

AUDIO TEST INSTRUMENTS

Audio Oscillator

Model 1110



- High power output to + 31.0 dBm
- 10 Hz to 150 kHz with ultra-low distortion (typically 0.001%)
- Resolution to 0.001 Hz
- Variable output impedance (50, 150, and 600Ω)
- Swept frequency or level
- IEEE-488 bus interface standard



Description

The Model 1110 Audio Oscillator is a versatile and accurate programmable source of audio power for both bench and ATE applications. Its wide frequency range and high output power allows the characterization of both active and passive devices, while its ultra-low distortion and noise satisfies the demands of digital audio applications. In addition to its role as an audio oscillator, the 1110 can also function as a programmable sweeper.

The mark of quality for any oscillator is spectral purity. The 1110 is outstanding in this regard. Total harmonic distortion is specified as less than 0.01%, with noise less than 10 μ V in an 80 kHz bandwidth. Typical distortion and noise is an order of magnitude better than specified.

Sweep Operation

Frequency or level can be swept in user-selected linear or logarithmic steps over any portion of the range. Frequency sweep can be used to quickly determine the frequency response of a device. Level sweep is useful for determining amplifier dynamic range and testing compressor/expander circuits. Rear-panel X AXIS and PEN outputs are provided for plotter application.

Versatile Output

The 1110 features wide control over its output configurations. Source impedance can be set to 50, 150, or 600 ohms in either a floating or single-ended configuration. All source impedances are available at the same set of output connectors, a distinct advantage in an ATE system because there is no need to multiplex separate 50 ohm and high impedance output connections. Output level is programmable from 0 to 16 volts open-circuited with resolution to 10 microvolts. Output power is sufficient to provide adequate headroom for professional audio applications; maximum power into a 600 ohm load is 25.6 dBm. The output level can be displayed as open-circuited, terminated, or relative to a selected reference. The level reference allows the 1110 to take into account the loss or gain of external attenuators or amplifiers and display the level that exists at a remote load.

Fast Operation

The 1110 is fast, with typical switching speeds of 12 milliseconds for frequency and level changes via the GPIB.

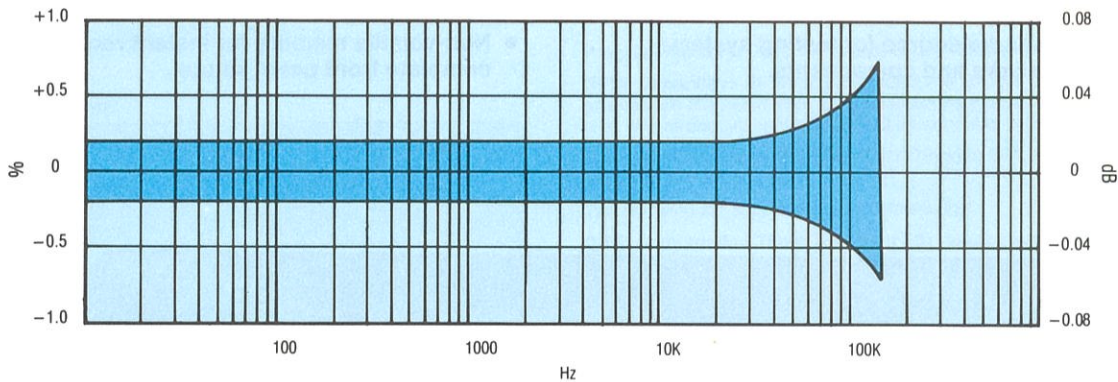
Complete Bench/ATE Flexibility

The 1110 is ideal for both bench operations and as part of an ATE system. Up to 99 complete panel setups can be stored in non-volatile memory and later recalled, in any order, by entering the program location. This capability makes often-repeated tests an easy task. All panel functions are duplicated by a full-function IEEE-488 interface.

AUDIO TEST INSTRUMENTS

Audio Oscillator

Model 1110 (continued)



TYPICAL FLATNESS OF MODEL 1110
(1.5 mV to 8 V INTO 50 Ω)

Specifications

Frequency

Range: 10 Hz to 150 kHz

Resolution:

0.001 Hz, 10.000 Hz to 199.999 Hz
0.01 Hz, 200.000 Hz to 1999.99 Hz
0.1 Hz, 2.0000 kHz to 19.9999 kHz
1.0 Hz, 20.000 kHz to 150.000 kHz

Accuracy: +10 ppm + 1 count

Timebase Accuracy: ±1 ppm/yr, 10 MHz TCXO

Level

Range:

10 μV to 16 V rms, open circuit

Resolution:

10 μV, 0.00 mV to 30.00 mV
0.1 mV, 30.0 mV to 300.0 mV
1.0 mV, 300 mV to 3.000 V
5.0 mV, 3.000 V to 16.00 V

Accuracy (settings from 0.60 mV to 16.000 V):

± 0.5% setting ± 0.05% range, 10 Hz to 50 kHz;
± 1.0% setting ± 0.05% range, 50 kHz to 100 kHz;
± 1.5% setting ± 0.1% range, 100 kHz to 150 kHz

Flatness, ref 1 kHz: 0.30 mV to 8.0 V (into 50Ω):

± 0.5%, 10 Hz to 50 kHz
± 1.0%, 10 Hz to 100 kHz
± 1.5%, 10 Hz to 150 kHz

Output

Impedance: 50Ω ± 2%, 150Ω ± 1%, 600Ω ± 1%

Output Power (50Ω source):

31.07 dBm (8 V) into 50Ω load
29.82 dBm (12 V) into 150Ω load
25.60 dBm (14.76 V) into 600Ω load

Distortion and Noise (the greater of):

0.01% (-80 dB) or 10 μV, 10 Hz to 20 kHz, 80 kHz BW;
0.02% (-74 dB) or 20 μV, 20 kHz to 50 kHz, 220 kHz BW;
0.056% (-65 dB) or 50 μV, 50 kHz to 100 kHz, 500 kHz BW;
0.10% (-60 dB) or 50 μV, 100 kHz to 150 kHz, 500 kHz BW

Rear-Panel Connectors

SYNC: TTL-compatible output relative to source frequency

X CLK: TTL-compatible input for external 10 MHz counter reference, automatically switched when external signal is present

X AXIS: 0 to 5 V DC signal relative to sweep frequency or level. 1000Ω source impedance

PEN: TTL-compatible output for penlift

Input Power: 100, 120, 220, 240 V ± 10%, 50 to 400 Hz, 60 VA

Remote Interface: IEEE-488-1978. Implements AH1, SH1, T6, TE0, L4, LE0, SR1, RL1, PP0, DC1, C0, and E1

Operating Temperature: 0 to 55°C

Physical

Dimensions: 5.85" H x 17.75 W x 18.0 D (14.9 cm x 45.1 x 45.8)

Weight: 25 lbs (11.4 kg)

Accessories

Supplied: Spare output fuses

Available: Rack mounting kit, P/N 950044

Chassis slide kit, P/N 950043

Single binding post to BNC (M), P/N 954018

BNC (F) to phono plug, P/N 954019

Phono jack to BNC (M), P/N 954020

Two-conductor shielded balanced line (36"), P/N 954021

Audio XLR connector to three banana plugs, P/N 954022

Options: -01, Rear panel output connectors

IEEE-488 Bus: Complies with IEEE-488. Implements AH1, SH1, T6, TE0, L4, LE0, SR1, RL1, PP0, DC1, DT1, C0, and E1.