



Production Test Automation

What's New: APx500 version 4.2 October 2015

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.

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INTRODUCTION TO APx500 VERSION 4.2

APx 4.2 is a major release that brings both software innovations and support for the hardware improvements to the APx platform available at the 4.2 release, such as the upgraded PDM I/O module with jitter and low-voltage logic capabilities.

SEQUENCE AND SEQUENCER CHANGES

APx's built-in automation engine, the Sequencer, has been improved in a number of ways. These changes primarily support robust and flexible production test sequences, but also provide more powerful and intuitive sequence design and operation for any application.

Multiple sequences within a project

Until now, an APx project only contained one sequence. With version 4.2, you can create any number of different sequences within a project, refer to them with custom names, and place them in any running order. Each sequence runs a subset of the available Navigator Signal Paths, measurements, and results. Simply select a sequence, then choose its measurements and results using the Navigator checkboxes.

A new Edit Sequences dialog has been added to manage settings for multiple sequences.

Pre-sequence Steps node

With version 4.2, you can add Prompt, Program, Delay and Set Aux Control Out steps that run before any of the Signal Path or Measurement steps begin.

Post-sequence Steps node

Previous versions of APx provided optional Report and Data Output nodes at the end of the sequence. With version 4.2, you can also add Prompt, Program, Delay and Set Aux Control Out steps that run after all the Signal Path and Measurement steps are completed.

Sequence Steps nodes for every measurement

In earlier versions of APx, the sequence steps and measurement sequence properties were hard to find, hidden in dialogs several clicks removed from the Navigator. In APx 4.2, each measurement has a Measurement Sequence Settings node and a Sequence Steps folder node, always visible and easily available in the Navigator.

Flexible Data Output

New Data Settings and Data Specifications provide content control for the sequence Data Output file. This can be accessed using the APx API. See Flexible Data Export on page 5.

Import Limit Data step

APx version 4.2 adds the ability to import limit curves, and a new sequence step has been provided to import limit data during a sequence. See Import Limits Feature on page 5.

Sequence and Sequencer Settings and Properties reorganization

With the provision of multiple sequences within a project, a reorganization of project, sequence, and measurement sequence properties was necessary. Production Test, Delay, Pass/Fail Message and Dialog Button Aux Control settings have been placed in the Sequencer Properties dialog. Aux Control Start and End sequence settings have their own dialog, available on a per-sequence basis from the Edit Sequences dialog.

Production Test

One or more sequences can be designated as Production Test sequences.

A Production Test sequence is designed by an administrator or supervisor, who possesses the APx project password. One or more of the project sequences is designed to be run on the production floor by an operator, who does not have the password and works from a restricted menu, locked out from modifying the project.

Menu design, prompts and other interaction with the operator are facilitated in the Edit Sequences dialog. System and user variables can be used in prompts, responses and file paths. Sequence statistics and variable lists can be saved and reported. See Variables, next.

VARIABLES

APx 4.2 allows the use of system variables and user variables in sequence prompts, responses, and file paths.

System variables

System variables include APx system variables, operating system environment variables, and path variables to common system folders. These can be selected and inserted into sequence prompts, responses and file paths.

User-defined variables

Custom user-defined variables can be created to contain any text string. These can be selected and inserted into sequence prompts, responses and file paths.

NEW PDM HARDWARE BRINGS JITTER AND LOW VOLTAGE SUPPORT

Jitter generation and measurement in APx 52x and 58x instruments requires the presence of the optional Advanced Master Clock (AMC). The AMC is standard in the APx555.

Jitter generation and measurement for PDM I/O

The upgraded PDM hardware option module (model 228) is being released concurrent with the release of APx500 version 4.2. When used with the AMC, this new module can generate or measure jitter on the PDM clock.

Lower Vdd and Logic Family voltages for PDM I/O

The upgraded PDM hardware option module (model 228) is being released concurrent with the release of APx500 version 4.2. This new module can provide Vdd across the

range of 0 VDC to 3.6 VDC, and can support DUTs operating at logic levels from 0.8 VDC to 3.3 VDC.

IMPORT LIMITS FEATURE

Limit curves can now be exported and imported to XY graph results. Scalar offsets and offset curves can be applied. An Import Limits step extends this feature to sequences. These features enable straightforward processes for characterization of and comparison to a “Golden Unit.”

DSIO IMPROVEMENTS

With APx 4.2, a channel-count selection of six channels has been added to the Digital Serial Input/Output settings. Also, for jitter-enabled DSIO modules (with AMC), APx 4.2 now supports the application of jitter to the bit clock when DSIO is a receiver. Previously, DSIO application of jitter to the DSIO bit clock was only available when DSIO was a transmitter.

INPUT EQ

In addition to the low-pass, high-pass and weighting filters available in Signal Path > Input/Output, you can now apply an equalization curve to the input signal. Like the Output Equalization feature, the input curve can be edited, exported and imported. The input EQ curve can be selectively applied to the available input channels.

FLEXIBLE DATA EXPORT

In APx 4.2, you can now exert a more detailed control over the result data you choose to export. In addition to selecting the result, number of points and data set to export, you can create (and save) a Data Specification where you can define the X-range, the step type (log or lin) and even add or delete specific points.

This granular control of data export is available to graph data export, the Export Data sequence step, and to the new Data Settings control that specifies the content of the sequence Data Output file.

XLSX SUPPORT

Files that could be exported to or imported from the Microsoft Excel *.xls format can now use the newer *.xlsx format as well.

ANALOG GENERATOR GLOBAL LEVEL MAXIMUM (VMAX)

To protect a device under test from accidental overload, a maximum APx analog generator output level can be set that is applied globally, to all measurements in the project.

POLQA IMPROVEMENTS

POLQA measurements have added a tabular log result called POLQA Result Data, which lists all the POLQA algorithm results for review.

SIGNAL ACQUISITION NODE ADDED

A Sequence Mode node has been added to the Navigator and Sequencer. Not really a “measurement,” Signal Acquisition acquires signal data but performs no processing or analysis. This feature is important when using external processing or future plug-in measurement features.

SAVE TO FILE FEATURE EXTENDED TO MORE MEASUREMENTS

Measurement Recorder, Multitone Recorder, Noise Recorder, PESQ, POLQA, and the Bench Mode Recorder have a Save to File capability. This feature has been added to the Signal Acquisition and Signal Analyzer measurements, and to the Bench Mode FFT.

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