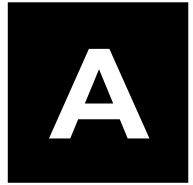


# Acoustic Test Module

option for

## AIO Test System



The Acoustic Test Module (AIO-A) is designed for making basic acoustic measurements of a device under test (DUT)—typically a speaker or driver. Ideal for use with measurement microphones, ear simulators, artificial heads, speakers, actuators, and mouth simulators. AIO-A 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 10 W class-D amplifier outputs

### KEY APPLICATIONS:

- Speakers
- Headphones & earbuds
- Mobile devices
- Microphones

### MIC/LINE INPUTS:

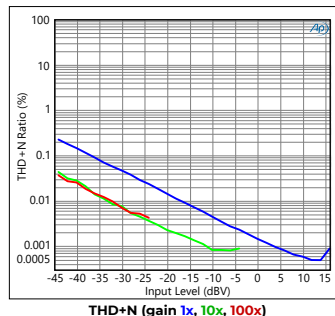
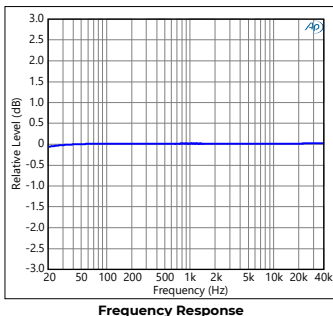
Four low-noise inputs accommodate a very wide range of input voltages, from dynamic microphones to line-level inputs. Features include adjustable gain, constant current power, and TEDS readers.

### AMPLIFIER OUTPUTS:

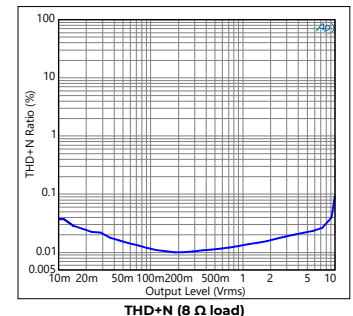
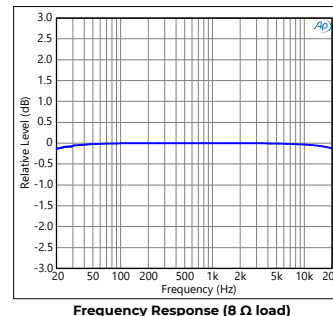
Two high-quality 10 Watt class-D floating amplifier outputs with output protection.

### PERFORMANCE GRAPHS:

#### Mic/Line Inputs



#### Amplifier Outputs



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.

## ACOUSTIC 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-A1	AIO-A		4			2					
AIO-A2	AIO-A	AIO-A	8			4					
AIO-AC	AIO-A	AIO-C	4			2			Yes	8/8	Yes
AIO-AH	AIO-A	AIO-H	6		2		1				
AIO-AT	AIO-A	AIO-T	4			2		TDM 10/10			
AIO-SA	AIO-S	AIO-A	6			3	1				

## SPECIFICATIONS:

Microphone / Line Inputs	
Input impedance:	1 M $\Omega$
Input coupling:	AC
Input gain:	1x, 10x, and 100x
Voltage, full scale (1x gain):	8.75 Vpk (+15.8 dBV)
Voltage, maximum:	$\pm 15$ Vpk
Frequency response:	$\pm 0.01$ dB (10 Hz – 22 kHz) (48k SR) $\pm 0.01$ dB (10 Hz – 44 kHz) (96k SR) $\pm 1$ 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 $\mu$ V
IMD (SMPTE 4:1 @ full scale):	-95 dB
Crosstalk:	< -122 dB (20 Hz – 20 kHz)
Phase error:	< $\pm 0.1^\circ$ @ 20 kHz
Constant current supply:	CCP/IEPE/ICP, 4 mA
TEDS reader:	IEEE 1451.4 Class 1

Amplifier Outputs	
Output impedance:	190 m $\Omega$
Output coupling:	AC
Load, minimum:	4 $\Omega$
Voltage, full scale:	9.475 Vrms (8 $\Omega$ load)
DC offset, residual:	< $\pm 6$ mV
Power output (20 Hz – 20 kHz, all channels driven):	10 W @ <0.2% THD+N (8 $\Omega$ load) 6 W @ <0.3% THD+N (4 $\Omega$ load)
Frequency response:	$\pm 0.2$ dB (10 Hz – 20 kHz) (8 $\Omega$ load)
Output bandwidth (-3 dB @ 192k SR):	44 kHz
Dynamic range (20 kHz BW):	100 dB
Noise, residual:	100 $\mu$ V
IMD (SMPTE 4:1):	< -53 dB ( $\geq 0.5$ mW)
Crosstalk:	< -70 dB (20 Hz – 20 kHz)
Phase error:	< $\pm 1.2^\circ$ @ 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-AC rear view with **A** acoustic 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:

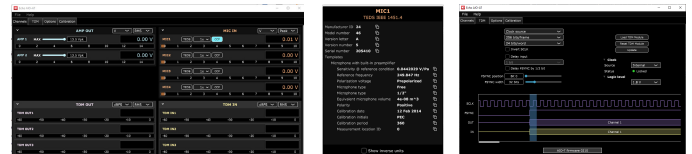
Choose from a wide variety of third-party test and measurement software, including APx500 Flex, ARTA, LabVIEW, and MATLAB. The AIO system works just like a standard sound card for Windows, Mac, or Linux.

### Echo Test + Measurement

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 echotm.com sales@echotm.com +1 805-880-5590

## 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.



Specifications are subject to change without notice. All trademarks or registered trademarks are the property of their respective owners. The AIO Test System is CE compliant.