Getting Started with the
Audio Precision 2700 Series
LabVIEW driver

Audio Precision 2700 Series

Certified LabVIEW Plug and Play (project-style) Instrument Driver

Introduction

Audio Precision has developed a complete LabVIEW project-style instrument driver for IEEE 488.2 (GPIB) equipped models of the 2700 Series of audio analyzers. This driver supports NI LabVIEW 8.20.

LabVIEW is a well-established, widely used graphical system design platform for test and control from National Instruments. An audio analyzer such as a 2700 Series instrument can be represented in LabVIEW as a collection of virtual instruments that can be interconnected and controlled from the LabVIEW interface while being physically connected by a GPIB or other compatible bus system. For more information about LabVIEW, visit www.ni.com.

> Download the driver from Audio Precision at http://www.ap.com/ap/download/AP2700_LabVIEW.zip

> or from National Instruments at

> http://sine.ni.com/apps/utf8/niid_web_display.download_page?p_id_guid=28E51AFE103A222AE0440003BA230ECF

Requirements

- A GPIB-equipped Audio Precision 2700 Series audio analyzer
  (models SYS-2702G, SYS-2712G, SYS-2720G or SYS-2722-192k G).
- A GPIB interface card and driver (such as the NI PCI-GPIB 778032-01 or Agilent 82350B) for the controlling PC.
- A GPIB interface cable.
- National Instruments LabVIEW 8.20 installed on the controlling PC.

Installation

The download is a Zip archive named AP2700_LabVIEW.zip. Download this file to your hard drive and open the archive using WinZip. You can download WinZip from http://www.winzip.com/. Extract the files to the [instr.lib] subfolder in your local LabVIEW installation, at this path:

> \Program Files\National Instruments\LabVIEW 8.2\instr.lib
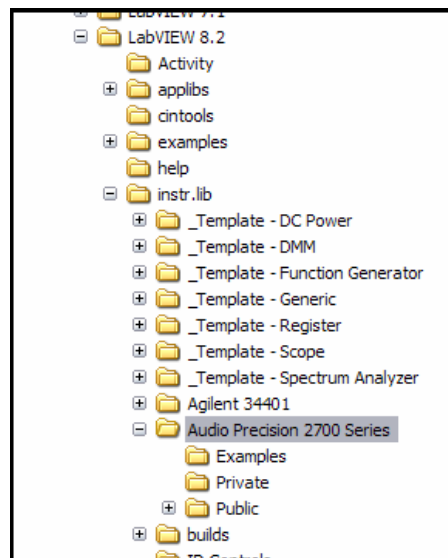
Basic Operation

Launch LabVIEW and open an Audio Precision example VI (virtual instrument), or double-click an example VI from Windows Explorer to launch LabVIEW.

The LabVIEW Front Panel for the example will load. You can view the Block Diagram for the example by choosing > >, or by pressing Ctrl E.

In the Block Diagram view, right click to open the Functions palette. Choose Instrument I/O > Instrument Drivers > Audio Precision 2700 Series to view the available VIs.
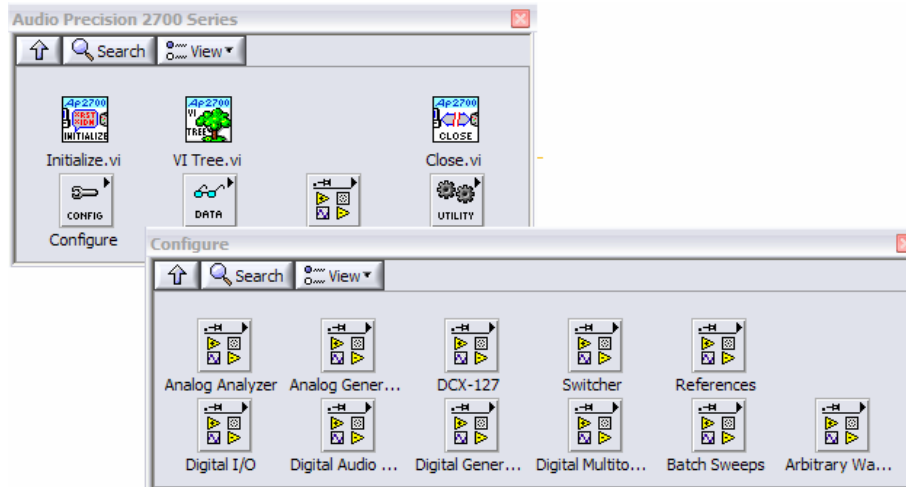
The Example VIs

The 2700 Series example VIs provide an easy way to build your own custom configurations and tests. Open an example, then open a new VI. You can drag and drop the icons from the example that you need, and then wire this new VI for the desired functionality.
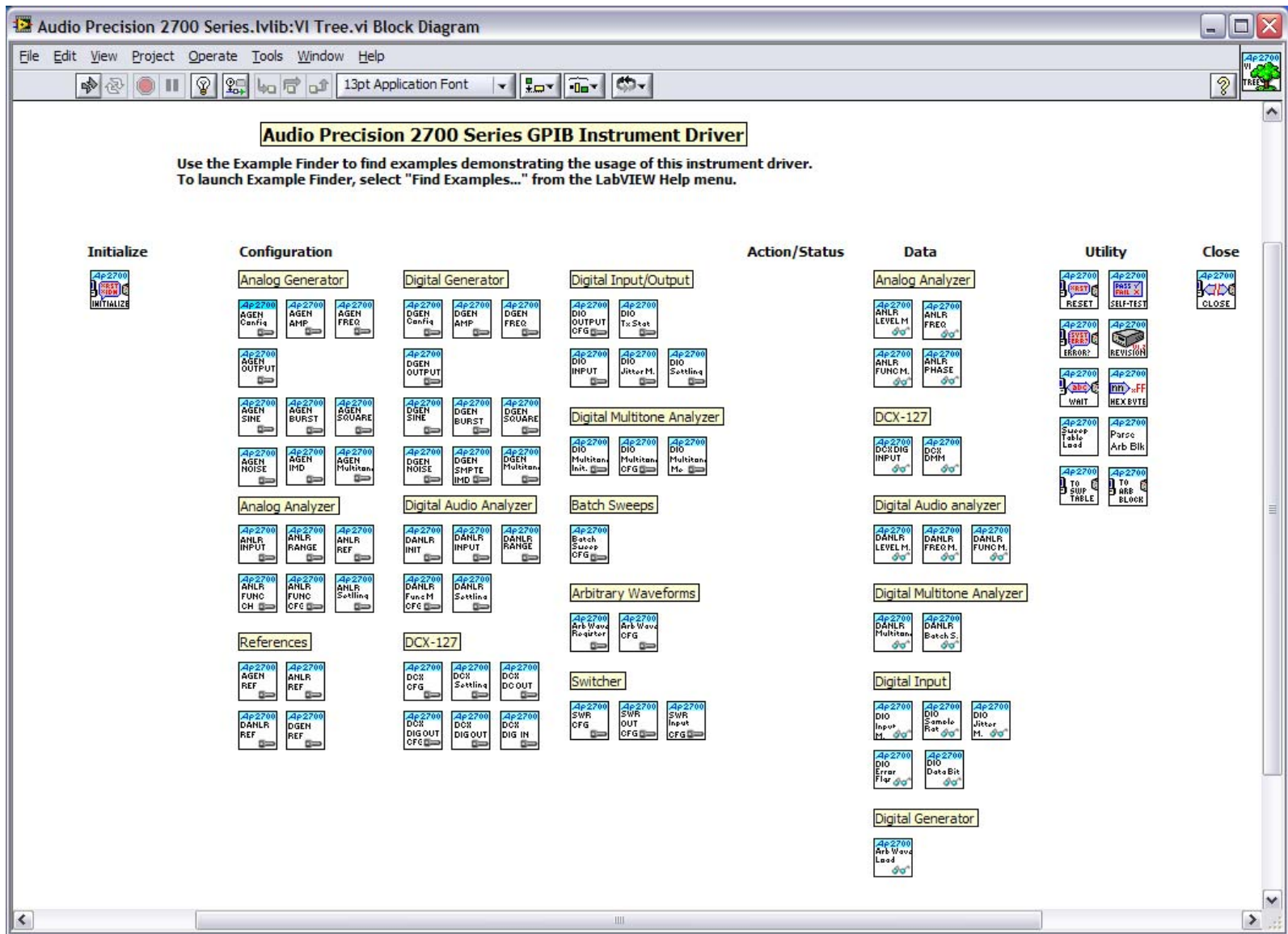
You must always begin with a VISA resource name that points to the Audio Precision GPIB instrument. Wire this resource to the AP2700 Init.vi, then wire the resource name and error pins to the next VI in the chain. For example, to configure the 2700 Series generator, you would drag in the generator configuration VI and add a Boolean control for the on/off switch. It's a good idea to finish with the Close VI wired with a final error indicator that will show success or failure for the entire VI.

When your VI has been tested to your satisfaction, you can then drag it into a larger project as a component VI.
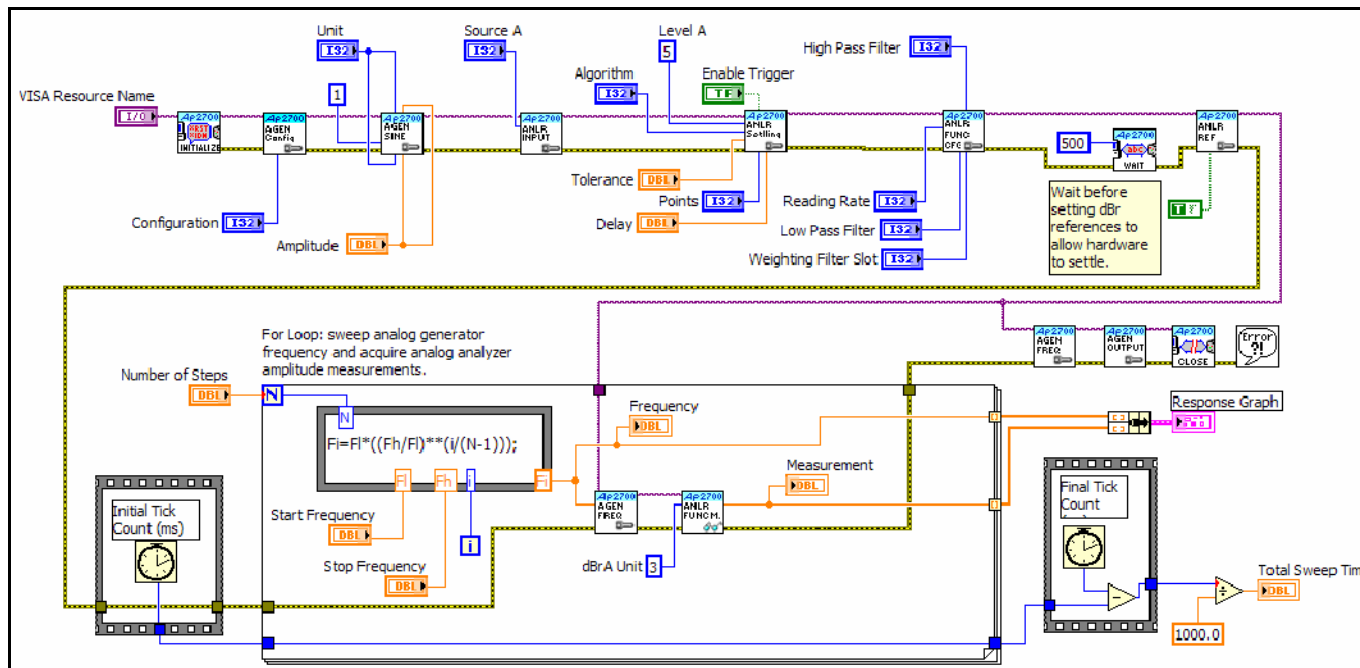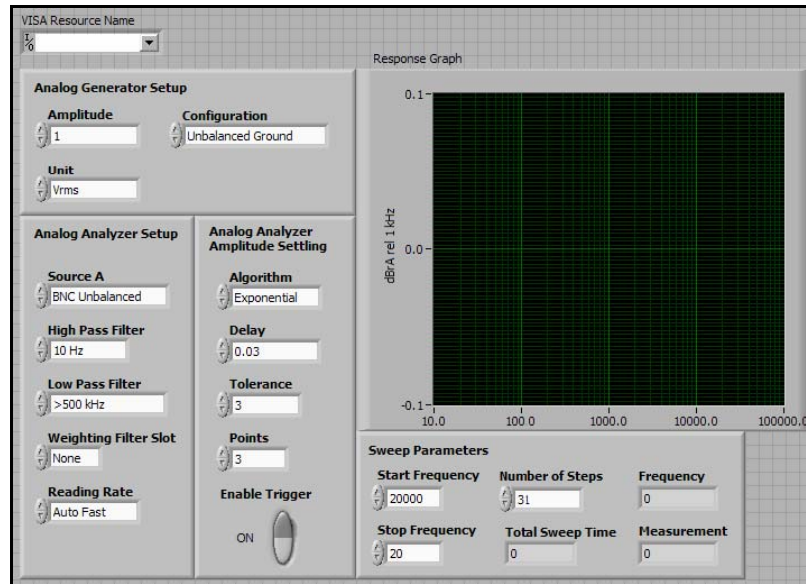
See the illustrations for the LabVIEW Tree view, analog generator and the multitone analyzer VI control panels and block diagrams on the following pages.
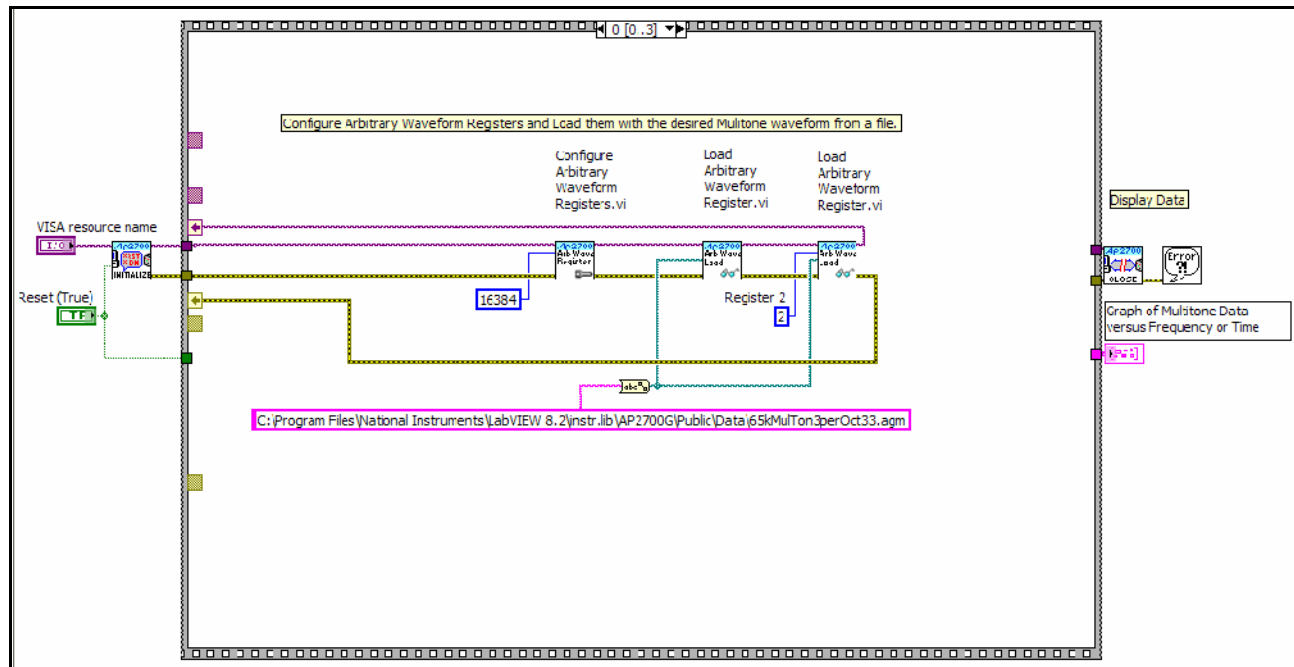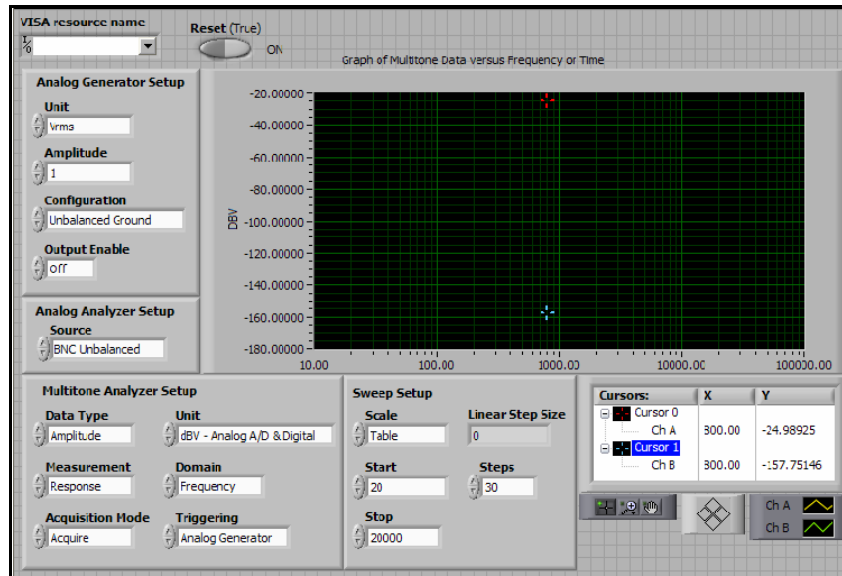
0058.0010 r000

LabVIEW Tree view shows entire set of VIs in project.

Analog Generator Setup

Amplitude
1

Configuration
Unbalanced Ground

Unit
Vrms

Response Graph

Analog Analyzer Setup

Source A
BNC Unbalanced

High Pass Filter
10 Hz

Low Pass Filter
>500 kHz

Weighting Filter Slot
None

Reading Rate
Auto Fast

Analog Analyzer Amplitude Settling

Algorithm
Exponential

Delay
0.03

Tolerance
3

Points
3

Enable Trigger
ON

dBrA rel 1 kHz

Sweep Parameters

Start Frequency
20000

Number of Steps
31

Frequency
0

Stop Frequency
20

Total Sweep Time
0

Measurement
0

VISA Resource Name

Unit

Source A

Level A
5

Algorithm

Enable Trigger

High Pass Filter

Configuration

Amplitude

Tolerance

Points

Delay

Reading Rate

Low Pass Filter

Weighting Filter Slot

500

Wait before setting dBr references to allow hardware to settle.

Number of Steps

For Loop: sweep analog generator frequency and acquire analog analyzer amplitude measurements.

$Fi = Fl*((Fh/Fl)**(i/(N-1)));$

Frequency

Measurement

Response Graph

Initial Tick Count (ms)

Start Frequency

Stop Frequency

dBrA Unit
3

Final Tick Count

Total Sweep Time

1000.0

Analog Generator VI control panel and block diagram.

Multitone Analyzer VI control panel and block diagram.