

General technical specification of Soundbook

The following data refer to 4 (2) channel instruments

Basic device CF-18

| | |
|------------------|---|
| Processor | Centrino™ 900 MHz, 256 MB RAM |
| Display | 11" TFT XGA, convertible, Touchscreen |
| Storage medium | HD 40 Gbyte |
| Interfaces | 2xUSB, RS232, LAN, WLAN, Modem, Cardbus, VGA, GPRS and Bluetooth optionally available |
| Operating system | WindowsXP multi lingual |

Input channels 1-4 (1-2)

| | |
|------------------------|---|
| Resolution | 20 bit (level), 16 bit (sound recording) |
| Real-time bandwidth | 20 kHz (48 / 51.2 kHz sampling rate) |
| THD + noise | > 80 dB |
| Cross-talk attenuation | > 80 dB |
| Random noise | < 1.4 µV(A), < 2.2 µV(Z) @ 20 Hz ... 20 kHz |
| Sampling rates | 48 kHz / 51.2 kHz / 96 kHz |
| Decimation rates | 1, 2, 4, 8 ... 1024 (via DSP) |
| Anti-aliasing filter | 22.4 kHz |
| Max. input voltage | ± 10 Vpeak @ overmodulation reserve 1 dB |
| Amplification | -20 dB ... 40 dB in 10 dB steps |
| Overload detection | yes, also with out-of-band frequency |
| Phase mismatch | < 0.1° @ -20 dB, 20 Hz ... 20 kHz |
| Offset adjust | yes, automatically with self-calibration |
| Input filter | DC, AC 0.15 Hz, HP 10 Hz, LP 2 kHz |
| Channel cascading | possible, channels 1+2, channel 3+4 |
| Sensor power supply | microphone ± 14 V, + 200 V, ICP 2 mA |
| Support of IEEE1451.4 | yes |

Service channels 5-11

| | |
|---------------------------|---|
| Resolution/sampling rate | 12 bit / 100 Hz |
| Input voltage | 0 ... 15 V |
| Input impedance | 12 kOhm for channels 5-9, 2.5 kOhm for channels 10 / 11 |
| Tacho mode channels 10/11 | Input frequency 1 / 60 Hz ... 1 MHz @ TTL level |
| Digital input mode 10/11 | Sampling frequency: 16 x sampling rate of channels 1-4 |

Output channels 1-4 (1-2)

| | |
|---------------------|--------------------------------|
| Sampling rates | 48 kHz / 51.2 kHz / 96 kHz |
| Bandwidth | DC ... 20 kHz |
| Max. output voltage | 3.16 Vpeak |
| Attenuation | +10 dB ... -50 dB in 1dB steps |

AES3 interface (+option)

| | |
|-------------------------|--|
| Digital input (stereo) | 24 / 16 bit with sample rate converter |
| Digital output (stereo) | 24 / 16 bit |

Physical characteristics

| | |
|-----------------------|---|
| Dimensions | 280 mm x 220 mm x 65 mm |
| Weight | 3100 g |
| Battery | CF-VZSU30U Lithium Ion battery pack, capacity 4 h |
| External power supply | 100 ... 240 V AC with CF-AA1623A adapter |

Environmental conditions

| | |
|--------------------|---------------------------------------|
| Protection rating | IP54 |
| Shock resistance | according to MIL-STD 810E 514.4-16-10 |
| Humidity | 30 % ... 90 % |
| Temperature range | -10 °C ... +50 °C |
| Storage conditions | -20 °C ... +60 °C, max. 95 % humidity |

Electromagnetic compatibility

| | |
|----------|----------------------------------|
| Emission | conforming with EN50081-1 (1992) |
| Immision | conforming with EN50082-1 (1997) |

Trade marks and owners

Microsoft Corp.
Intel Corp.
Panasonic Corp.
Caesar Datensysteme GmbH
The MathWorks, Inc.
National Instruments Corp.

Windows XP™
Centrino™
Toughbook™
µREMUS™
MATLAB™
LabView™

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SINUS Messtechnik GmbH Soundbook™, Harmonie™, siNoise™, SAMURAI™

Soundbook™

Universal multi-channel acoustic measuring system

- Sound level measurement
- Frequency analysis
- Order-Tracking analysis
- Psychoacoustics analysis
- Modal analysis
- Operational vibration analysis
- Rotor balancing
- Building acoustics
- Pass-by measurements
- Human vibration measurement

SINUS
Messtechnik GmbH

Soundbook

Universal acoustic measuring system, sound level meter conforming to IEC standards, multi-channel real-time analyzer and personal computer suited for field applications



Soundbook is our versatile portable measuring system for sound and vibration measurements and general engineering measurements. It is fully compatible to our HARMONIE™ measuring system and is based on the CF-18 Toughbook™. With Soundbook you can work practically everywhere, in the office as well as outdoors. Heat, cold, rain, dust, vibration and rough handling hardly affect Soundbook.

With a weight of 3 kg (magnesium casing), the convertible, outdoor-readable XGA display, low power consumption and a wide range of interfaces, Soundbook combines the performance of a sophisticated measuring instrument with the possibilities of a PC. According to your requirements you can choose from variants with 2, 4 or 8 measuring channels and an additional AES3 digital interface.

Soundbook is especially suited for:

- Environmental and labor protection
- Engineering services
- Quality assurance
- Research and development

Soundbook works as an open device platform with various software packages. With our SAMURAI™ and siNoise™ software packages we offer sound level meters conforming to the IEC60651/IEC60804/IEC61672 standards with two or four channels. For the various requirements in acoustics a number of software packages for Soundbook (and HARMONIE) are available.

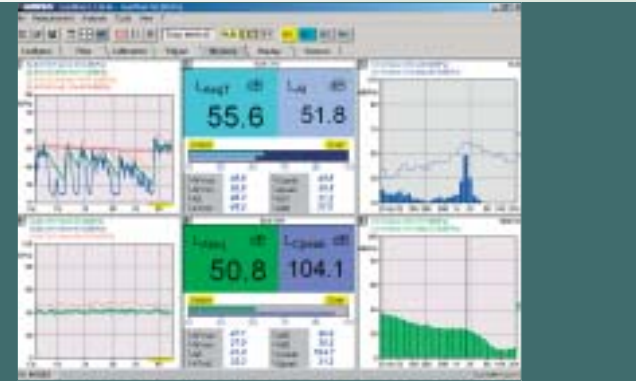
For the MATLAB® and LabView™ engineering software environments we offer drivers enabling the user to program Soundbook (and HARMONIE) efficiently and to integrate them into measuring systems.

Sound level meter

Four-channel sound level meter type 1 according to IEC60651, IEC60804, IEC 61672, Real-time third-octave analyzer (0.6 Hz ... 20 kHz), FFT analyzer, Sonogram and waterfall plot, Sound recording, Noise monitoring (application for PTB approval).

Sound intensity measurement

Sound intensity according to DIN ISO 9614 part 1 and 2 in real time, Sound power measurement, Real-time third-octave analyzer, Sound recording, Sound mapping in combination with digital photos.



Building acoustics

Airborne and impact sound transmission loss according to ISO 717, ISO 140, DIN 52210, Measurement of reverberation time by the noise and pulse methods, Real-time third-octave analyzer, Signal generator and Sound recording.

Frequency analyzer

Display of time signals, Real-time FFT analysis, Level recording, Sound recording, Tracking analysis, Psychoacoustics module.

Modal analysis and analysis of operational vibration

Geometry editor, SDOF, MDOF and Handfit, Structure modification, Determination of vibration modes in frequency and time, Visualization by geometry and animation modules.

Rotor balancing

Iterative balancing of rigid rotors with: Initial run, Taring run, Balance prediction, Balance protocol.

Tracking analysis

Measurement of vibration and speed signals, Evaluation and visualization of waveforms, tracking and octave spectra, 3D waterfall and Campbell plot, Sonogram display.

Passing-by noise according to ISO 362

4 dynamic and 7 static channels, Measurement and evaluation of sound pressure on indoor and outdoor microphones, Acquisition of distance, Acquisition of climatic data.

Human vibration measurement

Hand/arm vibration, Whole-body vibration, Comfort and health measurements, Additional sound level measurement.

Soundbook versions available:

| Soundbook version | „light“ | „quadro“ | „octav“ |
|------------------------------|--|--|------------------------------------|
| Order number | 974300.8 | 974301.6 | 974302.4 |
| mit AES3 interface + option: | 974303.2 | 974304.0 | 974305.7 |
| Acoustic inputs | 2 | 4 | 8 |
| Jack | LEM07 | LEM07 | ODU triax |
| DC...100 Hz inputs | 7 | 7 | - |
| Tacho inputs | 2 | 2 | 2 |
| Jack | LEM08 | LEM08 | LEM02 |
| Resolution | 20/16 Bit | 20/16 Bit | 16 Bit |
| Sampling rate | 44.1 kHz * 48.0 kHz 51.2 kHz 96.0 kHz | 44.1 kHz * 48.0 kHz 51.2 kHz 96.0 kHz | 44.1 kHz * 48.0 kHz 51.2 kHz |

*only on request

Soundbook is delivered with either German or American keyboard (WindowsXP multilingual).

Data for Soundbook with siNoise / SAMURAI as sound level meter

| | |
|-------------------------------|--|
| System | Soundbook with WindowsXP and siNoise version 1.1 |
| Microphones /preamplifiers | 4 x MK221/MV203, connection via LEM07 jack |
| Number of channels | 4 (2) measuring channels and 7 additional service channels |
| Accuracy | Type 1 according to IEC 60651 / IEC 60804 / IEC 61672-1 |
| Display | TFT display, rotatable |
| Measuring range | 20 dB(A) ... 140 dB(A) |
| Frequency weighting | A, C, Z (simultaneously) |
| Time weighting | Fast, Slow, Impulse, Peak (simultaneously) |
| Measurement functions | Lp, Lmin, Lmax, Leq, LE, LATm5, Ln (N=1-99%), measurement time, level recording, FFT and 1/3 octave analyzer from 0.6 Hz to 20 kHz, sound recording (simultaneous) |
| Self-interference level | for range 20 ... 90 dB: typically < 12 dB(A), <14 dB (C), <16 dB(Z) |
| Integration time | 1 s ... 24 h, manual Start/Stop |
| Sampling rate level / | 20, 60, 100, 200 or 1000 ms as desired third-octave values |
| Bandwidth for sound recording | 1.25, 2.5, 5, 10 or 20 kHz as desired |
| AC outputs | 4 x sound signal (Z) |