

NI Sound Power Plus

NI Sound Power Plus

Application Features

- Real-time, third-octave analysis from 25 Hz to 20 kHz
- Multichannel type 1 real-time analyzer, 800 line FFT with zoom
- 12,800 line post process FFT with prominent tone analysis
- Configurations for ISO 7779 and other free-field sound power standards
- Microphone calibration and position configuration setup routines included
- Parallelepiped, hemispherical, spherical, cylindrical, and custom measurement surfaces
- Plug-in multiplexer drivers

Application Benefits

- Ready-to-run application with no programming required
- Source code available to develop custom functions
- Comprehensive documentation
- Automated calibration routine for multiple microphones
- Tabular and graphical display of test data and test results
- Three ways to export data easily into Microsoft Excel
- Test Reporting – example templates provided. Easy to customize using Microsoft Excel



Overview

National Instruments Sound Power Plus is a ready-to-run application for multichannel measurement of product noise emission testing in free-field test environments. It incorporates PC-based instruments with LabVIEW™-based application code to provide sound power and sound pressure measurements. NI Sound Power Plus is an ideal solution if you are performing ISO 7779 measurements and is also useful in a wide range of other acoustic applications. With NI Sound Power Plus, you can begin acquiring data immediately in your acoustic lab.

Supported Standards

NI Sound Power Plus handles the following standards:

- Sound power measurement in free-field test environments with configuration flexibility to meet requirements of ISO 7779, ECMA-74, ISO 3744, and ISO 3745
- Sound pressure-level measurements in accordance with ISO 7779 and ECMA-74
- Prominent tone analysis via tone-to-noise ratio method as defined in ISO 7779 and ECMA-74. NI Sound Power Plus software includes dual-tone analysis
- Prominent tone analysis via prominence ratio method as defined in ANSI S1.13 and ECMA-74
- Impulsive noise analysis as defined in ISO 7779 and ECMA-74

Typical System Configuration

A typical configuration consists of the following products, which you must purchase separately.

- Pentium PC running Microsoft Windows 2000/NT/9x with a minimum of 64 MB RAM and 50 MB hard disk space
- NI Sound Power Plus software*
- PCI expansion chassis or industrial computer with sufficient PCI slots
- LabVIEW Professional Development System*[†]
- LabVIEW Sound and Vibration Toolset*[†]

- NI 455x dynamic signal acquisition (DSA) instrument boards*
- NI DSA Real-Time Octave Analysis software*
- GPIB board – optional*
- Microsoft Excel †
- Microphone(s)
- Multiplexer(s) – optional

*products offered by National Instruments

† required for source code execution or modification

NI Sound Power Plus Software

The software consists of a stand-alone application targeted to the measurements of product noise emissions in free-field test environments. With the LabVIEW Professional Development System and the LabVIEW Sound and Vibration Toolset, you can make changes to the source code and recompile it into a new executable. Both the executable and the source code offer the same functionality.

Instrument and Measurement Configuration

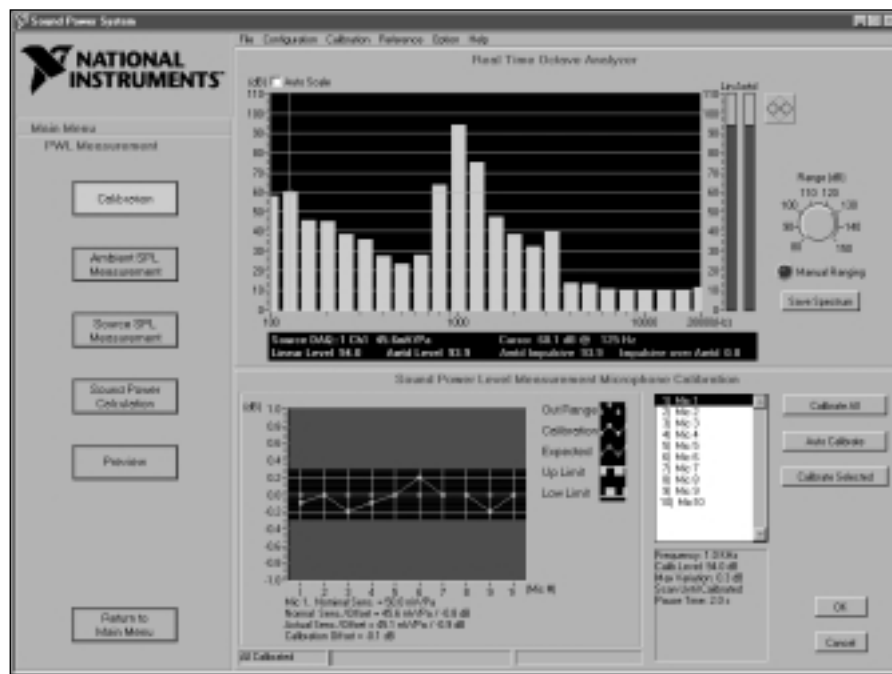
With menu-based configuration routines, you can configure a virtual acoustic instrument and set up measurement parameters to meet your specific needs. With flexible configuration, the software can conduct measurements with just a few channels, or you can maximize throughput with high-channel count systems.

Microphone Calibration

The software provides a calibration routine that automates the process of calibrating several microphones and provides tools to assist you in maintaining control over the calibration process. With audio feedback, a single technician can calibrate multiple microphones.

The software tracks calibration parameters for microphone sensitivity and frequency response. Using a built-in control chart, the software indicates out-of-range conditions before they have a chance to affect the measurement data.

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The microphone calibration front panel displays calibration results, both graphically and numerically.

Measurements

The core functionality of the software is the measurement of sound power and sound pressure levels. The automated routine samples the system microphones, records the data, and conducts the analysis to determine 1/3 octave band, A-weighted, and linear levels over a user-selectable frequency range of 25 Hz to 20 kHz. The sound pressure level routine includes sound quality analysis for impulsive noise and prominent tones. The prominent tone analysis routine conducts analysis of potential tones by both the tone-to-noise and prominence ratio methods. The software uses a powerful 12,800 line fast Fourier transform (FFT) to speed up the analysis by eliminating the need for constantly zooming the FFT. With NI Sound Power Plus, you can analyze two tones within a single critical band.

Multichannel Real-Time Analyzer

With NI Sound Power Plus, you can use the multichannel, real-time analyzer independently of the sound power application as a general-purpose instrument. With a powerful export routine, you can place data onto Excel worksheet templates as it is acquired; so that you can automate other acoustical measurements.

Test Reporting and Documentation

NI Sound Power Plus software provides an extensive routine for documenting the device-under-test. We provide forms for test information, source documentation, and recording of meteorological conditions. With six user-definable fields, you can document custom test parameters. All test documentation is exported along with the test data into a Microsoft Excel spreadsheet. Therefore, you can use Microsoft Excel and other Microsoft Office tools to generate custom reports based on the data. The software also provides a standard certificate-style report template as an example.

DSA Instrument Board

The NI 4551 and NI 4552 DSA boards are high-performance, high-accuracy, computer-based dynamic signal analyzers for the PCI bus.

The measurement capabilities of these DSA boards include:

- Two channels (20 kHz) or four channels (10 kHz) per board
- 95 kHz DSA with real-time zoom
- FFT resolution – 100, 200, 400, 800, 1,600 lines
- Time and measurement capture to disk
- Overload detection
- 90 dB dynamic range
- 16-bit analog-to-digital converter (ADC)
- Analog and digital triggering
- Input gain adjustable for over a 70 dB range

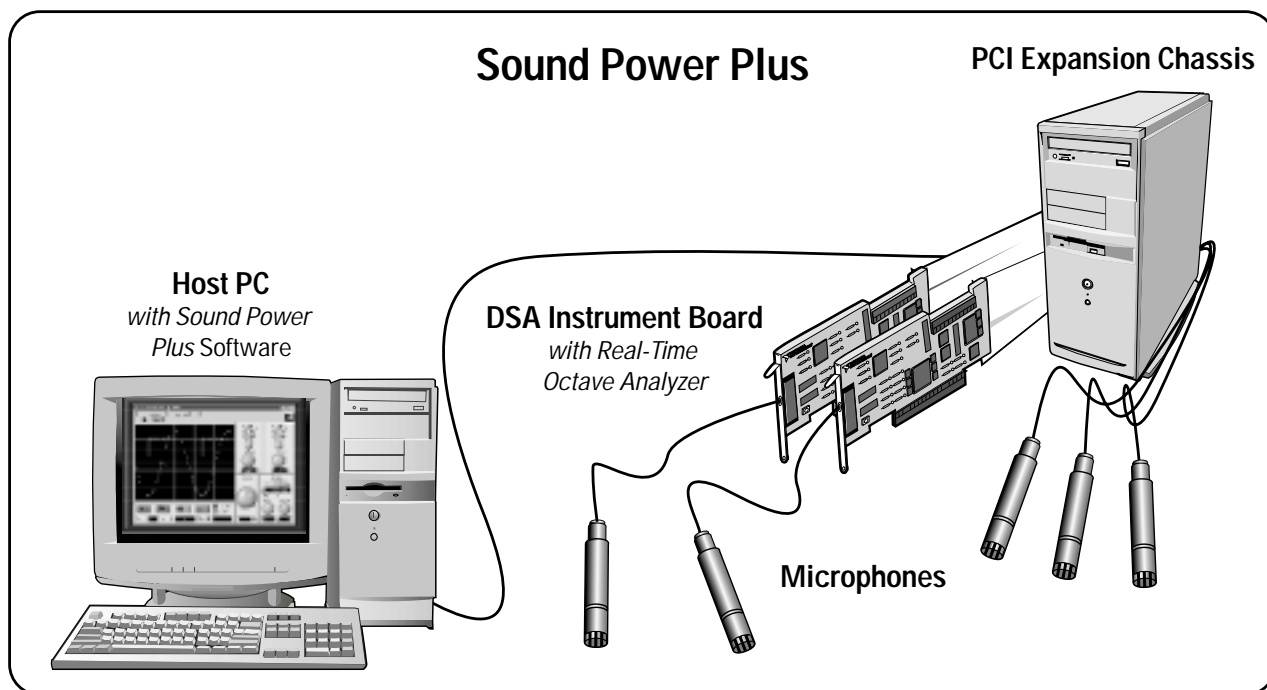
The NI 4551 DSA board provides two input channels and two output channels with a frequency range of 20 kHz maximum. The NI 4552 DSA board provides four input channels with a frequency range of 10 kHz maximum or two input channels with a frequency range of 20 kHz maximum.

Real-Time Octave Analysis Software

The Real-Time Octave Analysis software is add-on software for use with NI-455x DSA boards for fractional octave and sound-level measurements. Following is a list of features included in the analysis software:

- 1/1, 1/3, 1/12 octave analysis
- 1/3-octave analysis from 25 Hz to 20 kHz
- Equivalent, continuous sound pressure level (Leq)
- Exponential averaged sound pressure level
- A-weighted, impulsive sound pressure level
- Type 1 compliant
- A, B, C weighting

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Sound Power System Configuration

LabVIEW Professional Development System

The LabVIEW Professional Development System (PDS) includes the LabVIEW Full Development System (FDS) plus the LabVIEW Application Builder, for building stand-alone executables and creating distribution kits. The LabVIEW PDS also furnishes source code control tools and offers utilities for quantitatively measuring the complexity of your applications.

LabVIEW Sound and Vibration Toolset

The Sound and Vibration Toolset extends LabVIEW with functions and indicators for handling engineering units, calibration, frequency analysis, transient analysis, sound-level measurements, and fractional-octave analysis. With this toolset, you have a customizable software foundation with which to build custom sound and vibration applications.

Multiplexer

NI Sound Power Plus handles the Bruel & Kjaer Type 2811 and Type 2822 multiplexers, the Larson-Davis Model 2210 multiplexer, and the Norsonic 834. You need a GPIB (IEEE-488) board to control the Bruel & Kjaer and the Norsonic multiplexer.

PCI-GPIB

The PCI-GPIB is a high-performance Plug and Play IEEE 488 interface for personal computers and workstations equipped with PCI expansion slots.

Microphone

You can use any microphone(s) designed for sound level measurements in accordance with IEC Type 1 with NI Sound Power Plus.

Ordering Information NI Sound Power Plus

Step 1. Select your software application package.

Sound Power Plus Software	778491-03
Sound Power Plus executable and source code software LabVIEW	
Professional Development System*	776678-03
Sound and Vibration Toolset*	777970-03
Real-time Octave Analysis Software**	777728-01

*Required for the Sound Power Developer Software

**Only 1 needed per development computer

Step 2. Select your hardware.

NI 4551 DSA board for PCI	777726-01
NI 4552 DSA board for PCI	777727-01
NI-488.2M™ for Windows 2000/NT/9x and 2 m GPIB cable***	777158-51

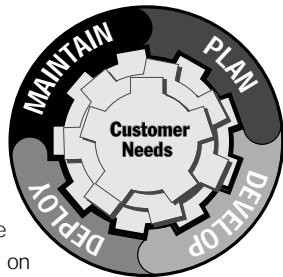
***Only required if you are using a GPIB-controlled multiplexer.

NI Services and Support

Worldwide Technical Support and Services

National Instruments strives to provide you with superior technical assistance worldwide. As a registered user of National Instruments products, you are entitled to our extensive online technical support resources, located on our Web site at ni.com/support Our technical

support resources include comprehensive KnowledgeBase, troubleshooting wizards, example programs database, and driver and updates library. Standard technical support gives you direct access to our Applications Engineers to help you get up and running with your National Instruments products. For your expanded support needs, we also offer a variety of fee-based support services including priority access to product specialist, software maintenance, and on-site startup assistance.



NI Sound Power Plus Services and Support

When you purchase Sound Power Plus software, you must purchase a fee-based contract for telephone support. The software includes FREE one-year telephone support for the installation and functioning of National Instruments hardware products.

Hardware and Software Services

To ensure that your application takes advantage of the latest developments in measurement and automation, we offer fee-based hardware and software support and maintenance programs to keep your products up-to-date with the latest features and minimize downtime. These programs include extended services such as warranties, calibration, and software subscription programs.

Installation and Training

Two-day, on-site installation and training is available in the U.S. and Canada. This includes installation of plug-in board hardware and application software, and connection to multiplexer and microphones. The training includes a tutorial of the application software from configuration to report generation. For customers outside the U.S. and Canada, please contact your local National Instruments representative for information on pricing and availability.

National Instruments strives to provide you with quality technical assistance worldwide. We currently offer electronic technical support along with our technical support centers staffed by Applications Engineers.

Access information from our Web site at ni.com Our FTP site is dedicated to 24-hour support, with a collection of files and documents to answer your questions. Log onto our Internet host at ftp.natinst.com

Warranty

All National Instruments data acquisition, computer-based instrument, VXIbus, and MXI™ bus products are covered by a one-year warranty. GPIB hardware products are covered by a two-year warranty from the date of shipment. The warranty covers board failures, components, cables, connectors, and switches, but does not cover faults caused by misuse. The owner may return a failed assembly to National Instruments for repair during the warranty period. Extended warranties are available at an additional charge.

Information furnished by National Instruments is believed to be accurate and reliable. National Instruments reserves the right to change product specifications without notice.

Customer Education

National Instruments is committed to offering training that permits you to get the best possible use of your National Instruments products and minimize startup time. We provide alternatives to meet your training needs from self-paced tutorials and interactive CDs to instructor-led courses. We offer courses that help you take advantage of your measurement and automation system. These courses are available in several programming environments. Topics include LabVIEW and NI hardware products.

Alliance Program

The National Instruments Alliance Program offers benefits to users, integrators, and developers. Users who have time constraints can rely on a vast network of Alliance Program members to provide consulting or integration services. National Instruments offers Alliance Program members a valuable portfolio of sales, marketing, and technical benefits designed to give tangible results. For more information on Alliance Program membership, please visit ni.com/alliance



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