Line-level Test Module

option for

AIO Test System

The Line-level Test Module (AIO-L) is designed for making basic acoustic or electrical measurements of a device under test (DUT). AIO-L is a configuration option for the AIO Test System and requires the AIO chassis to operate.

HARDWARE FEATURES:

- **Four mic/line inputs**
- **CCP/IEPE/ICP microphone power**
- **TEDS reader for microphone data**
- **Two balanced line-level outputs**

KEY APPLICATIONS:

- **Mobile devices**
- **Communications systems**

MIC/LINE INPUTS:

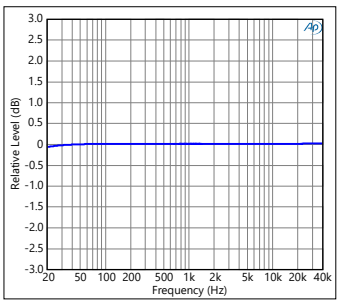
Four low-noise inputs accommodate a very wide range of input voltages, from dynamic microphones to line-level inputs. Features include adjustable gain, constant current power, and TEDS readers.

LINE-LEVEL OUTPUTS:

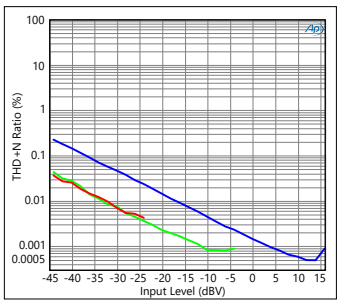
Two high-quality low-noise, low-distortion balanced line-level outputs.

PERFORMANCE GRAPHS:

Mic/Line Inputs

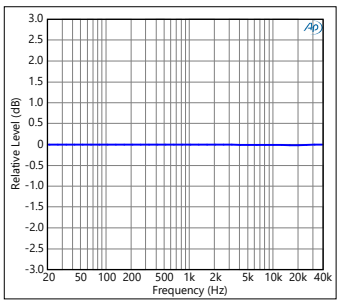


Frequency Response

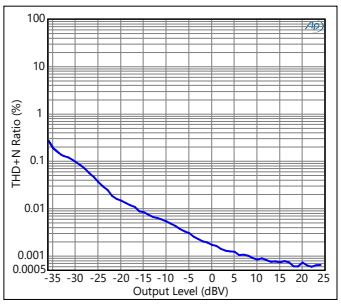


THD+N (gain 1x, 10x, 100x)

Line-level Outputs



Frequency Response



THD+N (balanced)

The Echo AIO ™ is a modular audio test platform ideally suited for high-volume production-line testing and QA/QC verification. The AIO combines the functionality of multiple standalone devices into a single, integrated unit, making test stations both more reliable and less expensive.

LINE-LEVEL MODULE COMMON CONFIGURATIONS: (Other configurations may be available—check with your dealer.)

Model	Inner Module	Outer Module	Mic/Line Inputs	Line Outputs	Headphone Outputs	Amp Outputs	Impedance	Digital	5VDC & Battery Simulator	GPIO	PTH
AIO-L1	AIO-L		4	2							
AIO-L2	AIO-L	AIO-L	8	4							
AIO-LT	AIO-L	AIO-T	4	2				TDM 10/10			
AIO-SL	AIO-S	AIO-L	6	2		2	1				

SPECIFICATIONS:

Microphone / Line Inputs	
Input impedance:	1 MΩ
Input coupling:	AC
Input gain:	1x, 10x, and 100x
Voltage, full scale (1x gain):	8.75 Vpk (+15.8 dBV)
Voltage, maximum:	±15 Vpk
Frequency response:	±0.01 dB (10 Hz – 22 kHz) (48k SR) ±0.01 dB (10 Hz – 44 kHz) (96k SR) ±1 dB (10 Hz – 86 kHz) (192k SR)
Input bandwidth (-3 dB @ 192k SR):	94 kHz
Dynamic range (20 kHz BW):	112 dB
THD+N (1x gain, 20 kHz BW):	< -105 dB (20 Hz – 20 kHz)
Noise, residual:	17 µV
IMD (SMPTE 4:1 @ full scale):	-95 dB
Crosstalk:	< -122 dB (20 Hz – 20 kHz)
Phase error:	< ±0.1° @ 20 kHz
Constant current supply:	CCP/IEPE/ICP, 4 mA
TEDS reader:	IEEE 1451.4 Class 1

Line Outputs	
Output impedance:	102 Ω
Output coupling:	DC
Minimum load:	600 Ω
Voltage, maximum:	16 Vrms (+24 dBV) (bal) 8 Vrms (+18 dBV) (unbal)
DC offset, range:	±22.6 VDC (bal); ±11.3 VDC (unbal)
DC offset, residual:	< ±1.6 mV
Frequency response:	±0.01 dB (10 Hz – 21 kHz) (48k SR) ±0.01 dB (10 Hz – 43 kHz) (96k SR) ±1 dB (10 Hz – 75 kHz) (192k SR)
Output bandwidth (-3 dB @ 192k SR):	90 kHz
Dynamic range (20 kHz BW):	120 dB
THD+N (20 kHz BW):	< -102 dB (20 Hz – 20 kHz)
Noise, residual:	17 µV (bal), 8.5 µV (unbal)
IMD (SMPTE 4:1 @ full scale):	-101 dB
Crosstalk:	< -122 dB (20 Hz – 20 kHz)
Phase error:	< ±0.1° @ 20 kHz

General	
Power:	90 – 264 VAC, 50/60 Hz, 60 W
Dimensions:	17.5" (44.4 cm) x 8.75" (22.2 cm) x 1.75" (4.4 cm)
Weight:	42.5 lbs (19.3 kg)

AIO Test System (See system datasheet for more details)

Shown: AIO-LC rear view with **L** line-level and **C** combo test modules.

FEATURES:

- **High accuracy**
- **Cost effective**
- **Silent—no fan!**
- **Standard USB 2.0 audio class interface**
- **Wide test & measurement software compatibility**
- **Runs on Windows (10 or later) or macOS**
- **ASIO, WASAPI, & Core Audio protocols**

CONTROL PANEL SOFTWARE:

Provides comprehensive level monitoring and control over hardware settings, including transducer power, TEDS data, gain, TDM format, and calibration. Command-line and API access to settings is also available.

TEST & MEASUREMENT SOFTWARE:

Choose from a wide variety of third-party test and measurement software, including APx500 Flex, ARTA, LabVIEW, and MATLAB. The AIO system works just like a standard sound card for Windows, Mac, or Linux.

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MODULE OPTIONS: (See individual datasheets for details and configurations)

A **Acoustic:** Four mic/line inputs with CCP, TEDS; two 10 W class-D amplifier outputs.

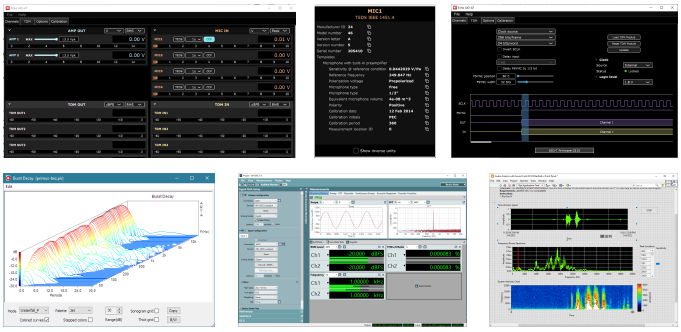
C **Combo:** GPIO; 5 VDC fixed supply; 5 VDC battery simulator; Pressure, temperature, and humidity sensor.

H **Headphone:** Four mic/line inputs with CCP, TEDS; two headphone/earbud outputs with impedance measurement.

L **Line Level:** Four mic/line inputs with CCP, TEDS; two balanced line-level outputs.

S **Speaker:** Two mic/line inputs with CCP, TEDS; two 10 W class-D amplifier outputs; built-in speaker impedance measurement.

T **TDM:** Digital TDM, up to 10 channels, 24 or 32 bit samples.



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