

## General technical specification of APOLLO\_light data acquisition box

The Apollo\_light is compatible to our established Apollo\_box and Soundbook Analyzer, but without SLOW channels and AUX port. This reduction to main functions allows us to reduce, dimensions, power consumption and price. We offer following versions with 2, 4, 8 and channels with different connectors (see following table).

Version	Apollo_It_2L	Apollo_It_2B	Apollo_It_4L	Apollo_It_4B	Apollo_It_8C	Apollo_It_16
Order number	908046.2	908045.7	908048.7	908047.0	908049.5	908050.1
Input connector	2x LEMO7	2x BNC	4x LEMO7	4x BNC	8x NIM-CAMAC	1x MDR + cable + BNC splitter box

The Apollo\_light is able to operate with any Windows-based PC (or Tablet) via USB 2 or USB 3 interface. We recommend to use a PC with Windows7 or higher.

# Apollo<sup>TM</sup> light

### Input channels 1-2/4/8/16

Resolution	24-bit
Real-time bandwidth	DC ... 20 kHz @ 2 ... 16 channels
Dynamic range	110 dB
Random noise	< 3 µV(A), < 6 µV(Z) @ 0.1 Hz ... 20 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
Microphone power supply	± 14 V, + 20 / 63 / 200 V switchable (LEMO7 and MDR versions only)
ICP power supply	2 mA switchable
Support of IEEE 1451.4	yes

### Output channels 1-2

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

### Service channels

Trigger	2x Trigger / Tacho, trigger level setable via software
Synchronization	via flat cable (up to 4x Apollo_It)

### Physical characteristics

Dimensions	180 mm x 105 mm x 22 mm
Weight	700 g
USB cable	standard printer cable USB-A to USB-B
Power supply	via USB 2

### Available Software

SAMURAI	<b>universal multi channel noise &amp; vibration analyzer</b> for individual programming using MATLAB as programming language LabView driver for individual programming universal multi channel NVH software
SINUS Matlab Toolbox	
LabView	
µREMUS	

### EMC

Emission	conforming with IEC 61000-6-3
Immission	conforming with IEC 61000-6-1



*The light version of our black box acoustic analyzer - especially handy and robust - with USB Interface*



- Sound level measurement
- Frequency analysis
- Signal recording
- Human vibration measurement
- Pass-by noise measurement
- Building acoustics
- Machine vibration measurement
- Modal analysis
- Order tracking analysis
- Operational vibration analysis

### Trade marks and owners

Windows <sup>TM</sup>	Microsoft Corp.
Soundbook <sup>TM</sup> , Apollo <sup>TM</sup> , SAMURAI <sup>TM</sup>	SINUS Messtechnik GmbH
MATLAB <sup>TM</sup>	The MathWorks, Inc.

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# Apollo\_light

USB-based Multi-channel System for Sound & Vibration Measurement and Analysis  
*Simply plug-in and start your measurement*



The new **Apollo\_light** measuring system with 2...16 measurement channels and additional service channels runs with the USB 2.0 interface. The robust and small box can easily be used with any Windows Personal Computer and with a wide range of application software.

It is a universal portable measuring system for acoustic, vibration and engineering measurements in general, representing the latest generation of mobile PC-controlled instruments on the basis of the tried & trusted **Apollo™** hardware platform. According to your requirements you may choose from variants having LEMO7, BNC, NIM-CAMAC or MDR input connectors. The additional 2 Tacho & Trigger channels and the Synchronization port allow universal application of the device.

The Apollo\_light is a perfect measurement solution for:

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

Our universal **SAMURAI™** software offers all functions necessary for measurement and analysis of sound and vibration according to standards, both in **real-time and as post-processing**.

The system meets for all channels the standards for sound level meters according to IEC 61672-1 and third-octave analyzers according to IEC 61260 in class 1.

The Apollo\_light offer the sensor power supply with ICP (via BNC, CAMAC and MDR connectors) and 200 V (via LEMO7 connectors). TEDS support is also provided.

The **Easy Operator Mode** allows setups with restricted features to be created for less experienced users, in order to avoid operator errors in field measurements. The **REPLAY Mode** allows stored measurements to be replayed at various speeds.

The measured values are displayed independently from the data acquisition in **up to 16 windowpanes**. The display settings may be adjusted before, during and after the measurement.

The two output channels may be used either for signal generators or for the output of the input signals.

We deliver Apollo\_light including drivers for Windows and Linux OS. We support OEM software development using C++ or Python.

**Alternative software solutions are supported:**

- **SMT** (SINUS Matlab Toolbox) for individual programming
- **ME'Scope VES** for mechanical investigations
- **ARTEMIS** for operational Modal Analysis
- **LabVIEW** library for individual programming

**SAMURAI contains the following virtual measuring devices as basic features for each channel:**

■ **Sound level meter**

Class 1 Sound Level Meter according to IEC 61672-1 allowing simultaneous measurements with the frequency weightings A, C, Z and the time weightings Fast, Slow, Impulse.

The Sound Level Meter also supports the processing of statistical values, automatic impulse detection, measurement of Takt-maximal levels, impulsive and low-frequency characteristics as well as intelligent markers and triggers.

■ **Frequency analyzer**

Real-time 1/3 octave analysis from 1/3 octave center frequencies of 0.04 Hz ... 20 kHz (class 1 according to IEC 61260) and FFT analysis of 100 ... 25600 lines, each feature including freely adjustable averaging modes and storage intervals. In addition the sum levels are displayed and stored.

■ **Raw signal storage**

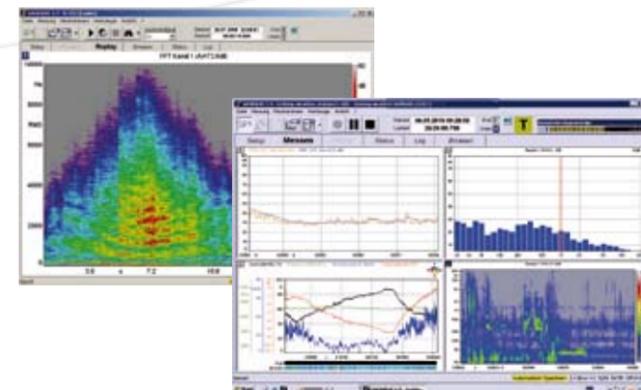
Storage of the time signal from DC up to 80 kHz with **freely adjustable decimation option per each channel and selectable data compression** into OggVorbis format to reduce data volumes.

■ **Reverberation time measurement**

Measurement of reverberation time in 1/3 octaves. Excitation types: switched-off noise, impulse and sine-sweep. The 2 signal outputs are used for output of the generated signals.

**Several sound level meters and frequency analyzers with different parameters can be applied for each channel.**

**All types of virtual instruments can operate with individual trigger and storage conditions.**



**SAMURAI options overview:**

- **Option: Post-Processing**
- **Option: Adrienne**
- **Option: BG VDI 2057**
- **Option: Building Acoustics**
- **Option: Building Vibration**
- **Option: Data Collector**
- **Option: Envelope Analyser**
- **Option: Fractional Octaves**
- **Option: Human Vibration**
- **Option: Multi-Generator**
- **Option: Munisense Interface**
- **Option: NoiseCam**
- **Option: OPC Server Interface**
- **Option: Order Tracking**
- **Option: Radar Speed Sensor**
- **Option: Remote Client**
- **Option: Room Acoustics**
- **Option: Sound Intensity**
- **Option: Sound Power**
- **Option: TCP/IP Interface**
- **Option: Tonality ISO 1996-2**
- **Option: Transfer FRF**
- **Option: Vibration Meter**
- **Option: Virtual Tacho**
- **Option: Weather Station**
- **Option: Zoom-FFT**

**Apollo\_light versions:**

908045.7	Apollo_It_2B	2 channels LEMO7 connectors
908046.2	Apollo_It_2L	2 channels BNC connectors
908047.0	Apollo_It_4B	4 channels LEMO7 connectors
908048.7	Apollo_It_4L	4 channels BNC connectors
908049.5	Apollo_It_8C	8 channels CAMAC connectors
908050.1	Apollo_It_16	16 channels MDR connector
908051.8	Apollo_It_8S	8 channels SMB (on request)

It is possible to synchronise up to 4 different Apollo\_light units into one system - up to 64 channels @ 20 kHz.

**Apollo\_light accessories:**

908346.5	Apollo_It SYNC Cable
971010.4	LEMO7/BNC adapter
908185.7	Apollo_Tacho/Trigger Cable
908186.5	Apollo_Tacho/Trigger_Splitterbox

Structure of a cascaded Apollo\_light system (4 units up to 64 ch), Apollo\_It SYNC Cable not displayed

