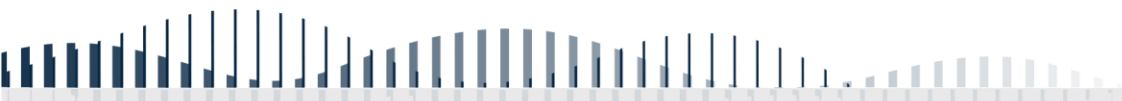# APx500 Software – Evolving Audio Measurement

# Overview – APx500 Software

- AP continues to add enhancements and capabilities to APx500 software, both in response to customer feedback and to address evolving standards and measurement techniques.

- Each new APx analyzer is shipped with a license for the current software release <u>and</u> the next major release (Example: units are currently shipping with 6.x.x and will run 7.x.x when it is available).

- APx software is provided with a perpetual license. Using the example above, new units have perpetual licensing for both v6.x.x and v7.x.x

- The added value of newer software versions (beyond the current licensing of an analyzer) can be accessed via optional upgrades or software maintenance agreements.

- 3-year and 5-year software maintenance agreements are offered with any analyzer that is licensed for the current release. SW maintenance can reduce future upgrade costs by up to 35%.

# APx500 version 4.6 Sep 2018
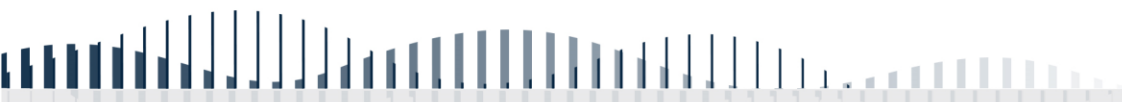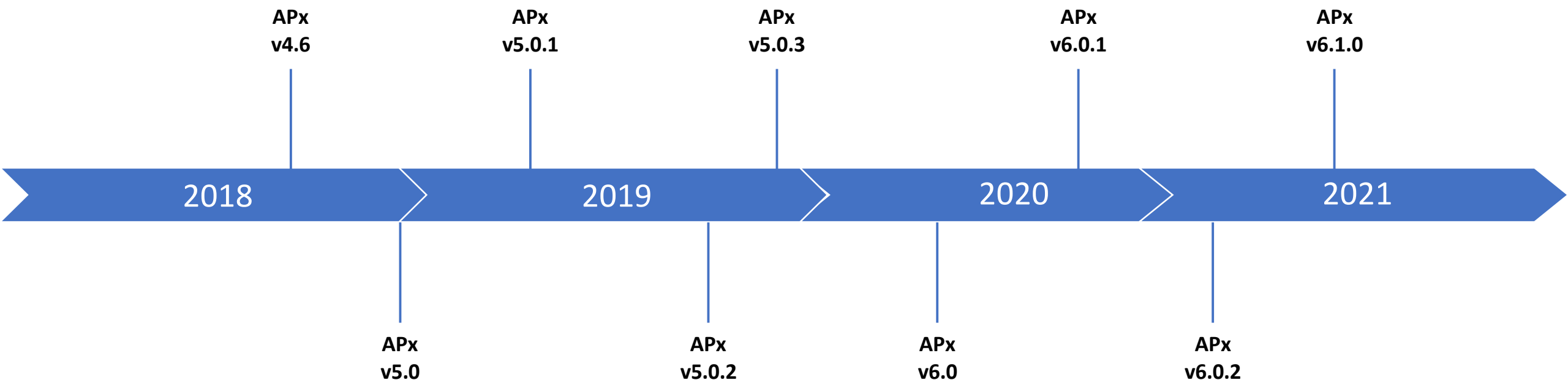
APx500 version 4.6 is a major release that supports open loop configurations for two chirp-based measurements, Continuous Sweep and Acoustic Response, enabling smart device testing across the cloud. Other enhancements include multichannel equalization for microphone array measurements and support for new file types for DTS compliance testing and verification.

## *Features added*

- Open loop configuration for chirp-based measurements

- Multichannel input equalization

- Added a "select input EQ curve" sequence step

- Added an "import generator EQ curve" sequence step

- Derived result: EQ

- Bluetooth codecs

- Support for DTS:X files

- New security requirement: the APx Keybox



What's New:
APx500 version 4.6
September 2018

ACOUSTIC SENSORS AND AUDIO MEASUREMENT
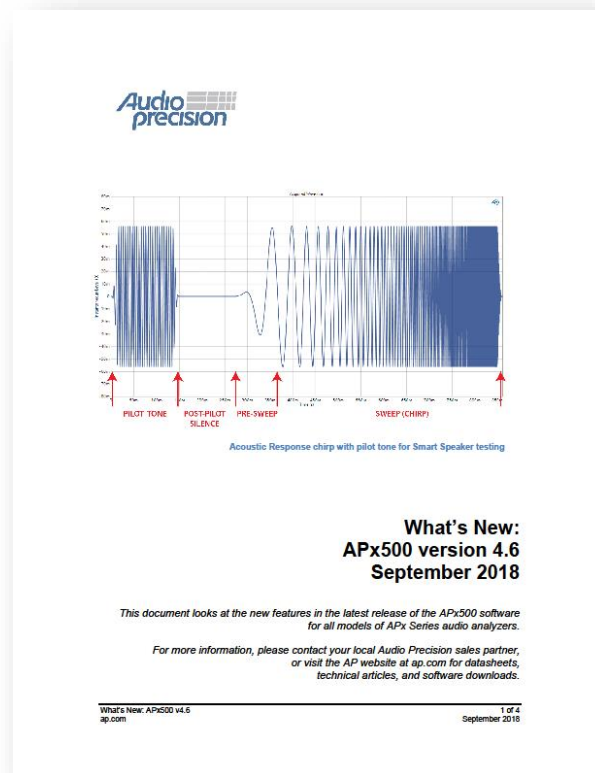
APx500 version 5.0 is a major release that brings the transfer function measurement, improved security, and B Series compatibility to the APx platform. Transfer Function provides the difference between two audio signals by comparing the complex spectra of the two signals. Often, the signals are taken at the input and output of a device, so their comparison represents how the signal has changed having transferred through the device.

## *Features added*

- Transfer function measurement

- Support for the Enhanced Analog Generator (APx555 only)

- ADC test software option (APx555 only)

- Software option digital keys

APx500 version 5.0.2 is a release update that enables APx software use with ASIO-capable soundcards (APx500 Flex).

APx500 version 5.0.3 is a release update that provides multi-channel MEMS mic measurement (PDM 16).

## *Features added*

- ASIO Analog Units

- ASIO Auto Latency Adjustments

- Improved Generator Triggering for ASIO Interfaces

- APx500 Flex analyzer

- Simultaneous measurement of up to 16 MEMS microphones (PDM 16 module)



APx525 B Series Audio Analyzer with PDM 16 module and PDM 16 pod

**What's New:
APx500 version 5.0.3
Nov. 2019**
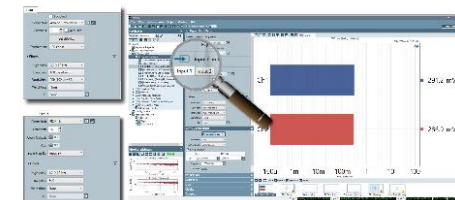
This document looks at the new and improved features in the latest release of the APx500 software for all models of APx Series audio analyzers.

For more information, please contact your local Audio Precision sales partner, or visit the AP website at ap.com for datasheets, technical content, and software downloads.

What's New: APx500 v5.0.3          1 of 3
ap.com          November 2019

APx500 6.0.0 is a major release that brings software support for Multiple Simultaneous Input Types, a new Sensitivity Result, and other changes and improvements. Paired with the wide range of digital I/O options available using APx modular analyzers, the latest APx500 software has increased functionality for measurements involving digital microphones in products like mobile/smart phones, *Bluetooth®* headsets, speaker phones, and smart speakers, as well as any audio device with both analog and digital interfaces.

## *Features added*

- Multiple simultaneous input types:
    - Obtain data from an analog input and a digital input in a single measurement

- Sensitivity derived result

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APx500 6.0.1 is a release update that adds several new features to the software, including new hearing aid measurements, a Derived Result to fit limits to data, ISO R-series Nth Octave sweeps, improvements to Bandpass Level accuracy, and other changes and improvements. Paired with the wide range of digital I/O options available using APx modular analyzers, the latest APx500 software has increased functionality for measurements involving speakers, microphones, headsets, hearing aids, as well as a wide range of electronics that incorporate speakers and microphones.

## *Features added*

- ANSI S3.22 AND IEC 60118-0 Frequency sweeps

- ANSI S3.22 Fit limit to data derived result

- BANDPASS Level improvements

- ISO R-SERIES NTH Octave sweeps (R10, R20, R40, R80)

- APX517 Acoustic Audio Analyzer support



**What's New:**
**APx500 version 6.0.1**
**November 2020**

*This document looks at the new and improved features in the latest release of the APx500 software for all models of APx Series audio analyzers.*

*For more information, please contact your local Audio Precision sales partner, or visit the AP website at ap.com for datasheets, technical content, and software downloads.*
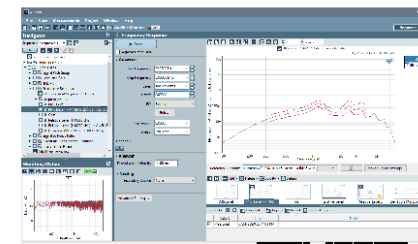
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www.ap.com / www.grasacoustics.com

The APx500 6.0.2 release brings full APx500 software support for new GRAS microphone power supplies. With this new introduction, APx500 software now allows calibrated microphone measurements to be made with all configurations of APx500 analyzers, including APx500 FLEX. The software support integrated into the APx500 systems provides for additional value and cost savings in cost-sensitive applications such as production test of acoustic devices.

## *Features added*

- Support for new GRAS 12BA and 12BB measurement microphone power supplies
  - Automatic detection and configuration of one or more Mic Power Modules
  - Automatic assignment of channel number to each channel on each module
  - Access to TEDS data is same as APx517 analyzer and APx1701 Transducer Interface
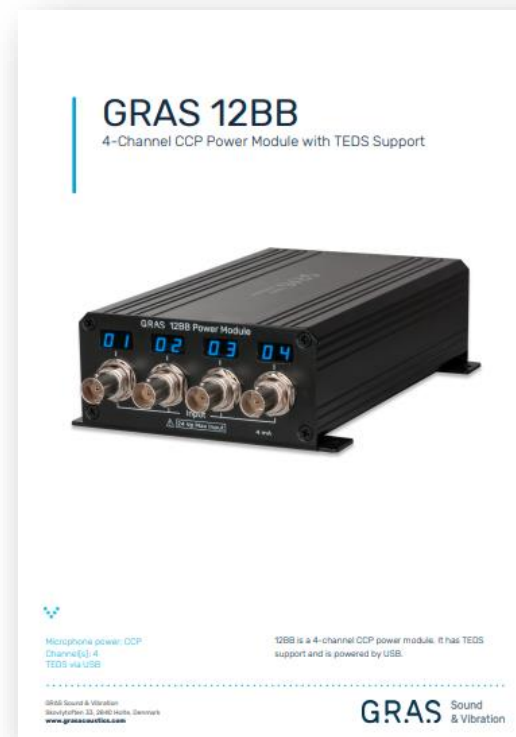
For more information, go to
www.grasacoustics.com

APx500 6.1.0 is a release update that adds several new features to the software, including a new Fast Sweep stimulus for Loudspeaker Production Test measurements, additional Rub and Buzz results, enhancements to distortion ratio results, and any results containing waveform data can now be exported to WAV files. With this latest release, APx500 software now offers the broadest set of rub and buzz defect detection methodologies available to support designers and manufacturers of speaker drivers and finished products that incorporate such drivers (e.g., speakers, headphones, headsets, smart speakers, etc.).

## *Features added*

- Rub & Buzz Measurement Results:
    - Rub & Buzz Loudness
    - Sonetrac Rub & Buzz
    - High-Order Harmonic Distortion (HOHD)

- Fast Sweep – Very fast, transient-minimized stepped frequency sweeps.

- Normalized THD – Distortion results are normalized to the frequency response of the device under test.

- Selectable IEEE or IEC calculation of distortion ratio results.

- Save any acquired waveform or impulse response result in the software to a .wav file (manually or automatically in a sequence).



Rub and Buzz Loudness result in APx500 version 6.1.0 using the APx517B analyzer

**What's New: APx500 version 6.1.0 June 2021**

*This document looks at the new and improved features in the latest release of the APx500 software for all models of APx Series audio analyzers.*

*For more information, please contact your local Audio Precision sales partner, or visit the AP website at ap.com for datasheets, technical content, and software downloads.*

What's New: APx500 v6.1.0    1 of 3
ap.com    June 2021

# APx500 Releases: 2018 - 2021

**Open-Loop Chirp**
- Multi-Channel Input Equalization
- Auto Import of Measurement Equalization Curves
- EQ Derived Result
- Bluetooth AAC added for MPEG-2 and MPEG-4 Codec Support
- DTS:X Support

**APx v4.6**

- Analog Output Fixed Range

**APx v5.0.1**

- Simultaneous measurement of up to 16 MEMS microphones (PDM 16 module)

**APx v5.0.3**

- ANSI S3.22 and IEC 60118-0 Frequency Sweeps (incl. DFD & Total DFD)
- ANSI S3.22 Fit Limit to Data
- Improved Bandpass Level measurements (Bench Mode)
- ISO R-Series Nth Octave sweeps
- APx517 Acoustic Analyzer

**APx v6.0.1**

- Rub & Buzz Loudness
- Sonetrac Rub & Buzz
- High-Order Harmonic Distortion (HOHD)
- Fast Sweep
- Normalized THD
- Acquired waveform or impulse response saved as .wav file

**APx v6.1.0**

2018    2019    2020    2021

**APx v5.0**

- Transfer Function measurement
- ADC TEST (Bal and Single-ended)

**APx v5.0.2**

- ASIO Analog Units
- ASIO Auto Latency Adjustments
- Improved Generator Triggering for ASIO
- APx500 FLEX

**APx v6.0**

- Multiple Simultaneous Input Types
- Sensitivity derived result (directly measure sensitivity)

**APx v6.0.2**

- Integration of GRAS 12BA / BB Mic Power Supplies

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www.ap.com / www.grasacoustics.com

# APx500 Software – Summary

- For the past 15 years, Audio Precision has averaged two APx500 software releases per year.

- Every year AP adds major and minor features to the software, and maintenance for any errors or defects which are discovered.

- APx500 Software is supplied as a perpetual license – you can use it for as long as you like without making any change or upgrade.

- If you anticipate taking advantage of the new capabilities offered in future major releases, you can save by:
  - Choosing the SW-EXT option when buying a new analyzer
    (saving ~30% or more)
  - Purchasing a SW-MAINT license for your existing instruments
    (saving nearly 30%).

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