

# *Orchestra*

## The Ultimate Compact Real-time Data Acquisition Front End and Frequency Analyser



**01 dB-Stell**  
MVI technologies group

# Orchestra

Or

Orchestra is made up of one or several modular multichannel hardware units and of the 01dB-stell software suite dedicated to real-time data recording and frequency analysis.

Orchestra is a configurable and modular system containing separate and independent hardware modules. No main frame is needed and all modules can be mounted very easily.

Three kinds of modules can be mounted together:

- Interface module allowing connection to PC through Firewire interface (IEEE 1394)
- Input module for 4 transducers with conditioning and 24 bits A/D conversion
- Function module adding features like output module for signal out or generator

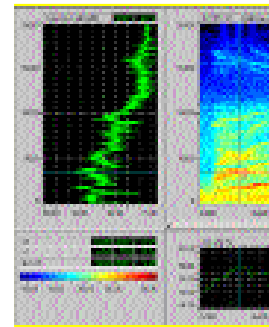
One interface unit can manage up to 24 channels (6 input modules). Independent frequency sampling can be used on each input module. Several different input modules are available for Direct voltage/IEPE\* transducers, Microphones, Charge accelerometers, Strain gage, Tacho sensors,...

A main unique feature of Orchestra is to allow a Multi-channel real-time analysis while recording on a PC hard disk.

With the Firewire interface capability, unrivalled feature is the network and distributed measurement performed with several Orchestra systems (one 24-channel Orchestra unit constitute a measurement group). 192 channels can be measured and analysed at the same time with a maximum distance of 100 m between groups.

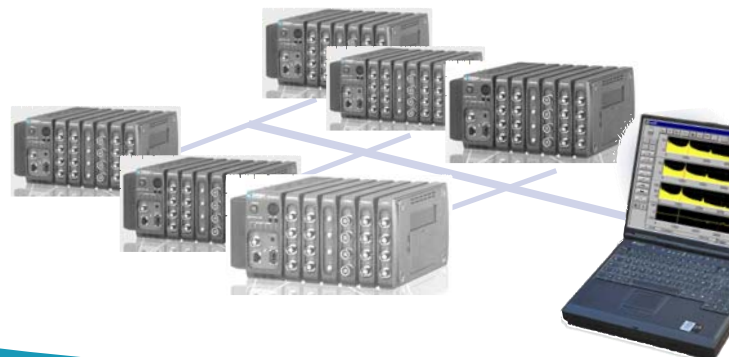
The 01dB-Stell software suite manages in real-time all data coming from Orchestra when it is used as a front end. The recording mode transforms Orchestra into a data acquisition front end and stores all signals on the PC hard disk while monitoring (Oscilloscope, Overall values, FFT, 1/3 octave) is performed to check data quality. The Analyser mode transforms Orchestra into a real-time frequency analyser dedicated to many industrial applications.

\*IEPE Integrated Electronic Piezo Electric



## Expandability

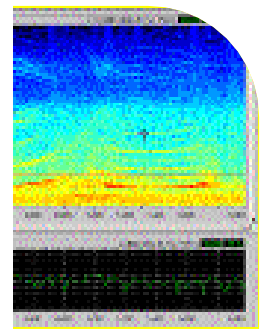
- Any combination of 4-channel input modules and function modules can be used for one measuring group
- 4 to 24 channels (max. 6 modules) per measuring group
- 8 measuring groups can be connected together via Firewire interface



## Wide range of applications:

- Lab, field or mobile data acquisition
- Testing and evaluation
- Consulting and engineering services
- Predictive maintenance
- Design engineering
- Research and development
- Equipment reliability
- Education

# Orchestra



## Measurement

- Firewire transfer rate: max. 26 Mbps for each Orchestra
- 32 channels 16 bits real time up to 20 kHz bandwidth
- Networked and distributed measurement up to 192 channels by 8 units
- Up to 100 m between each measuring group

## Software

- Data recording / Throughput to disk
- Frequency Analysis (FFT / 1/n octave)
- Sound Intensity / Sound Power
- Structural Analysis
- Material Testing
- Building acoustics
- Psychoacoustics / Sound Quality
- Rotating Machine Analysis
- Predictive Maintenance

## Hardware

- No main frame
- Direct connection of sensors
- Several module types
- Easy mechanical mounting of modules
- Synchronous 16 or 24 bits ADC
- Multi-frequency sampling
- >100 dB dynamic range
- Multiple tacho inputs
- High-speed Firewire interface
- AC/DC and battery powered

Example of module combination for one measuring group



Lithium-Ion battery

FireWire interface unit

Charge module

Count/FV module

Analogue output module

Direct/ICP® module

DC strain module

Microphone module

# Technical specifications

## General specifications:

- Input channels: 4 to 24 channels - 4 ch. per module - max. 6 modules can be connected
- Sampling frequencies: From 8 Hz up to 65536 Hz
- Same frequency sampling type within the system
- Frequency sampling selectable per module
- Bandwidth: sampling frequency/2.56
- Transfer rate: 26.2144 Mbps
- ADC: 16 or 24 bits selectable
- Vibration resistance: MIL-STD-810C/E
- Measuring group: dimensions for 4ch. W88 x H110 x D200 mm and for 24 ch. W213 x H110 x D200 mm
- Weight: 4ch. 1.9 kg - 24ch. 4.8 kg
- Power supply: AC -110 to 240 V; DC - 11 to 30 V; Battery Pack (Optional)
- Power consumption: 18 W @ DC 12 V; 44 W @ DC 12 V

## Interface unit module specifications:

- PC interface: Firewire (IEEE1394)
- Number of modules connectable: 6
- Triggers: Trigger channel - TTL, level/edge; pre/post
- Fan control mode: on/off
- Input range: from  $\pm 0.1$  to 20 Vpk
- Weighting filters: A, B, C

## Direct/IEPE\* Input module specifications:

- Number of channels: 4 BNC connectors (Single ended) or 2 (differential)
- Coupling: AC/DC
- High-pass filter: 0.5 Hz, 20 Hz
- Low-pass filter: digital filter
- Input range: from  $\pm 0.1$  to 20 Vpk
- Weighting filters: A, B, C

## Microphone Input module specifications:

- Number of channels: 4 Lemo 7 pin connectors (Single ended)
- Preamp. power and polarisation:  $\pm 14$  V and 0, 200 V
- High-pass filter: 0.5 Hz, 20 Hz
- Low-pass filter: digital filter
- Input range:  $\pm 7$  m to 7 Vpk

## Charge Input module specifications:

- Number of channels: 4 Microdot connectors (Single ended)
- Charge sensitivity: 0.1 to 100 pC/m/s<sup>2</sup>
- High-pass filter: 0.5 Hz (1st order RC)
- Low-pass filter: digital filter
- Input range: 1, 3.16, 10, 31.6, 100, 316, 1000, 3160, 10000 pC

## DC strain Input module specifications:

- Number of channels: 4 Lemo 6 pin connectors (differential)
- Coupling: DC
- Bridge type and voltage: full and half bridge, DC 2.5, 5, 10 V
- Zero adjustment: automatic
- Low-pass filter: digital filter
- Input range: from  $\pm 0.2$  to 10 mV/V

## Count/FV Input module specifications:

- Number of channels: 4 BNC connectors (Pulse) or 1 (FV)
- Input: Logic (TTL); Bipolar (AC)
- Digital input sampling frequency: from 2 to 32 MHz selectable. Accuracy: 25 ns
- Frequency measurement: from 1 to 500 kHz selectable
- Threshold: logic (from 0 to 4 V variable)

## Analogue output module specifications:

- Number of channels: 4 BNC connectors (single ended)
- Output range:  $\pm 1.2$  pk (fixed) or variable at 0.1 V step with  $\pm 5$  Vpk max.

## Function generator module specifications:

- Output 2ch (BNC connector) with individual parameters
- Peak level: 0dB (5 V), -10 dB, -20 dB
- Frequency range: DC ~ 20 kHz
- Offset range:  $\pm 5000$  mV @ 10 mV step
- THD: -70 dB or less
- Signal generated: Pink noise, white noise, sine wave, sweep sine wave, burst

\*IEPE Integrated Electronic Piezo Electric

# Benefits

- Acoustics and Vibration
- Process signals
- Multichannel front end
- Real-time frequency analyser
- Multi-frequency sampling
- Network capability
- Modular / expandable
- Transducer conditioning
- Many software products for industrial and environment measurements

## France

(Head Office)

200, chemin des Ormeaux  
F - 69578 Limonest Cedex  
Phone +33 4 72 52 48 00  
Fax. +33 4 72 52 47 47

## Italy

Phone +39 049 920 0966  
Fax. +39 049 920 1239

## USA

Phone +1 315 685 31 41  
Fax. +1 315 685 31 94

## Brazil

Phone +55 11 55 79 6460  
Fax +55 11 55 79 6610

## Asia Pacific

Phone +60 3 563 22 633  
Fax. +60 3 563 18 633

Web: [www.01db-stell.com](http://www.01db-stell.com)

Mail: [infogb@01db-stell.com](mailto:infogb@01db-stell.com)