



# APx517 B Series | ACOUSTIC ANALYZER

Acoustic Production Test Redefined



## KEY FEATURES

- ◆ 35 W mono power amplifier
- ◆ 2-channel headphone amplifier with field-swappable headphone connector panels
- ◆ Integrated dual-channel Kelvin impedance measurement capabilities
- ◆ 2 analog microphone input channels with built-in TEDS support
- ◆ Broadest set of methodologies for detecting rub & buzz defects
- ◆ Integrated microphone power supplies with ICP/IEPE, DCV and 48 V phantom power
- ◆ APx Module I/O support for digital I/O requirements
- ◆ Overload, short circuit, and reverse current protection

## A complete, integrated solution for loudspeaker and headphone test

The **APx517 B Series** acoustic audio analyzer is specifically designed, configured and priced to meet production-line needs. With the broadest set of methodologies available for detecting rub & buzz defects, it is ideal for the testing of speakers, microphones, headphones, headsets and the wide range of consumer electronics incorporating speakers and microphones. The APx517B enables manufacturers to deploy an integrated acoustic test system that brings the renowned quality, reliability and robustness of Audio Precision's lab-oriented analyzers to their manufacturing lines.

### Fast Setup & Reconfiguration

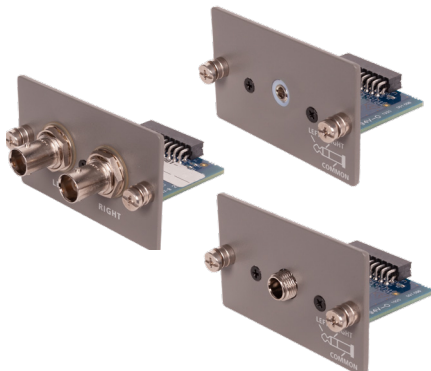
On a production line, any time spent setting up a new test system, calibrating a system for a new shift, or reconfiguring a system for a change in DUT (device under test), is effectively a "line down" situation. As an integrated system combining audio analyzer (signal generation and acquisition), power amplifier, headphone amplifier, and microphone power supplies, along with any required digital interface such as *Bluetooth*®, the APx517B has the power to drastically reduce setup and reconfiguration time by eliminating multiple individual components (from a variety of vendors) and their associated cabling. Additionally, and unlike those individual components, the APx517B is uniquely delivered with a Certificate of Traceability, confirming that each unit meets its published specification.

### Quality & Reliability

Most, if not all, current acoustic analysis systems are an assortment of individual components from different vendors. As such, an additional "line down" risk of these systems is the quality and reliability of each component, along with the configuration of each connection point. In contrast, the APx517B is an integrated system engineered and assembled to the same standard as all other APx analyzers and is delivered with a three-year warranty and Certificate of Traceability. For 36 years, AP analyzers have been recognized as much for their quality and reliability as they have been for their performance and measurement accuracy.

### Configuration & Options

The APx517B maintains the APx Series' tradition of flexibility and configurability. In its base configuration, APx517B is a ready-to-go system for measuring analog speakers, microphones, headphones, or headsets. For digital devices, APx517B has a module slot for the addition of a single APx digital interface module, such as Bluetooth, PDM or HDMI. On the software side, a standard system provides a core set of measurements and functionality to allow out-of-the-box, fundamental test of acoustic devices. Additional advanced measurement options are available, either individually or in groups.



Headphone Connector Panel Options





## APx Digital Options

APx B Series audio analyzers offer world-class performance and flexibility. Our modular systems allow you to select the interfaces and options that make sense for the work you do, covering the widest range of digital I/O in the industry.



### Bluetooth®

The B Series APx Bluetooth Duo supports A2DP, AVRCP, HFP, and HSP profiles for comprehensive wireless audio testing.

With two integrated radios, APx Bluetooth Duo easily supports source/sink, audio gateway/handsfree, and target/controller profile roles.



### PDM 16

The B Series APx PDM 16 option provides 16 acquisition channels for audio devices that

have a PDM output (such as MEMS microphones), connecting through the module's PDM 16 remote pod. All 16 channels can be measured simultaneously to provide sample-accurate interchannel timing information. With cables available in lengths of 2, 5, and 10 meters, the acoustically silent remote pod can be placed next to the analyzer or up to 10 meters away, facilitating anechoic chamber testing.



### PDM

The APx PDM option provides direct connectivity for audio devices that have a PDM output

(such as a MEMS microphone) or input (such as the decimator on a smartphone chip). In addition to all the standard audio measurements, APx provides variable DC voltage, variable sample rate, and a PSR (Power Supply Rejection) measurement to test the device's full operating parameters.



### Digital Serial

The Digital Serial I/O option adds a multichannel digital serial interface.

This provides a direct connection to chip-level interfaces such as I2S and supports all popular serial interface formats including left justified, right justified, and DSP.



### HDMI

The B Series APx HDMI option (HDMI2+eARC) allows you to measure HDMI audio quality

and audio format compatibility on devices such as surround sound receivers, set-top boxes, HDTVs, smartphones and tablets, and DVD or Blu-ray Disc™ players.



### AES/SPDIF

The B Series APx DIO option provides AES3, AES/EBU balanced digital I/O on XLR;

unbalanced SPDIF digital I/O on BNC; and TosLINK optical digital I/O.



## Automation Capabilities

Production testing can easily be automated with the built-in measurement sequencer and saved as a project that can be used with any APx analyzer. Production Test mode provides an optional simplified operator interface with multiple run statistics, created and supervised by a manufacturing engineer. Access the API if you prefer: documentation for VB.NET, C#.NET, MATLAB, and LabVIEW is included.

## KEY SPECIFICATIONS

### SYSTEM LEVEL

192 kHz SR (High-Res Audio Ready)  
Quiet, thermostatically controlled fans,  
Universal 100-240 V power supply

### ANALOG OUTPUTS

35 W Mono Power Amplifier  
17 Vrms max output  
2 – 8 Ω @ 35 W  
17 Vrms above 8 Ω  
Residual THD+N (20 kHz BW)  
< -80 dB +35 μV

Impedance Accuracy  
≤ 1% for resistive loads  
4 Ω to 16 Ω, 20 Hz to 20 kHz  
≤ 2% for resistive loads  
2 Ω to 4 Ω, 20 Hz to 20 kHz

Output current limited  
Reverse overload protected  
Integrated, dual-channel (Vsense, Vdriver)  
Kelvin impedance measurement

### Stereo (2 ch) Headphone Amplifier

9 Vrms max output  
2 – 800 Ω @ 100 mW  
Residual THD+N (20 kHz BW)  
< -84 dB +15 μV

Impedance Accuracy  
≤ 1% for resistive loads  
< 350 Ω, 20 Hz to 20 kHz  
≤ 1% for resistive loads  
350 Ω to 800 Ω, 20 Hz to 6 kHz  
≤ 3% for resistive loads  
350 Ω to 800 Ω, 6 kHz to 20 kHz

Output current limited  
Reverse overload protected  
Integrated, dual-channel (Vsense, Vdriver)  
Kelvin impedance measurement

### ANALOG INPUTS

**BNC Unbalanced**  
40 Vpk max input  
ICP / IEPE mic power, 4 or 10 mA  
DC Bias mic power, 0 - 12 V  
Residual THD+N (20 kHz BW)  
< -98 dB +1.9 μV

Input overload protection

**XLR Balanced**  
40 Vpk max input  
48 V phantom power  
Residual THD+N (20 kHz BW)  
< -98 dB +1.9 μV

Input overload protection



Accredited by A2LA  
under ISO/IEC: 17025  
for equipment calibration



## APx517B Measurement Options

The APx517B uses the same APx500 measurement software that is used on all other APx series analyzers and includes features like input signal monitors and file analysis. To minimize the cost of the measurement software, the system is offered using the APx500 FLEX option model, which provides seven standard measurements, allowing additional measurements to be purchased in cost-effective Flex Packs or as individual measurements.

Software licensing options provide APx users several choices for accessing new software releases. Perpetual licenses are available via the SW-EXT (new analyzers) or SW-MAINT (existing analyzers) options. Time-limited licenses are available via software subscriptions (SW-SUBSCR) and provide access to all software versions and options (excluding POLQA).



### FLEX PACK OPTIONS

PART NUMBER	DESCRIPTION	INCLUDED MEASUREMENT
N/A	Base Configuration	Standard with the APx517B: Frequency, Level & Gain, Loudspeaker Production Test (including the broadest set of methodologies for detecting rub & buzz), Pass/Fail, Stepped Frequency Sweep, Signal Acquisition, THD+N.
APX-FLEX-PACK-2	Flex Pack 2	Includes the following measurements: Crosstalk, Crosstalk Sweeps, DC Level, DC Level Sweep, DUT Delay, Frequency Response, Interchannel Phase, Level Ratio, Measurement Recorder, Noise, Noise Recorder, Q-Peak Noise, SNR, SINAD, Stepped Level Sweep.
APX-FLEX-PACK-3	Flex Pack 3	Includes the following measurements: Continuous Sweep, Digital Error Rate, Dynamic Range–AES17, IMD, IMD Frequency Sweep, IMD Level Sweep, Input Sample Rate, Maximum Output, Maximum Output (CEA–2006), Multitone Analyzer, Regulated Frequency Sweep, Signal Analyzer.
APX-FLEX-PACK-4	Flex Pack 4	Includes the following measurements: Acoustic Response, Bandpass Frequency Sweep, Bandpass Level, Bandpass Level Sweep, Cumulative Spectral Decay, Impedance/Thiele-Small, Modulated Noise, Polar Plots, Transfer Function.

### ASIO INTERFACE

#### DESCRIPTION

16 channels are included with the APx517B.

A list of ASIO interfaces that have been tested and verified by Audio Precision is available at [ap.com](http://ap.com).



## APx517B Measurement Options (continued)

In addition to Flex Packs, measurement options can be purchased individually so that you can get just the measurements you need, without paying for ones you don't. Measurements can be added to an APx517B when ordering a new acoustic analyzer or they can be delivered electronically to add to an existing APx517B. APx500 software's Bench Mode is also available, as are specialized perceptual audio tests such as ABC-MRT, STI, and POLQA.

### INDIVIDUAL MEASUREMENT OPTIONS

ABC-MRT	Digital Error Rate		POLQA
Acoustic Response	Dynamic Range (AES17)	Level Ratio	Q-peak Noise
Bandpass Frequency Sweep	DUT Delay	Loudspeaker Production Test*	Regulated Frequency Sweep
Bandpass Level	Frequency*	Maximum Output Level	Signal Acquisition*
Bandpass Level Sweep	Frequency Response	Maximum Output per CEA-2006	Signal Analyzer
Continuous Sweep	IMD	Measurement Recorder	SNR
Crosstalk Sweep, 1 Channel Driven	IMD Level Sweep	Modulated Noise	SINAD
Crosstalk Sweep, 1 Channel Undriven	IMD Frequency Sweeps	Multitone Analysis	Stepped Frequency Sweep
Crosstalk, 1 Channel Driven	Impedance/Thiele-Small	Noise	Stepped Level Sweep*
Crosstalk, 1 Channel Undriven	Input Sample Rate	Noise Recorder	STI
Crosstalk, Custom Measurement	Interchannel Phase	Pass/Fail*	THD+N*
DC Level	Level & Gain*	Polar Plots	Transfer Function
DC Level Sweep	* These measurements are included in the base configuration		

### SOFTWARE LICENSING OPTIONS

PART NUMBER	DESCRIPTION	MEASUREMENT/FEATURES
SW-MAINT-1/3/5	Software Maintenance	Provides 1, 3, or 5 years of software maintenance for an existing APx Legacy or B Series audio analyzer (perpetual licenses).
SW-EXT-3/5	Software Maintenance	Provides 2 or 4 additional years of software maintenance with the purchase of a new APx B Series analyzer (perpetual licenses).
SW-SUBSCR-1/3/5YR	Software Subscription	Provides 1, 3, or 5 year software subscriptions (time-limited licenses).