SCS-EUROACOUSTIC







SCS 8400 series Sound Powerr software

Typical Applications

Acoustic Power determination of:

- Earth moving machines
- Household appliances
- Electrical motors and other components
- Business machines

ACOUSTIC POWER MEASUREMENT

Standards:

EN 60804 class 1 precision, EN 61260 1/3 octave filters ISO 3741, 2, 3, 4, 5, 6, 7 - ISO 6393, 4, 5, 6 ISO 11094 - ISO 7779 - 2000/14/CE

Measurements types:

Scan measurement with Multiplexing

Parallel Measurements with Multichannels Real Time Analyzers Additional parameters: Meteo data, RPM transmission, Speed and position tracking, Ear driver dBA measurement, Wireless LAN for single operator use

Platforms Supported:

MESA Real Time Analyzer DSplus Sound Level Meters and Real Time Analyzers with standard Digital interfaces Multichannels Front-end with standard interfaces MESA Mux 10A Multiplexer 01dB Solo, Symphonie, Harmonie - dBENV software (DDE option) 01dB Orchestra - dBFA software RION NL series w/out MUX 10A Multiplexer NORSONIC 118 w/out MUX 10A Multiplexer B&K 2240, 2250, 2260 w/out MUX 10A Multiplexer NI Data acquisition boards



SCS 8400 series Sound Powerr software



Mesa DSPlus Real Time Analyzer

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SCS 8400 Acoustic Power Software

The SCS 8400 software system is a "state of the art" for easy and precise Acoustic Power Determination supporting all relevant standards and market available Hardware Platforms, the software calculates Sound Power level according to ISO 3744, ISO 3745 and directive 2000/14/CE (dedicated to grass cutter machine). The European (EU) directive 2000/14/CE is a part of ISO 3746. ISO 7779 is also supported (including multiple tone search, Impulse index detect and the measurement of sound pressure level at defined operator and bystander position).

The PC software has a unique user interface and it allows the user to graphically select the measurement positions, input the surface and other fixed parameters, perform autorange and checks for overloads. Data are transferred to the PC through high speed link where the software performs all necessary calculation for linear averaging, corrections and LWA.

The resulting Power spectrum is displayed fully annotated while Intermediate spectra are available as an ASCII file for user purposes or to trace Time Histories on each Frequency band as requested by most recent standards. A wizard is also provided which guides the user step by step through all test setup, including calibration and machine identification in the internal data base.

SCS 9004 Hardware: DSPlus

All ISO standards requirements have been taken into consideration for the development of the DS+2 offering up to 12 channels 1/3 octaves Real Time processing using Digital FIlters, fulfilling EN 61260 characteristics.

Extremenly simple and reliable either for Laboratory MesaE testing or Field use, the "DS+2" implement Motorola 56303 DSP.

The DS+2 accept in Input a wide choice of transducers (ICP included), it also has a high input dynamic and frequency range, high precision and output stability, Remote (RS-232) programming.

SCS 9004 Hardware: Multiplexer

Virtually any Real Time Sound Analyzer can be connected to the MESA MUX/10A Multiplexer to form a powerfull system for Acoustic Power determination. Measurement channels are scanned sequentially and signal are analyzed by the connected SLM or RT Analyzer.

The MESA MUX/10A Multiplexer is compatible with a wide choice of transducers and Data Acquisition Systems and has a feature of an extremely high input dynamic and frequency range, high precision and output stability, manual and Remote (RS-232) programming. Also available in a 4 channels version.





Mesa MUX10A Multiplexer



Acoustic Power Determination

SCS 9004

International Standards

ISO Standards 374x SERIES

The ISO Standard series 374x for the Acoustic Power determination LWA in 1/1 or 1/3 octave bands requires a minimum of 9 measurement points distributed around the noise source to be certified.

- With the SCS 9004 system the Acoustic Power determination is as easy as a Sound Level measurement:
 - 1) just plug in the necessary number of microphones to the MUX 10A multiplexer, connect it to a Real Time Analyzer like SIP95RT, Symphonie, Harmonie;
 - or you might want to perform "parallel measurements" using the DS+2 Real Time Analyzer (up to 12 channels);
 - 2) connect the serial ports to your PC,
 - 3) boot it and press Start.

Autoranging, correction limits, calculation, etc. are not a problem to you anymore, just leave it to the system and "please" look in the lower part of the screen there it is the LWA value.

ISO Standards 699x Series and 2000/14/CE

The ISO standards for moving machines requires a minimum of 6 microphones positions and describes procedures for LWA determination mainly in free field conditions and for machines actually moving while working. The Speed and the Position of the machines during the Noise measurements are than becoming very usefull for better understanding of noise sources and diagnostic. Measurements procedures are very similar to the ones described above, using specific wizzard, in additin are available some interesting options:

- Ear Driver LpA measurement simultaneous to LWA measurement
- RPM measurement and recording with telemetry transmission Noise measurements synchronized to Vehicle position

Acoustic Power....

as easy as you like it



SCS 8400 typical setup

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SCS 8400 Data Base

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Mesa DSPlus Technical Data

Real time spectrum analyser in 1/3 octaves bands Channel number: up to 12 Input sensitivity reference: . 50mV/94dB Accuracy class: Input frequency range: 25Hz - 20kHz Signal conditioner dynamic range: >90 dB 1/3 octave dynamic range: 70dB Lin, A, C Frequency weighting: Signal conditioner output range: 7.0Vpk Signal conditioner gain: -20dB to +40 dB in 10 dB step Over range indicator: 7.0Vpk / -10dB / -20dB Microphone polarisation voltage: 0V, 200V Preamplifier power supply: ±12Vdc / 3.5mA(ICP) Gen. white noise crest factor: >3.3 Gen. white noise bandwidth (-3dB):10Hz - 40kHz Gen. band (25Hz - 20kHz): ±0.3dB Gen. Pink noise slope: -3dB/oct. Gen. Output level (White-Pink): 0dB re 1VRMS Gen. Ouput attenuation: 0dB; -10dB; -20dB Gen. Ouput impedance: 50ohm Auxiliary input Coupling: DC, optoisolated Auxiliary Input HI level: 5Vdc to 30Vdc Auxiliary Input LO level: < 2Vdc TTL/CMOS; NPN; PNP; O.C. Auxiliary Source type: Auxiliary Input impedance: >6kohm Start/Stop/Trigger function: software selectable Source power supply: 12.6Vdc - 100mA max Power supply: 10.5 - 15Vdc / 3A max Dimension 450mmW - 300mmD - 105mmH Weight: 1.2 kg max

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Your Local <u>Representative:</u>

ISO-7779: IMPULSE CONTENT AND PURE TONE DETECTION

Short-duration high-amplitude noise emissions are measured under the same modes and conditions as the A-weighted sound pressure levels; the impulse parameter DLI is computed as the difference between the Aweighted impulse Lp and the A-weighted Lp. For pure tone detection, on Autospectrum with FFT lines resolution is measured, and the Search for discrete tone procedure is applied.

The user has just to set cursor positions on the displayed graph

The program performs the calculation for: F_0 : Central frequency of the tone (between

- F1 and F2)
- F₁ : Frequency at Left cursor position
- F₂ : Frequency at Right cursor position

 ΔF : Frequency range from cursor F1 to cur-

sor F2 Lt : Sound pressure level (dB) of the discrete tone

 F_1c : Left cursor that defines the critical bandwidth area

 $F_{2}c$: Right cursor that defines the critical bandwidth area

 Δ Fc : Size of the critical bandwidth

Ln : Sound pressure level (dB) of the masking noise, exclusive of the tone, contained within the critical band (F1c-F2c) centered at the frequency of the tone (F0)

Lt-Ln : Tone-to-noise ratio (dB)

SCS 8400 - AUTO-CALIBRATION

The Sound Power software includes both "Standard calibration" or "Automatic calibration".

While in Standard calibration mode each channel shall be fitted with an Acoustic Calibrator; it is necessary to select the corresponding channel in the software, in the Automatic calibration method, the user shall select the channels he wants to calibrate within the 'Available channels' list and than just fit the calibrator to each individual microphone.

When the program detects the calibrator signal (according to the validation parameters) it calculates the new correction factor. An audio message is played before and after each channel calibration. Automatic operation is based on the following:

"Validation Lp level" is the minimum value (dB) to assume a calibrator signal, at the calibrator frequency, it has been detected;

"<u>Channel validation time</u>" is the time value (s) that the program checks for stable incoming signal. If the incoming signal is stable this means that: "<u>Validation</u>

range" is the value that indicate the range [Validation SPL level -Validation range / Validation SPL level + Validation range] the program uses to identify a stable incoming signal. If the incoming

program uses to identify a stable incoming signal. If the incoming signal is inside the range [Validation SPL level - Validation range / Validation SPL level + Validation range] the incoming signal is stable.



euroAcoustic



Discrete tones search.