Apollo™
PCIe - Cards

Effective solutions for multi-channel vibro-acoustic applications

- Measure data acquisition and analysis
- Customized measuring equipment
- Test facilities for end-of-line testing
- Monitoring noise and vibrations
- Condition monitoring on machines
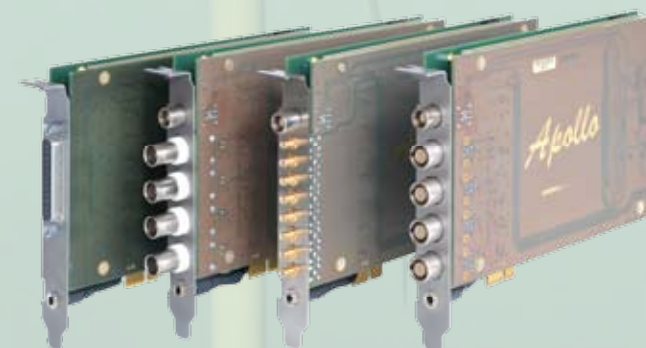- Acoustic camera

Technical specification of Apollo_PCIe cards

Designation	Apollo_PCIe_4B	Apollo_PCIe_4L	Apollo_PCIe_4D	Apollo_PCIe_8C (SMB on demand)	Apollo_PCIe_8D	Apollo_PCIe_16
Input channels						
Number of main channels	4	4	4	8	8	16
Resolution	24 bit	24 bit	24 bit	24 bit	24 bit	24 bit
Input connectors	4x BNC	4x LEMO7	1x DSUB25	8x NIM-CAMAC	1x DSUB25	1x SMB
Real-time bandwidth	DC-80 kHz	DC-80 kHz	DC-80 kHz	DC-20 kHz	DC-20 kHz	DC-20 kHz
Sampling rate	204.8 kHz	204.8 kHz	204.8 kHz	51.2 kHz *)	51.2 kHz *)	51.2 kHz
Decimation rate	per channel	per channel	per channel	per channel	per channel	per channel
Dynamic range	120 dB	120 dB	120 dB	110 dB	110 dB	110 dB
Noise	< 3 µV(A)	< 3 µV(A)	< 3 µV(A)	< 3 µV(A)	< 3 µV(A)	< 3 µV(A)
Max. input voltage	±1 V // ±10 V	±1 V // ±10 V	±1 V // ±10 V	±1 V // ±10 V	±1 V // ±10 V	±1 V // ±10 V
Overvoltage detection	yes	yes	yes	yes	yes	yes
Input coupling	DC, AC, LP, HP	DC, AC, LP, HP	DC, AC, LP, HP	DC, AC, LP, HP	DC, AC, LP, HP	DC, AC, LP, HP
ICP power supply	2 / 4 mA	2 / 4 mA	2 / 4 mA	2 mA	2 mA	2 mA
Microphone power supply	-	±14 V, 200 V	±14 V, 200 V, 12 V	-	±14 V, 200 V, 12 V	-
TEDS (IEEE 1451.4)	yes	yes	yes	yes	yes	yes
Trigger channels (LEMO7)	2x In, 2x Out	2x In, 2x Out	2x In, 2x Out	2x In, 2x Out	2x In, 2x Out via DSUB25	2x In, 2x Out
Output channels						
Number	2	2	2	2	2	2
Resolution	24 bit	24 bit	24 bit	24 bit	24 bit	24
Real-time bandwidth	DC-80 kHz	DC-80 kHz	DC-80 kHz	DC-20 kHz	DC-20 kHz	DC-20 kHz
Special channels (option) with expansion card only						
SYNC (LEMO7)	1	1	1	1	1	1
SLOW-channels (LEMO10) 24 Bit @ 200 Hz	8	8	8	8	8	8
Other specification						
Dimensions	170x111x19 mm	170x111x19 mm	170x111x19 mm	170x111x19 mm	170x111x19 mm	170x111x19 mm
Weight	325 g	325 g	325 g	325 g	325 g	325 g
Power consumption	2.8 W	2.8 W	2.8 W	2.8 W	2.8 W	2.8 W
Bus system	PCIe x1	PCIe x1	PCIe x1	PCIe x1	PCIe x1	PCIe x 1
Synchronisation **)	SYNC-BUS	SYNC-BUS	SYNC-BUS	SYNC-BUS	SYNC-BUS	SYNC-BUS
Supply voltage	12 V	12 V	12 V	12 V	12 V	12 V
Operating temparature range	-10 °C...+50 °C	-10 °C...+50 °C	-10 °C...+50 °C	-10 °C...+50 °C	-10 °C...+50 °C	-10 °C...+50 °C

*) high-speed version 204.8 kHz available on demand
**) Master-slave via SYNC cable or GPS via expansion card

SINUS
Messtechnik GmbH

Apollo_PCI Express cards

Quality and performance of Soundbook combined with an individual hardware configuration
PCIe measuring cards for your PC or as configurable customized PC solution

With the **Apollo PCI Express measuring cards** we provide a means to realise individually composed high-precision vibro-acoustic measuring systems with a high number of channels at a fair price. Highest dynamics and precision of the integrated AD converters as well as a frequency range from DC to 80kHz guarantee a wide application scope. The Apollo PCI Express cards are ideal for:

- Acquisition and analysis of measured data
- Customized vibro-acoustic measurement equipment
- Test facilities for end-of-line testing
- Monitoring noise and vibrations
- Condition monitoring on machines and equipment
- Acoustic camera

The PCIe measuring cards can be integrated into any modern Windows PC with a vacant PCI Express slot. To extend the number of channels you may use any number of measuring cards in one PC and synchronize them for sample accuracy.
You can reduce data volume by individually adjusting the sampling rate of each channel (binary decimation).
The Apollo_PCIe measuring cards are fully compatible to the type-approved Soundbook_MK2 instrument.

Our universal software **SAMURAI™** provides all functions required for the standard-conforming measurement and analysis of vibrations and sound in **real time or during post processing.**
The SAMURAI software support includes the following services:

- Provision of all SAMURAI updates
- Support by SAMURAI.support@sinusmess.de
- Telephone service from Monday to Friday between 9:00 and 17:00 (CET)

For the application in machine diagnostics or the individual programming of the devices using our unified Windows device driver we offer the following **alternative software solutions:**

- **ME'Scope** or **ARTeMIS** for mechanical inspections,
- **SMT** (SINUS Matlab Toolbox) for individual programming,
- **LabView** driver for individual programming.

Based on the Apollo PCI Express measuring card portfolio combined with high-quality industrial PCs made in Germany we offer pre-assembled integrated solutions, which will be described in the following.

All devices will be equipped with the Apollo PCI Express cards chosen by the customer and supplied by us as tested assembled systems.

For all complete systems produced by us we offer a manufacturer's warranty of 3 years and free software support for the first year.


◼ Monitoring station *SWING_MK2*

Noise and vibration monitoring station based on a robust, wall-mounted, fanless industrial PC with two slots for Apollo PCI Express measuring cards.
The computer is mounted in the enclosure door with the heatsink located on the outside.
In a user-friendly arrangement the enclosure contains the AC power supply, an uninterruptible power supply (USP) with backup battery and a terminal strip for connecting the sensors. The USP bypasses short-term power failures and safeguards measurement completion, fault report transmission and proper shut-down of the PC in case of long-term power failures. When power is restored the system will automatically resume measurement.

PC	**Intel i3 3217UE** or Atom E3845 with 4 GB RAM, 240 GB SSD, RAID1 as option
Operating system	Windows 7 or higher, Linux
Interfaces	4 x USB, 1 x RS232, 2 x LAN, DVI
PCIe slots	2 x PCIe x1 for Apollo_PCIe card
Router (optional)	3G, 4G or ADSL via LAN
Terminals	32 x for sensors, 3 x mains
Cable feed-through	10 x PG gland
Software	**SAMURAI, LTMS**
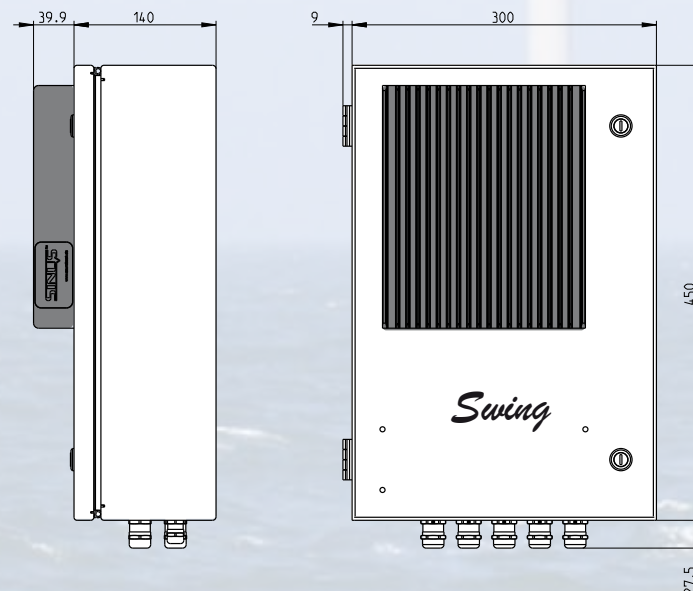
◼ Measuring system *Tornado*™

This compact mobile measuring station is ideal for stationary as well as mobile operation. Special features are the fanless design and the 3-way power supply from AC, DC and battery (V-mount battery on the back of the device for up to 6 h of autonomous operation).
Up to 4 Apollo PCI Express measuring cards may be integrated. Available options are connections for external system synchronization via GPS and 8 SLOW channels.
The Tornado measuring system features a very robust mechanical design while offering a rather small weight.
The folding carry handle at the top may be used for carrying as well as for securing the device during operation (e.g. in a vehicle).

PC	**Intel i7 3517UE** with 4 GB RAM, 240 GB SSD, CFast as data storage
Operating system	Windows 7 or higher, Linux
Interfaces	4 x USB, 1 x RS232, 2 x LAN, DVI
PCIe slots	4 x PCIe x1 for Apollo_PCIe card, up to 32/64 measuring channels, 24 Bit @ 204/51 kHz sampling rate and 8 SLOW channels @200Hz
Keyboard	USB trackball keyboard (GER, EN)
Software	**SAMURAI, SMT, ME'Scope VES**

◼ Measuring system *Typhoon*™

This high-performance multi-channel measuring system in a 19 inch format is suited for laboratory and field operation.
Providing the ability to externally synchronize samples, measuring systems with any number of channels can be realized.
For mobile operation we offer a robust 19 inch rack with 4 HE as additional protective housing with locking covers and sturdy carry handles.
The exchangeable high-end CPU card (slot card CPU PIG-MG) with the Intel XEON Server CPU safeguards high reliability. Power supply and fan are designed for high performance.
Exchangeable 2.5" SATA SSDs serve as data storage. The internal raid system ensures high security for data storage.

PC	**Intel XEON 3.6 GHz** with 4 GB RAM, 2x 240 GB SSD, 2 x 240 GB as data storage
Operating system	Windows 7 or higher, Linux
Interfaces	6 x USB, 2 x RS232, 2 x LAN, DVI
PCIe slots	12 x PCIe x1 for Apollo_PCIe card, up to 96/192 measuring channels, 24 Bit @ 204/51 kHz sampling rate and 8 SLOW channels @200Hz
Keyboard	USB trackball keyboard (GER, EN)
Software	**SAMURAI, SMT, ME'Scope VES**

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