

vib@work HAND-ARM



Vib@work Hand-Arm - new dosimeter in range

Developed in collaboration with INRS.

- ▶ Automatic computation of standardized exposure values
- ▶ Accurate measurement on all kind of handheld tools, including highly percussive tools (up to 5000 G)
- ▶ Self contained miniature sensor without wired connections
- ▶ Fully compliant with the European Vibration Directive
- ▶ Non intrusive
- ▶ Includes means of avoiding common measurement errors
- ▶ User friendly implementation and use
- ▶ Placement of sensors regardless of the measurement predominant axis
- ▶ Reasonable cost



Description

Our innovative measurement system allows taking vibration measurements on handheld tools thanks to autonomous sensors that does not need to be wired during measurements.

Stored data is downloaded from the sensor(s) at the end of the working period using a docking station connected to a PC.

Software allows automatic computation and display of workers' exposure to hand arm vibration, and indicates how it compares with limit and action values defined in the vibration Directive.

In order to cover the full range of existing handheld tools two sensors have been developed: one for usual vibrating tools while another one is dedicated to highly percussive tools exhibiting high level of shocks. (Up to 50 000 m/s²)

Our measuring device, that can be attached to any kind of tools, is currently the only one capable of taking accurate vibration measurement without disturbing worker's tasks with annoying and fragile cabling. A special version of the sensor is specifically dedicated to measurement on highly percussive tools.

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Sensors description

The sensing device is made of a miniature case to be fixed on the tool and includes:

- a 3-axis accelerometer ;
- an electronic circuit acquiring , processing (weighting filters), and storing the acceleration values
- a compact battery
- a communication circuit to access stored values (not used during measurement)
- an indication of operation (LED)

The available range includes two sensors looking the same and operating identically, but exhibiting different characteristics:

One allows taking measurements on most common handheld tools, while the second one is dedicated to highly percussive tools (e.g. rammers, rock-drills, ...)

	Standard sensor	Highly percussive tool sensor
Measurement range	$\pm 2\,000\text{ m/s}^2$	$\pm 50\,000\text{ m/s}^2$ (1)
Maximum measurement noise	$0,10\text{ m/s}^2$	$0,50\text{ m/s}^2$

(1) Sensor range (including internal mechanical filters)

Software for exposure values computation

- Windows™ software
- Access to measures from one sensor or more using the supplied docking station
- Automatic computation and display of workers' exposure to hand arm vibration, and comparison with limit and action values defined in the european vibration Directive
- Storage and export of vibration time history for further processing with analysis software (option)

Operation

The sensors are plugged in the docking station; which is connected to the PC. These are then made ready to measure. As soon as they are unplugged from the docking station, they can be attached to the tool(s) within a given period of time (user parameters). At the end of the measurement period sensors are plugged again in the docking station. Measurements are downloaded from each sensor and worker's exposure to hand-arm vibration is computed, eventually taking into account the different tools he has been using.

Measurement errors avoidance

Unwanted effects can lead to inaccurate results. Hand-arm vibration is prone to measurement errors such as those generated by high shocks encountered on percussive tools (e.g. DC Shift, ...). In order to avoid those phenomena, special provisions have been implemented (i.e. integrated 3-axis mechanical filter). Those provisions allows any user - being an expert in vibration or not - to get to accurate and consistent measurement results.

Supply

Basic configuration:

A suitcase (4 sensors capacity) including :

- a vibration sensor (standard sensor or sensor for highly percussive tools);
- sensor fixing means
- a docking station (4 sensors capacity) for charging and communication between the sensors and the software
- a communication cable between docking station and PC (USB port)
- a charger
- a user manual
- the dose computation software on CD

Additional sensors (standard sensor and sensor for highly percussive tools) can be purchased separately and added to the basic configuration.

Compliance

- Fully compliant with the european vibration Directive 2002/44/EC and related standards ISO 5349-1 and 5349-2
- Compliant with the ISO 8041 : 2005 standard (Human response to vibration – Measuring instrumentation)
- Weighting filters according to ISO 5349-1
- The sensors are supplied with coupling devices for firm and stiff attachment to the tools as per ISO 5349-2
- Developed in partnership with INRS (Research Center for Safety, France)

Optional analysis software

- Display of vibration time histories
- Different periods of use simulation
- Management of several sensors
- Reporting tools
- Measurement export (spreadsheets, text, ...)

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