

## AES ANALOG TONE GENERATOR 812-OP/E



### For Future Generations

The GenFlex 812-OP/E is a high performance 24 bit digital and analog audio generator. The 812-OP/E is a single module for use with the SPG-812 GenFlex frame. This unit is designed to perform two basic functions. The first basic function of this module is to produce a single AES/EBU digital audio signal for use as a digital audio reference or digital tone source. Second, it is to produce a balanced stereo analog audio signal of up to +28dBu for use as a test tone.

The generator has a set of features designed to make it fit into a wide variety of applications. These features include genlocking of the audio to digital or analog video within the Genflex frame. Also, the user may select to have this module free run with its high stability oscillator.

The user may select the amplitude and frequency of the audio tone from a fixed set of 8 combinations. Within this set of eight there are three frequencies (1KHz, 400Hz, 60Hz) and three levels (0dBFS, -10dBFS, -20dBFS)\*. With this, the module has the ability to produce "digital silence" while producing one of the eight combinational tones on the output.

There are two digital outputs, one conforming with the AES3-ID interconnection standard and the other with AES3-1992 interconnection standard. The analog output consists of screw-type terminal block connections for balanced stereo audio.

The level of the analog audio tone can be adjusted in 2dB increments in reference to the digital audio with internal rotary switches. This generator runs at the professional sample rate frequency of 48kHz. LEDs are used to indicate tone frequency and level, digital silence, lock status, and power indication. Further, the user has control of some of the user status bits through dip switches on the module.

Internally, the creation of the audio tone is done with a 24 bit audio "wave table" stored in ROM. The output from the ROM is formatted and output as digital audio. The analog output is created by digital to analog conversion. This is done with a high performance one-bit delta-sigma DAC with a 128x oversampled forth-order modulator.

The GenFlex audio generator is built with quality throughout the unit. The analog audio signal path consists of surface mount thick film resistors to achieve low noise and high quality audio characteristics. Further, with its ability to produce 24 bit digital audio, it can produce the highest resolution audio available in the AES3 format. The 812-OP/E is an addition to Link's GenFlex family of analog/digital generator products. It is designed to reside in LINK's SPG-812 frame in the audio slot with a possible total of five other video modules.

\* 60Hz tone has 2 levels (0dBFS and -20dBFS). The other tones have three levels.

# 812-OP/E DIGITAL & ANALOG TONE

## SPECIFICATIONS

Type ..... digital, wave table  
Resolution ..... 24 bits  
Sample Rate ..... 48KHz

### DIGITAL TO ANALOG CONVERSION

Interpolation Filter ..... digital  
Type ..... 1 bit delta-sigma  
Modulation Order ..... forth  
Oversampling ..... 128x  
Resolution ..... 24 bits

### ANALOG OUTPUT

Nominal Level Range  
A. 0dBFS input ..... +10dBu to +28dBu @ 2dB increments  
B. -10dBFS input ..... +0dBu to +18dBu @ 2dB increments  
C. -20dBFS input ..... -10dBu to +8dBu @ 2dB increments  
Level Accuracy .....  $\pm 0.5$ dBu  
Channel to Channel Level Variation ..... < 0.5dB  
DC Offset ..... < 0.5mV  
Impedance ..... 66 $\Omega$ (balanced)  
Number ..... one stereo pair  
Signal to Noise Ratio ..... 110dB (0dBFS)  
Total Harmonic Distortion ..... < 0.004%  
Total Harmonic Distortion + Noise ..... < 0.02%

### DIGITAL OUTPUT

Sample Rate ..... 48KHz  
Interconnection  
A. Standard ..... AES3-ID  
1. Connector ..... BNC  
2. Impedance ..... 75 ohms  
3. Level ..... 1Vpp  $\pm 0.2$ V  
4. Jitter ..... < 0.08UIpp  
B. Standard ..... AES3-1992  
1. Connector ..... 3 contact screw-type terminal block  
2. Impedance ..... 110 ohms  
3. Level ..... 4Vpp  $\pm 0.2$ V  
4. Jitter ..... < 0.07UIpp

### Tone Data

A. Type ..... Sine Wave  
B. Frequencies ..... 1kHz, 400Hz, 60Hz  
C. Nominal Levels  
1. Audible ..... 0dBFS, -10dBFS\*\*, -20dBFS  
2. Digital Silence ..... -144dBFS\*\*\*  
D. Level Accuracy .....  $\pm 0$ dB  
E. Total Harmonic Distortion ..... < 0.00007%  
F. Total Harmonic Distortion + Noise ..... < 0.0002%

### ENVIRONMENTAL

Operational Temperature Range ..... 0 to 60°C ambient  
Humidity ..... 10% to 90% non-condensing  
Power ..... 3W  
Supply Voltage ..... +5VDC, provided by SPG-812 frame

### MECHANICAL

Dimensions  
Length ..... 10.0 inches  
Width ..... 4.27 inches  
Height ..... 0.50 inch maximum  
Weight ..... 6.0 oz.

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