SoundPro® SE & DL Series with Option-1

Acoustic Spectral Curves and Speech Intelligibility

The SoundPro SE & DL Models Option -1, when equipped with Acoustic Spectral Curves and Speech Intelligibility firmware, display and record a selection of spectral curves for use in room and building acoustics measurements and to make assessments of speech intelligibility.

Acoustic Spectral Curves are used for a variety of purposes including assessing the "quality of sound environment" in a classroom, hospital, or other facility. Evaluation and certification of the background noise levels caused by heating, ventilating, and air conditioning equipment are another use of these curves along with other industrial and noise control engineering applications.

Captured Curves

When equipped with this option, the SoundPro offers a variety of measurement solutions. First, the operator may use the **"Captured Curves Mode" (CAP)**. This allows the user to make a measurement including 1/1 or 1/3 octave band frequency distribution and save or "capture" the spectral curve; this "snapshot" can be displayed in QuestSuite Professional II as a baseline or reference curve. A new measurement is then made and superimposed over the captured baseline curve to illustrate octave band frequency deviations from the original distribution creating a user defined criteria curve. This is useful in product or process comparisons, job task risk assessments, environmental investigations and many other applications.

Types of Acoustic Curves

Additionally, this option offers a number of "Criterion Curves" for room and building acoustic evaluations and noise control engineering. These include the following:

- **Noise Criterion Curves (NC)** for HVAC room or building acoustic comparisons.
- **Preferred Noise Criterion Curves (PNC)** for an updated NC method.
- **Room Criterion Curves (RC)** which calculate a numerical reference and are based on speech interference and indicates interference such as hissing, rumbling, or vibration.
- **Balanced Noise Criterion Curves (NCB)** which are one of the newer incarnations of criterion curves also indicating interference from rumble, rattle, and hiss.
- **Noise Rating Curves (NR)** which are used in Europe, Australia, and other country's room and building acoustic measurements, HVAC studies, machine noise evaluations, and also for some community noise enforcement applications.

Audiometric Background Curves

- **Audiometric Test Room Background Sound Level Curves (OSHA)** which compares the ambient noise readings to the maximum permissible ambient noise levels (MPANLs) at 500 Hz, 1K, 2K, 4K, and 8K Hz as specified by the OSHA Hearing Conservation Amendment (1983).
- **Audiometric Test Room Background Sound Level Curves (ANSI)** which compares the ambient noise to selectable criterions specified in ANSI S3.1-1999 and allows for a variety of audiometric earphones using 1/1 and 1/3 octave band analysis.

Speech Intelligibility

Option-1 also includes the firmware which allows testing and evaluation of the intelligibility of speech, particularly through public address (PA) and mass notification systems (MNS). This is accomplished by using a complex analysis of the frequency spectrum of the speech being broadcast and comparing it to an installed model of speech signals based on the Speech Transmission Index (STI) and human voice modulations over octave bands. The STI-PA method used in the SoundPro is in accordance with IEC 60268-16 – Objective rating of speech intelligibility by speech transmission index; the NFPA National Fire Alarm Code (NFPA 72); IEC 60849 –Sound Systems for Emergency Purposes; BS 5839-8 Fire Detection and Alarm Systems for Buildings; and the U.S. DOD United Facilities Criteria –UFC 4021-01.

Features

Explanation
• **Captured Curves for display and logging**
• **Supports Criterion Curve Families NC, PNC, RC, NCB, NR, Audiometric Background Curves (ANSI S3.1 & OSHA)**
• **Capability to measure Speech Intelligibility* in quick 15 second intervals**
• **Interfaces with QuestSuite® Professional II Software**

** Note: see Option-2 for complete kit.*

Specifications for Curves

Curve Type	Explanation	Measurement
Noise Criterion (NC) Curves	NC-15 through NC-70	63-8000Hz
Preferred Noise Criterion (PNC) Curves	PNC-15 through PNC-65	31.5-8000Hz
Room Criterion (RC) Curves	RC-0 through RC-65	16Hz-4000Hz
Balanced Noise Criterion (NCB) Curves	NCB-10 through NCB-65	16Hz-8000Hz
Noise Rating (NR) Curves	NR-0 through NR-130	31.5-8000Hz
Audiometric Booth Curves (ANSI S3.1)	1/1 or 1/3 Octaves	125-8000Hz
Audiometric Booth Curves (OSHA)	1/1 Octaves	500-8000Hz

Specifications for Speech Intelligibility

Standards:	• **IEC 60849 Sound Systems For Emergency Purposes** • **NFPA 72 National Fire Alarm Code** • **BS 5839-8 Fire Detection and Alarm Systems for Buildings** • **UFC 4-021-01 United Facilities Criteria (UFC): Mass Notification Systems** • **IEC 60268-16 Objective rating of speech intelligibility by speech transmission index**
Available Measurements:	• **STI-PA, CIS, A-weighted Broadband SPL, Leq and Z-weighted SPL, Leq for full octave bands**
Weighting:	• **A, Flat**
Special Functions:	• **Selectable gender specific weighting** • **Post Processing via the meter or QuestSuite® Professional II** • **4 stored background noise profiles for use with post processing**

*** Ordering Information - Please specify SoundPro® SE or DL model with Option-1*

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