










VBR-HS-LR-2, version 1.0

Vibrometer HS

The Vibrometer HS (*High Shock*) is a triaxial wireless device designed to monitor strong vibrations through particle velocity. It supports waveform transmission for event analysis and streams data to MyMove platform for visualization and alarms. Built for compliance-driven applications, it extends measurement capabilities beyond standard vibrometers.



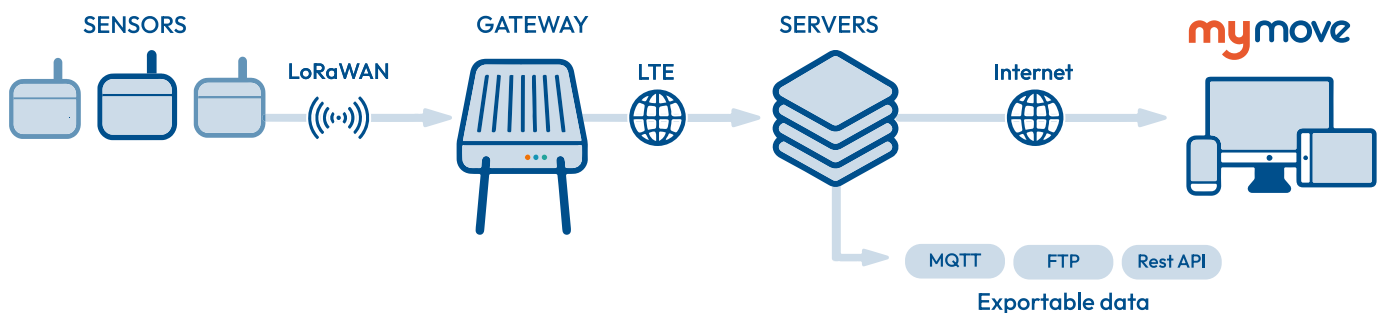
KEY FEATURES

-  For indoor and outdoor operation
-  External Battery Pack required
-  Wireless LoRaWAN connection
-  Fully remote configuration and management
-  Quick, flexible, and easy installation
-  Structural vibration assessment (*UNI 9916, Circulaire '86, ISEE, OSMRE, RI 8507, BS 7385-2, SN 640-312a, DIN 4150-3 315Hz, DIN 4150-3 80Hz*) and human exposure monitoring (*DIN 4150-2, BS 6472-1*)
-  Trigger-based data acquisition with programmable threshold
-  Data logging in the internal memory
-  Data management and processing through the MyMove platform

Its design ensures quick and easy installation, significantly reducing time and costs.

The sensor is optimized for a long operating life, which can

be further extended by adjusting the sensor configuration. To operate the sensor requires a Move Solutions Gateway installed nearby.



Output data

The sensor provides information about vibrational activity at the installation point with the following output parameters.

PEAK AND SUMMARY METRICS

- **PPV** : peak particle velocity
- **PVS** : peak vector sum
- **PPA** : peak particle acceleration
- **RMS velocity**
- **RMS acceleration**

FREQUENCY AND SPECTRAL ANALYSIS

- **F_{mg}** : zero-crossing frequency
- **FFT** : Fast Fourier Transform
- **F_{dom}** : dominant frequency on the FFT spectrum
- **Waveforms for each axis**

COMFORT AND FATIGUE INDICATORS

- **KB_{FTi}**: instantaneous KB_{FT}, measured over a period of 30 seconds
- **KB_{FTm}** : mean value of KB_{FT} over the measurement period
- **KB_{Fmax}** : maximum value of KB_{FT}
- **KB_{FTr(rest)}** : KB_{FT} computed over the rest period
- **KB_{FTr(no rest)}** : KB_{FT} computed over the active period
- **VDV_i** : instantaneous Vibration Dose Value, measured over a period of 30 seconds
- **VDV** : overall Vibration Dose Value

The sensor also records the temperature at measurement time.

NOTE

Due to sensor configuration constraints, not all previously available output parameters can be provided simultaneously; the set of output parameters depends on the selected sensor setup.

Working principle

The sensor can be configured to work with one of the following regulations:

- UNI 9916
- Circolare '86
- ISEE
- OSMRE
- DIN 4150-2
- RI 8507
- BS 6472-1
- BS 7385-2
- SN 640-312a
- DIN 4150-3 315Hz
- DIN 4150-3 80Hz

A custom regulation is also available to tailor the data processing to more specific needs.

NOTE

Some regulations require a specific working mode and/or specific settings. In this case some parameters might be forced to specific values.

The customer can choose the preferred Acquisition type among the following list:

1 TRIGGER MODE

The sensor will constantly measure velocity, on the 3 axes. A buffer equal to the pre-trigger time is always held by the sensor. When the threshold is surpassed on at least one of the axis:

- With Autostop end condition, the sensor will stop recording when the signal is below the trigger level on all 3 axes for the specified number of samples. As a consequence, different events have a different number of samples.
- With Fixed post-trigger end condition, the sensor will stop recording after a specified post-trigger number of samples. All the events recorded have the same number of samples.

The sensor provides both summary parameters and the full waveform.

2 CADENCE MODE

The sensor measures velocity on the 3 axes. Time is divided into intervals that are equal to the cadence selected.

Over the cadence time, the device detects a series of key parameters for the selected processing mode. The full waveforms are not provided, but only some summary parameters.

3 COMBO (TRIGGER MODE + CADENCE MODE)

A combination of Trigger and Cadence modes.

Technical specifications

MEASUREMENT PERFORMANCES

Sensing technology	MEMS accelerometer
Number of axes	3
Sampling frequency range ¹	250 Hz – 2 kHz
Bandwidth lower limit range	0.5 Hz – 10 Hz
Bandwidth upper limit range	80 Hz – 315 Hz
Velocity full scale range	up to 500 mm/s or 19.685 in/s
Velocity resolution	16 bits
RMS velocity noise	0.15 mm/s or 0.00591 in/s ²
Acceleration full scale range	up to 40.96 g
Supported regulations ³	UNI 9916, Circulaire '86, ISEE, OSMRE, DIN 4150-2, RI 8507, BS 6472-1, BS 7385-2, SN 640-312a, DIN 4150-3 315Hz, DIN 4150-3 80Hz, custom (user-defined configuration)
Operating modes	Cadence, Trigger, Combo ⁴

¹ Down sampled from a main sampling frequency of 4 kHz.

² Typical value measured on a reference sample with 40.96 g acceleration full-scale, 2 kHz sampling frequency and 1-315 Hz bandwidth.

³ Some regulations may require a dedicated calibration procedure. Contact Move Solutions for more details.

⁴ When the Combo mode is selected, multiple operating modes are enabled simultaneously; as a result, individual mode performance may be reduced. To achieve optimal performance for each operating mode, it is recommended to avoid using Combo mode.

MEASUREMENT PERFORMANCES			
Processing modes, operating modes and output parameters	Processing mode	Operating mode	Output parameters
	A	Cadence	PPV, PVS, Fmg, Velocity RMS, PPA, timestamp, temperature ¹
		Trigger	PPV, PVS, Fmg, Velocity RMS, PPA, waveforms, FFT, Fdom, timestamp, temperature ¹
	B	Cadence	KBF_{Ti} (over 30 seconds slots), KBF_{Tm} , KB_{Fmax} , $KB_{FTr(rest)}$, $KB_{FTr(no rest)}$, RMS acceleration, timestamp, temperature ¹
C	Cadence	VDV _i (over 30 seconds slots), VDV, RMS acceleration, timestamp, temperature ¹	
Cadence range ²	30 seconds – 24 hours		
Activation threshold range ³	1.5 mm/s or 0.0591 in/s – Velocity full scale		
Data buffer maximum depth ³	Samples	Sampling frequency	Duration
	21844 samples	250 Hz	87.3 seconds
		500 Hz	43.6 seconds
		1000 Hz	21.8 seconds
2000 Hz		10.9 seconds	
Trigger mode features ³	Velocity activation threshold for each axis		
	Selectable pre-trigger time		
	Selectable post-trigger time, or auto-recording with selectable auto-stop time		
	Waveform data acquisition with individual enable flag for each axis		
Typical waveform transmission time	Number of samples	Transmission time	
	250	10 seconds	
	1000	45 seconds	
	10000	7.5 minutes	
	21844 (max)	16 minutes	
Timestamp accuracy ⁴	± 1 s		
Temperature resolution	0.05 °C		
Temperature accuracy	0.2 °C		
Internal storage memory ⁵ (circular)	Yes		

¹ Temperature is measured internally within the sensor and may differ from the ambient temperature.

² Applies to Cadence mode only.

³ Applies to Trigger mode only.

⁴ Under good LoRaWAN radio coverage.

⁵ The actual memory capacity may vary depending on sensor configuration and input signal characteristics.

GENERAL DATA

Wireless connection technology	Sub-GHz LoRaWAN protocol ¹ (Gateway required)
Wireless coverage ²	1 km line of sight from the nearest Gateway
Connections	Move Solutions 8-pole connector. For compatible accessories visit Move Solutions' website or contact support.
IP rating ³	IP67
Power supply	Move Solutions Battery Pack (SBE-STD-CB-1) required
Operating temperature range	From -40 °C to +85 °C
Dimensions ⁴	129 × 100 × 98 mm
Weight ⁴	0.6 kg
Package weight	1 kg
Case material	GD-ALSi12 alloy
Installation options ⁵	Wall, floor, or ceiling mount. Four-points attachment using screw anchors (Ø6mm max). One set included in the package.
Software version	v1

¹ The sensor's LoRaWAN connection operates on a best-effort basis, which means that while most data packets are delivered, there is a slight possibility of occasional packet loss.

² Wireless coverage may vary based on the actual deployment scenario.

³ The declared IP rating is guaranteed only when the product is correctly assembled, with the lid properly screwed in place, the antenna installed, and the Move Link connector protected either by a properly connected external cable or by the supplied protective cap when no cable is present.

⁴ Refers to the sensor unit with protective dome, antenna, and fixed plate. The standard mounting plate and other additional accessories are not considered.

⁵ To ensure the best measurement performances please follow the best-practices for the installation of vibration measurement equipment and/or the requirements of regulations of interest.

BATTERY LIFE

Mode ^{1,2}	Sampling frequency		
	500 Hz	1000 Hz	2000 Hz
Cadence mode <i>Any cadence</i>	3.2 years	2.1 years	1.2 years
Trigger mode ³ <i>Waveform on all axes, 1 event per hour</i>	2.5 years	1.6 years	0.9 years
Trigger mode ³ <i>Waveform on all axes, 4 events per hour</i>	1.6 years	1.2 years	0.8 years
Trigger mode ³ <i>No waveform</i>	3.0 years	1.8 years	1.0 years

¹ Configuration parameters that are not specified are to be considered in their default configuration.

² The estimation refers to a sensor in a typical working environment with average quality of the radio connection between the sensor and the Gateway. Actual battery life may be worse in case the product is used under extreme conditions, such as prolonged working in high or low temperatures, bad quality of radio connection between the sensor and the Gateway, etc.

³ The consumption of trigger acquisitions depends on the actual input signal of the sensor and its configuration, so it may differ from the stated.

ORDERING INFORMATION

SENSOR	PART NUMBER
Vibrometer HS sensor, standard <i>Includes: sensor unit, standard antenna, protective dome, standard mounting plate</i>	VBR-HS-LR-2
ACCESSORIES	PART NUMBER
Battery Pack	SBE-STD-CB-1
Data download cable	SCM-STD-CU-1

For complete information regarding proper use of the device, safety precautions, installation, operation, and maintenance requirements, users must refer to the official product manual.

DOCUMENT REVISIONS

N°	DATE	NOTES
REV. 1	29 May 2026	Initial release

Notice of publication

The information contained in this document may be subject to change without notification. For more detailed information, product specifications and to download up-to-date documents, visit our website at www.movesolutions.it.