Model 5400 and 5410

Dual Sync Generator and Test Signal Generator with HD Tri-Level Sync

The 5400 Dual Sync Generator/Test Signal Generator is a stable timing source that is perfect for local reference generation in broadcast, remote trucks and post. Dual outputs, simultaneously in analog composite and serial digital, and an HD Tri-Level Sync reference output are generated. Analog and AES audio outputs are optional.

The 5400 can operate from an internal precision frequency reference as a stand-alone Master Sync Generator or lock to a video reference. For the ultimate in precision, the 5400 can lock to an external 10 MHz source, such as an atomic standard or GPS receiver.

Two sets (primary and secondary) of composite outputs and serial outputs are provided. Each output set can be timed with respect to the reference to any point in the television frame. Color framing tracks the reference signal. Timing adjustments for primary and secondary outputs are configured independently. The 5400 can be configured to output 525 and 625 standards simultaneously.

The primary sync generator always outputs the test pattern generator. The Cyclops feature adds a motion element to the video test signal. An ID slate with user-programmable text can overlay the test pattern. The secondary sync generator always outputs color black.

For complex facilities, the 5400 can be paired with the 5405 Dual Analog SPG module, adding two more sets of timeable reference (black burst) outputs.

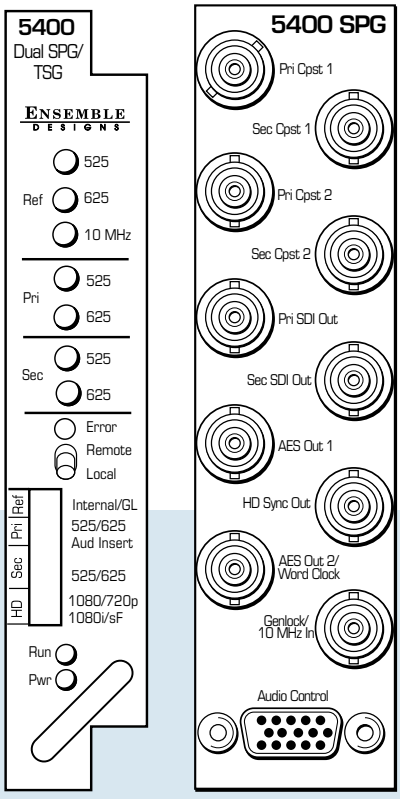
The HD Tri-Level Sync output provides an analog timing reference for high definition applications and is independently timeable. There are a variety of user-selectable formats including: 1080i, 720p, 1080p and 1080sF. When using the sF formats, the Tri-Level output has the proper 4:5 frame relationship with respect to the standard definition output. The 5410 option provides a 6 Hz output which is useful in telecine applications.

AES3id, word clock, analog tone and embedded audio reference outputs are offered with the optional 5410 sub module. The AES outputs are synchronous to the 525 and 625 outputs as they all share the same time base, making the 5400 a perfect fit in multi-standard facilities. With the 5410, the primary 601 output will have EDH checksums inserted.

For HD and 3 Gb/s systems, consider the 7400 and 9400 modules.

Features

- Use as Master Sync Gen or lock to external reference or GPS
- Generates 30+ test signals
- Digital and analog video outputs
- Primary and secondary outputs can be independently timed
- HD Tri-Level Sync output
- Can provide 525 and 625 outputs simultaneously
- 5410 option provides AES, word clock, analog tone, embedded audio, EDH, EDH error, and 6 Hz pulse outputs
- Audio Automatic Gain Control option



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Reference Input

Number	Two: External or Frame Master Reference
Signal Type	1 V P-P PAL, NTSC, or 10 MHz
Return Loss	>40 dB DC to 5.5 MHz

Composite Outputs

Number	Two Primary, Two Secondary
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, user selectable

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 Outputs

Number	One Primary, One Secondary
Signal Type	Serial Digital SMPTE 259M
Return Loss	>15 dB DC to 270 MHz

Tri-Level Sync Output

Number	One, 75 Ω
Signal Type	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
Output DC	±50 mV
Return Loss	>30 dB to 30 MHz

AES Audio Output (Optional with 5410)

Number	Two
Signal Type	AES3id 1 kHz tone or silent
Resolution	24 bit

Analog Audio Output (Optional with 5410)

Number	One stereo pair or two mono
Signal Type	1 kHz tone or silent
Impedance	30 Ω, balanced
Reference Level	-10 to +8 dBu, adjustable

General Specifications

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