



RECovIB

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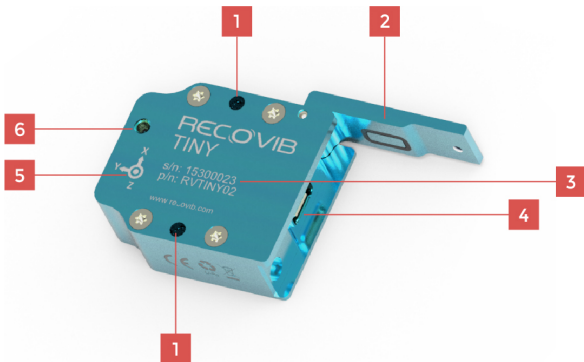
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## CASE CONTENT



1. Up to 5 RECOVIB.Tiny sensors
2. Two pot magnets per sensor, with nuts and washers
3. USB cable(s) to connect sensor to PC
4. Wrench
5. Screwdriver
6. Charger
7. Charger power cable
8. USB key containing software installer

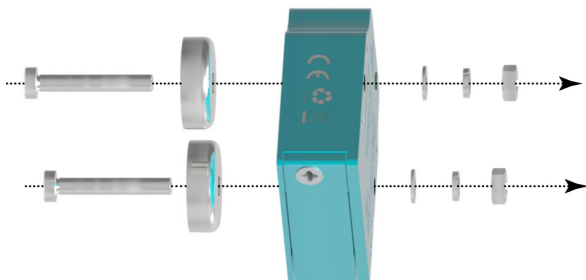
## SENSOR DESCRIPTION



1. Holes for pot magnets
2. Protective flap
3. Serial number
4. Micro USB connector
5. Reference axes of measures
6. Status LED


## MOUNTING MAGNETS ON A SENSOR

If the vibrating device is not magnetic, contact Micro-mega SA customer service for an alternative solution.



- Push the pot magnets through the casing holes.
- Place the washers in the correct order. The order is important to ensure the rigidity of the assembly.
- Tighten the nuts using the wrench.


## INSTALLING THE SOFTWARE

- Plug the USB key into your PC.
- Read the USB key, and double-click the exe file.
- The RECOVIB.Tiny setup wizard will guide you through the installation. Click **Next**.
- To enable the **I agree...** checkbox, scroll the license agreement until the end. Click the checkbox, and click **Next**.
- Click the **Browse...** button to change the default location of the software. Click **Next**.
- Click **Install**. If asked, confirm that you allow the Micromega SA software to be installed on your PC.
- When the installation is finished, click **Close**.
- Finally, remove the USB key and put it back in the case.
- To launch the software, double-click the  icon on your desktop.
- If your PC is connected to Internet, the RECOVIB.Tiny software checks automatically if updates are available.



## MANAGING SENSORS

- Do not connect a sensor to your PC while managing sensors.


### ACCESSING THE SENSORS MANAGEMENT WINDOW

- Launch the RECOVIB.Tiny software. Click **Next**.
- In the sensors management area, click the  button. The sensors management window opens.

### ADDING A SENSOR

- From the sensors management window, click the  button.
- Type the serial number of the sensor that you want to add. The serial number is written on the sensor.
- Click the  button to validate. The sensor is added to the list.

### REMOVING A SENSOR

- From the sensors management window, select a sensor in the list.
- Click the  button, and confirm the deletion.



## PREPARING A SENSOR FOR MEASURE

- Do not connect a sensor to your PC until the software requests it.

### CONFIGURING SENSORS FOR MEASUREMENT


- Launch the RECOVIB.Tiny software. Click **Next**.
- Choose **Operation 1 [...]**, and click **Next**.
- Either set the configuration for the first time, or import an existing configuration file.
- Click **Next**.

### SETTING A CONFIGURATION FOR THE FIRST TIME


- Select one or several sensors in the list. To add a sensor to that list, refer to "Managing Sensors" on the previous page.
- Click **Next**.
- If needed, add a comment to each sensor (typically what it will measure, its location...).
- Save the current configuration if you want to reuse it.

## SAVING A CONFIGURATION

A configuration file is an XML file containing information about a selection of sensors: serial number and associated comment.

- To save the current configuration to a file, click the  button.
- Browse to a location, enter a name for the file, and save it.

## IMPORTING A CONFIGURATION

- To import a configuration, click the  button.
- Browse to a configuration file, and open it. A selection of sensors is displayed. You can still modify the selection.
- Click **Next**. Selected sensors, with associated comments, are displayed in the list. You can still modify comments, and save the configuration.

## SETTING MEASUREMENT TIME

- The same time will be programmed on each sensor of the configuration.
- The date and time are synchronized with the PC clock.

### WITH START AND STOP DATE AND TIME

- Click the first radio button.
- Select a date and time for the measurement start, and for the measurement stop. Obviously, they must be after the current date and time.
- Click **Next**.

### WITH START DELAY AND DURATION

- Click the second radio button.
- Select a delay from the current time before the measurement start.
- Select the duration of the measurement.
- Click **Next**.

## UPLOADING MEASUREMENT SETTINGS ON SENSORS

### CONNECTING A SENSOR TO YOUR PC

- Do not connect several sensors to your PC at the same time. The software asks for sensors one after the other.
- Open the protective flap of the sensor using the screwdriver.
- Connect the right sensor to your PC using the USB cable.

When the RECOVIB.Tiny software has recognized the sensor, it displays its status (including the battery state).

### SETTING ACCELERATION RANGE

- Select the appropriate range of accelerations for this sensor.

### UPLOADING DATA

- Click the **Setup Device** button.
- The current configuration replaces any other configuration on the sensor. Confirm the sensor setup, and, when it is done, click **OK**. When the sensor is ready for measurement, the LED flashes red.

- If your configuration includes several sensors, connect and disconnect them one after the other.

#### DISCONNECTING A SENSOR

- Disconnect the sensor from the PC. Unplug the USB cable.
- Close the protective flap of the sensor using the screwdriver.

#### ENDING CONFIGURATION

- When the measurement setup is complete, click **Next**. A summary of your configuration is displayed. Click **Finish**.
- To restart the RECOVIB.Tiny software, click **No**.
- To quit the software, click **Yes**.

## RECORDING VIBRATIONS

- Make sure the sensor is ready for measurement. When the sensor is ready for measurement, the LED flashes red. Refer to "Preparing a Sensor for Measure" on page 9.
- If magnets have not been mounted yet, refer to "Mounting Magnets on a Sensor" on page 6.
- Snap the sensor on the vibrating device.
- The vibrations are decomposed into accelerations along 3 reference axes, oriented as indicated on the sensor casing.
- 1024 times per second, the sensor records 3 accelerations: 1 on the X axis, 1 on the Y axis, and 1 on the Z axis.
- A green LED is flashing during the measurement.
- When the measurement is finished, a red LED lights for 5 seconds. Then, the sensor automatically switches off.

## RETRIEVING MEASUREMENTS

- Do not connect a sensor to your PC until the software requests it.

### CONFIGURING SENSORS FOR DOWNLOAD


- Launch the RECOVIB.Tiny software. Click **Next**.
- Choose **Operation 2 [...]**, and click **Next**.
- Either set the configuration for the first time, or import an existing configuration file.
- Click **Next**.

### SETTING A CONFIGURATION FOR THE FIRST TIME


- Select one or several sensors in the list. To add a sensor to that list, refer to "Managing Sensors" on page 8.
- Click **Next**.
- If needed, add a comment to each sensor (typically what it will measure, its location...).
- Save the current configuration if you want to reuse it.

## SAVING A CONFIGURATION

A configuration file is an XML file containing information about a selection of sensors: serial number and associated comment.

- To save the current configuration to a file, click the  button.
- Browse to a location, enter a name for the file, and save it.

## IMPORTING A CONFIGURATION

- To import a configuration, click the  button.
- Browse to a configuration file, and open it. A selection of sensors is displayed. You can still modify the selection.
- Click **Next**. Selected sensors, with associated comments, are displayed in the list. You can still modify comments, and save the configuration.

## CHOOSING A LOCATION FOR DOWNLOADED DATA

- Click the ... button to change the default location of the downloaded data. Click **Next**.



## DOWNLOADING MEASUREMENT FROM SENSORS

### CONNECTING A SENSOR TO YOUR PC

- Do not connect several sensors to your PC at the same time. The software asks for sensors one after the other.
- Open the protective flap of the sensor using the screwdriver.
- Connect the right sensor to your PC using the USB cable.

When the RECOVIB.Tiny software has recognized the sensor, it downloads all data.

- If your configuration includes several sensors, connect and disconnect them one after the other.

### DISCONNECTING A SENSOR

- Disconnect the sensor from the PC. Unplug the USB cable.
- Close the protective flap of the sensor using the screwdriver.

## EXPORTING MEASURES

- Select an output format, and, if applicable, a decimal symbol.
- Click the **Export to [...]** button.
- When the export is complete, click **OK**. Then, click **Finish**.
- To restart the RECOVIB.Tiny software, click **No**.
- To quit the software, click **Yes**.

	A	B	C	D	E
1	ticks	ax_15300018	ay_15300018	az_15300018	
2	0	-0.329	1.297	-10.365	
3	1	-0.331	1.296	-10.373	
4	2	-0.326	1.302	-10.36	
5	3	-0.316	1.32	-10.332	
6	4	-0.312	1.33	-10.317	
7	5	-0.313	1.325	-10.32	
8	6	-0.314	1.319	-10.332	
9	7	-0.32	1.308	-10.35	
10	8	-0.329	1.296	-10.369	
11	9	-0.338	1.287	-10.372	
12	10	-0.337	1.288	-10.355	
13	11	-0.328	1.307	-10.333	
14	12	-0.319	1.322	-10.316	
15	13	-0.318	1.323	-10.31	
16	14	-0.319	1.32	-10.324	
17	15	-0.321	1.312	-10.344	
18	16	-0.332	1.299	-10.348	
19	17	-0.335	1.287	-10.356	
20	18	-0.33	1.284	-10.371	
21	19	-0.331	1.291	-10.363	
22	20	-0.329	1.308	-10.341	
23	21	-0.325	1.32	-10.326	
24	22	-0.319	1.321	-10.317	

## MAINTAINING YOUR SENSORS

### CALIBRATION

- To ensure optimal measurements, the sensor needs to be regularly calibrated, at least every 2 years.
- The software warns you when a sensor needs to be calibrated.
- Calibration is performed by Micromega SA exclusively. Contact Micromega SA customer service for further information.

### CHARGE

- To charge your sensor, connect it to the mains using the provided charger. Or charge it through your PC using the USB cable.
- The power connector is a standard micro USB connector.
- A fully charged sensor has an autonomy of about 6 hours.
- The replacement of the battery is carried out by Micromega SA exclusively. Contact Micromega SA customer service for further information.

## CLEANING

- After use, clean the sensor with a dry cloth to keep it in good condition.
- If the device is dirty, clean the casing with a slightly damp cloth or a very mild cleaning product.
- Avoid wetting the connectors and cables.
- Never soak the devices in water.

## PRECAUTIONS

- Never open the devices. They do not contain any user changeable parts.
- Do not unscrew the casing hold-down bolts under any circumstances, as this may damage the device.
- Do not use the sensors in the presence of inflammable liquids or gas. They are not intended for use in potentially explosive environments.
- Keep the devices away from environments with high humidity and/or temperatures.

- Do not leave any of the devices in a vehicle, or in locations where the temperature may exceed 60°C, such as behind a windscreen, a window or a rear window, where they could be exposed to direct sunlight for extended periods. This could cause damage to the device, overheating of the battery and may present risks of fire or burns.
- The sensors contain a lithium-ion rechargeable battery. To reduce the risk of fire or burns, do not dismantle, crush, pierce, expose their contacts, throw them into fire, immerse them in water or expose them to temperatures above 60 °C.
- Return the devices to the Micromega SA customer service should any problems be encountered.

# TECHNICAL SPECIFICATION

## MEASUREMENT CHARACTERISTICS

<b>Measuring ranges</b>	$\pm 2\text{ g}$ or $\pm 6\text{ g}$
<b>Lower frequency limit</b>	0 Hz (DC)
<b>Passband frequencies (per channel)</b>	250 Hz
<b>Sampling frequency (per channel)</b>	4096 Hz
<b>Storage rates (per channel)</b>	1024 samples/s
<b>Non-linearity</b>	$\pm 1\%$ F.S.
<b>Residual noise</b>	$60\text{ }\mu\text{g}/\sqrt{\text{Hz}}$
<b>Transverse sensitivity</b>	$< 5\%$

## ENVIRONMENTAL CHARACTERISTICS

<b>Operating temperature range</b>	-10 to 50 °C
<b>Non-operating temperature range</b>	-40 to 85 °C
<b>Temperature coefficient of sensitivity</b>	$\pm 0.02\%$ /°C
<b>Temperature drift of zero point</b>	$\pm 0.5\text{ mg}/\text{°C}$
<b>Protection grade</b>	IP 65

## MECHANICAL DATA

<b>Dimensions</b>	39.6 x 33.4 x 14 mm
<b>Weight</b>	33.5 g
<b>Casing material</b>	Aluminum

## AUTONOMY

<b>Li-ion battery</b>	> 6 h
<b>Storage</b>	2 GB

## SOFTWARE

<b>Output formats</b>	Binary, txt, csv, NI LabVIEW, MATLAB (Level 5 MAT-file)
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## RECYCLING

Standards applicable to waste electrical and electronic devices state that they must be recycled.

If you are no longer using this material or if it cannot be repaired, do not throw it away in the usual household rubbish. Recycle these products in accordance with your country's legal provisions.



**Li-ion**





## CONFORMITY

This product has been subjected to tests in conformity with European directives.

Outside the EU, consult the competent local authorities before using the device.





## Vibration Control Technology

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