

# USER MANUAL

## IoT SoundSensor™ V3.02



## 1. Introduction

**To all residents of the European Union**

**Important environmental information about this product**



This symbol on the device or the package indicates that disposal of the device after its lifecycle could harm the environment. Do not dispose of the unit (or batteries) as unsorted municipal waste; it should be taken to a specialized company for recycling. This device should be returned to your distributor or to a local recycling service. Respect the local environmental rules.

If in doubt, contact your local waste disposal authorities.

Thank you for choosing Sensorteam. Please read the manual thoroughly before bringing this device into service. If the device was damaged in transit, do not install or use it and contact your dealer.

## 2. Safety Instructions



This device is not suited for children under the age of 16, and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning the use of the device in a safe way and understand the hazards involved. Children shall not play with the device. Cleaning and user maintenance shall not be made by children without supervision.





Batteries are electrochemically live at all times. Do not short circuit the battery terminals. Inspect the battery consignment for signs of transport damage. Ensure the consignment has all items listed on the delivery note or invoice, i.e. batteries, cables, shrouds etc. While unpacking each battery, take care not to drop anything on the terminals. Inspect each battery for physical damage such as cracks or distortion of the case and terminals.

## 3. General Guidelines




- Familiarise yourself with the functions of the device before actually using it.
- All modifications of the device are forbidden for safety reasons. Damage caused by user modifications to the device is not covered by the warranty.
- Only use the device for its intended purpose. Using the device in an unauthorised way will void the warranty.
- Damage caused by disregard of certain guidelines in this manual is not covered by the warranty and the dealer will not accept responsibility for any ensuing defects or problems.
- Nor Sensorteam B.V. nor its dealers can be held responsible for any damage (extraordinary, incidental or indirect) –of any nature (financial, physical...) arising from the possession, use or failure of this product.
- Due to constant product improvements, the actual product appearance might differ from the shown images.
- Product images are for illustrative purposes only.
- Do not switch the device on immediately after it has been exposed to changes in temperature. Protect the device against damage by leaving it switched off until it has reached room temperature.
- Keep this manual for future reference.

## 4. Specification standards

	<ul style="list-style-type: none"> <li>• <b>Size and Weight of IoT SoundSensor™ V3.02</b> <ul style="list-style-type: none"> <li>- Dept: 252mm / Width: 246mm / Height: 193mm / Weight: 4100grams</li> </ul> </li> <li>• <b>Included cables IoT SoundSensor™ V3.02</b> <ul style="list-style-type: none"> <li>- USB C male to USB B male cable</li> </ul> </li> <li>• <b>Power and Battery type IoT SoundSensor™ V3.02</b> <ul style="list-style-type: none"> <li>- Sealed Lead Acid Battery / Power solar (outdoor) or 5V USB (indoor)</li> </ul> </li> <li>• <b>Material Case of IoT SoundSensor™ V3.02</b> <ul style="list-style-type: none"> <li>- High Impact Polystyrene (HIPS) UL94-V0</li> </ul> </li> <li>• <b>Operation temperature °C IoT SoundSensor™ V3.02</b> <ul style="list-style-type: none"> <li>- Minus (-) 10 °C ~ plus (+) 60 °C</li> </ul> </li> <li>• <b>Operation humidity IoT SoundSensor™ V3.02</b> <ul style="list-style-type: none"> <li>- 0 ~ 95% RH, non-condensing</li> </ul> </li> </ul>		
	<table border="1"> <tr> <td data-bbox="338 837 928 1344"> <ul style="list-style-type: none"> <li>• <b>Frequency Weighting &amp; Range</b> <ul style="list-style-type: none"> <li>- A and C weighting / 20 Hz to 20 KHz</li> </ul> </li> <li>• <b>Dynamic Range</b> <ul style="list-style-type: none"> <li>- 33 to 121 dB (decibels)</li> </ul> </li> <li>• <b>Parameters IoT SoundSensor™ V3.02</b> <ul style="list-style-type: none"> <li><math>L_{Aeq}</math>, 1 min, <math>L_{Ceq}</math>, 1 min</li> <li>dB(A)fast, dB(A)slow, dB(C)fast, dB(C)slow</li> </ul> </li> <li>• <b>Microphone type</b> <ul style="list-style-type: none"> <li>- Electret condenser microphone</li> </ul> </li> <li>• <b>Microphone directive</b> <ul style="list-style-type: none"> <li>- Omnidirectional</li> </ul> </li> <li>• <b>Measurement interval</b> <ul style="list-style-type: none"> <li>- 1, 5, 10, 15 or 30 minutes</li> </ul> </li> </ul> </td><td data-bbox="928 837 1519 1344"> <ul style="list-style-type: none"> <li>• <b>IP Rating IoT SoundSensor™ V3.02</b> <ul style="list-style-type: none"> <li>- IP67</li> </ul> </li> <li>• <b>Radio Frequency Band</b> <ul style="list-style-type: none"> <li>- EU868 - Europe 863-870 MHz</li> </ul> </li> <li>• <b>RF Module and GPS Module</b> <ul style="list-style-type: none"> <li>- Microchip RN2483 / Ublox GPS</li> </ul> </li> <li>• <b>Interfaces</b> <ul style="list-style-type: none"> <li>- Programmable Digital Signal Processor (DSP)</li> <li>- Analog Audio output 920 mV RMS max</li> <li>- 18 Programmable I/O's (18): <ul style="list-style-type: none"> <li>A. Analog (10-bit DAC), digital</li> <li>B. PWM, UART, SPI en TWI (I2C)</li> <li>C. DC current per I/O pin: 7mA</li> <li>D. External interrupt</li> </ul> </li> </ul> </li> </ul> </td></tr> </table>	<ul style="list-style-type: none"> <li>• <b>Frequency Weighting &amp; Range</b> <ul style="list-style-type: none"> <li>- A and C weighting / 20 Hz to 20 KHz</li> </ul> </li> <li>• <b>Dynamic Range</b> <ul style="list-style-type: none"> <li>- 33 to 121 dB (decibels)</li> </ul> </li> <li>• <b>Parameters IoT SoundSensor™ V3.02</b> <ul style="list-style-type: none"> <li><math>L_{Aeq}</math>, 1 min, <math>L_{Ceq}</math>, 1 min</li> <li>dB(A)fast, dB(A)slow, dB(C)fast, dB(C)slow</li> </ul> </li> <li>• <b>Microphone type</b> <ul style="list-style-type: none"> <li>- Electret condenser microphone</li> </ul> </li> <li>• <b>Microphone directive</b> <ul style="list-style-type: none"> <li>- Omnidirectional</li> </ul> </li> <li>• <b>Measurement interval</b> <ul style="list-style-type: none"> <li>- 1, 5, 10, 15 or 30 minutes</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>IP Rating IoT SoundSensor™ V3.02</b> <ul style="list-style-type: none"> <li>- IP67</li> </ul> </li> <li>• <b>Radio Frequency Band</b> <ul style="list-style-type: none"> <li>- EU868 - Europe 863-870 MHz</li> </ul> </li> <li>• <b>RF Module and GPS Module</b> <ul style="list-style-type: none"> <li>- Microchip RN2483 / Ublox GPS</li> </ul> </li> <li>• <b>Interfaces</b> <ul style="list-style-type: none"> <li>- Programmable Digital Signal Processor (DSP)</li> <li>- Analog Audio output 920 mV RMS max</li> <li>- 18 Programmable I/O's (18): <ul style="list-style-type: none"> <li>A. Analog (10-bit DAC), digital</li> <li>B. PWM, UART, SPI en TWI (I2C)</li> <li>C. DC current per I/O pin: 7mA</li> <li>D. External interrupt</li> </ul> </li> </ul> </li> </ul>
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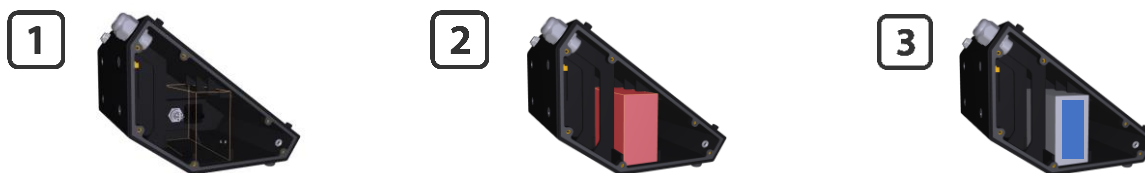
## 5. Safety & Installation precautions

	<p><b>DO NOT ATTEMPT TO SELECT, INSTALL, USE, OR MAINTAIN THIS IOT SOUNDSENSOR UNTIL YOU HAVE READ AND FULLY UNDERSTOOD THESE INSTRUCTIONS. BE SURE THIS INFORMATION REACHES THE OPERATOR AND STAYS WITH THE PRODUCT AFTER INSTALLATION. DO NOT PERMIT UNTRAINED PERSONS TO INSTALL, USE, OR MAINTAIN THIS CONTROLLER, OR ACCESSORY.</b></p> <ul style="list-style-type: none"> <li>• <b>Inspect the</b> sensor, and accessories for physical damage and contamination. Do not connect the sensor, or accessory if you detect oil, grease, (water-) damage or broken/damaged parts.</li> <li>• <b>When unpacking the battery</b>, make sure to handle it gently. Rough handling may shock the battery, causing damage. Check that the battery is free from cracks, fractures, tipping/ leakage.</li> <li>• <b>Do not place</b> the battery and soundsensor near a device that may cause sparks (such as a switch or a fuse). The battery may generate flammable gas when charged, so remember to keep the battery away from fire open flame to prevent any sparks from igniting or causing explosions.</li> <li>• <b>Do not allow</b> the soundsensor to be immersed in water/sea-water; as it may corrode the battery, cause fire or create an electric shock hazard.</li> <li>• <b>Do not attempt to</b> disassemble, remodel or destroy the battery, as it may cause battery leakage, fire or bursting, and could also create sulfuric acid spills from the battery resulting in possible burns to personnel and damage to the immediate environment.</li> </ul>
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## 6. User manual guidelines

The sensor is supplied without a battery, this must be a **Yausa NP12-6**.

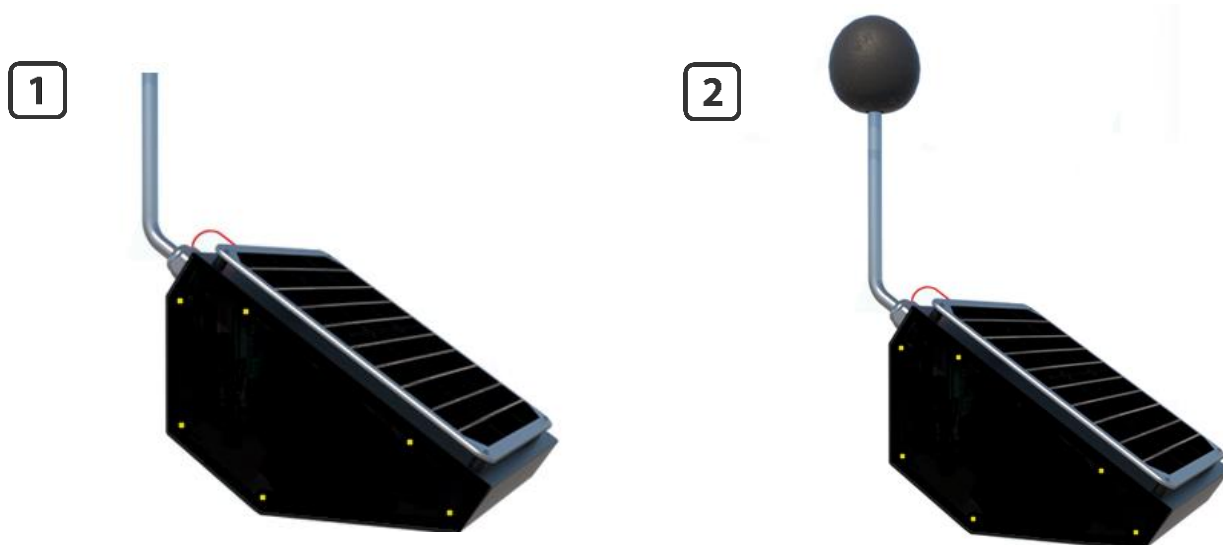
1. The sensor has a loose cable harness with cable lugs / sliding plugs (6,3x0,8mm) to which the battery must be connected. To connect the battery to the sensor, please slide the receptable with the **white wire** onto the negative terminal (-) of the battery, and slide the receptable with the **blue wire** onto the positive terminal (+) of the battery.
2. Slide the battery into the battery compartment of the housing, making sure that the cable harness is free and does not get caught in any way. The battery should be oriented with the terminals to the left, otherwise the terminals won't slide past the battery supports inside of the housing. The applied foam piece of 45x70x12mm should be facing the open side of the housing.



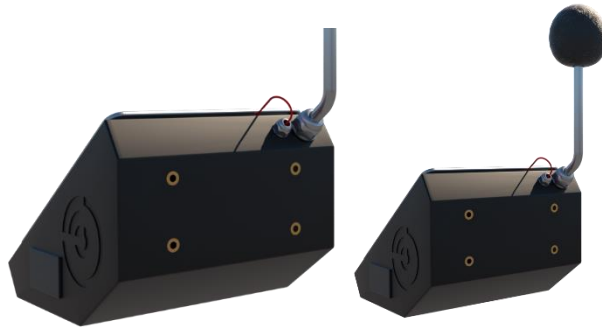
3. Mount the cover with the supplied M4 screws. The screws must be tightened with a force of **1Nm**.



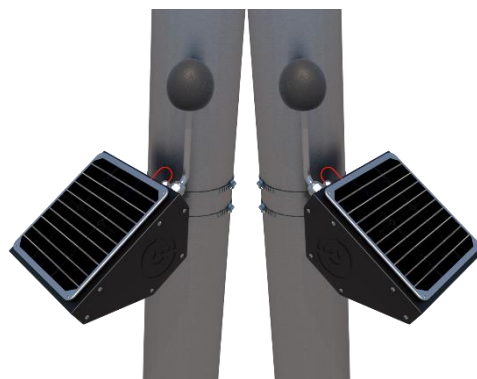
4. Slide the wind shield over the microphone.



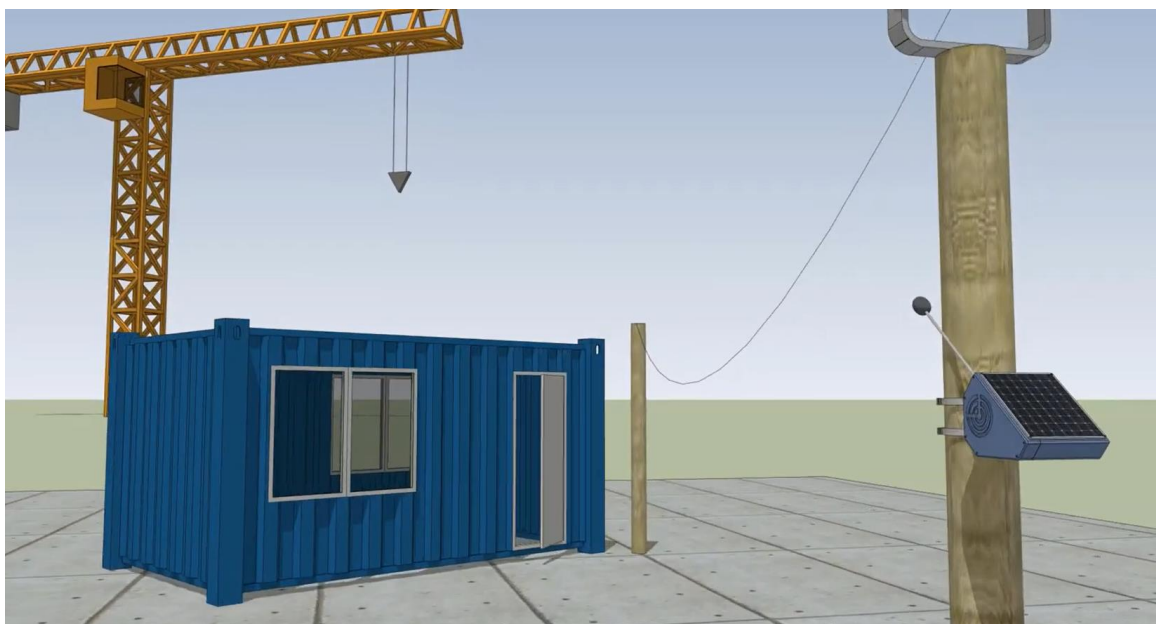
5. Mount the optional pole clamps with the supplied M8 screws. The screws must be tightened with a force of 3Nm.



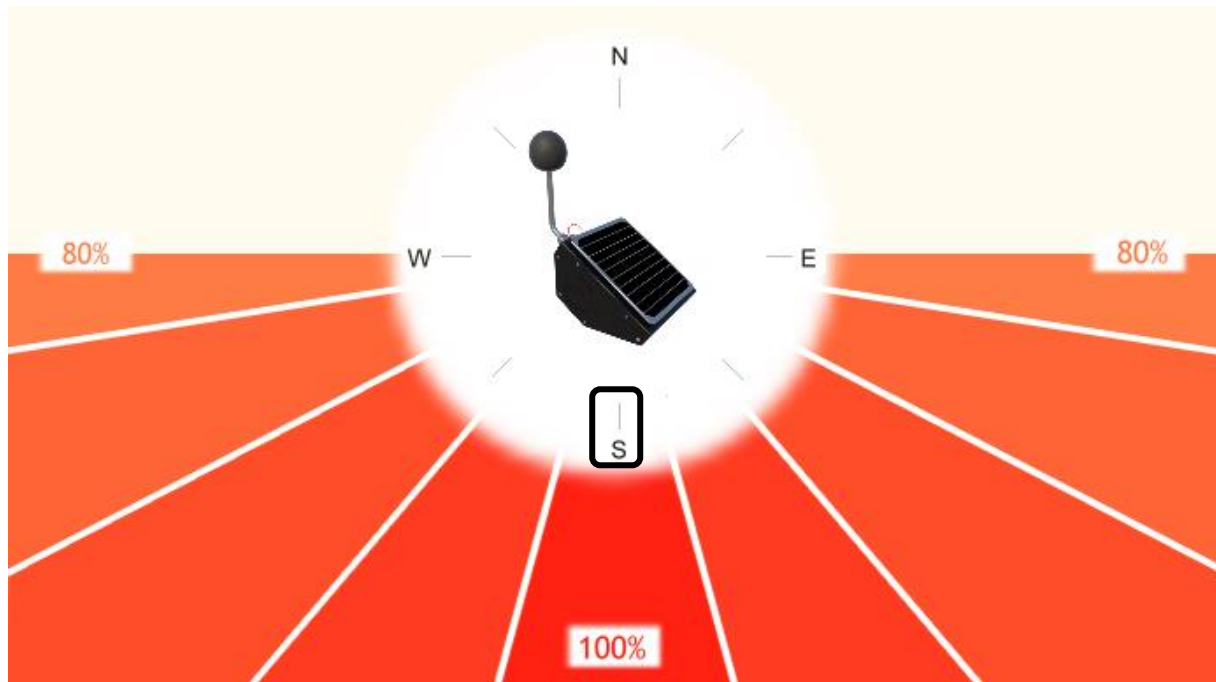
6. Mount the optional bird pin strip on the top of the housing with silicone sealant. Insert a single bird pin through the windshield without making contact with the microphone. ***(if the bird pin comes in contact with the microphone date and sound measurement can be effected)***
7. Mount the sensor on a pole by inserting the hose clamps (which are supplied with the sensor) and clamp it around the pole. The diameter of the pole is preferably not wider than 10cm (3.937 inches).



8. Make sure the sensor is at least 3 meters away from large reflective surfaces of nearby walls.



9. Face the solar panel of the sensor to the south.



10. Remove the cap in the side of the housing and press the switch once. The V3.0.1 the sensor can run on only solar power when there is enough light. This means the led can blink while the switch has not been pressed. **Cover the solar panel with a piece of paper before pressing the switch.** V3.0.2 can simply be switched on. The led will light **for 2 seconds long**, this indicates that the sensor has just been **turned on**. After doing so the led will flash each time a LoRa message is sent (once every minute). Check if the USB connector is sealed with it's cap and push back in the main cap into the recess.

