



Vibrometer HS

VBR-HS-LR-2, version 1.0



INSTALLATION & OPERATION MANUAL

Safety, Compliance and Warranty Information

Rev. 1

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Vibrometer HS

INSTALLATION & OPERATION MANUAL

This document applies to:

VBR-HS-LR-2, version 1.0

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Revision 1

NOTICE OF PUBLICATION

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

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Regulatory and safety information

For the correct and safe operation of the product, it is recommended to read and follow the instructions in this manual.

The device is designed and intended exclusively for the monitoring of dynamic parameters, including vibrations, accelerations, and structural movements, within civil, industrial, and environmental engineering applications. The device is intended to be installed on structures such as buildings, infrastructure, geotechnical works, or machinery, in order to collect data for structural health assessment, predictive maintenance, and evaluation of operating conditions.

The product is supplied exclusively on a business-to-business (B2B) basis and is not intended for sale or use by private consumers. Installation, configuration, operation, and maintenance of the device must be carried out solely by qualified and trained personnel with appropriate technical expertise.

The product must be used in accordance with Move Solutions' technical specifications, within the declared environmental and operational conditions, and in combination with compatible communication systems (e.g. LoRaWAN networks). Any use other than that described above shall be considered non-compliant with the intended use of the device.

Great attention should be paid to the following warnings. Move Solutions shall not be held responsible for inconveniences, damage or malfunctions due to lack of compliance to the prescriptions and suggested use in this manual.

- 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.
- Before use, make sure that the product conforms to the description in this manual and that no damage is present.
- Do not use batteries other than those specified by Move Solutions inside the Battery Pack, and do not use any power source other than the Move Solutions Battery Pack to power the sensor, without express approval from a Move Solutions representative.
- Before any operation on the product, disconnect the Battery Pack.
- The product is not intended for use in applications where safety is extremely critical, such as medical-related applications or life-security systems.

- On top of the prescriptions in this manual, the user should operate in compliance with local standards for security and health, and according to the best engineering practices for a safe installation.
- The product must be kept clear of children, animals, and any unauthorized personnel.
- Do not disassemble the product except when explicitly instructed in this manual, as this could cause malfunctions and damage the product.
- Do not attempt to repair or modify the product.
- If the product releases smoke or heat during operation, immediately disconnect the Battery Pack.
- Do not expose the product to high temperatures outside the specified range or heat sources.
- Do not expose the product to liquids of any kind and do not operate on it with wet hands. The product can only be exposed to water when the conditions to guarantee the IP rating are satisfied.
- Do not operate on the product in extreme weather conditions that may damage the device or the user, such as thunderstorms or snowstorms.
- Do not disperse the product or part of it in the environment.
- Correct functioning of the product in environments with high radio activity is not guaranteed.
- The product is compliant to all regulations concerning the fair use of ISM radio bands. However, given the free nature of these bands, occasional conflict with nearby devices operating on the same bands cannot be fully prevented.
- Measurements provided by the device are intended for informational purposes only. Move Solutions shall not be liable for any structural assessment, safety certification, or engineering decisions made by the user based on the data collected.
- The user acknowledges that wireless communication (e.g. LoRaWAN) is subject to environmental interference and network availability. Move Solutions does not guarantee 100% data delivery and is not responsible for any data loss or transmission delays.

NOTE

In case of deterioration or loss of this manual, a compliant copy may be requested by the customer from the manufacturer. For increased security, we suggest that you keep a copy of this manual in a place where it cannot be damaged or lost.

WEEE Compliance

This product contains electronic components and batteries that must be disposed of separately from common household waste, according to local regulations. To ensure correct disposal of the product at the end of its lifecycle, please contact your local authority. Failure to comply with these regulations could lead to penalties.



This product is registered in the Italian WEEE Register under number IT25110000017837, in accordance with Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE).

FCC Compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Contains FCC ID: 2A3LJ-MAMWLE

ICES-ISED Compliance

This device complies with Innovation, Science and Economic Development Canada's (ISED) licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This equipment complies with Innovation, Science and Economic Development Canada radiation exposure limits set forth for an uncontrolled environment.

Cet équipement est conforme à l'exposition aux rayonnements Innovation, Sciences et Développement économique Canada limites établies pour un environnement non contrôlé.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

CAN ICES-003(B)/NMB-003(B)

Contains IC: 28058-MAMWLE

Contient IC: 28058-MAMWLE

Symbols and provisions used in the documentation

The following symbols and conventions are used throughout Move Solutions products documentation. Please follow all warnings and instructions marked on the product.



WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, can result in minor or moderate injury.



Fire Danger icons warn of the possibility of fire.



Electrical Danger icons warn of the risk of electric shock.



IMPORTANT

IMPORTANT indicates a potentially hazardous situation which, if not avoided, can result in property damage or loss of product functionality.



Prohibition icons indicate actions that must not be performed.

NOTE

NOTE specifies the operating environment, installation conditions, or special conditions of use.

Bold

Highlights an important point or keywords for understanding the context.

Underlined

Denotes a reference to another part of the documentation or to an element within MyMove platform.

General description

2

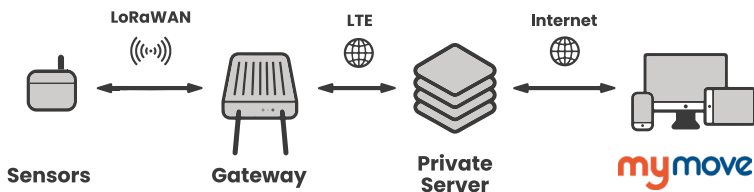
The Vibrometer HS (*High Shock*) is a triaxial wireless device designed to monitor strong vibrations through particle velocity. It supports waveform transmission for event analysis and streams data to MyMove platform for visualization and alarms.

Built for compliance-driven applications, it extends measurement capabilities beyond standard vibrometers.

The sensor is part of the Move Solutions range of LoRaWAN products for monitoring purposes; as such, it needs a LoRaWAN Gateway in its range (such as the Move Solutions Gateway) to connect to MyMove. When the sensor is connected to the platform, the settings and data can be personalized to fit the user's needs.



The Vibrometer HS design ensures quick and easy installation, significantly reducing time and costs. The sensor's operating life can be optimized by adjusting cadence and radio conditions, and it's powered by an external Battery Pack (required).



2.1 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}
- $KB_{FT(rest)}$: KB_{FT} computed over the rest period
- $KB_{FT(no rest)}$: 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.

2.2 Working principle

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

- 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

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

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.

NOTE

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

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		
Processing modes, operating modes and output parameters	Processing mode	Operating mode	Output parameters
	A	Cadence	PPV, PVS, Fmg, Velocity RMS, PPA, timestamp, temperature ⁵
		Trigger	PPV, PVS, Fmg, Velocity RMS, PPA, waveforms, FFT, Fdom, timestamp, temperature ⁵
	B	Cadence	KBF_{T_1} (over 30 seconds slots), KBF_{T_m} , $KB_{F_{max}}$, $KB_{F_{Tr(rest)}}$, $KBF_{Tr(no rest)}$, RMS acceleration, timestamp, temperature ⁵
	C	Cadence	VDV, (over 30 seconds slots), VDV, RMS acceleration, timestamp, temperature ⁵
Cadence range ⁶	30 seconds – 24 hours		
Activation threshold range ⁷	1.5 mm/s or 0.0591 in/s – Velocity full scale		

Measurement performances			
	Samples	Sampling frequency	Duration
Data buffer maximum depth ⁷	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 ⁷	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 ⁸	± 1 s		
Temperature resolution	0.05 °C		
Temperature accuracy	0.2 °C		
Internal storage memory ⁹ (circular)	Yes		

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.

⁵ Temperature is measured internally within the sensor and may differ from the ambient temperature.

⁶ Applies to Cadence mode only.

⁷ Applies to Trigger mode only.

⁸ Under good LoRaWAN radio coverage.

⁹ 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

¹The 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.

3.1 Battery life estimation

Mode	Sampling frequency		
	500 Hz	1000 Hz	2000 Hz
Cadence mode Any cadence	3.2 years	2.1 years	1.2 years
Trigger mode³ Waveform on all axes, 1 event per hour	2.5 years	1.6 years	0.9 years
Trigger mode³ Waveform on all axes, 4 events per hour	1.6 years	1.2 years	0.8 years
Trigger mode³ No waveform	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.

What's in the box

The Vibrometer HS is shipped in a cardboard box. On the side of the box, a label is affixed with the **EUI** and **Serial Number** of the product. The EUI uniquely identifies the sensor on the **MyMove** platform and must be retained for configuration and registration purposes. The package contains the following items:

- Vibrometer HS
- Move Solutions flyer with a QR code linking to the most up-to-date documentation

Mounting anchors are also supplied.

Carefully inspect the contents of the shipment upon receipt and verify that all components are present and in good condition.



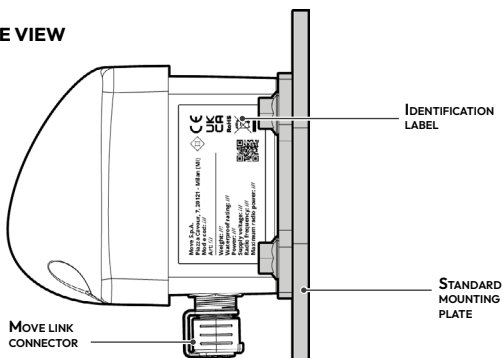
WARNING

DO NOT use the Vibrometer HS if any of the components looks broken or tampered with.

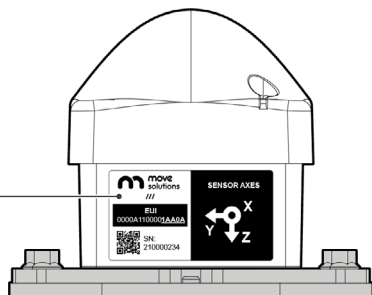


Two labels bearing the same information as the one on the packaging are affixed on the side of the Vibrometer HS. From the outside you'll see:

SIDE VIEW



TOP VIEW



AXES LABEL

The arrows' direction on the label are to be intended as the positive direction of the sensor's axes (+Z, +Y).

The X axis is positive (+X) when the label side is on top.



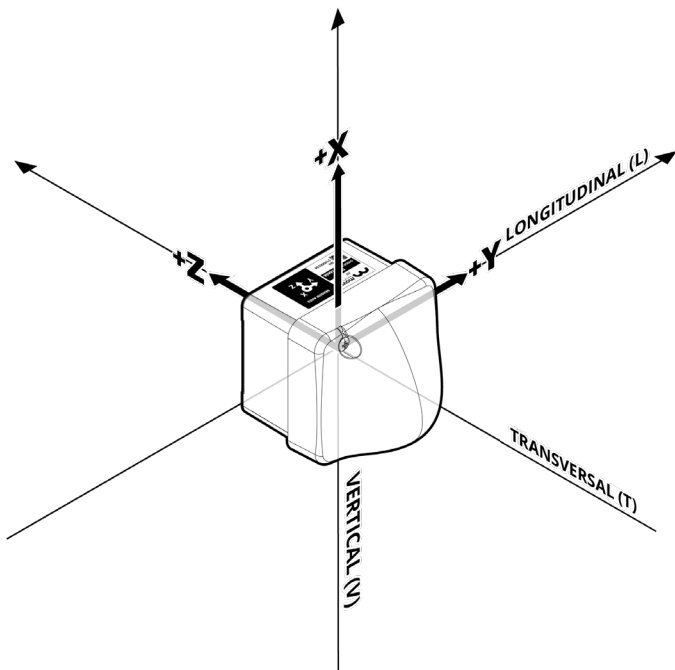
IMPORTANT

- **DO NOT** unbox or expose the Vibrometer HS in dusty and/or humid environments. 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.
- **DO NOT** loosen or tighten the screws of the Vibrometer HS as this could alter the product's IP rating.

Before installation

5.1 Axis configuration

By default, the sensor's LONGITUDINAL axis (L) is set to be +Y and the TRANSVERSAL axis (T) is +Z, with the VERTICAL axis (V) being +X.

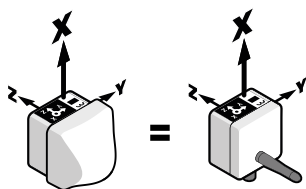


The association between the (X, Y, Z) and (L, T, V) axis systems can be configured on the MyMove platform, allowing the user to define a unified axis representation in which both reference systems are mapped onto the same structural axes.

VERTICAL AXIS CONFIGURATION

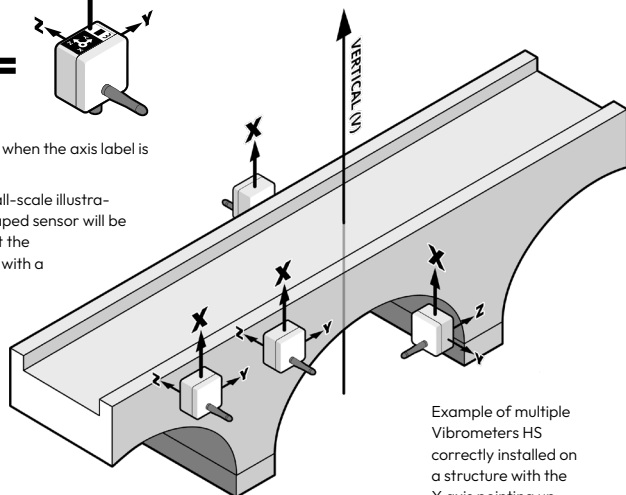
It's important to be aware, during installation, which one of the three axes of the sensor (out of X, Y and Z) is VERTICAL and in which direction (point up or pointing down). The proper configuration of this parameter is crucial for the sensor's correct functioning.

By default, the sensor is set to have **+X as VERTICAL (V)** (X axis, pointing up). Installing the sensor in that position is preferable, in order to avoid a configuration step (setting a different VERTICAL axis on MyMove platform).



X axis is pointing up when the axis label is on top.

For simplicity in small-scale illustrations, the dome-shaped sensor will be represented without the mounting plate and with a visible antenna.



Example of multiple Vibrometers HS correctly installed on a structure with the X axis pointing up.



IMPORTANT

In case it was not possible to install the sensor with the X axis pointing up, the user will have the possibility to configure, from MyMove, the axis of the sensor associated with VERTICAL.

LONGITUDINAL AXIS CONFIGURATION (OPTIONAL)

Once the VERTICAL axis is properly configured, changing the axis associated to LONGITUDINAL is not a required configuration step.

This step is needed in two occasions:

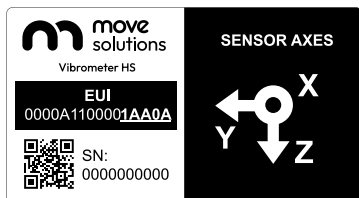
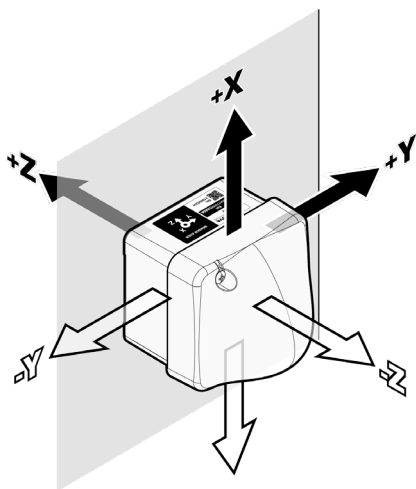
- **VERTICAL axis is different from default (+X)**
- **To ensure consistent axis alignment across sensors on the same structure**

Check the chapter [5.2 Why change the longitudinal axis?](#) for more details.

NOTE

When associating the axis of the sensor to LONGITUDINAL and TRANSVERSAL, for every axis the two options + and - are available (example: +Y and -Y).

If +Y is set as LONGITUDINAL it means that the positive (+) direction of Y is associated with LONGITUDINAL. If -Y is set as LONGITUDINAL it means that the negative (-) direction of Y axis is associated with LONGITUDINAL.



Refer to the axes label on the top side of the Vibrometer HS to identify the axes positions and directions. The arrows direction indicate the positive side of its axis (+X, +Y, +Z).

Consequently the directions opposite to the arrows can be identified as the negative side of the axes (-X, -Y, -Z).

Default configuration

By default, the axes configuration is FIG.1:

- LONGITUDINAL (L) associated with +Y
- TRANSVERSAL (T) associated with +Z

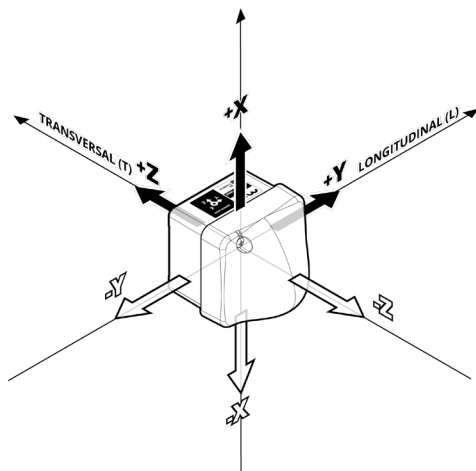


FIG.1
DEFAULT CONFIGURATION

Structure axis	L	T	V
Sensor axis	+Y	+Z	+X

Alternative configuration

Modifying the LONGITUDINAL and TRANSVERSAL axes configuration means associating different axes to them. An example of an alternative configuration would be FIG.2:

- LONGITUDINAL (L) associated with +Z
- TRANSVERSAL (T) associated with -Y

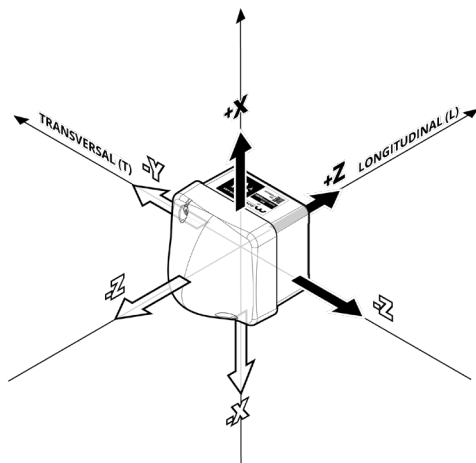


FIG.2
ALTERNATIVE CONFIGURATION

Structure axis	L	T	V
Sensor axis	+Z	-Y	+X

5.2 Why change the longitudinal axis?

The two situations that make it necessary to modify that parameter are:

1. **VERTICAL axis is different from default (+X):** in this scenario it's necessary to identify new LONGITUDINAL and TRANSVERSAL axes.
2. **Axis alignment across a structure:** if multiple sensors are installed on the same structure with different axis orientations, it may be necessary to adjust the axes associated with LONGITUDINAL and TRANSVERSAL on some sensors. In this way, the LONGITUDINAL and TRANSVERSAL axes of each sensor are aligned and consistently represent those of the entire structure.

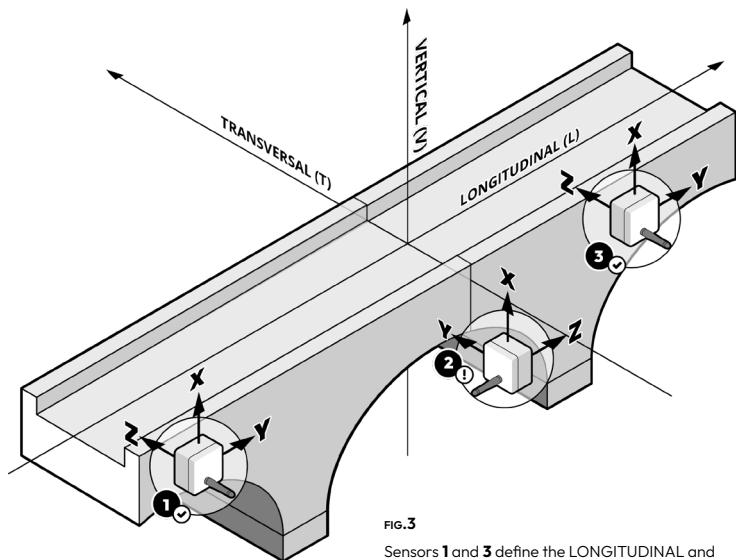


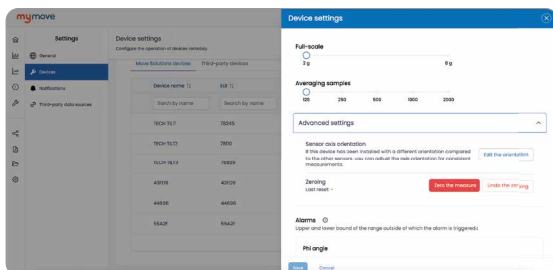
FIG. 3

Sensors 1 and 3 define the LONGITUDINAL and TRANSVERSAL axes of the structure based on their position. Sensor 2 is installed with a different orientation compared to Sensors 1 and 3. You can adjust the axes assignment of Sensor 2 on MyMove platform, to align with the other sensors.

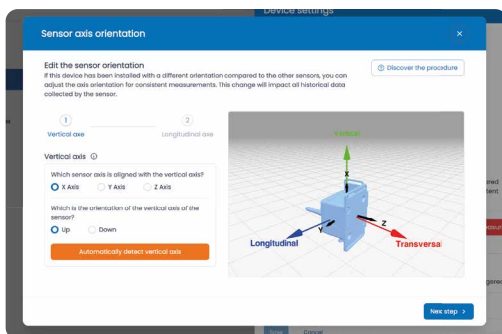
5.3 Schematics for each possible Vibrometer HS orientation

As already mentioned, you can change the orientation of the sensor axes from the **MyMove** platform. To do this, follow the steps below:

1. In **MyMove** once you're on a project dashboard, use the lateral menu to navigate to **Settings > Devices**.
2. Locate and select the device you want to configure, then click **Edit settings**. A side panel titled **Device settings** will appear.
3. In the side panel, click **Operation**.
4. Under the Operation section, open the **Advanced settings** accordian.



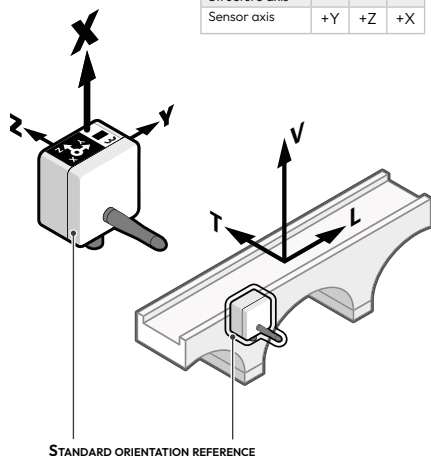
5. From here, you can access the **Sensor axis orientation** editor to adjust the sensor axes.



A. X axis pointing upwards (+X as VERTICAL)

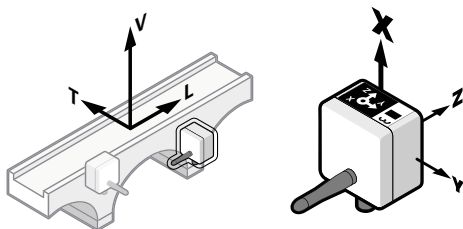
The figure alongside illustrates the Vibrometer HS in its standard reference orientation. In the subsequent examples, the axis reorientation procedure is demonstrated with respect to a reference Vibrometer HS.

Keep in mind that there is no universal standard for assigning the LONGITUDINAL or TRANSVERSAL axis of the structure; A practical recommendation is to adopt as the reference orientation the position in which the majority of your Vibrometers HS are installed.



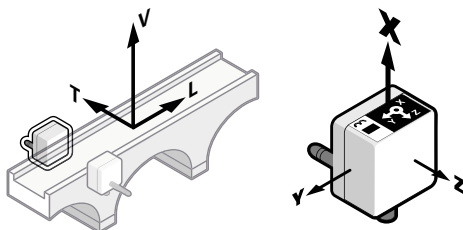
A.1

Structure axis	L	T	V
Sensor axis	+Y	+Z	+X



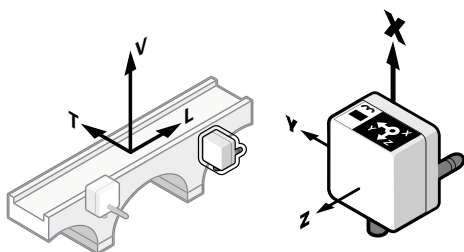
A.2

Structure axis	L	T	V
Sensor axis	+Z	-Y	+X



A.3

Structure axis	L	T	V
Sensor axis	-Y	-Z	+X



A.4.

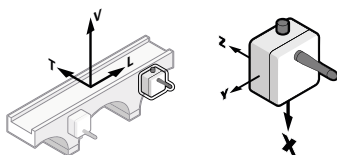
Structure axis	L	T	V
Sensor axis	-Z	+Y	+X

B. X axis pointing downwards (-X as VERTICAL)



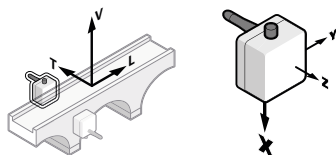
IMPORTANT

For optimal performance, **DO NOT** install the Vibrometer HS with the axis label facing downward and the connector pointing upward. The option to change the axis configuration in **MyMove** in the B.1, B.2, B.3 and B.4 orientations should be considered only as a failsafe measure, to be used exclusively when it is not possible to adjust the device orientation at the installation site.



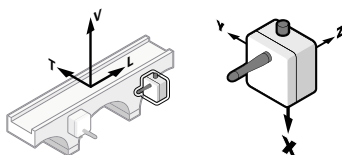
B.1

Structure axis	L	T	V
Sensor axis	-Y	+Z	-X



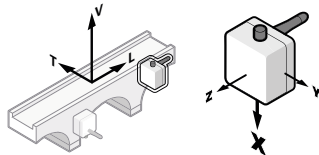
B.3

Structure axis	L	T	V
Sensor axis	+Y	-Z	-X



B.2

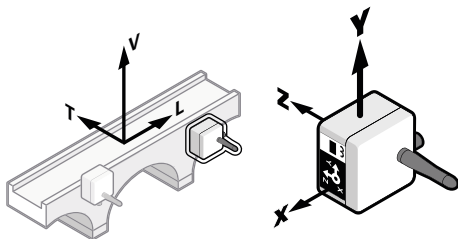
Structure axis	L	T	V
Sensor axis	+Z	+Y	-X



B.4

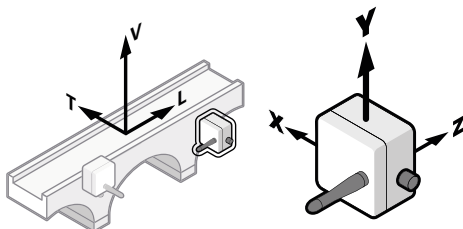
Structure axis	L	T	V
Sensor axis	-Z	-Y	-X

C. Y axis pointing upwards (+Y as VERTICAL)



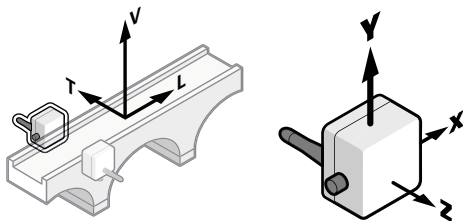
C.1

Structure axis	L	T	V
Sensor axis	-X	+Z	+Y



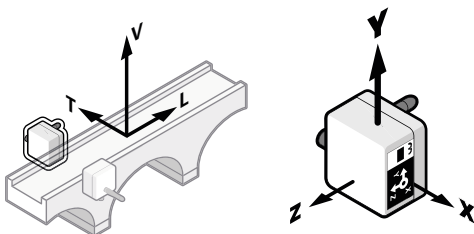
C.2

Structure axis	L	T	V
Sensor axis	+Z	+X	+Y



C.3

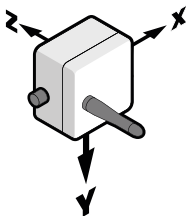
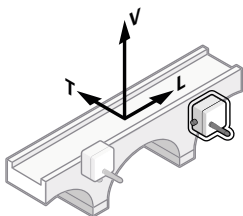
Structure axis	L	T	V
Sensor axis	+X	-Z	+Y



C.4

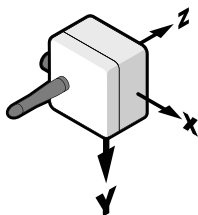
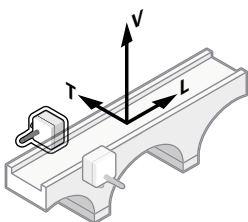
Structure axis	L	T	V
Sensor axis	-Z	-X	+Y

D. Y axis pointing downwards (-Y as VERTICAL)



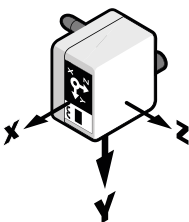
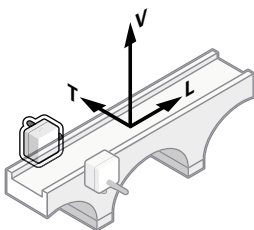
D.1

Structure axis	L	T	V
Sensor axis	+X	+Z	-Y



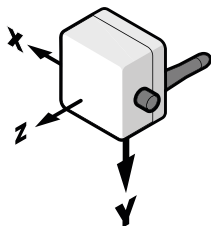
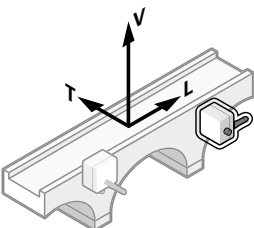
D.2

Structure axis	L	T	V
Sensor axis	+Z	-X	-Y



D.3

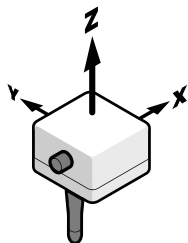
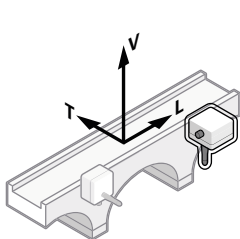
Structure axis	L	T	V
Sensor axis	-X	-Z	-Y



D.4

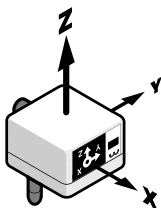
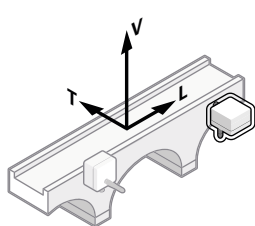
Structure axis	L	T	V
Sensor axis	-Z	+X	-Y

E. Z axis pointing upwards (+Z as VERTICAL)



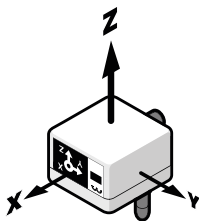
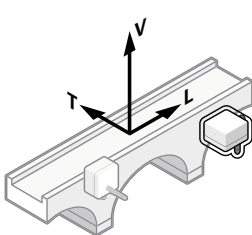
E.1

Structure axis	L	T	V
Sensor axis	+X	+Y	+Z



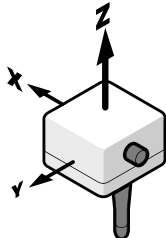
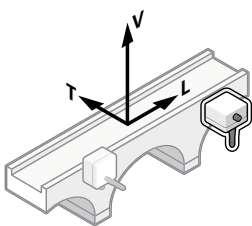
E.2

Structure axis	L	T	V
Sensor axis	+Y	-X	+Z



E.3

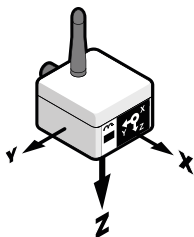
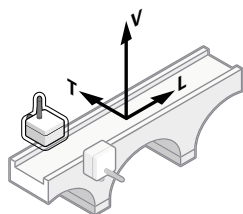
Structure axis	L	T	V
Sensor axis	-X	-Y	+Z



E.4

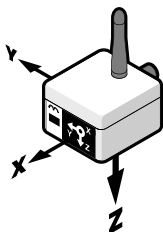
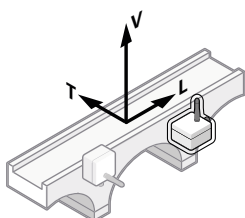
Structure axis	L	T	V
Sensor axis	-Y	+X	+Z

F. Z axis pointing downwards (-Z as VERTICAL)



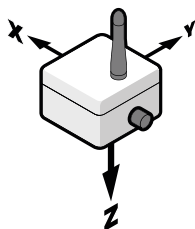
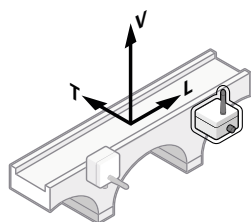
F.1

Structure axis	L	T	V
Sensor axis	-Y	-X	-Z



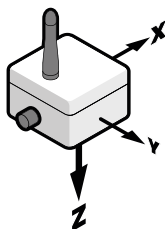
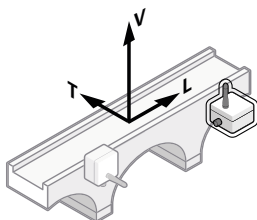
F.2

Structure axis	L	T	V
Sensor axis	-X	+Y	-Z



F.3

Structure axis	L	T	V
Sensor axis	+Y	+X	-Z



F.4

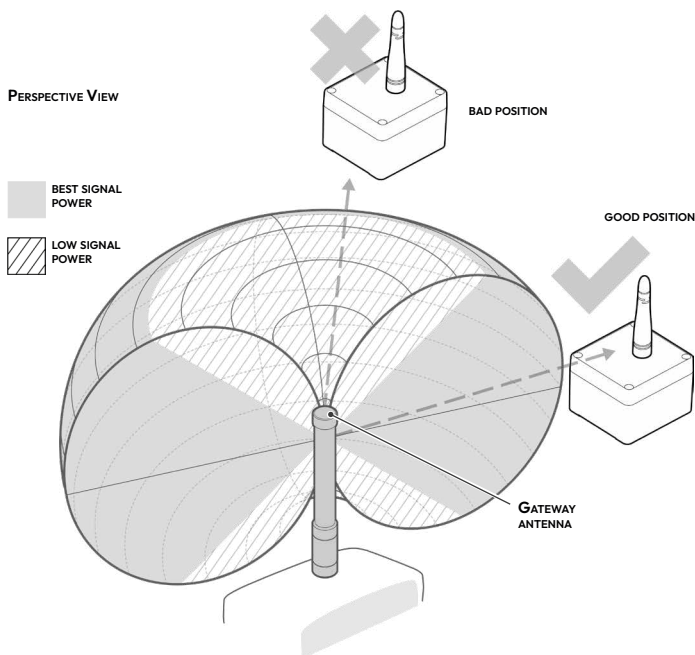
Structure axis	L	T	V
Sensor axis	+X	-Y	-Z

5.4 Optimizing radio performances

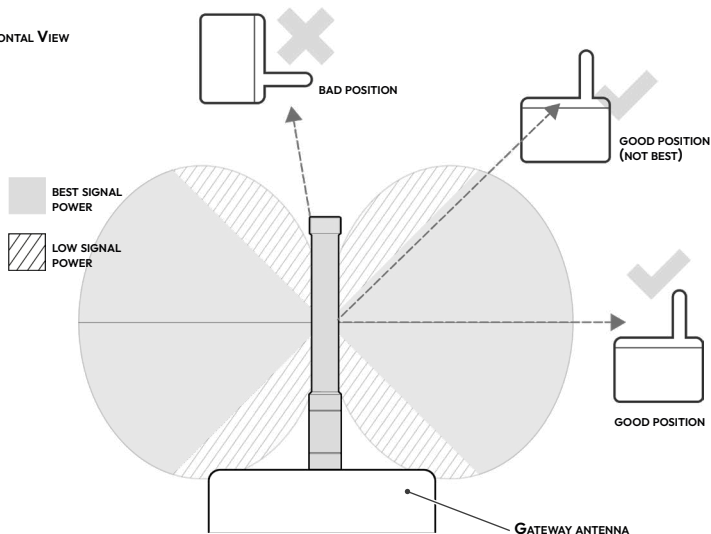
When installing the Vibrometer HS, it is important to follow some basic prescriptions to ensure the correct operation of the product.

Avoid, if possible, to locate the Gateway vertically above or under the Vibrometer HS. If this cannot be avoided, it is best to keep the two antennas perpendicular to one another. Keep the Vibrometer HS and the Gateway in line of sight as much as possible, as obstacles along the path of the signal could have a negative impact on the radio link.

Additional information on optimal positioning can be found on the Gateway manual.



FRONTAL VIEW



Try to keep the antenna as far as possible from metallic materials that could alter its radiative performance. Similarly, keep the antenna as far as possible from high voltage power cables, radio and tv antennas and any other source of unwanted electromagnetic disturbance.

Use the hardware supplied with the Vibrometer HS to fix it to the wall, floor, or ceiling.



WARNING

Remember to install the Vibrometer HS away from busy areas where it could be damaged by or cause damage to animals or people.

For example, don't install the Vibrometer HS on the floor unless it's in a completely secluded area.

Installation

6



IMPORTANT

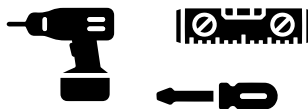
Installation must be performed by qualified personnel.

The mounting hardware provided and the instructions in this manual are for guidance only.

The choice of installation materials and the proper execution of the installation are the sole responsibility of the installer. Move Solutions is not responsible for any damages of any kind, including personal injury, resulting from the installation of the device.

Check that you have the right tools for the operation.

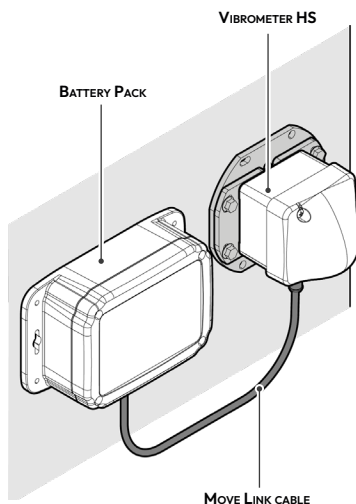
- A drill of suitable size
- An electric screwdriver of suitable size
- A level



POWERING THE SENSOR

The Vibrometer HS is not equipped with internal batteries. It must be powered using an external **Battery Pack** (P/N SBE-STD-CB-1, sold separately) connected to the Move Link connector.

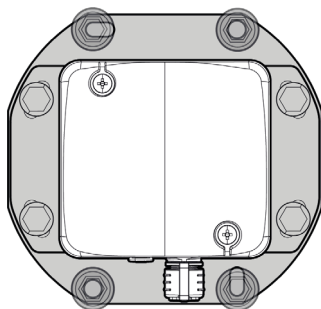
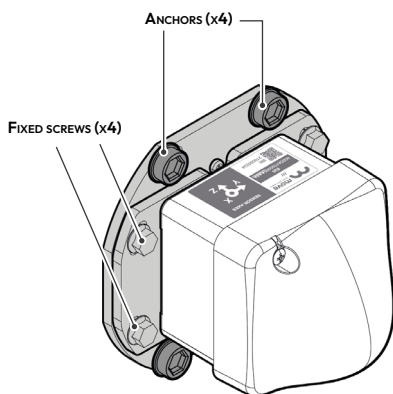
For Battery Pack installation and operation, refer to the Battery Pack installation and operation manual. When positioning the Battery Pack, consider the mounting orientation and cable length relative to the Vibrometer HS to prevent mechanical stress or tension on the Move Link cable.



ANCHORS POSITIONING AND ADJUSTMENT

The Vibrometer HS is supplied with a standard mounting plate designed for installation on rigid surfaces using anchors. For maximum stability, the unit should be secured with four anchors, as shown in the figure.

Once the anchors are installed, the mounting plate allows rotation about the Z-axis to fine-tune the sensor alignment. The fixed screws on the plate can be loosened to slightly rotate the unit and correct its orientation if needed. Once the desired position is achieved, fully tighten all screws to ensure stable and secure mounting.

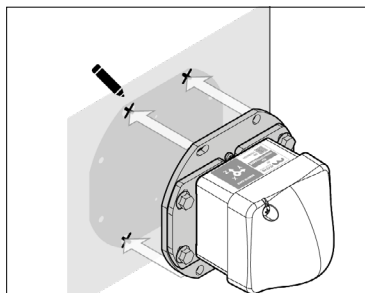


Front view

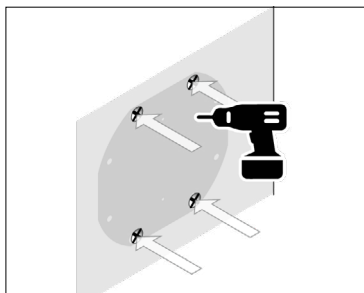


IMPORTANT

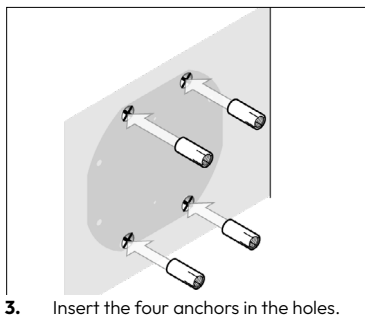
Make sure the surface where the Vibrometer HS is going to be installed does not have asperities and protrusions. Close, stable and tight contact of the device with the surface is crucial to detecting accurate data.



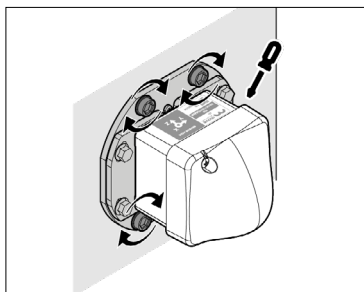
1. Using the installation plate as reference, mark the chosen spot.



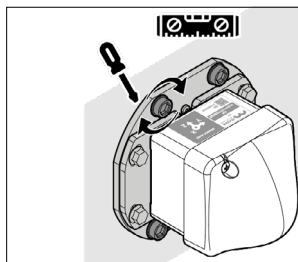
2. Drill four holes for the anchors in the mounting surface.



3. Insert the four anchors in the holes.



4. Place the Vibrometer HS on the structure and loosely tighten the four screws.



5. Using a level, make sure that the sensor is as horizontal as possible. The plate allows for slight corrections in inclination. Tighten the screws to lock in place.

If the Gateway is already running, you can start checking your data on **MyMove** platform within a few minutes. Otherwise, a maximum time of 30 minutes after the installation of the Gateway is required before the sensor can be viewed on the platform.

MyMove platform

7

GENERAL SETTINGS

To access MyMove, connect to the URL that you have been supplied with by Move Solutions and log in with your credentials.

Through the MyMove you'll be able to:

- check the data of the last 24 hours and the current state of all your devices
- explore all the data that has been gathered by your sensors since day one
- set alarms and email notifications for each sensor
- manage settings for each sensor
- ...and more!

NOTES

- MyMove is frequently updated with new features, fixes, and reviews. Refer to its documentation for more detailed information.
 - Settings that alter the Vibrometer HS behavior (settings that don't concern email alarms and sensor naming) can require up to 1 hour to be synchronized with the sensor.
-





IMPORTANT

Opening the Vibrometer HS and breaking the seal voids the warranty. For issues on devices still covered by warranty always consult Move Solutions before resolving to opening the product.

The Vibrometer HS does not include any batteries but relies on an external Battery Pack for power. There is no need for the user to open the device to perform regular maintenance.

Depending on the sensor's working settings and its environmental conditions, a replacement of the batteries inside the Battery Pack (or the Battery Pack as a whole) may be necessary every few months to every few years. For maintenance information about the Battery Pack please consult the related user manual.

9

The purpose of these illustrations is to assist you in understanding the various components and their relative positions. Therefore, it is essential to rely on the numerical measurements provided alongside the drawings for accurate dimensions.

Front view

130

60

120

82

60

100

Technical drawing of the front view of the S1000 outdoor lamp. The lamp has a white, dome-shaped top and a black base. A vertical dimension line on the left indicates a height of 100 mm. The black base features a label with technical specifications and a QR code.

Annex A

Troubleshooting

Here we seek to give a few pointers to the most common misfunctions and suggested counter-measures.



WARNING

Remember to always disconnect the Battery Pack before physically operating on the Vibrometer HS.

1. THE VIBROMETER HS IS OFFLINE

Check that a Gateway is installed nearby, and that it is online. If the Gateway is offline, refer to its manual or to the customer service to solve the problem. If the Gateway has no issues, the problem can be ascribed to the sensor itself, so follow these steps:

- Wait a few hours: the Vibrometer HS might be functioning correctly, but the data may not arrive due to high traffic on the radio channel. This might be the case in installations with a high density of LoRaWAN devices, or when the radio environment abruptly changed. The device automatically adapts its radio parameters to the environment, but in some cases up to one day might be required to reach stability.
- Examine the surroundings of the Vibrometer HS and check that no disturbance is present. Disturbances might come from industrial appliances, machinery, or metal objects in general. If the device has stopped working after regularly working for a while, investigate on environmental conditions that might have appeared (drastic changes in atmospheric conditions, such as fog or snow, or new obstacles that might have been installed). Changes in the device's environment could cause the device to go offline for several hours, for example if a large metal object is placed close to the sensor, behaving as a radio shield.
- Dismount the Vibrometer HS and move it in a location closer to the Gateway and wait up to one day. If the Vibrometer HS goes back online, it probably means that the radio path between it and the Gateway is suboptimal, and action needs to be taken.

If all these tests fail, refer to the customer support for assistance.

2. THE VIBROMETER HS IS ONLINE, BUT NO DATA IS SHOWING ON MYMOVE PLATFORM

The Vibrometer HS might be configured in Threshold triggering mode, but the measured data never reach the threshold. Check that the Vibrometer HS mechanical coupling to the structure is correct. If the mechanical coupling is correct, then the measured data might actually be unable to reach the selected threshold: in this case, you can set a lower threshold to collect more data points. In case the instrument is using programmed acquisition based on a defined cadence, you can increase the cadence to collect more data points for the same time interval.

3. UNEXPECTED BEHAVIOR AFTER CHANGING THE SETTINGS

Changes made in the platform's setup menu might require up to 1 hour to be synchronized to the sensor. Moreover, if the setup is changed on more than one sensor, there might be a difference on when different sensors receive the new setting. For the best results, please allow some time for the system to stabilize after changing any settings.

Document revisions

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

MOVE SOLUTIONS CUSTOMER ASSISTANCE SERVICE

Visit the website at www.movesolutions.it for contact information relating to office addresses and telephone numbers.

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PUBLICATION

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29 May, 2026

Revision 1



www.movesolutions.it

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NEED HELP WITH INSTALLATION,
MAINTENANCE OR SERVICE?

Write to: support@movesolutions.it

or call: +39 342 64 86 115