

Application description when using HD2070.BV

Evaluation of human exposure to whole-body vibration in buildings due to internal and external sources with respect to the comfort and annoyance of the occupants. Annoyance evaluation criteria.

The evaluation of the annoyance is carried out on the basis of the frequency weighted acceleration value a_w , (t) appropriately acquired by the instrumentation and treated to obtain the V_{sor} descriptor to be compared with a series of limit values expressed in mm/s^2 and dependent on the destinations of use of buildings and from the reference period (day / night). When the values or levels of the vibrations under examination exceed the limits, the vibrations can be considered objectively disturbing for the exposed subject.

Types of vibration sources: road and railway traffic, industrial activities and machinery operation, road and construction site activities, explosions, various types of human activities that generate vibrations.

Limits V_{sor}

Environments for residential use: daytime: $7.2 mm/s^2$ night time: $3.6 mm/s^2$

Workplaces: $14 mm/s^2$

Hospitals: $2 mm/s^2$

Kindergartens and rest homes: $3.6 mm/s^2$

Schools: $5.4 mm/s^2$

Reference standards

UNI 9614:2017

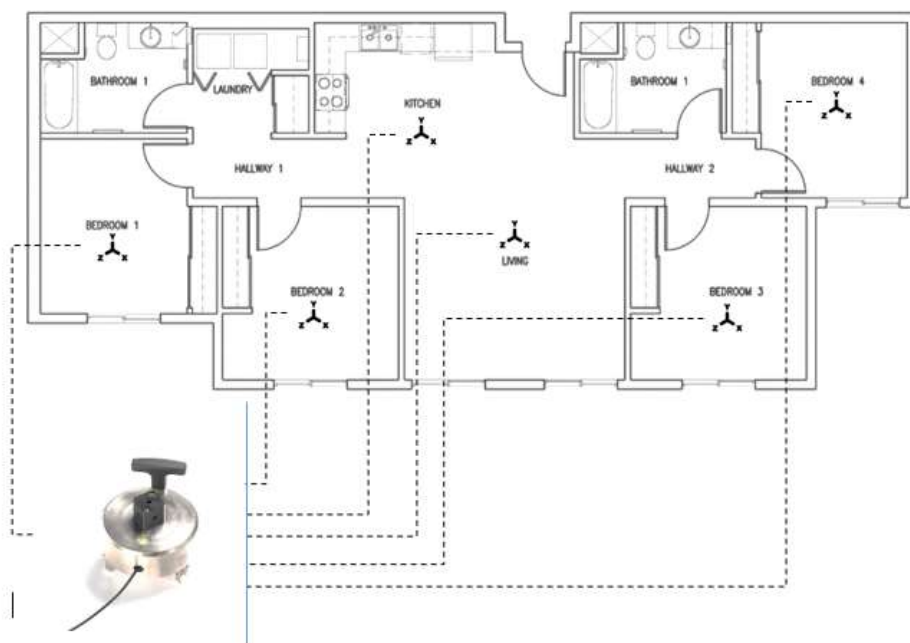
EN ISO 8041-1:2017

ISO 2631-2:2003

NS 8176.E

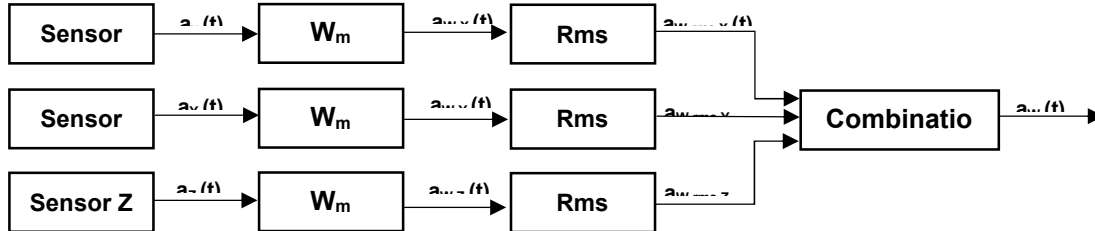
Accelerometer positioning

Example of a typical positioning of the triaxial sensor on floors or surfaces of rooms used for habitable use



Acquisition principle

Signal processing of HD2070 vibrometers in accordance with EN ISO 8041



Ordering Codes

HD2070.BV includes HD2070.k1 , HDBV-1000, HD2030CAB3M-5M, HD2030AC5

Technical specifications HD2070

Reference standards: EN ISO 8041-1:2017

Frequency weightings: W_m independent for each acquisition channel , conforming to ISO 2631-2:2003

Band-Pass filtering: F_m 0.8 Hz-100 Hz

Parameters: $a(t)$, $a_x(t)$, $a_y(t)$, $a_z(t)$, $a_{bl,j}(t)$, $a_{w,j}(t)$, $a_{w,rms,j}(t)$, $a_w(t)$, $a_{w,max}$

Accelerometers:

Type: tri-axial

Sensing element: MEMS

Nominal sensitivity: 1 V/ms²

Frequency response: 0.2 Hz- 400Hz .

Sampling frequency: 8 KHz

Resolution: 25 bit

Typical Noise: < 1mm/s²

Storage: SD card up to 32Gb

Firmware options

Spectral analysis HD2070.O1: real time, octave and third-octave filters compliant with IEC 61260

Statistical analysis HD2070.O2: probability distribution in 1dB classes. Percentile levels from L_1 to L_{99}

Digital signal recording HD2070.O3: on all channels in parallel with acceleration profiles and frequency spectra

Floor positioning adaptor: HD2030AC5 according to ISO 5348 , with spirit level and adjustable feet to allow a perfect isostatic support. Protected accelerometer mounting .

Optional - on site calibration of measurement chain

Calibrator: HD2060 according to EN ISO 8041-1

Frequency: 1000 rad/s (160Hz) or 100 rad/s (16Hz)

Amplitude: 10m/s² o 1m/s²

Periodic calibration

Manufacturer calibration of the measurement chain with calibration report according to ISO 8041-1