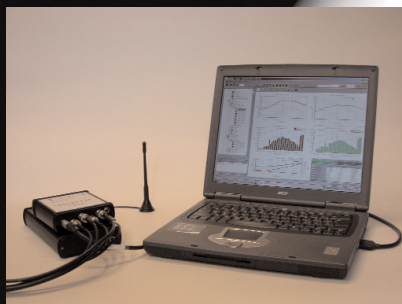


NOISE & VIBRATION DIAGNOSTIC



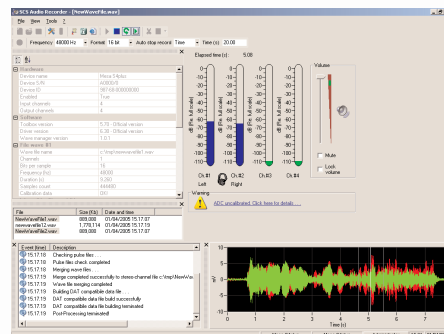
SCS 9010 typical setup



MESA H46: Front End



MESA S4 plus: 24 bits - 4 channels - PCMCIA card



SCS 8610 Audio Recorder software

MESA™ is a Registered Trade-Mark of SCS Controlli e Sistemi

Typical Applications

- Signals Recording and Playback
- Time and Frequency Editing
- Filtering HP, LP, BP, Notch
- Equalization and masking effects
- Environmental Noise study and Monitoring
- Noisiness evaluation and Noise control simulation
- FFT Analisi, Waterfall and sonogram
- Transient analysis
- 1/n analysis
- Psycho-acoustic, Loudness
- Structural analysis
- Noise paths analysis
- Order analysis and Run-up/down
- Quality control

The "first" aim of performing Noise and Vibration Analysis is normally "to check" for Noise target and Standard and "to control" possibly in case of exceeding levels, i.e. the Problem Solving approach.

Two points can be considered on:

1) Diagnostic would include Level, FFT or 1/n octaves, plus additionally time-frequency domain advanced functions, and everything can be done in Real Time or in Post processing. However, the Real Time characteristic does not have common sense all the time and do not fully justify the costs for systems having high specifications.

For instance, one would consider to apply several analysis techniques to solve the problem and he should not supposed to repeat the test as many times as necessary, once the signals are recorded than everything can be done on them as Post processing.

2) A Noise problem is very often generated by a complex Vibration phenomena, which needs some skill to be identified, furthermore a Noise problem is it so because we listen to it and we judged that there is a problem!

So than, the playback of recorded signals performed during the analysis it represent something more fundamental for the Noise Problem Solving approach.

Vehicles On-board Noise & Vibration

Vehicles noise is one of the key application field for the SCS 9010 system. Portability and "immediate" easy to use are the strong features to perform comparison test, diagnostic procedures, Quality control, Sources identification, etc.

4 audio channels and 2 rpm signals can be simultaneously recorded, alternatively a binaural recording plus 2 accelerometers plus 2 rpm, or any other combination becoming necessary.



NV Diagnostic and Quality control on vehicles

Once signals are recorded, it is possible to listen to them or perform automatic analysis giving a "Go - Not Go" results with graphical reporting.

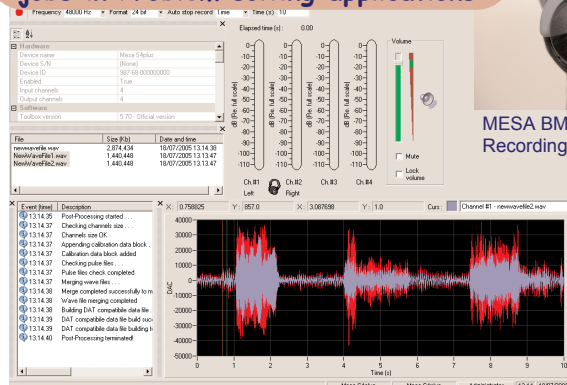
Noise & Vibration Diagnostic

SCS 9010

The SCS 9010 system it has been conceived after more than 10 years in dealing with Noise Problem Solving and upon today's available high-end audio recording devices.

It is very compact and consist of a PCMCIA card PC-board (featuring 4 channels - 24 bits) and an instrumented Front-End to which it can be possible to connect various type of ICP transducers, tachometer probes and a Binaural audio recording devices. The Audio Recorder software SCS 8610 allows direct HD recording with calibration and file info header, with several data format including WAV and DAT, all synchronous and with 24 bits resolution. The software handles also the transducers and files data-base system.

A very special recorder for great jobs in Problem solving applications

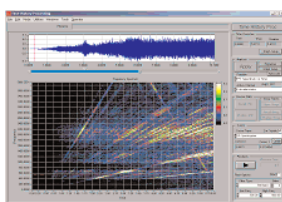


MESA BMH: Binaural Recording Headphone

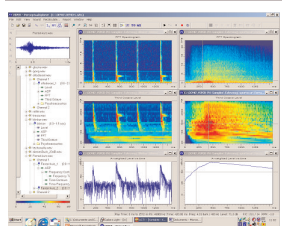
Application Software available

A large selection of market available softwares can actually read files recorded with SCS 9010 systems and SCS 8610 Audio Recorder software, including the export of the header information.

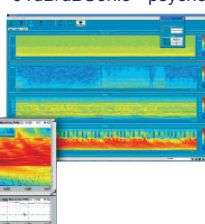
SCS 8610 is fully compatible⁽¹⁾ with SCS application softwares:



SCS 8200 - integral part of SCS 9002 Quality control system
SCS 8410 - integral part of SCS 9004 Sound Power system
SCS DaDisp - special version of DaDisp (DSP development Corporation) with SPL integrated programming
NI-LabView - from National Instruments



SCS 8610 directly handle data exchange⁽¹⁾ with softwares:
01dB/dBFA - application suite for noise and vibration analysis
01dB/dBSonic - psycho acoustic analysis



Head Acoustic Artemis - application suite for noise and vibration analysis

⁽¹⁾ Others available on request

SCS 9010 - Technical Data

Front-End MESA™ H46

4 channels Conditioner for Binaural Headphone, microphones, Accelerometers, RPM probe, etc.
2 Input/Output channels dedicated for direct connection of Mesa BMH Recording/Playback Headphone
4 channels with standard ICP powering, selectable ICP Gain converter: 0dBV ±0.5dB
Frequency range: 1.6Hz - 20kHz
Noise in band: <-90dB
Dynamic range: >100dB
Max output voltage: ±5Vpk
ICP current: 3.6mA cost. / 14Vdc
Headphone Input gain: 0dB (direct)
Headphone Auxiliary output: 0dB buffered (max 160ohm)
4 channels output: 2 buffered + 2 unbuffered
RPM input: 2 independent channels
RPM range: from 0 to 10000 (max. 1kHz input frequency)
S/PDIF: Input/Output (unbuffered)
Power supply: int. 9V battery or ext. 9-12Vdc
Dimensions: 107 x 117mm x 34mm
Weight: 400g

MESA™ S4plus PCMCIA 24 bits A/D converter

4 analogic channels
4 balanced I/O channels
Frequency range: 4Hz - 20kHz
A/D and D/A conversion: 24 bit
Audio standard sampling up to 48kHz, simultaneous on 4 channels
S/N ratio: >93dB
THD+N distortion: <-88dB (0.004%)
Channels crosstalk: <-90dB
Channel input amplitude: ±4Vpk
Input impedance: 10kohm
Output impedance: 100ohm
Input gain: selectable up to +48dB
Output gain: selectable up to -91.5dB
S/PDIF line: 1 x 24 bit digital I/O

Audio Recorder Software SCS8610

Audio Recorder & Playback Software
Support for M-S4plus (recording & playback) and pc audio boards (playback)
Synchronous recording up to 4 audio channels + 2 RPM channels
Files in WAVE format selectable as: single (mono), dual (stereo) or multichannel w/out RPM data, file header (data properties)
Start/Stop recording: manual or time-triggered
Sample rate: 44,1 kHz o 48 kHz
Sample resolution: 16 o 24 bit
Gain: 0 dB, +30 dB, +48 dB
Overload indicator
Bar-graph display during recording/playback (M-S4plus only)

Transducers

ICP standard Preamplifiers
Condenser Microphones 1/2" o 1/4"
ICP Accelerometers
Tacho probes TTL

Special accessories:

MESA™ BMH: Binaural Headphone and Microphone for Recording/Playback
Open air type electrodynamic transducers
Frequency range: 20Hz - 18kHz
Impedance: 160 ohm
Nominal microphones sensitivity: 10mV/Pa
Acoustic calibration: specific acoustic coupler for use of standard ACosutic calibrators 94-114 dB at 1 kHz, 1/2" coupling
Statica headphone pressure: about 1.6N
Weight: 110g

MESA™ H42:

ICP line converter and BMH adaptor
ICP gain: 0dBV ±0.5dB
Frequency range: 1Hz - 100kHz
Noise in band: <-90dB
Dynamic range: >100dB
Output signal: ±5Vpk
ICP current: 2.5 - 5mA constant, 14-28Vdc
M-BMH adaptor gain: 0dB (straight connection)
Dimensions: 15mm diam.- 118mm length.
Weight: 68g



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