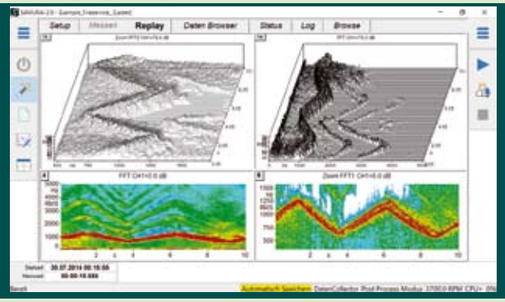
General technical specification of NoisePAD

The following data refers to the 4 channel version NoisePAD_4C.
All analyzer input and output connectors are NIM-CAMAC.

NoisePAD base device

Processor	Intel ATOM Cherrytrail, 4 GB RAM
Display	TFT 8" 1024 x 600
Storage medium	SSD 128 GByte
Interface	2x USB, WiFi, Bluetooth, 4G, GPS, HDMI, SD-Card, 2x camera
Operating system	Windows 10

industrial 8" Tablet PC



Input channels 1- 4

Resolution	24 bit
Real-time bandwidth	DC ... 20 kHz @ 4 channels
Dynamic range	110 dB
Random noise	> 1 µV(A), < 2 µV(Z) @ 0.1 Hz ... 40 kHz
Sample rates	51.2 kHz
Decimation	down to 200 Hz sample rate, selectable per channel
Anti-aliasing filter	yes
Max. input voltage	± 10 V peak
Amplification	0 dB, 20 dB
Overload detection	yes
Phase mismatch	< 0.1° @ 20 Hz ... 20 kHz
Offset adjust	yes, automatically with self-calibration
Input coupling	DC, AC 0.15 Hz, HP 10 Hz, LP 2 kHz
ICP power supply	2 mA switchable
Cable error detection	yes, with ICP sensors
Support of IEEE 1451.4	yes

Output channel

Resolution	24 bit
Real-time bandwidth	DC ... 20 kHz
Max. output voltage	± 3.16 Vpeak

Trigger channels

Trigger	2x Trigger / Tacho, trigger level setable via software

Physical characteristics

Dimensions	226 mm x 156 mm x 28 mm
Weight	950 g
Battery	Lithium Ion battery
Autonomy	up to 12 h
External power supply	5 VDC, 100 ... 240 VAC converter is included

Accessories

Keyboard	wireless Touchpad keyboard (German or English)
Cradle	optional, with LAN, 3x USB

Environmental conditions

Protection rating	IP67 (with closed protection cups)
Shock resistance	according to MIL-STD 810F
Humidity	30 % ... 90 %
Temperature range	-20 °C ... +50 °C
Storage conditions	-20 °C ... +60 °C, max. 95 % humidity

EMC

Emission	compliant to EN50081-1
Immision	compliant to EN50082-1

Trade marks and owners

Windows	Microsoft Corp.
NoisePAD, SAMURAI	SINUS Messtechnik GmbH
MATLAB	The MathWorks, Inc.
ME'scope VES	Vibrant Technology Inc.
ARTeMIS	Structural Vibrations Solution

Scope:

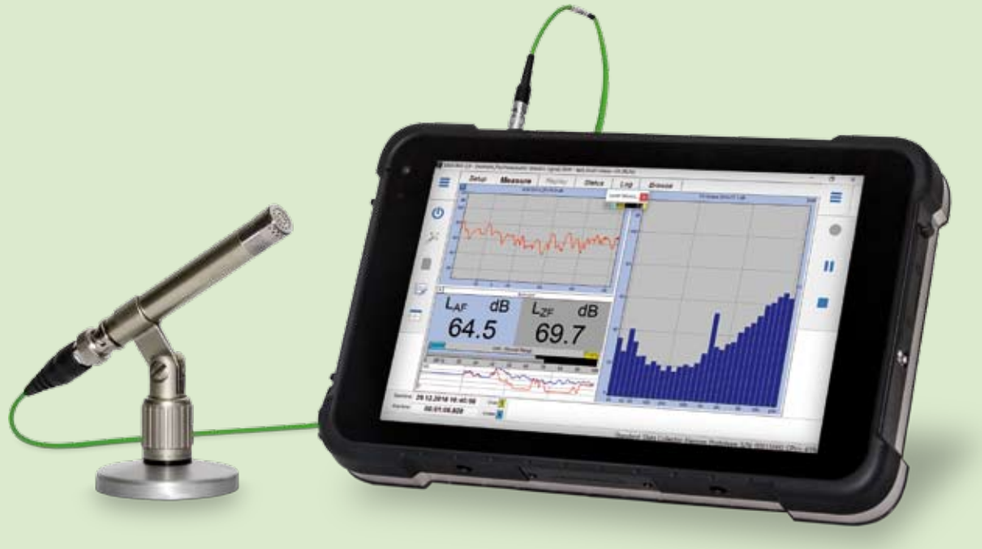
Microphones:	MM255, 46AE, WME980, GRAS41
Outdoor protector:	WS1, RA0153
Number of channels:	4 input channels
Sound level meter:	type 1 according to IEC 61672-1
1/3 octave analyzer:	type 1 according to IEC 61260
Displayed values:	SLM, 1/3 octaves, level recorder
Measuring range:	25 dB(A)...135 dB(A)
Frequency weighting:	A, C, Z (simultaneously)
Time weighting:	Fast, Slow, Impulse, Peak (simultaneously)
Measurement values:	L_{AF}, L_{Aeq}, L_{AS}, L_{AFmax}, L_{ZF}, L_{Atm5}, L_{E}, L_{AIeq}, L_{Cpeak}, L_{Zpeak}
Integration time:	freely adjustable via Start / Stop
TCP/IP-interface:	control of measurement via WiFi

PTB type approval under preparation

The new generation of mobile acoustics & vibration analyzer - compatible with the proven SAMURAI™ software package

NoisePAD™

NoisePAD + siNoise Version 3.0



- Sound level measurement
- Frequency analysis
- Signal recording
- Human vibration measurement
- Building acoustics
- Machine vibration measurement
- Modal analysis
- Order tracking analysis
- Rotor balancing

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SINUS Messtechnik GmbH

NoisePAD Acoustics & Vibration Analyzer

Ruggedized 4-channel PC-based instrument offers full connectivity.

Perfect for field and laboratory applications!

NoisePAD™ is our new class of 4-channel real-time analyzer for noise & vibration. This combination of a robust industrial 8" Tablet and a DSP-based analyzer meets the standard MIL 810.
All connectors are protected against water and dust with rubber protection cups. The NoisePAD allows you to work practically everywhere - in the office as well as outdoor with 12 h autonomy with onboard 4G, GPS and WiFi. Typical applications:

- Industrial safety and environmental protection
- Engineering services and maintenance
- Quality assurance
- Research and development.

With the bright TFT display, a very low power consumption and the full connectivity, the NoisePAD unites the performance of a high-quality measuring device with the possibilities of a modern Windows Tablet PC.

The flexible **SAMURAI™** software offers in the base version the raw data recorder and FFT analyzer per channel.
We offer many options and attractive software bundles:

- Acoustic Bundle
- Vibration bundle
- 5, 10 or all options bundle

So you may customize the functionality of your NoisePAD with any combination of SAMURAI software options on demand.
Individual user programming (e.g. MATLAB, Python, C++) and alternative software are also supported (ARTeMIS, ME'scopce).

SAMURAI 3.0 contains following basic features for each channel:

- **Base package**

Data recorder
Triggered storage of the time signal from DC up to 20 kHz with freely adjustable decimation option (down to 200 Hz) to reduce the data volume.
FFT analyzer
FFT analysis of 100 ... 25600 lines, each feature including freely adjustable averaging modes and storage intervals.

- **Acoustic Bundle includes additional:**

Sound level meter
Class 1 SLM according to IEC 61672-1 allowing simultaneous measurements with the frequency weightings A, C, Z and the time weightings Fast, Slow, Impulse. The SLM also supports the processing of percentiles, automatic impulse detection, measurement of Takt-maximal levels, impulsive and low-frequency characteristics as well as markers and triggers.
1/3 Octave analyzer
Real-time 1/3 & 1/1 octave analysis from center frequencies of 0.04 Hz ... 20 kHz (class 1 according to IEC 61260) with setable avaraging modes and storage intervals. In addition the sum levels are displayed and stored.
Reverberation time measurement
Measurement of the reverberation time in 1/3 octaves. Excitation types: interupted noise, impulse and sine-sweep.
The signal output is used to output the generated signals.

- **Vibration Bundle includes additional:**

Transfer FRF, Vibration Meter, ZOOM FFT and **Order Tracking**.

Software options for SAMURAI 3.0 :

Option: Post-Processing
This option offers a new analysis from stored or imported samples. The data browser allows a comfortable selection and editing of the time signals that will be analyzed in post process.

Option: Automation
Automatic comparison of the measured spectra with reference spectra and their management as well as automatic detection by the device and start of an application (e. g. to send an email).

Option: Building Acoustics (SAMBA)
The whole acoustic testing of airborne noise and impact sound insulation is organized according to ISO 717 and ISO 10140. The measurements are prepared (rooms, partitions, measuring tasks) and performed; the results are then provided in printable form.

Option: Building Vibration
Measurement of building vibration according to DIN 4150 with the 3D-Seismometer and assessment of the vibration impacts on people in buildings using the $KB_{F(t)}$ value.

Option: Fractional Octaves
This option provides 1/1 to 1/48 octaves up to 20 kHz in real-time (filters comply with class 1, IEC 61260).

Option: Human **V**ibration **M**ulti **A**nalyzer
The **HVMA** allows the 3-channel measurements according to all filter curves of the ISO 8041 standard and the calculation of the resultant vectors for hand-arm or whole body vibrations.

Option: Multi-Generator
This option additionally provides the signal types: sine, rectangle, triangle, impulse, multi-sine, sine-sweep (lin and log), pseudo-noise and the synchronized output of *.wav files.

Option: NoiseCam
Together with the signal data recorder, this option allows the video documentation with overlayed measurement values and export to a multimedia standard format using the internal cameras.

Option: Order Tracking
This option allows measurement and display of spectra versus order of a basic frequency or RPM of a rotating machine.

Option: TCP/IP Interface
These option allows all features of SAMURAI to be controlled via network and integrated into a complex measuring system.

Option: Room Acoustics
Measurement of the room-acoustics parameters Clarity, Distinctness (C30 / C50 / C80 / D50 / D80), RASTI, STIPA and STITEL according to ISO 3382 and ISO 18233 on the basis of sine-sweep.

Option: Sound Intensity and Sound Power ISO 9614
Sound pressure and intensity measurements according to ISO 9614 parts 1 and 2 with sound mapping on digital photos.

Option: Sound Map
Creation of colour coded sound map based on sound pressure or intensity measurements for stationary sound source localization.

Option: Transfer FRF
The transfer function of a structure is obtained using an impulse hammer and a triax accelerometer. The data storage corresponds with the measurement's geometry.

Option: Vibration Meter
Double integration of the time signal as well as filtering according to the standards ISO 2954, ISO 7919 and ISO 10816.

Option: Virtual Tacho
RPM calculation from any input signal channel.

Option: Rotor Balancing
User guided balancing of rigid rotors in one or two planes with accelerometers and RPM sensor.

for more detailed information and options visit **www.soundbook.de**

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