



ORION Smart Vibration Monitoring Terminal
INSTALLATION & SAFETY INSTRUCTIONS



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TABLE OF CONTENTS

1.	Safety Instructions	7
1.1.	General Safety Warnings	7
1.2.	Definitions : Safety Guidelines	7
1.3.	Safety Labels and markings	7
1.3.1.	ID label on the back plate of the instrument	7
1.3.2.	Markings next to the connectors	8
1.3.3.	Markings on the keyboard	9
1.3.4.	Marking for Earth connection	9
1.4.	Operating environment	10
1.4.1.	Instrument	10
1.4.2.	Power supplies	10
1.5.	Mechanical risk and work area safety	11
1.6.	Electrical safety	12
1.6.1.	Generalities	12
1.6.2.	External Power supplies	12
1.6.2.1.	General information	12
1.6.2.2.	Standard power supply VMT1004000	13
1.6.2.3.	Waterproof power supply VMT1007000	14
1.6.2.4.	Existing Power Over Ethernet supply	16
1.6.3.	Inputs and Outputs	16
1.7.	Personal safety	17
1.8.	Use and care	17
1.9.	Cleaning	17
1.10.	Radio	18
1.10.1.	General information	18
1.10.2.	WIFI	19
1.10.3.	GSM	19
1.10.4.	GPS	19
	20
1.11.	Access hatch	20
1.12.	vent valve	20
1.13.	Service	20
1.14.	Recycling and Waste disposal	20
1.14.1.	General information	20

1.14.2.	Charge/Discharge.....	21
1.15.	Transportation.....	22
1.16.	Storage recommendations	22
2.	General Presentation.....	23
2.1.	Introduction.....	23
2.2.	Measurement domains	23
2.3.	Overview.....	24
2.4.	Inputs sensors Description	25
2.4.1.	Triaxial internal Accelerometer	25
2.4.2.	Triaxial external transducer	25
2.4.3.	Microphone external sensor.....	25
2.5.	Antennas	25
2.6.	Access hatch	26
3.	Installation.....	26
3.1.	Use cases prerequisite.....	26
3.2.	Flowchart for the installation.....	26
3.3.	Installation of the ORION with the optional Mounting Plate	27
3.4.	Power supply	28
3.5.	Earth connection	29
3.6.	General installation scheme	30
4.	Maintenance	30
4.1.	Generalities	30
4.2.	Parts replacement	30

Welcome to the world of 01dB

ACOEM would like to thank you for purchasing this 01dB product and invites you to refer to this installation and safety instructions. For more information on 01dB's products and services, please visit www.01db.com.

Receipt of your equipment

This product was carefully inspected and tested prior to shipping. Nevertheless, you are requested to check when opening the packaging that there is no sign of damage and that all the accessories are included. If this is not the case, please notify ACOEM or its approved representative without further delay. You are advised to keep the packaging in case you need to return your equipment for maintenance at ACOEM's premises.

Warning



Before using the product, read the instructions carefully, especially the safety instructions and the installation section

The safety instructions described in this manual should be adhered to and the instruments should always be used within the limits specified hereafter. Instrument and operator safety is at risk when the instrument is used in conditions that are not intended by ACOEM.

The User Manual (Computer version DOC1154), the Installation and Safety Instruction Manual NOT1561 (computer and paper versions) provided with ORION must be read by the operator before installation or starting to operate. Print this document or use a computer or a tablet to keep them available, especially during installation;

Warranty

For this 01dB product, ACOEM offers a 24-month warranty for parts and labor, against all manufacturing defects, with free shipment to return the equipment to ACOEM. Any defects or damage caused by normal wear or resulting from negligence (poor supervision, maintenance or storage conditions, misuse of product, etc.) or arising from modifications that are not allowed for nor specified by ACOEM are excluded from the warranty. Up to the expiry date of the warranty period, ACOEM undertakes to rectify any defect that adversely affects the normal operation of the product and that fails within the scope of this warranty. In the event that such a defect should arise, you should inform ACOEM in writing without delay, including any information liable to be useful in diagnosing the nature of the defect and providing all supporting data as to the existence of the defect.

For further information:

- Visit our website at www.01db.com
- Follow us on Twitter: http://twitter.com/01dB_acoem
- Follow us on Facebook: <https://www.facebook.com/pages/Acoem/>
- Follow us on LinkedIn: <https://www.linkedin.com/company/01db-prevention-of-noise-&-vibration-pollution>
- Contact our Customer Service Department by e-mail at 01db.support@acoemgroup.com

1. SAFETY INSTRUCTIONS

1.1. GENERAL SAFETY WARNINGS






WARNING! Read all safety warnings and all instructions. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE.

Follow the "Quick Start Guide" and the "User Manual" that can be downloaded on: <http://support.01db.acoemgroup.com>.




1.2. DEFINITIONS : SAFETY GUIDELINES




The definitions below describe the level of severity for each signal word. Please read the manual and pay attention to these symbols:

Symbol	Description
	WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
	WARNING: indicates a potentially hazardous voltage

1.3. SAFETY LABELS AND MARKINGS









1.3.1. ID label on the back plate of the instrument

M/N:	VMT1002000	FCC ID: 2AC3Z-VMT1002000
	01dB ORION	IC: 12336A-VMT1002000
		Contains FCC ID: R17HE910
S/N:	10017	Contains IC: 5131A-HE910
01dB-Metravib ACOEM		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.
01dB.com		
		
Made in France		

Symbol	Description
	Discard the instrument with due care for the environment.
	CE certification data. Refer to the copy of the UE certificate
	Warning: Whenever this symbol is present on the device, it is essential to refer to the safety instructions documentation and the user manual.
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 and IC statutory. Refer to section "Radio"
FCC ID: 2AC3Z-VMT1002000 IC: 12336A-VMT1002000 Contains FCC ID: R17HE910 Contains IC: 5131A-HE910	FCC and IC number. Refer to section "Radio".

1.3.2. Markings next to the connectors



Connector #	Symbol	Description
C1	Ext. sensors 24V  4mA	External sensors ( means dc: direct current) Constant Current output 4 mA dc at +24 Volts max
C2	TTL out 0/3.3V  30mA	TTL output ( means dc: direct current) +3,3 V dc at 30 mA max
C3	Power 12V  1.3A	External input Power; Respect tension and current. ( means dc: direct current) +12 Volts nominal dc at 1,3 A max Refer to section external supply (§1.6.2)
C4	LAN PoE 48V  0.3A	Ethernet / External Power over Ethernet; ( means dc: direct current) +48 Volts dc nominal at 0,3A max Respect tension and current. Refer to section PoE (§1.6.2.4)

1.3.3. Markings on the keyboard



Symbol	Description
	Power button Power LED
	Lock LED
	Sensor error LED
	Wi-Fi button Wi-Fi LED
	Memory SD (solid disk) card slot (Behind the hatch)
	Micro-USB Factory service only (Behind the hatch)
	SIM card slot (Behind the hatch)
	Micro-USB Connector (Behind the hatch)
	Ethernet LED
	Battery LED for charge level indication
	Wi-Fi antenna connector
	GPS Connector
	GSM antenna connector LED for quality signal

1.3.4. Marking for Earth connection

Symbol	Description
	Label Earth protection

1.4. OPERATING ENVIRONMENT

Don't use this instrument, its accessory and its power supply in explosive atmosphere, or near flammable products, or near corrosive products.

1.4.1. Instrument

The instrument has a protection degree IP65 (IEC60529) when hatch is closed and connector's bases are equipped of their protections or their connectors.

The instrument has a protection degree IP20 (IEC60529) when hatch is opened.

In an industrial environment, always use the instrument equipped with its connector hatch. Check the presence of the seals and their condition prior to any use. Check the tightening of the hatches.

In an office environment (no water splashes), the instrument can be used when the hatch is open.



Whenever the instrument is used outside, it must have hatch closed and connector's bases equipped of their protections or their connectors.

The instrument (excluding power supply) is designed to operate in environmental conditions as described in Standard IEC61010-1:

- Altitude up to 2,000 m;
- Temperature from 5°C to 40°C.
- Pollution rating 2
- maximum relative humidity 80 % for temperatures up to 31 °C decreasing linearly to 50 %
- relative humidity at 40 °C;

And the following extended conditions:

- Outdoor use.
- Pollution rating 4
- Wet Location
- ambient temperatures from -10°C to 55°C.
- 95% humidity, no condensation.



Warning: The operating environments for power supplies are not the same than for the instrument ORION.

Take care to respect the most constraining environment if the power supplies are used.

1.4.2. Power supplies

Respect the emplacement for the power supply.

Use only the power supply described in this document.

Only the waterproof power supply may be used outdoor.

For more information on the environment of Power supplies, Refer to §1.6.2 External Power supplies)

1.5. MECHANICAL RISK AND WORK AREA SAFETY

- Keep work area clean and well lit. Cluttered or dark areas invite accidents.
- Ensure the cables connected to the instrument are secure, protected and fixed to avoid hanging on or falling.
- A mark-up and/or a mechanical protection must be put in place to protect the instrument
- As the device is heavy, wear security shoes to prevent injury from a drop.

As standard, the device is equipped with three feet with spherical extremity

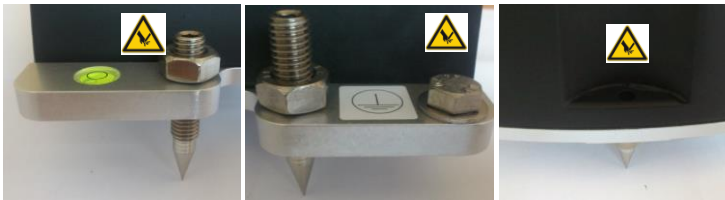


Optionally, the device can be equipped with three feet with very sharp extremity

- Be very careful to prevent injury by the sharp extremity.
- Use gloves to prevent injury when manipulating
- When not used, cover the sharp extremities with their cap.
- When installing the device, keep the protective cap as long as possible and remove it at the last time.
- When the sharp feet are in place on the device, always turn them to the ground. Never let the device with the sharp feet turned up.
- The sharp feet are provided in a bag with three warning labels and a safety warning. Stick the labels as explained.



01 – Standard foot
02 – Optional sharp foot
03 – Protective cap



1.6. ELECTRICAL SAFETY

1.6.1. Generalities



- All external circuits connected to ORION should be non-hazardous voltage, and energy source limited within the meaning of the IEC61010-1 standard.
- The power supply must be connected to the mains power equipped with a differential circuit breaker.
- The power supply is the main disconnecting device in the system and, as such, should remain always perfectly accessible and disconnectable
- The power outlet must be in an accessible location for fast unplug if there is a need for fast disconnection.
- The instrument and power supply plugs must match the outlet. Never modify the plug in any way. Unmodified plugs and matching outlets will reduce risk of electric shock.
- Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the instrument.
- Ensure the power supply is connected to an outlet protected from shocks or possible damage.
- Keep cord away from heat, oil, sharp edges or moving parts. Damaged or entangled cords increase the risk of electric shock.
- When operating the instrument outdoors with the optional outdoor power supply, use an extension cord suitable for outdoor use. Use of a cord suitable for outdoor use reduces the risk of electric shock.
- The connection of the safety ground on the housing is essential using cables outside the building

1.6.2. External Power supplies

Observe the recommended Power supply is very important for the instrument safety.

1.6.2.1. General information

The instrument can be powered by four type of external power supply

- A standard power supply which can only be used in an Indoor environment.
- A Waterproof power supply which can only be used in an Indoor and Outdoor environment
- The instrument can also be powered by an existent Ethernet Lan providing the power supply over Ethernet (PoE). Observe the electrical safety rule for this case.

The Standard power supply and the waterproof power supply come on the C3 External Power

The Ethernet power supply come on the C4 Ethernet connector.

1.6.2.2. Standard power supply VMT1004000



GC-ZDL1201500 GIGA-Concept Electronics components

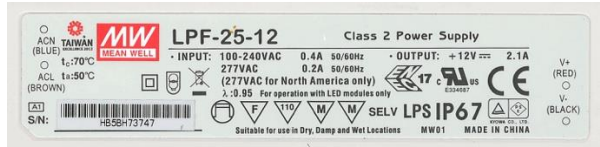
Symbol	Description
	Only for indoor use
	The power supply is double insulated in accordance with EN 60335; therefore no earth wire is required.
	Discard the power supply with due care for the environment.
	CE label
INPUT:AC100-240V 50/60Hz 0.8A	Input Electrical characteristics 100-240V AC frequency 50 to 60Hz at 0,8 A max
OUTPUT:12V --- 1500mA	Output Electrical characteristics (--- means dc: direct current) + 12 V dc at 1500 mA max
AC ADAPTER MODEL:ZDL1201500	Identification : Model number
	Output connector modified with cylindrical connector
www.giga-concept.fr	manufacturer
MADE IN CHINA	Country
	UL mark
	TUV Mark

Environment:

- Indoor only, altitude up to 2 000 m;
- Operation 0 to 35°C
- MAINS supply voltage fluctuations up to $\pm 10\%$ of the nominal voltage
- TEMPORARY OVERVOLTAGES occurring on the MAINS supply
- TRANSIENT OVERVOLTAGES up to the levels of OVERVOLTAGE CATEGORY II
- TEMPORARY OVERVOLTAGES occurring on the MAINS supply
 - Do not use the standard power supply outdoors.
 - To connect to the mains power, first connect the cylindrical plug C3 on the instrument, and connect the power supply to the power outlet. Proceed in reverse order to disconnect.






- Pull by body rather than cord when disconnecting standard power supply. This will reduce risk of damage to electric plug and cord.

1.6.2.3. Waterproof power supply VMT1007000



Part number LPF-25-12

Symbol	Description
LPF-25-12	Product identification
Class 2 Power Supply	The device has reinforced insulation without accessible metal part. Devices of class 2 does not need a ground pin Note: the ground pin on the input plug is not connected
- INPUT: 100-240VAC 0.4A 50/60Hz 277VAC 0.2A 50/60Hz (277VAC for North America only) λ:0.95 For operation with LED modules only	Input Electrical characteristics 100-240V AC frequency 50 to 60Hz at 0,4 A max (Ignore other marking)
• OUTPUT: +12V 2.1A	Output Electrical characteristics means dc: direct current) + 12 V dc at 2,1 A max
	CE mark
	ENEC mark (ENEC is the high quality European Mark for electrical products)
	Component UL recognized
IP67	International Protection degree for the module
MADE IN CHINA	Production country
HB5BH73747	Serial number
	The power supply is double insulated in accordance with EN 60335; therefore no earth wire is required.
	The power supply has a safety transformer
	Discard the power supply with due care for the environment.

	*Device independent auxiliary lighting
	*For direct mounting on flammable surfaces, such as wood (> 2mm)
	*Protection to avoid the lamp controlgear overheat whatever the conditions of use exceedantes the value indicated (110 ° C)
	*Could be mounted inside wood part. The minimal distance between the product and the wood part has to be respected (Please refer to VDE0710-14A)
SELV	*Safety extra low voltage
LPS	*Limited power source
 KYOWA CO., LTD.	TUV Rheinland of North America The PSE Mark is a mandatory mark for Japan according to the Electrical Appliance and Material Safety Law
t_c:70°C t_a:50°C	Temperature information
○ V+ (RED) ○ ACN (BLUE) ○ V- (BLACK) ○ ACL (BROWN)	Connexion Information

*Specific information for lighting applications (not involved for ORION)

Environment:

- Indoor and outdoor
- Operation -20°C to 55°C without derating
- MAINS supply voltage fluctuations up to ±10 % of the nominal voltage
- TEMPORARY OVERVOLTAGES occurring on the MAINS supply
- TRANSIENT OVERVOLTAGES up to the levels of OVERVOLTAGE CATEGORY II
- TEMPORARY OVERVOLTAGES occurring on the MAINS supply

Warning

ORION powered by this supply is a **class A product**. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures. See EU declaration of conformity.

- When operating the optional outdoor power supply, always avoid locations where the power supply or the connectors may be submerged. Use imperatively an extension cord suitable for outdoor to avoid the risk of electric shock.
- To connect the mains, first connect the cylindrical plug C3 on the instrument, and connect the power supply to the power outlet. Proceed in reverse order to disconnect.
- Mark the area to protect the power supply from shock



1.6.2.4. Existing Power Over Ethernet supply

Two cases possible:

The existing Power over Ethernet supply to ORION must conform to IEC 61010-1: 2010 and EN 61010-1: 2010 and all their applicable Amendments".

The output circuits of these power supplies must have safe voltage levels and power be limited in the sense of these standards.

or

The existing Power over Ethernet supply to ORION must comply with IEC 60950-1: 2005 and EN 60950-1: 2006 and all their applicable Amendments."

The output circuits of these power supplies must be of the Safety Extra Low Voltage (SELV) and be Limited Power Sources in the sense of these standards.

1.6.3. Inputs and Outputs

- All external circuits connected to ORION should be non-hazardous voltage and energy sources be limited within the meaning of the IEC61010-1 standard.
- Do not exceed the maximum input voltage on the connectors.

Connector #	Symbol	Description	Maximum voltage and current
C1	Ext. sensors 24V $\overline{\text{---}}$ 4mA	External sensors	DC input with current générateur ($\overline{\text{---}}$ means dc: direct current) +24V dc max at 4mA
C2	TTL out 0/3.3V $\overline{\text{---}}$ 30mA	TTL output	TTL Output ($\overline{\text{---}}$ means dc: direct current) +3.3V dc max at 30 mA
C3	Power 12V $\overline{\text{---}}$ 1.3A	External Power; Respect tension and current. Refer to section external supply	Input power ($\overline{\text{---}}$ means dc: direct current) 12V dc nominal at 1.3A Min 9V / Max 15V
C4	LAN PoE 48V $\overline{\text{---}}$ 0.3A	Ethernet / External Power over Ethernet; Respect tension and current. Refer to section PoE	Input ethernet power ($\overline{\text{---}}$ means dc: direct current) +48V dc at 0.3A Min 46V : Max 50V

1.7. PERSONAL SAFETY



- Stay alert, watch what you are doing and use common sense when installing and operating the instrument. Due to its weight and shape, the manipulation of the instrument can result in minor or moderate injury, especially if the spikes are mounted.
- In case of use of spikes, the spike protection must remain in place until the instrument is placed at its measurement position.
- Use personal protective equipment. In particular, safety shoes and possibly gloves when handling the instrument. This equipment is not provided with the system and must be provisioned by the user.

1.8. USE AND CARE

- Before any use, visual inspect the instrument case and its accessories and check there is no visible damage such as crack, broken part or abnormal deformation.
- Check the access hatch cover is correctly mounted and screwed.
- The instrument must be properly connected to the earthing system (use of optional cable + stake if no earth connection available) (refer to §3.5 Earth connection)
- The connection to the earthing system must be done before connecting the instrument power supply to the mains.
- Do not install nor uninstall all or part of the equipment in stormy weather.
- Do not install nor uninstall all or part of the system in explosive areas.
- Do not install the equipment next to flammable chemical products or unknown things.
- The instrument must be protected as much as possible against direct exposure to sun in order to limit heat-up.
- Always put in place the connectors cover.
- Disconnect the plug from the power source before changing accessories or storing the instrument.
- The instrument should not be used at altitudes above 2000m.

1.9. CLEANING

- Disconnect the instrument before attempting to clean.
- Close the hatch before cleaning.
- Protect the connectors with their cap before cleaning.
- Use non aggressive products to clean the instrument, as diluted detergent (dishwashing liquid, or soap)
- Start on little hided surface to be sure of the right product choice.
- Do not insist on labels to avoid erase them.
- Forbid aggressive product as acids, ammoniac, acetone,

1.10. RADIO

1.10.1. General information



The instrument is capable of connecting to Wi-Fi and 3G wireless networks. Modems Wi-Fi and 3G are qualified for EMC and safety. **This qualification is valid only with the antennas supplied with the unit and referred in this document.**

The instrument is also capable of receiving GPS satellites data

FCC ID: 2AC3Z-VMT1002000
 IC: 12336A-VMT1002000
 Contains FCC ID: R17HE910
 Contains IC: 5131A-HE910

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.

This device complies with FCC and IC RF radiation exposure limits set forth for general population. This device must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

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

1. FCC (USA):

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.

For Standard Power supply VMT1004000:

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 instruction, 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 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 circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

For Waterproof power supply VMT10070000

Note: This equipment has been tested and found to comply with the limits for a **Class A** digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

2. IC: (industry Canada)

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

This radio transmitter (IC: 12336A-VMT1002000) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device. ORION is equipped with 2.4GHz Mini Stubby Antenna model ANT-24G-S21, 50 ohms, 0 dBi. Only use this model of antenna.

This device complies with Industry Canada license-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. This class (B) digital apparatus complies with Canadian ICES-003

1.10.2. WIFI



Wifi modem is qualified for Safety and EMC. This qualification is valid only with the antenna supplied with the unit.

Reference of the antenna: **VMT1029000**



1.10.3. GSM



GSM modem (3G+) is qualified for safety and EMC. This qualification is valid only with the antenna supplied with the unit.

Reference of the antenna: **VMT1030000**



1.10.4. GPS

Two antennas types can be used:

- Antenna (ACE1105) mounted directly on ORION if satellites reception is satisfactory at ORION location.
- GPS patch (ACE1094) to be able to mount the patch at a different location from where ORION is for better satellites reception; 3 meters cable.



1.11. ACCESS HATCH



- The access hatch must be opened only in an office atmosphere with a desk-counter pollution less than 2.
- Do not forget to mount it before going on a job site



1.12. VENT VALVE

The instrument has a breath valve with a membrane which allows respiration, but stop humidity.

- Breathing valve must not be obstructed or blocked



1.13. SERVICE

- The disassembly for internal repair is prohibited.
- The service of the ORION has to be performed by a qualified person using only original replacement part. This will ensure that the safety of the instrument is maintained.

1.14. RECYCLING AND WASTE DISPOSAL

In no event should this instrument be thrown in trash. It must be disposed of according to the WEEE directive. Waste disposal and recycling procedures compliant with WEEE* shall be adopted.

*WEEE: Waste Electrical and Electronic Equipment

- The instrument and accessories should be recycled as electronic product incorporating a battery.
- The instrument and its accessories should not be incinerated or thrown into the fire
- The instrument and its accessories must not be landfilled.
- The instrument and its accessories must neither be ground nor crushed.



1.14.1. General information



- The internal battery is not replaceable by the User.
- The internal battery is not accessible by the User.
- The battery pack must be replaced at factory only by authorized personnel

Anyway,

- Do not open or dismantle the battery pack. The pack includes essential safety protections and assembly that should in no event be modified.
- The battery pack can only be replaced for maintenance purposes. The operating lifetime of the pack is long enough to guarantee a full day of continuous work.
- Do not short circuit the terminals of the battery connector (note: for safety reasons, the battery pack is equipped with an internal non resettable fuse. A short circuit would make the battery pack unusable).
- Respect the voltage, current and temperature ranges listed on the battery label.
- Do not exert excessive mechanical pressure on the battery pack.
- Do not expose the battery to water or condensation.

- Do not place the battery into fire or close to any other temperature source (> 70°C). This action may cause overheating, even start a fire. This type of use may also lead to degraded performances and to a significantly reduced lifetime for the battery.
- Immediately disconnect the power supply in the event of one of the following situations:
 - unusual odour
 - unusually high temperature

1.14.2. Charge/Discharge



The battery is charged by an internal charger.

The external power supply provides energy to the instrument for its functioning and also for the battery recharge. The priority is always given to instrument functioning.

During the charge, the battery temperature rises. The charger senses the temperature to maintain it under a safety level. If the temperature begins to rise too high, the charger will stop the charge.

The maximum ambient temperature for a full charge rate at 3A is 36°C

Otherwise, the current charge will stop as long as the temperature is too high.

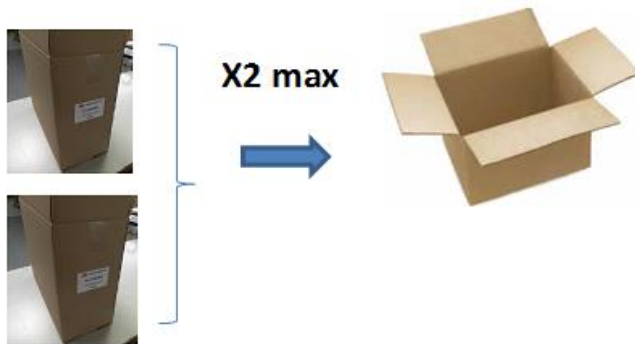
1.15. TRANSPORTATION

Safety instructions for Lithium Ion :

The instrument together with its integrated Lithium Ion battery comply with all applicable shipping regulations as prescribed by industry and legal standards which include UN Recommendations on the Transport of Dangerous Goods; International Air Transport Association (IATA) Dangerous Goods Regulations, International Maritime Dangerous Goods (IMDG) Regulations, and the European Agreement Concerning The International Carriage of Dangerous Goods by Road (ADR). Lithium-ion cells and batteries have been tested to section 38.3 of the UN Recommendations on the Transport of Dangerous Goods Manual of Tests and Criteria.

The instrument has the classification number UN3481. Section II Package instruction 967.

Each unit is individually wrapped. Two products are allowed in the shipping carton. They must be secured inside.



It is the expeditor responsibility to comply with the applicable regulations.

1.16. STORAGE RECOMMENDATIONS

- The best storage place is a cool and dry area away from direct sunlight and excess heat or cold. For optimum battery performance and life, store the instrument between 15°C and 25°C
- For long storage, it is recommended to store a fully charged instrument in a cool, dry place out of the power supply
- Observe the storage temperature -20 ° C < T ° storage < 70 ° C

NOTE: The instrument should not be stored completely depleted of charge. The battery will need to be recharged before use.

2. GENERAL PRESENTATION

2.1. INTRODUCTION

ORION is a new generation upgradeable vibration measuring instrument, integrating innovative technology. The programming of all available functions (Input / Output / Storage...) allows meeting best the user's requirements.

The data measured with the instrument are displayed on a remote screen, such as a tablet, smartphone or laptop, using an off-the-shelf networked device equipped with Wi-Fi or 3G connectivity and a web browser, in conjunction with the web interface, the web server built into the instrument. This function offers access to all the functions of the instrument (measurement and system configuration, real-time display...).

A status bar visible on the web interface gives the operator a quick overview of the device status and the current measurement. At any time, the user can access more detailed information looking at the different menus available. For instance, the user is informed about the remaining battery lifetime (depending on parameters of the selected configuration), disk space available etc.

The integrated Ethernet, Wi-Fi and 3G communication features give the user complete control of the instrument (configuration, real-time values, stored data...), with equal ease adjacent to the measurement point (a few dozen meters away using point-to-point Wi-Fi) and at a distance (3G). Hence, the interest for simultaneous measurement in several points and as a result getting fully synchronised and geo-referenced results using several instruments with built-in GPS component and external antenna or patch.

2.2. MEASUREMENT DOMAINS

- Vibrations on buildings: e.g. damage caused on a building site by a neighbour
- Vibrations on occupants: e.g. vibrations near a railway
- Vibrations on sensitive equipment: e.g. work in the museum neighbourhood or sensitive computers.

The evaluation of vibration is based on velocity or acceleration acquisition on three axes X, Y, Z in the band 0.4Hz-150 or 500Hz frequency. According to the standards of different countries, the measured quantities are compared to tolerance curves whose values may differ depending on the frequency.

2.3. OVERVIEW



Front view

- 01 – Hatch access to connectors SD, USB, SIM and service
- 02 – Keyboard
- 03 – Bubble level for horizontal adjustment
- 04 – Wi-Fi antenna
- 05 – GPS antenna (optional)
- 06 – 3G antenna
- 07 – Internal sensor directions
- 08 – QR code



Back view

- 09 – C1 - External sensors
- 10 – C2 - TTL Output
- 11 – Breathing valve
- 12 – C3 - External Power
- 13 – C4 - Ethernet / External Power over Ethernet (PoE)

2.6. ACCESS HATCH

The waterproof access hatch must be screwed using the knurled head screws with the torque allowing the user to unscrew them with fingers. It gives access to several slots:

- SD card slot
- Sim card slot
- Micro USB connectors for USB host connection (allows for reading the SD card content) and factory service

3. INSTALLATION

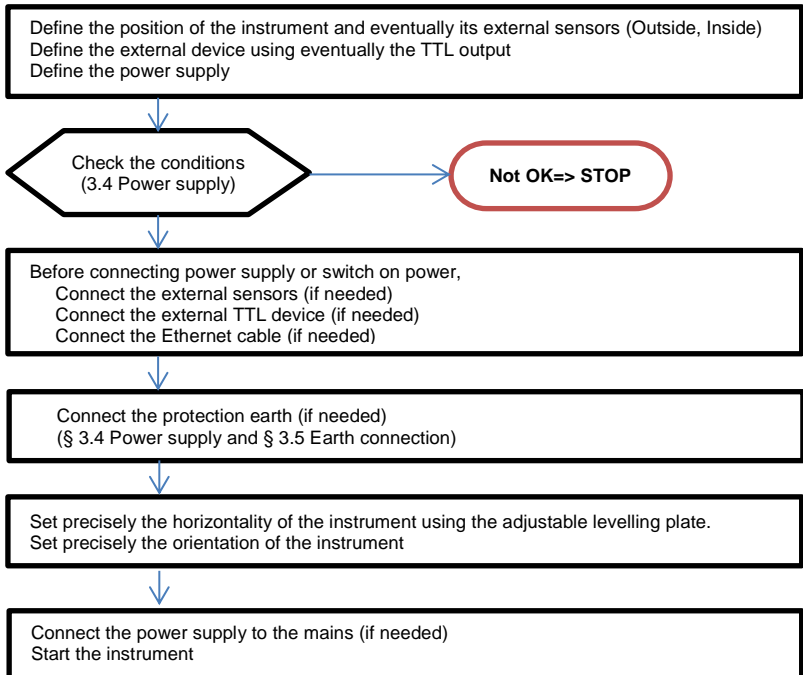


The equipment can be deployed in different configurations. All configurations are not allowed according to the environment. It is essential to observe the deployment and safety rules that apply to each use case.

3.1. USE CASES PREREQUISITE

Use cases are exhaustively described. Other use case, which are not described on this document, are not allowed for this instrument
I.

3.2. FLOWCHART FOR THE INSTALLATION



3.3. INSTALLATION OF THE ORION WITH THE OPTIONAL MOUNTING PLATE

The ORION could be fixed on concrete floor or wall using the optional mounting plate (VMT1013000A).

The 4 M6 screws needed to fix the ORION on the Interface plate are included in the delivery.

The 3 expanding studs needed to fix the mounting plate on the concrete are not delivered and must be selected by the operator according to the type of wall support.

To compensate for imperfections of planeness of the floor or wall, the mounting plate is delivered with washers to insert between the mounting plate and the supporting floor or wall.

To perform the installation, the user has to:

- Wear adapted PPE (safety glass, safety shoes, gloves, ear plug...)
- Check the safety of the drilling operation (no electrical wires, pipe... inside the wall)
- Have the drilling ability
- Check that the type of wall is adapted to the weight of the ORION (for wall installation) – **Installation on a plasterboard partition is forbidden**
- Check that the expanding studs are adapted to the weight of ORION. ACOEM recommend a Ø10mm expanding stud
- Follow the expanding stud installation instructions provided by the manufacturer.



To fix ORION on the wall please follow these steps:

- Place the mounting plate without ORION on the wall at the selected location
- Adjust the horizontality of the mounting plate with the spirit level
- Mark the location of the fixation point #1 (Indication 01 on the following picture)
- Remove the mounting plate and drill the first hole
- Remove dust from the hole
- Loosely screw the mounting plate on the wall with one expanding stud and a washer (between mounting plate and the wall)
- Adjust the horizontality of the mounting plate with the spirit level and drill the second and third holes (using the mounting plate as a guide)
- Tilt the mounting plate to access the holes Remove dust from the 2 holes
- Screw and tighten the mounting plate on the wall with the 3 expanding studs and washers (between mounting plate and the wall)
- Remove the feet of ORION, screw and tighten ORION on the mounting plate with the 4 M6 screws (Indication 04 on the following picture)

To fix ORION on the floor please follow these steps:

- Place the mounting plate without the ORION on the floor at the selected location
- Mark the location of the fixation point #1 (Indication 01 on the following picture)
- Remove the mounting plate and drill the first hole
- Remove dust from the hole
- Loosely screw the mounting plate on the floor with one expanding stud and a washer (between mounting plate and the wall)
- Drill the second and third holes (using the mounting plate as a guide)
- Tilt the mounting plate to access the holes
- Remove dust from the 2 holes
- Remove the feet of ORION, screw and tighten ORION on the mounting plate with the 4 M6 screws (Indication 04 on the following picture)
- Place the mounting plate and the ORION in front of the 3 holes and adjust the horizontality with washer (between floor and mounting plate)
- Screw and tighten the mounting plate on the floor with 3 expanding studs



01 – Wall/floor fixation point #1
 02 – Wall/floor fixation point #2
 03 – Wall/floor fixation point #3
 04 – ORION fixation point on mounting plate

3.4. POWER SUPPLY

Power supply	Power supply position	Instrument position	Earth Protection*
Internal battery	Indoor or Outdoor	Indoor: Allowed	recommended
		Outdoor: Allowed	Strictly necessary
Standard power supply	Indoor Only	Indoor: Allowed	recommended
		Outdoor: Allowed	Strictly necessary
Waterproof power supply*	Indoor or Outdoor	Indoor: Allowed	recommended
		Outdoor: Allowed	Strictly necessary
PoE on an existing PoE network	Indoor Only	Indoor: Allowed	recommended
		Outdoor: Not Allowed	

*Only waterproof power supply can be connected from the outside

All external circuits connected to ORION should be non-hazardous voltage and energy sources be limited within the meaning of the IEC61010-1 standard.

The earth protection is strictly necessary for every case below listed:

- Instrument ORION is outside of a building.
- One Sensor or more of ORION are outside of a building.
- One cable or more are outside of a building.
- One cable or more use paths where there are others cables.
- The TTL output is connected to a device powered by the mains

However, for the other cases, the earth protection is recommended for a better safety.

If the instrument ORION is connected to an existing PoE Network, this PoE should be non-hazardous voltage and energy source be limited within the meaning of the IEC61010-1 standard.

If the TTL output of the instrument ORION is connected to a device, this device should be non-hazardous voltage and energy source be limited within the meaning of the IEC61010-1 standard

The radio device (WIFI, GSM-3G, GPS) may be used in accordance of national regulations (RED, FCC, IC).

3.5. EARTH CONNECTION

The protective Earth connexion is possible on the screw terminal using the cable as shown on the picture. The recommended tightening torque is 3N.m. The screw is furnished (M8).



The other side of the earth cable must be connected to a good quality protective earth.

The Integrity of protective bonding must be in respect of the IEC61010-1 (cf 6.5.2 Protective bonding)

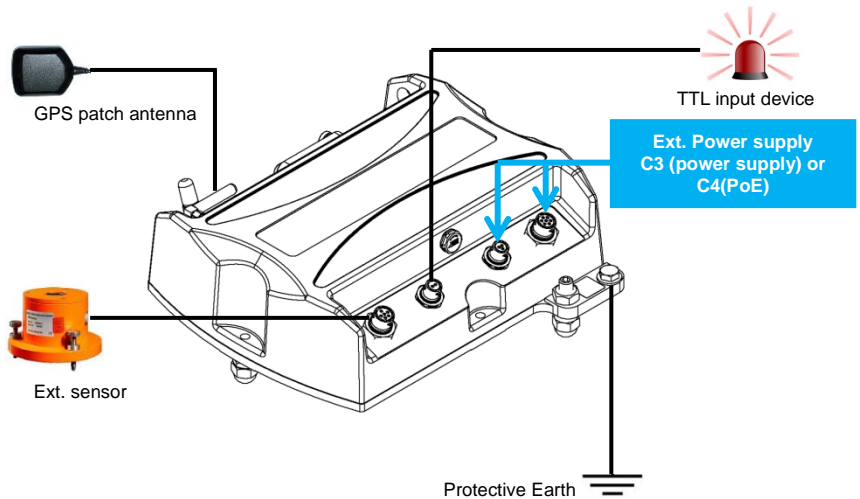
For outside situation, the protective earth may use a solid ground rod galvanized steel. The rod must be should be buried at least 60 cm. The ground must be wet permanently. If necessary, spray water at periodical time to maintain humidity.



An existing protective ground may either used in Whenever, it must compliant to the IEC61010-1 bonding)

replacement of the ground rod. standard (cf 6.5.2 Protective

3.6. GENERAL INSTALLATION SCHEME



All additional devices (GPS patch, TTL input, External sensor) could be connected from indoor to outdoor. In this case a protective earth has to be installed (§3.5 Earth connection). The maximum length of the cable is 10 meters.

4. MAINTENANCE

4.1. GENERALITIES

The device does not need maintenance or adjustment excluding cleaning and battery replacement.

- The internal battery is not replaceable by the user.
- The battery pack must be replaced at factory only by authorized personnel

4.2. PARTS REPLACEMENT

The parts of the device ORION that could be replaced by the owner are:

- The three feet, spherical or sharp end
- The antenna
- The cables or accessory
- The power supplies
- The access hatch

The replacement part must be provided only by the manufacturer.

The power supply and their cord must be provided only by the manufacturer

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