri-level Sync and AES digital audio outputs are also provided. There are three user Programmable Outputs that are selectable between AES, LTC, Wordclock or 6 Hz Pulse. Analog audio and AES outputs provide tone or silence.
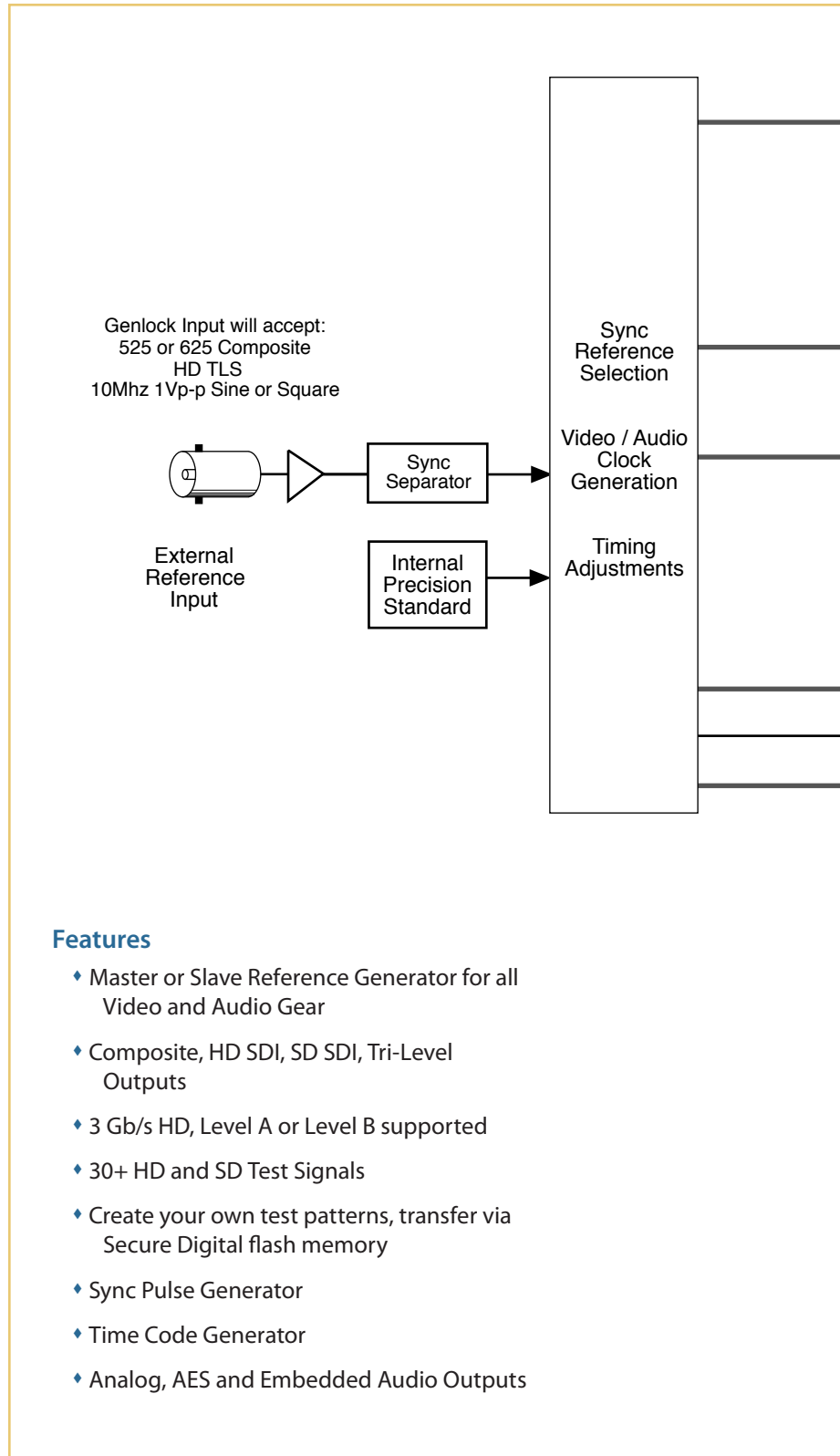
Color Black, Bars, Crosshatch, Multi-burst, and SDI Checkfield (Pathogenic) are just some of the signals simultaneously available on the SDI and analog composite outputs. The Cyclops feature adds a motion element to the selected video test signal. An ID slate with user programmable text can overlay the test pattern.

The internal Time Code Generator feeds DVITC on the SDI outputs and VITC on the composite outputs, Time Code can also be selected in LTC form on the programmable Aux outputs.

In addition to the standard suite of test patterns, users can create custom test patterns on a computer. Simply transfer test patterns to the included Secure Digital flash memory card and then insert the memory card into the front of the BrightEye 57. Test patterns can include motion and an associated audio clip such as voice over or station ID.
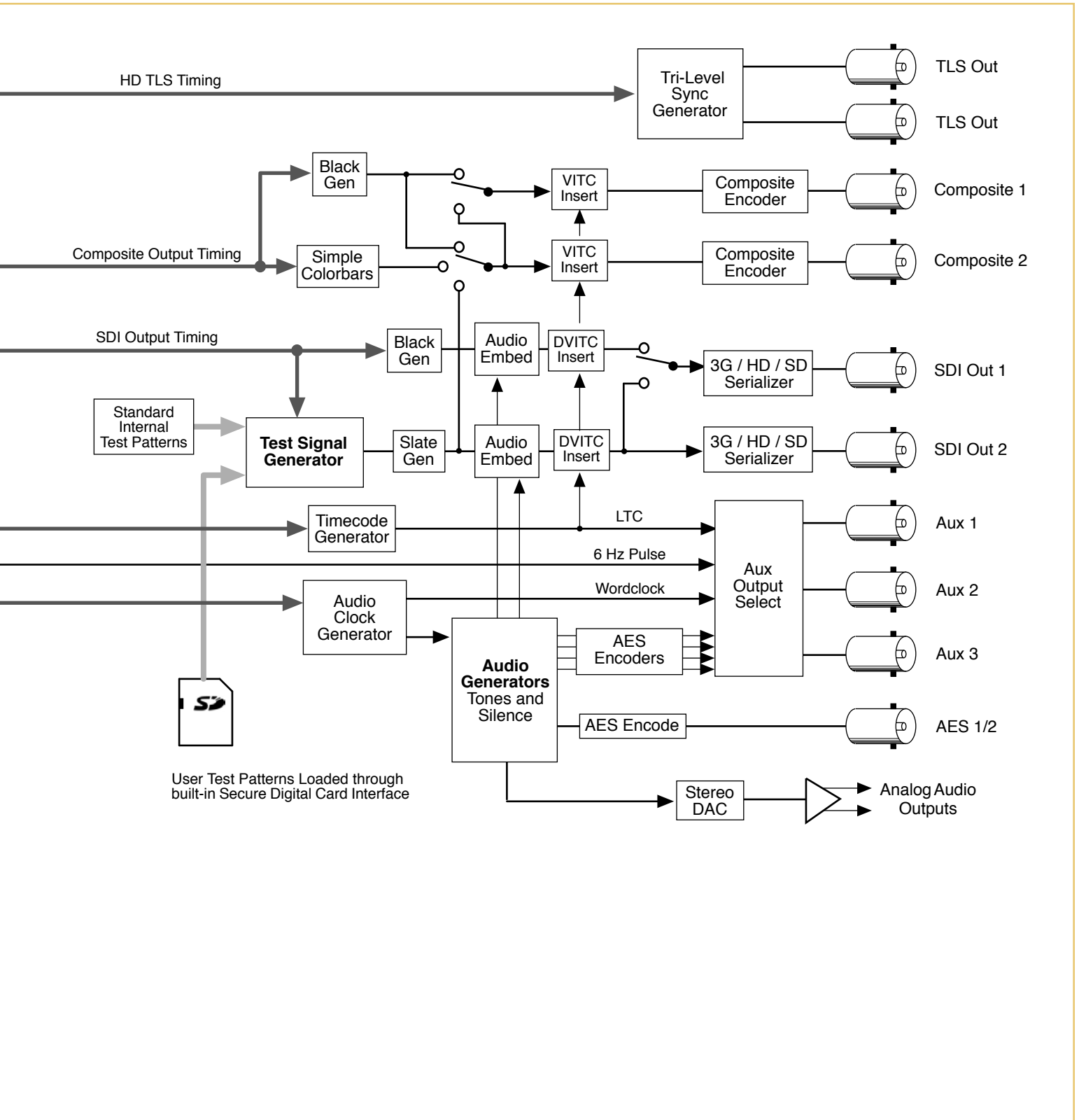
Many controls can be adjusted through the intuitive front panel. BrightEye Mac and BrightEye PC software provide a complete user interface for all adjustments and controls.

For facilities and manufacturers using 3 Gb/s video, BrightEye units can be combined to form a complete 3G signal chain. The BrightEye 57 test signal generator's 3G output can be distributed through the BrightEye 43 3G distribution amplifier or the BrightEye 46 and BrightEye 48 E/O 3G fiber optical transmitter/ receiver set.

Genlock Input will accept:
525 or 625 Composite
HD TLS
10Mhz 1Vp-p Sine or Square

External Reference Input

Sync Separator

Internal Precision Standard

Sync Reference Selection

Video / Audio Clock Generation

Timing Adjustments

Features

⬥ Master or Slave Reference Generator for all Video and Audio Gear

⬥ Composite, HD SDI, SD SDI, Tri-Level Outputs

⬥ 3 Gb/s HD, Level A or Level B supported

⬥ 30+ HD and SD Test Signals

⬥ Create your own test patterns, transfer via Secure Digital flash memory

⬥ Sync Pulse Generator

⬥ Time Code Generator

⬥ Analog, AES and Embedded Audio Outputs

HD TLS Timing → Tri-Level Sync Generator → TLS Out

Tri-Level Sync Generator → TLS Out

Black Gen

Composite Output Timing → Simple Colorbars

VITC Insert → Composite Encoder → Composite 1

VITC Insert → Composite Encoder → Composite 2

SDI Output Timing → Black Gen

Standard Internal Test Patterns → **Test Signal Generator** → Slate Gen

Audio Embed → DVITC Insert → 3G / HD / SD Serializer → SDI Out 1

Audio Embed → DVITC Insert → 3G / HD / SD Serializer → SDI Out 2

Timecode Generator — LTC

6 Hz Pulse

Audio Clock Generator — Wordclock

Aux Output Select

Aux 1

Aux 2

Aux 3

AES Encoders

Audio Generators Tones and Silence

AES Encode — AES 1/2

User Test Patterns Loaded through built-in Secure Digital Card Interface

Stereo DAC → Analog Audio Outputs

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What about 3G?

The BrightEye 57's 3G test signals are useful for facilities that are installing 3 Gb/s routers and signal distribution. At twice the bit rate as HD SDI, 3G can transmit 1080p (50 or 59.94) and 4:4:4 RGB signals on a single cable. BrightEye 57 is compliant with SMPTE 424M and 425M and has support for both Level A and Level B. 3G Level A is used for uncompressed 1080p 50/60 signals, useful in broadcast and satellite. 3G Level B is used for uncompressed 1080i 4:4:4 and is useful in post production.
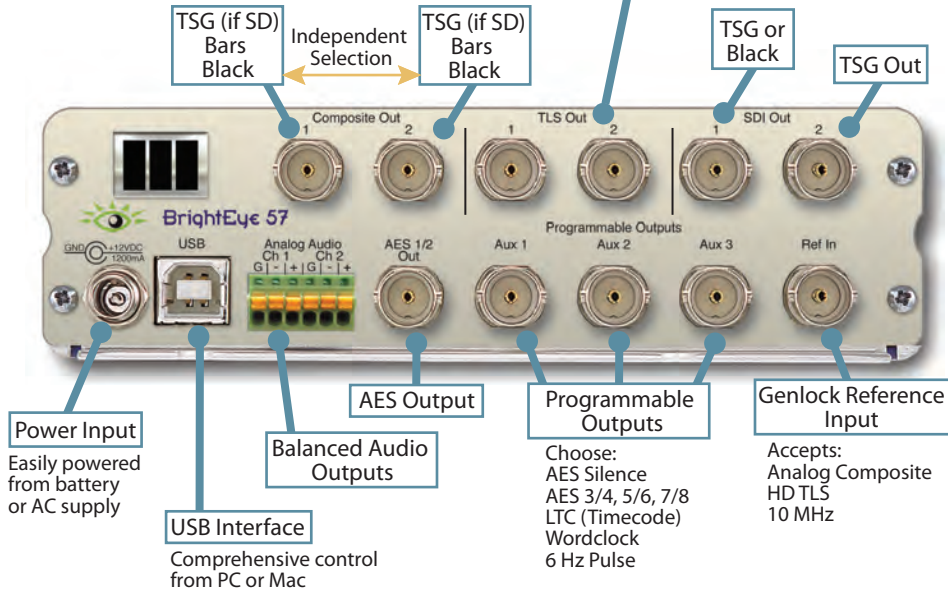
3G /HD /SD /Analog Test Signal and Sync Pulse Generator
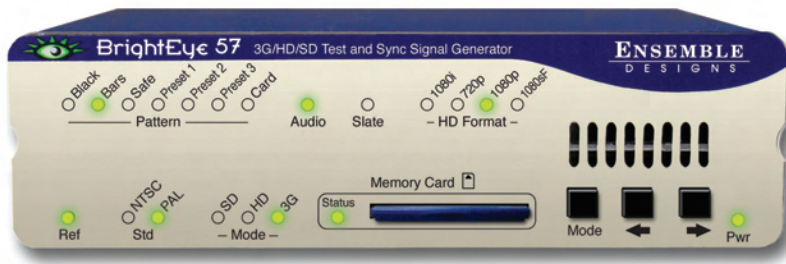
SD Composite Outputs
capable of simultaneous Bars and Black — even when SDI Output is HD

TSG (if SD)
Bars
Black

Independent Selection

TSG (if SD)
Bars
Black

Tri-Level Sync
available with either HD or SD SDI Out

3G /HD /SD SDI Outputs
available with either capable of simultaneous Bars and Black

TSG or Black

TSG Out

Power Input

Easily powered from battery or AC supply

USB Interface

Comprehensive control from PC or Mac

Balanced Audio Outputs

AES Output

Programmable Outputs

Choose:
AES Silence
AES 3/4, 5/6, 7/8
LTC (Timecode)
Wordclock
6 Hz Pulse

Genlock Reference Input

Accepts:
Analog Composite
HD TLS
10 MHz

Reference Input

Number	One
Signal Type	1V p-p PAL, NTSC, 10 MHz or HD Tri-Level Sync
Return Loss	>40 dB DC to 5.5 MHz

Composite Output

Number	Two
Signal Type	NTSC / PAL
Impedance	75 Ω
Return Loss	>40 dB DC to 5.5 MHz
Frequency Response	-0.1 dB 10 KHz to 5.0 MHz
Output DC	±50 mV
K Factor	<1.0%
Differential Phase	<1.0 degree
SCH Phase	±5 degrees

Accuracy and Timing Stability

Internal TCXO

PAL Fsc	4.43361875 MHz +/- 1 Hz
NTSC Fsc	3.579545 MHz +/- 1 Hz
601 Fs	27.000000 MHz +/- 5 Hz
Long Term Drift	<1 ppm/year
Analog Jitter	<1 ns
Digital Jitter	<0.2 UI (0.13 UI typical)

Serial Digital Output

Number	Two
Signal Type	270 Mb/s SD Serial Digital (SMPTE 259M)
	1.485 Gb/s HD Serial Digital (SMPTE 274M, 292M or 296M)
	2.97 Gb/s HD Serial Digital (SMPTE 424M, 425M)
Return Loss	>15 dB for 270 Mb/s
	>15 dB for 1.485 Gb/s
	>10 dB for 2.97 Gb/s
Max Cable Length	300 meters for 270 Mb/s
	100 meters for 1.485 Gb/s
	120 meters for 2.97 Gb/s (Belden 1694A or equiv.)

Tri-Level Sync Output

Number	Two, 75 Ω
Output DC	±50 mV
Return Loss	>30 dB to 30 MHz
Standards Supported:	

1080i (SMPTE 274M -4, 5, 6) 50, 59.94 or 60 Hz
720p (SMPTE 296M -1, 2, 3) 59.94 or 60 Hz
1080p (SMPTE 274M -9, 10, 11) 23.98, 24, 25 Hz
1080sF (RP211 -14, 15, 16) 23.98, 24, 25 Hz
2.97 Gb/s Level A or Level B (SMPTE 424M, 425M)
625i 50, 525i 59.94, Composite PAL, NTSC

AES Audio Output

Number	One
Type	AES3id, 1 KHz tone or silence
Resolution	24 bit

Analog Audio Output

Number	One stereo pair or two mono
Type	1 KHz tone or silence
Impedance	30 Ω, balanced
Reference Level	-10 to + 4 dBu, Adjustable

Programmable Outputs

Number	Three
Type	Selectable between AES, LTC, VITC, Wordclock or 6 Hz Pulse
Impedance	75 Ω

Flash Memory

Number	One
Type	Secure Digital SD Flash Memory Card
Size	1 MB card included

General Specifications

Size	5.625" W x 1.7" H x 5.5" D (143 mm x 40 mm x 140 mm) including connectors
Power	12 volts, 12 watts (100-230 VAC modular power supply not included)
Temperature Range	0 to 40° C ambient
Relative Humidity	0 to 95%, non-condensing

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◆Sales and Technical Support

    +1 530.478.1830

◆FAX

    +1 530.478.1832

◆Mailing Address

    Ensemble Designs

    PO Box 993

    Grass Valley CA 95945 USA

◆Shipping Address

    Ensemble Designs

    870 Gold Flat Rd.

    Nevada City CA 95959 USA

◆Web and Online Support:

    Ensemble Designs Product and Customer Service Support

    www.ensembledesigns.com/support.html

    support@ensembledesigns.com

◆Ensemble Designs Sales

    sales@ensembledesigns.com

◆Disclaimer

    Due to ongoing product development, all specifications are subject to change.

◆Warranty

    We warrant our products for a period of 5 years.

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