



USER MANUAL

W-Sensor

Digital meter reader for analog utility meters



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About this manual

This user manual contains the information you need to install, configure, use, and maintain the W-Sensor. It also contains technical data and specifications, warranty and liability information, support information, information regarding safe disposal of the W-Sensor and declarations of conformity.

The W-Sensor comes in two different models. One is configured for connection with LoRa, one is configured for connection with LTE. The installation, configuration, use, and maintenance instructions are the same for both models – meaning that **chapters 1 to 7 are applicable to both models of the W-Sensor.**

Organization of this manual

This manual contains the following parts:

- **Chapter 1: Product introduction**
 - This chapter contains a description of the Waltero W-Sensor and a device layout overview of the W-Sensor.
- **Chapter 2: Safety, warranty, and liability**
 - This chapter contains information about safety symbols used in the manual, safety instructions for the W-Sensor, and warranty and liability information.
- **Chapter 3: Installing the W-Sensor**
 - This chapter contains installation instructions for the Waltero W-Sensor.
- **Chapter 4: Configuration and settings**
 - This chapter contains instructions for configuring the connectivity settings of the W-Sensor.
- **Chapter 5: Maintenance of the W-Sensor**
 - This chapter contains maintenance instructions for the Waltero W-Sensor.
- **Chapter 6: Support**
 - This chapter contains information regarding support for the Waltero W-Sensor, including troubleshooting.
- **Chapter 7: Recycling and disposal**
 - This chapter contains information regarding recycling, discarding and waste related to the Waltero W-Sensor.
- **Chapter 8: Technical Data**
 - This chapter contains the technical data and specifications of the Waltero W-Sensor, including device layout, technical specifications, and radio technical specifications.
- **Appendix I: Declaration of conformity**
 - This appendix contains declarations of conformity for the W-Sensor.



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1 Product introduction

In this chapter you will find a description of the Waltero W-Sensor and its functions, followed by a device layout overview.

1.1 W-Sensor overview

The Waltero W-Sensor is a digital reader device designed for installation on top of analog utility meters. With the use of customized adapters manufactured by Waltero, the W-Sensor can easily and quickly be attached to any meter.

After installation there is no need for further interaction with the meter, because of the connectivity capabilities of the W-Sensor. The device provides wireless transmission of reading data which allows for real time monitoring and analysis. Depending on your model, the data is transferred either by LoRa or LTE.

The data is transferred to the W-Cloud internet service where it can be analyzed. From the W-Cloud, data can be forwarded to the user's system, allowing for further data processing in accordance with the needs of the customers organization.

In addition to reading data, the W-Sensor transmits operational data. The operational data gives you an easily accessed overview of operations. This overview allows for monitoring without the need for manual investigation or interruption of production flows.



1.2 W-Sensor device layout



POS	Description
A	Trigger button (button A)
B	User button (button B)
C	USB C power connector
D	Slots for attachment to adapter
E	Reader lens
F	Battery lid
G	2 x Torx T6 screws
H	QR-code for commissioning
I	Markings and safety information
J	Lock release button

NOTE: POC-information can be found on the inside of the battery lid.



2 Safety, warranty, and liability

In this chapter you will find information about safety symbols used in the manual and safety instructions for the W-Sensor followed by warranty and liability information.

2.1 Hazard levels

Symbol	Definition
 CAUTION!	If the safety information marked “Caution” in the instruction manual is not followed, this can lead to minor or moderate personal injuries.
OBSERVE!	If the safety information marked “Observe” in the instruction manual is not followed, this can lead to damages to device or property.

2.2 Other message levels

Symbol	Definition
IMPORTANT!	(1) Indicates significant information which is essential for the function of the product OR (2) instructions that MUST be followed to complete a task.
NOTE!	Indicates useful information which will help you get the most out of your product.

2.3 FCC Compliance Statement

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 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 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.

FCC Caution:

- Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
- This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

2.4 Safety instructions**CAUTION!**

In the event of complete destruction of the W-Sensor, the battery electrolyte can leak from the device. Avoid skin and eye contact with the electrolyte. Do not inhale the vapors produced by the electrolyte.

Ventilate the space where the leakage occurred adequately.

OBSERVE!

- Do not install the W-Sensor on unstable pipes, gauges, or meters.
- Ensure the correct adapter is used for installing the W-Sensor. Refer to the user manual of your adapter for more information regarding the installation of adapters.
- Only use accessories that comply with the W-Sensor. These can be provided by Waltero or an authorized third party.
- Do not attempt to repair the W-Sensor yourself. Contact Waltero support or an authorized reseller for service matters.
- Use only applicable tools when installing and performing maintenance on the W-Sensor.
- The W-Sensor must be installed and used in an area protected from freezing. Minimum allowed operation temperature is 5 °C.
- The W-Sensor must be installed and used in a dry environment and be protected from moisture and humidity. The has a IP21 rating and is not waterproof. Moisture and humidity can damage the device and its batteries.



- The W-Sensor must be protected from heat. Maximum allowed operation temperature is 55 °C.
- The W-Sensor must be installed away from heat sources and exposure to direct sunlight.
- The W-Sensor must not be installed in proximity to sources of electromagnetic disturbance.
- Store the W-Sensor in a dry and well-ventilated environment.
- Avoid exposing the W-Sensor to shock, pressure, freezing or temperatures over 55 °C.
- Changes or modifications not expressly approved by Waltero could void your authority to operate the equipment.
- Only use Waltero approved USB-C Cable (art. 3003-01 USB-01).

2.5 Transportation

OBSERVE!

- Use the original packaging when transporting the device to prevent damaging the product.

2.6 Battery

OBSERVE!

- Only use Waltero approved batteries that comply with IEC 60086-4 for the W-sensor, to avoid damage to the electric and electronic components of the device. Approved batteries are **Panasonic Energy CR123A** and **GP Batteries GPCR123A**.

2.7 Radio frequency

OBSERVE!

Ensure compliance with local laws and regulations, and prevent potentially damaging interference, by only installing W-Sensors in areas where these transmission frequencies are allowed.

**Applicable to LTE W-Sensor LTE-01, LTE-02, LTE-03, LTE-04, LTE-05 LTE-06:**

- The operating frequency ranges of the LTE W-Sensor LTE-01, LTE-02, LTE-03, LTE-04, LTE-05 LTE-06: are LTE B1/B2/B3/B4/B5/B8/B12/B13/B16/B17/B18/-B19/B20/B25/B26/B27/-B28/B66 and WiFi 2401 MHz – 2483 MHz.
- The maximum radiated power of the LTE W-Sensor LTE-01, LTE-02, LTE-03, LTE-04, LTE-05 LTE-06: is 23dBm max and WiFi 20dBm max.

Applicable to the LoRa W-Sensor LoRa-01:

- The operating frequency ranges of the LoRa W-Sensor LoRa-01 are LoRaWAN 868 MHz and WiFi 2401 MHz – 2483 MHz.
- The maximum radiated power of the LoRa W-Sensor LoRa-01 is LoRa 14dBm max and WiFi 20dBm max.
- The device class of the LoRa W-Sensor LoRa-01 is Receiver Class 3.

2.8 Warranty

Product warranty or service will not be extended if:

1. the product is incorrectly installed as a result of failure to observe the instructions provided by Waltero; or
2. the product is used for purposes other than those indicated in this manual; or
3. defects or damage is caused to the product under transport or loading and unloading; or
4. the product is used by unqualified or untrained personnel; or
5. the product is repaired, modified, or altered, unless such repair, modification or alteration is authorized in writing by Waltero.

2.9 Liability

The W-Sensor must be used as intended by Waltero, who are not liable for damage caused to persons, animals or property by incorrect installation, adjustment or maintenance, or incorrect use of the device.

Every care has been taken in the production of this document. Waltero cannot be held responsible for any technical or typographical errors and reserves the right to make changes to the product and manuals without prior notice. Waltero provides this manual “as is” without warranty of any kind, either express or implied, including but not limited to the implied warranties or conditions of merchantability or fitness for a particular purpose. In no event shall Waltero, its directors, officers, employees, or agents be liable for any direct, special, incidental, or consequential damages (including damages for loss of profits, loss of business, loss of use or data, interruption of business and the like), arising from any defect or error in this manual.



3 Installing the W-Sensor

In this chapter you will find instructions for installing the Waltero W-Sensor, connecting it to the W-Cloud service, connecting the device to a power source, attaching the device to a meter adapter and instructions for verification of data transmission.

NOTE! The below instructions are applicable to both models of the W-sensor.

NOTE! If you choose to connect your W-Sensor by means of WiFi the WiFi settings need to be configured prior to connecting the W-Sensor to the W-Cloud service. See **Chapter 4: Configuration** for configuration instructions.

3.1 Instructions for installing the W-Sensor

Prerequisites for installation of the W-Sensor:

- A suitable adapter has been mounted on the meter prior to installation of the W-Sensor. Refer to the user manual of your adapter for more information regarding the installation of adapters.
- A smartphone with the ability to scan QR-codes.
- An account to the W-Cloud application. If you lack an account, please contact your local administrator.

Tools and equipment:

- Three Waltero approved batteries. Approved batteries are **Panasonic Energy CR123A** and **GP Batteries GPCR123A**.
- (optional) External power adapter with Waltero approved USB-C cable (art. 3003-01 USB-01).
- A torx T6 screwdriver.

NOTE! Make sure that both the glass of the meter and the lens of the W-sensor are clean before installation. Refer to **Chapter 5.2 Cleaning the lens of the W-Sensor** for cleaning instructions.

3.1.1 Connecting a power source to the W-Sensor

The W-Sensor can operate with either a USB-C power adapter or only batteries. When using an USB power adapter, installation of batteries as a backup energy source is approved.

NOTE! The below instructions are applicable to both models of the W-sensor.



OBSERVE! Only use Waltero approved batteries, cables, and power adapter. Incompatible batteries, cable or power adapter can cause damage to your device.

OBSERVE!



This device uses a DC-power source.

Only use a power adapter with the following specifications. An incompatible power adapter can cause damage to your device.

- **Voltage:** 5V +/- 5 %
- **Current:** 500mA – 1000mA

3.1.1.1 Installing Waltero-approved batteries

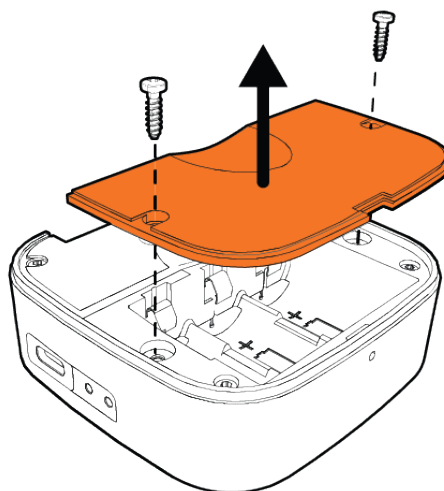
OBSERVE! Only use new batteries of the same type. Do not mix batteries of different types or mix new and old batteries.

OBSERVE! Only use Waltero-approved batteries, cables, and power adapter. Incompatible batteries, cable or power adapter can cause damage to your device.

OBSERVE! Only use approved batteries, **Panasonic Energy CR123A** and **GP Batteries GPCR123A**. Incompatible batteries can cause damage to your device.

OBSERVE! Only use Waltero approved USB-C cable (art. 3001-01 USB-01).

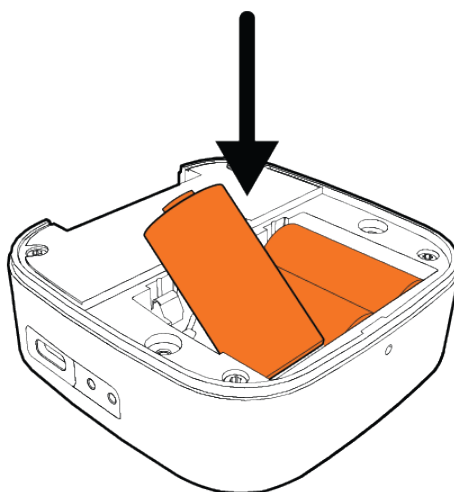
- 1) Loosen and remove the two T6-screws holding to the lid of the battery compartment using a torx-screwdriver and remove the lid.



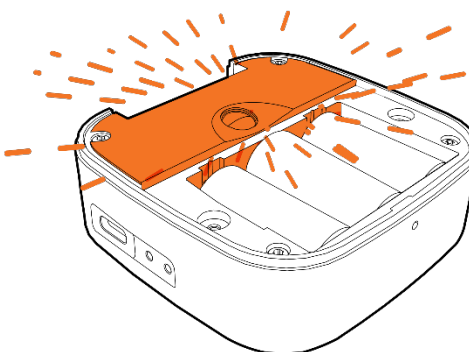


- 2) Install the three CR123A batteries.

OBSERVE! Make sure that the batteries are placed according to the polarity indications inside the battery compartment. Incorrectly installed batteries can damage your device.

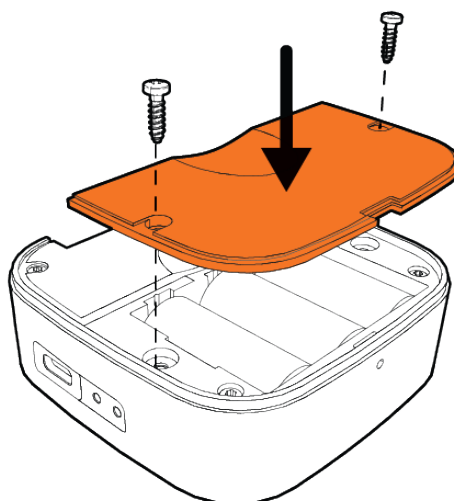


- 3) When the batteries are installed, the device briefly lights up to indicate that it has power.





- 4) Put the battery lid over the battery compartment and put back the two T6-screws. Tighten them using a torx-screwdriver



3.1.1.2 Connecting Waltero-approved USB-C power adapter (Optional)

OBSERVE!



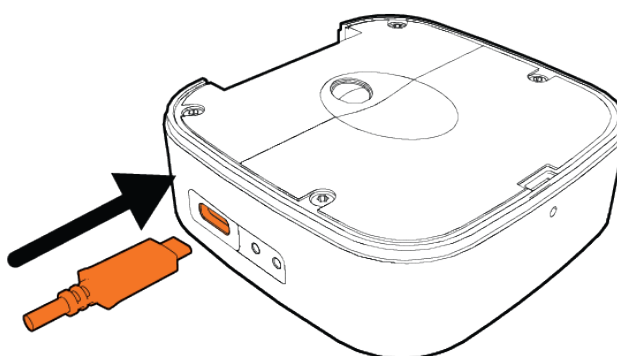
This device uses a DC-power source.

Only use a power adapter with the following specifications. An incompatible power adapter can cause damage to your device.

- **Voltage:** 5V +/- 5 %
- **Current:** 500mA – 1000mA

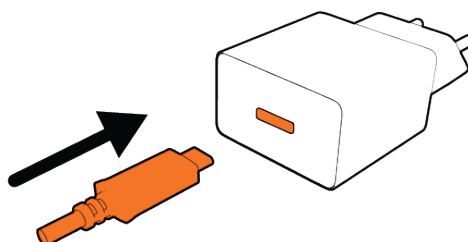
OBSERVE! Only use Waltero approved USB-C cable (art. 3001-01 USB-01).

- 1) Connect the USB-C cable to the power supply and plug the cable into the W-Sensor's USB-C port.

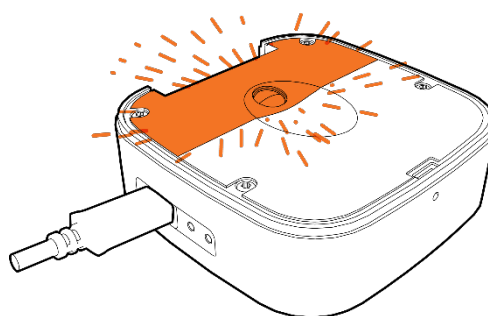




- 2) Connect the power supply to an electrical outlet.



- 3) When the power supply is connected, the device briefly lights up to indicate that it has power. **NOTE:** The device only lights up if batteries have not been previously installed.



3.1.2 Connecting the W-Sensor to the W-Cloud service

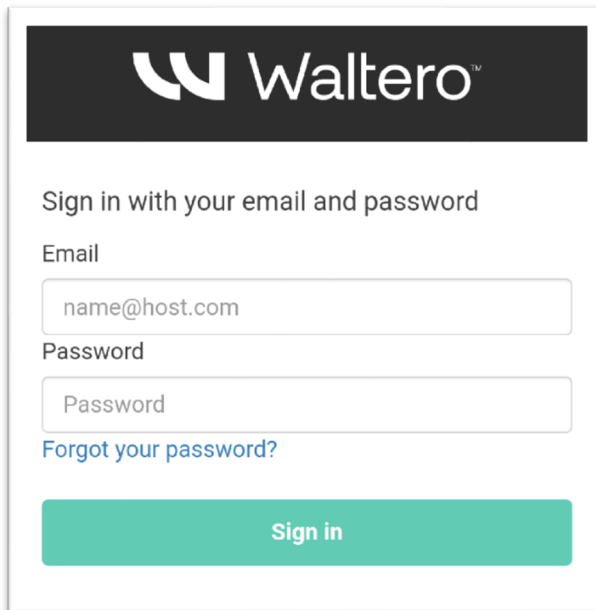
NOTE! The below instructions are applicable to both models of the W-sensor.

- 1) Scan the QR-code located on the side of the W-Sensor with your smartphone.





- 2) Follow the link to the Waltero commissioning webpage and use your account credentials to log into the W-Cloud application. If you lack an account, please contact your local administrator.

A screenshot of the Waltero login webpage. At the top is a dark header with the Waltero logo. Below the header, the text 'Sign in with your email and password' is displayed. There are two input fields: 'Email' with a placeholder 'name@host.com' and 'Password' with a placeholder 'Password'. A blue link 'Forgot your password?' is located below the password field. At the bottom is a large teal button labeled 'Sign in'.



3) Enter the following meter information into the application:

- A name for the meter (optional).
- A description of the meter (optional).
- The meter ID designation used within your organization (optional as per organization requirements).
- Organization and/or user, depending on installation requirements

10:28

Detail

Name

Description

Latitude
0

Longitude
0

Network Type*
The Things Network

External Meter Id

Meter Type*
Select Meter Type

Parent W-Sensor

Organization

User

CANCEL SAVE

- 4) By default, the W-Sensor will automatically identify the meter type ("Automatic"). If necessary, assign the type of meter manually by selecting the corresponding alternative from the drop down-menu and enter the correct designation of the meter.

Meter Type*

Select Meter Type



3.1.3 Attaching and detaching the W-Sensor

The W-Sensor attaches to the meter by means of an adapter mounted on the meter. The W-Sensor attaches to the hinges on the adapter and is secured into place by an internal locking mechanism which locks onto the pin on the adapter.

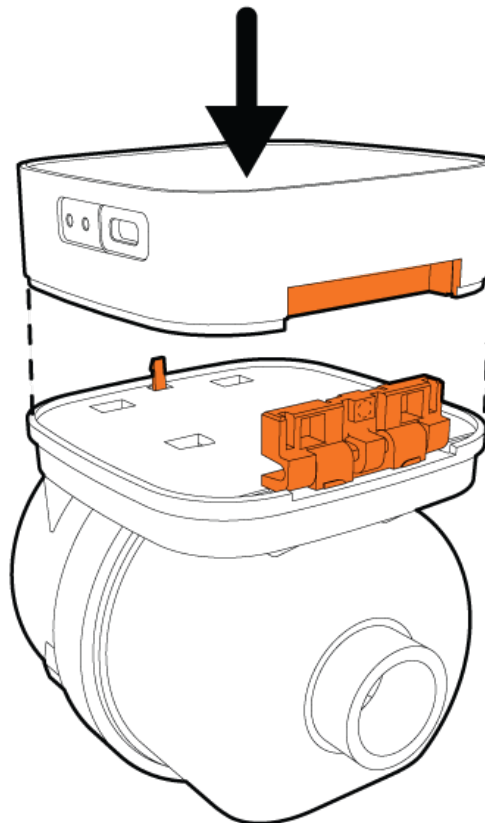
Refer to the user manual of your adapter for more information regarding the installation of adapters.

NOTE! The below instructions are applicable to both models of the W-sensor.
--

and that the adapter is correctly installed before attaching the W-

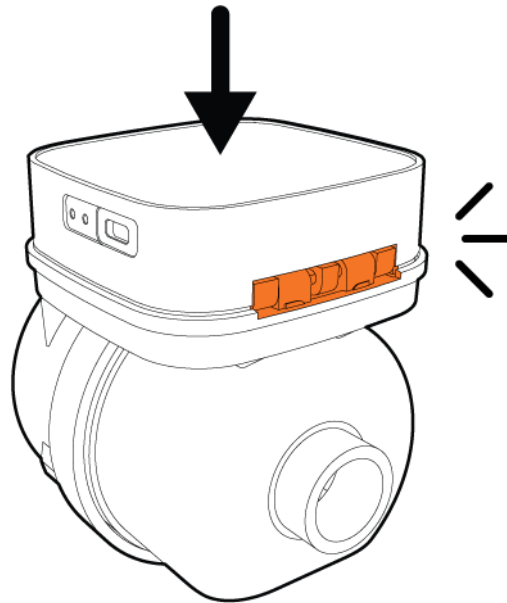
3.1.3.1 Attaching the W-sensor to an adapter

- 1) Align the hinge-slot on the W-Sensor to the hinge on the adapter and slide the sensor down the hinge at an angle while ensuring that the pin locks into the W-sensor.



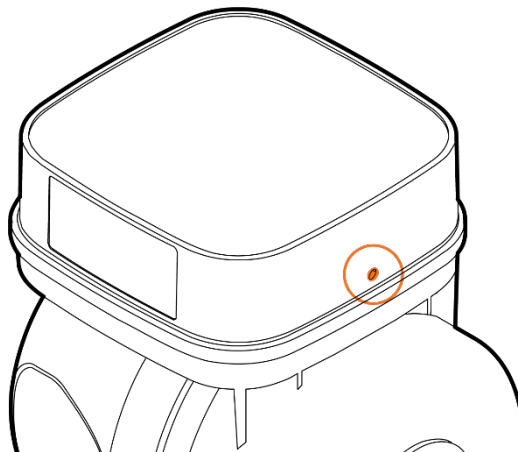


- 2) Close the hinge and gently press the W-Sensor with both hands until you hear a click. The sound indicates that the sensor is locked into place.



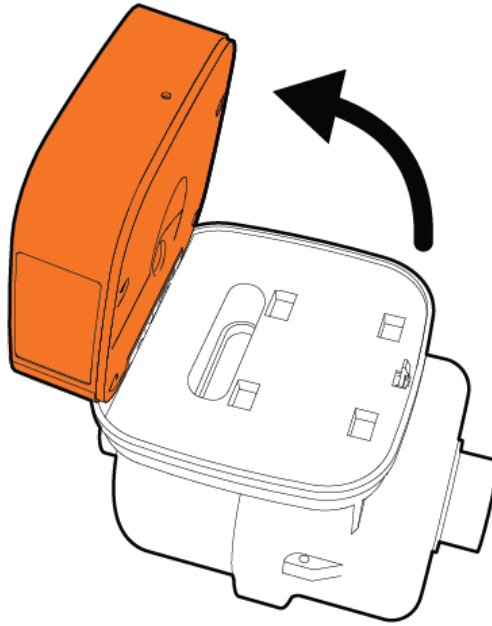
3.1.3.2 Detaching the W-sensor from an adapter

- 1) Open the locking mechanism by gently pressing the spring release button with an applicable tool.





- 2) When the locking mechanism has released the W-sensor can be opened along the hinges without removing the sensor from the adapter.



3.1.4 Verifying data transmission

If the W-Sensor has been correctly connected and installed, the transmission of data from the device to the W-Cloud service will start automatically at the pre-set time interval. Make sure that the installation and connection are correct by verifying the transmission.

NOTE! The below instructions are applicable to both models of the W-sensor.

- 1) Log into the W-Cloud at <https://cloud.waltero.io> using your account credentials.
- 2) Open the details page of your W-Sensor by choosing W-Sensors from the menu and then selecting your device from the list. The devices are identified by serial number, name, and external device-ID.
- 3) Trigger a reading of the meter by pressing the trigger button. The W-Sensor reads the meter and transmits the data.
- 4) Verify that the W-Sensor is connected by examining the timestamp of the received data transmission.



- 5) Verify that the entered meter type is correct. If not, choose the correct meter from the drop down-menu.
- 6) Verify that the received meter value is correct by comparing it to the value on the meter.



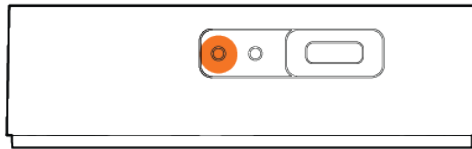
3.2 Use of installed W-Sensor

After the W-Sensor has been installed and connected to the W-Cloud service it will continue to transmit data automatically. The continued operation of the W-Sensor is autonomous, and there is no need for further interaction with the device. Although interaction is not necessary for continued operation of the W-Sensor, manual reading of the meter and manual triggering of data transfer is possible.

NOTE! The below instructions are applicable to both models of the W-sensor.

3.2.1 Manually triggering reading and data transfer

A reading of the meter can be manually triggered by pressing the trigger button of the W-Sensor. This causes the W-Sensor to do a reading of the meter and send the read-data to the W-Cloud service.



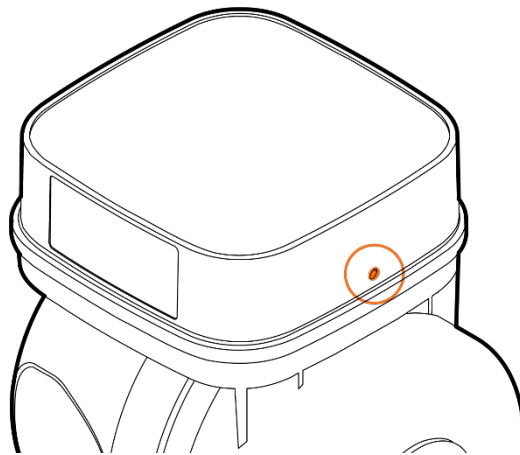
Manually triggering a reading causes the read-cycle of the W-Sensor to reset. If the read-cycle for example is set to once every 60 minutes the next reading and data transfer will occur 60 minutes after triggering a manual reading, irrespective of where in the cycle the device was when triggered.

3.2.2 Manual reading of meter

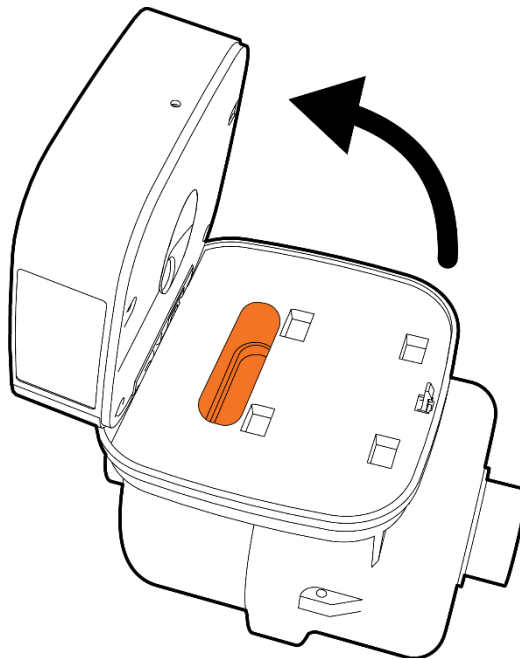
By lifting the W-sensor an operator can see the counter of the meter upon which the sensor is installed. This allows for manual reading of values without need of dismounting neither the device nor the adapter.

NOTE! Make sure the W-sensor is returned to its original (closed) position after being lifted. A lifted sensor will not be able to read the underlying meter.

- 1) To be able open the W-sensor, first open the locking mechanism by gently pressing the spring release button with an applicable tool.



- 2) When the locking mechanism has released, open the W-sensor along the hinges to access the counter of the meter.





4 Configuration and settings

In this chapter you will find instructions for configuring your W-Sensor.

NOTE! To be able to configure the settings of your W-Sensor it needs to be connected to a power source. Please see **chapter 3.1.1 Connecting a power source to the W-Sensor** for instructions on connecting a power source to your device.

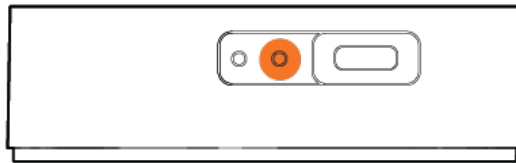
NOTE! The below instructions are applicable to both models of the W-sensor.

4.1 Entering configuration mode

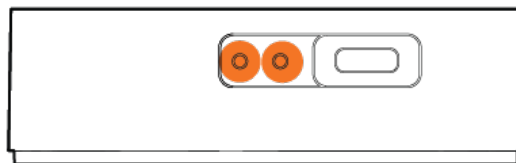
To be able to access and change the settings of the W-Sensor it first needs to be set to configuration mode.

NOTE! If the trigger button is pressed before the user button the sensor reads the meter and transmits data. If this happens, wait for 30 seconds before repeating the steps for entering configuration mode.

- 1) Hold down the User button (button B).



- 2) Press the Trigger button (button A) while still holding the user button (button B).



- 3) The W-Sensor now enters its configuration mode, and the settings can be accessed.

4.2 Connecting to W-Sensor

Connection to the W-Sensor is done through WiFi.

- 1) Open the WiFi settings on your computer.
- 2) Find the W-Sensor in the list of networks: Wsensor <serial number>. The serial number can be found beside the QR-code on your device.
- 3) Enter password, consisting of the first 8 characters in the pairing token, found beside the QR-code on your device.
- 4) Your computer is now connected to your W-Sensor.



4.3 Accessing W-Sensor settings

- 1) Open a new browser window.
- 2) Enter the IP address of the W-Sensor: 192.168.4.1
- 3) You are now in the settings menu of your W-Sensor.

4.4 W-Sensor settings menu

The W-Sensor has the following settings:

- A. Wi-Fi SSID:** Used for connecting the W-Sensor to a Wi-Fi-network. Enter the SSID of the network you want the device to connect to.
- B. Wi-Fi password:** Used for connecting the W-Sensor to a Wi-Fi-network. Enter the password for your chosen Wi-Fi-network.
- C. Connection mode:** Used for specifying which connection the W-Sensor will use. Choose between Wi-Fi or LoRa/LTE (depending on which W-Sensor model you are using).
- D. Meter Model:** Used for indicating which meter model the W-Sensor is mounted on. Enter meter model.
- E. Measurement interval:** Used for choosing at what interval the W-Sensor will read and transmit data. Enter the interval in seconds.
- F. IoT endpoint:** Used for choosing which server the W-Sensor will connect to. Choose between:
 - a. Global:** Automatically connects to the server that is geographically closest to the W-Sensor.
 - b. Manual:** Manually choose which server the W-Sensor will connect to.

5 Maintenance of the W-Sensor

In this chapter you will find maintenance instructions for the Waltero W-Sensor.

NOTE! The below instructions are applicable to both models of the W-sensor.

5.1 Replacing the batteries



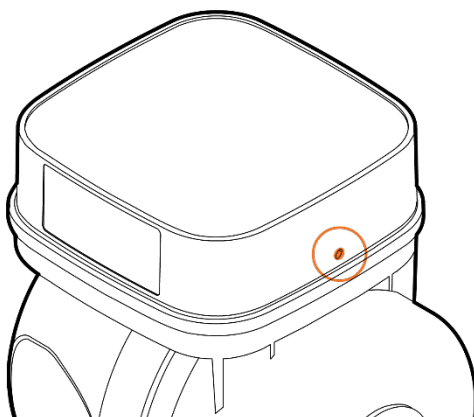
OBSERVE! Only use new batteries of the same type. Do not mix batteries of different types or mix new and old batteries.

OBSERVE! Only use approved batteries, **Panasonic Energy CR123A** and **GP Batteries GPCR123A**. Incompatible batteries can cause damage to your device.

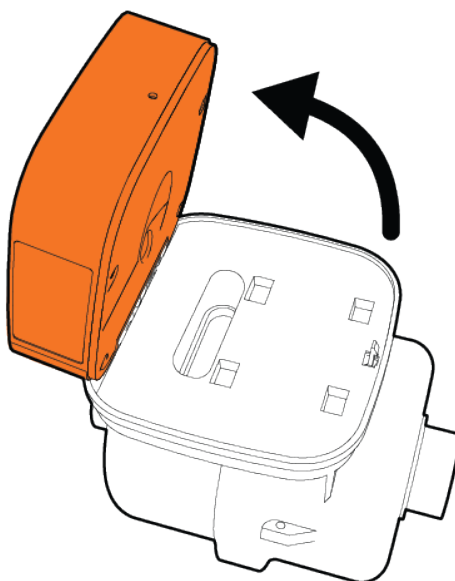
Tools and equipment:

- Three Waltero approved batteries. Approved batteries are **Panasonic Energy CR123A** and **GP Batteries GPCR123A**.
- A Torx T6 screwdriver.

- 1) Open the locking mechanism by gently pushing the spring release button with an applicable tool.

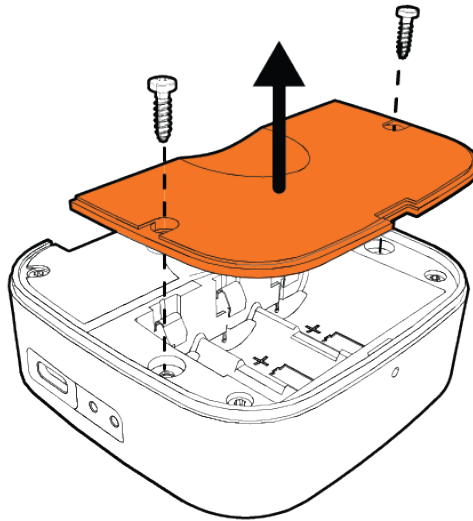


- 2) When the locking mechanism releases, open the W-Sensor along the hinges by lifting it, exposing the underside of the device.

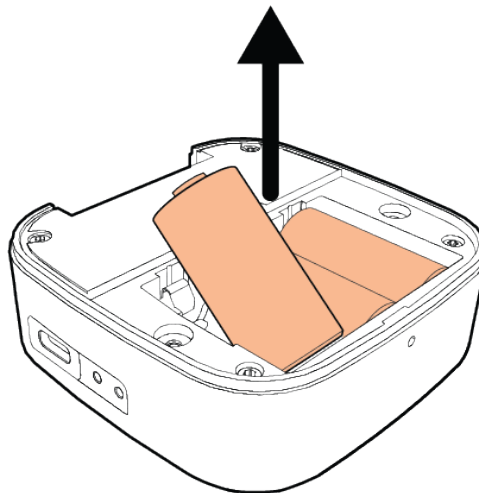




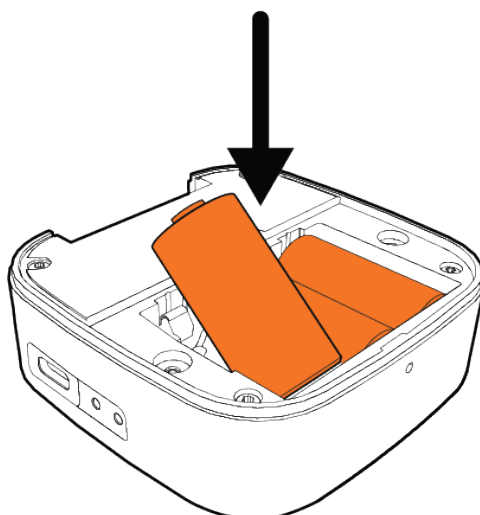
- 3) Loosen and remove the two T6-screws holding to the lid of the battery compartment using a Torx T6-screwdriver and remove the lid of the battery compartment.



- 4) Remove the old batteries.

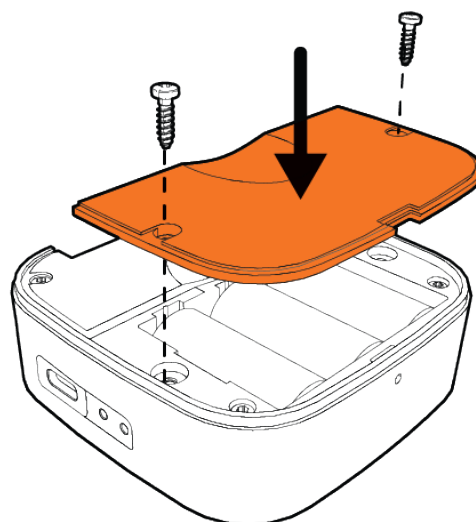


- 5) Install three new batteries.

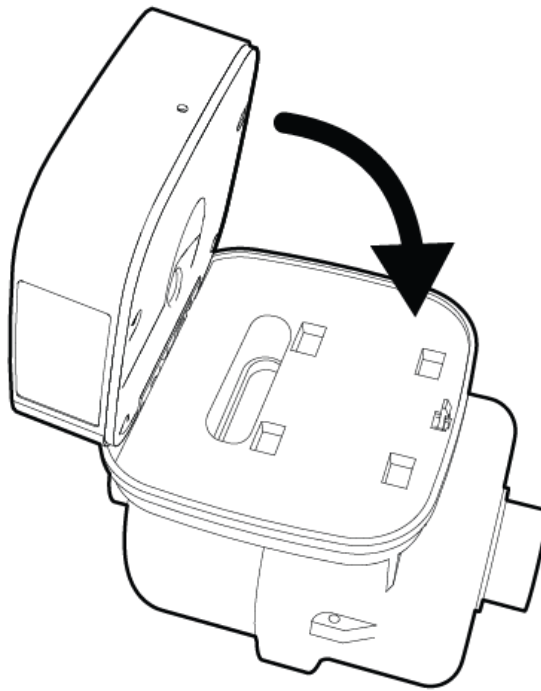


OBSERVE! Make sure that the batteries are placed according to the polarity indications inside the battery compartment. Incorrectly installed batteries can damage your device.

- 6) Put the battery lid over the battery compartment and put back the two T6-screws. Tighten them using a Torx T6-screwdriver.



- 7) Make sure the W-Sensor has power by examining the indicator lamp. If the W-Sensor has power, the indicator lamp comes on.
8) Return the W-Sensor to its original position (closed).





5.2 Cleaning the lens of the W-Sensor

For the W-Sensor to be able to accurately read the meter, both the glass of the meter and the lens of the sensor need to be clean and free from debris, dust, grease, and dirt. The W-Sensor will automatically signal the W-Cloud service if it is unable to read the values of the meter, indicating the need of cleaning the lens of the sensor and/or the glass of the meter.

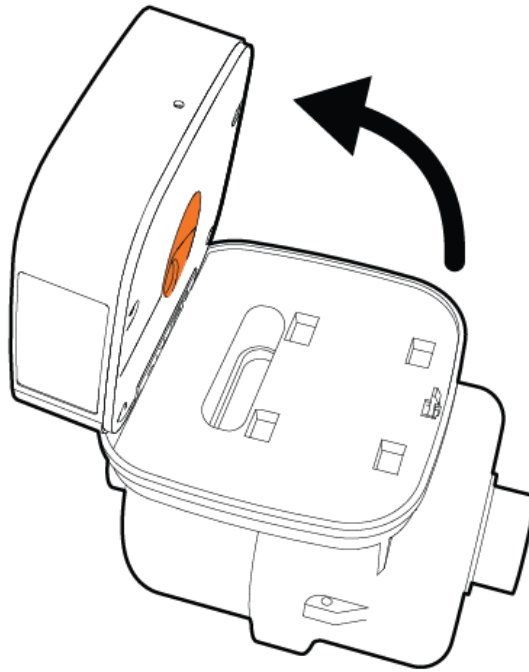
OBSERVE! Scratches and other damage to the glass surfaces of the meter and the lens of the W-sensor can prevent the device from being able to read the meter. Take care to not scratch the surfaces while cleaning the meter and the sensor.

OBSERVE! The below cleaning agents can damage your device.

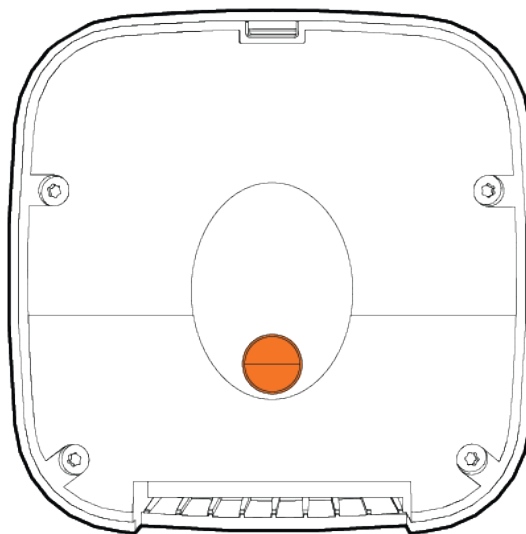
Do not use any of the below cleaning agents:

- Abrasive products
- Methyl alcohol
- Hydrochloric acid (35%)
- Sodium bicarbonate (10%)
- Tricresyl phosphate
- Benzol
- Concentrated ethanol
- Toluol
- Industrial petrol
- Methyl isobutyl ketone
- Acrylonitrile
- Cosmetic solvents
- Sodium hydrate (10%)
- Ammonium hydrate (10%)
- Nitric acid (40%)
- Potassium dichromate
- Acetone
- Diesel naphtha
- Petrol.

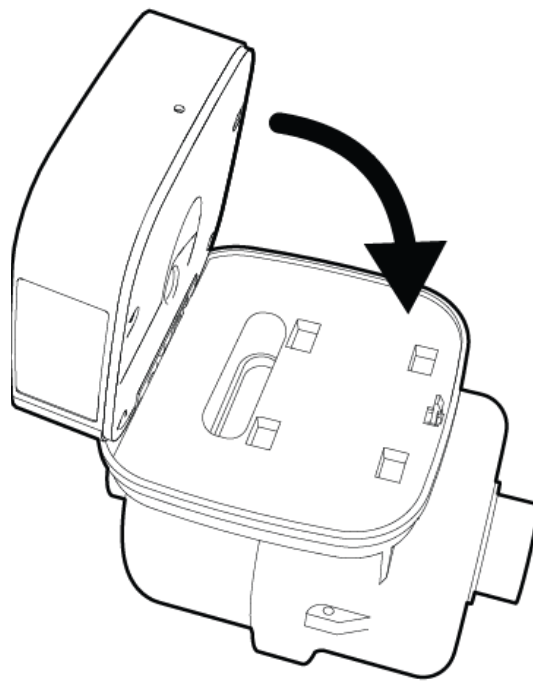
- 1) Open the W-Sensor along the hinges by lifting it, exposing the underside of the device.



- 2) Clean the glass of the meter and the lens of the reader using soft tissue. If necessary, use a mild detergent.



- 3) Inspect the glass of the meter and the lens of the W-Sensor for any left-over dust, grease, and/or other dirt. Repeat step 2 as necessary.
- 4) Return the W-Sensor to its original position (closed).





6 Support

In this chapter you will find information regarding support for the Waltero W-Sensor, including instructions for troubleshooting your device.

NOTE! The below instructions are applicable to both models of the W-sensor.

6.1 Troubleshooting

If the W-Sensor is not connecting or if the values are incorrect, please try the following:

- If the W-Sensor did not connect during installation: wait 5 minutes and retry the verification process. When connecting the W-Sensor for the first time it can take a few minutes for a connection to be established.
- If the connection is established but the reading is incorrect, verify that the entered meter type is correct. If not, choose the correct meter from the drop down-menu and trigger a new reading.
- Make sure that the lens of the reader and the glass of the meter are free from debris, dust, dirt, and grease that could interfere with the W-Sensors reading of the meter and trigger a new reading. See **chapter 5.2 Cleaning the lens of the W-Sensor** for cleaning instructions.

If the W-Sensor still isn't connecting or if the values are incorrect, please contact support.

6.2 Contacting support

If you require any technical assistance with your Waltero product, please contact your local Waltero partner. Contact information for your country can be found at <https://www.waltero.com>

If you visit the Waltero support page, you can:

- Download user manuals and user documentation.
- Find answers regarding your device in the FAQ section.
- See video instructions for installation of W-Sensor and its accessories.

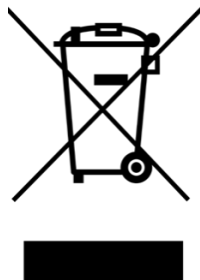


7 Recycling and disposal

In this chapter you will find information regarding the recycling and disposal of the W-Sensor.

NOTE! The below instructions are applicable to both models of the W-sensor.

7.1 Europe



This product is regulated by the European law WEEE (Directive 2012/19/EU on waste electrical and electronic equipment), which is applicable in all European Union member states. As such the product **must not** be disposed of together with household waste. Please contact your local Waltero partner for further information about how to dispose of this product correctly.

7.2 Rest of world

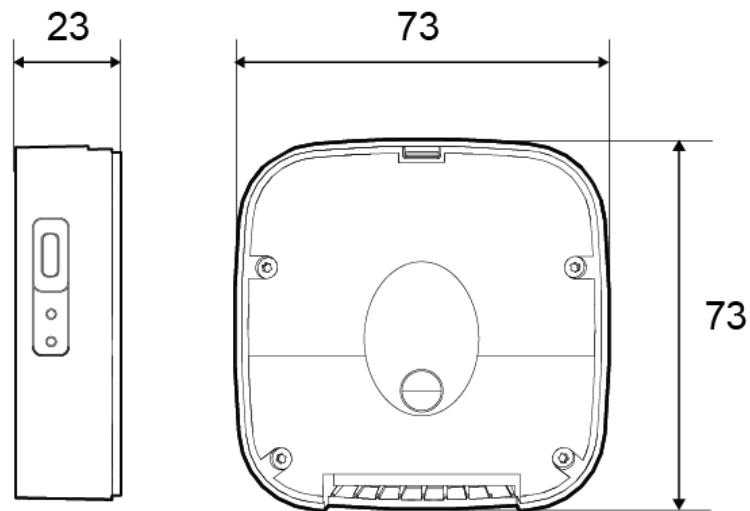
When the W-Sensor has reached the end of its lifecycle, dispose of it in accordance with local laws and regulations in your area. For more information regarding local collection points, laws, and regulations, contact your local authority/-ies responsible for waste management.



8 Technical data

In this chapter you will find the technical data and specifications of the Waltero W-Sensor, measurement, device layout technical specifications, and transmission specifications.

8.1 Structure and dimensions



8.1.1 Measurements

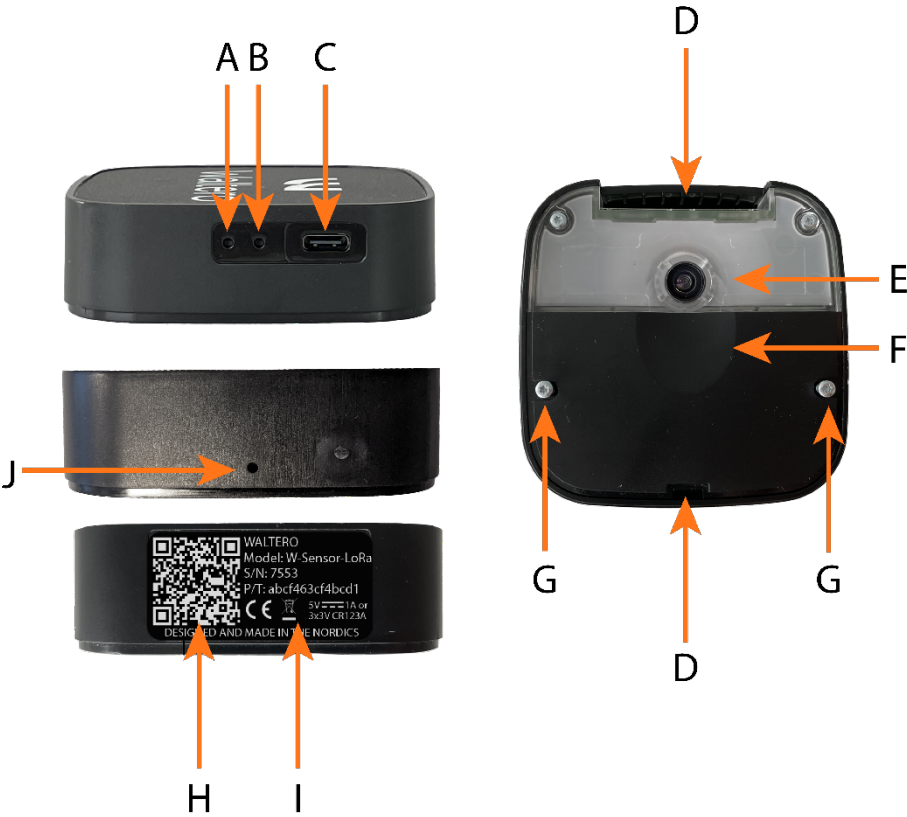
Width: 73 mm

Depth: 73 mm

Height: 23 mm



8.1.2 Device layout



POS	Description
A	Trigger button (button A)
B	User button (button B)
C	USB C power connector
D	Slots for attachment to adapter
E	Reader lens
F	Battery lid
G	2 x Torx T6 screws
H	QR-code for commissioning
I	Markings and safety information
J	Lock release button

NOTE: POC-information can be found on the inside of the battery lid.



8.2 Technical specifications

Feature	Description		Unit of measure
	LTE W-Sensor LTE-01, LTE-02, LTE-03, LTE-04, LTE-05 LTE-06:	LoRa W-Sensor LoRa-01:	
Weight	54 g (batteries not included), 104 g (with batteries).		Grams
Power source	- Batteries: 3 X CR123A, compliant with IEC 60086-4 (Panasonic Energy CR123A and GP Batteries GPCR123A). - USB: AC/DC USB power supply, delivering 5V+/- 5% and current between 500mA and 1000mA. Connector type C.		
Battery life	10 years at recommended reading and transmission frequency and using recommended batteries.		Years
Connectivity	- LTE NB-IoT (<21dBm) - LTE-Cat M (<23dBm) - WiFi (802.11 b/g/n, 2401MHz-2483MHz, TX Power <20dBm)	- LoRaWAN (Class A, v 1.03, 868MHz, TX Power <14dBm) - WiFi (802.11 b/g/n, 2401MHz-2483MHz, TX Power <20dBm)	
Maximum operating altitude	2000 meters above sea level		Meters
Operating conditions	- Temperature: 5-55 °C - Humidity: <85% RH, Non-condensing - Maximum operating altitude: 2000 meters above sea level		Celsius RH Meters
Storage conditions	-10 to +85 °C dry storage		Celsius
Clearance	Approx. 100 mm above the meter and 20 mm on all sides of the reader.		Millimeters
Pollution degree grade	2		



8.3 Radio technical specifications

Features	Description LTE W-Sensor LTE-01, LTE-02, LTE-03, LTE-04, LTE-05 LTE-06:	Description LoRa W-Sensor LoRa-01:
Status radio	Activation by programmable duty cycle. Range: every 10 seconds to once a week.	
Configuration	Factory setup	
Standard	3GPP Rel-13/Rel-14, LTE Cat M1, NB1/NB2 - WiFi 802.11b, 802.11g, 802.11n HT20, 802.11n HT40	- LoRaWAN v. 1.03 class A - WiFi 802.11b, 802.11g, 802.11n HT20, 802.11n HT40
Built-in antennas	- LTE (art. No: Y1WAL00A0AA) - WiFi (802.11 b/g/n, 2401MHz – 2483MHz, TX Power <20dBm)	- LoRaWAN (Class A, v 1.0.3, 868MHz, TX Power <14dBm) - WiFi (802.11 b/g/n, 2401MHz – 2483MHz, TX Power <20dBm)
Operating frequency range	- LTE B1/B2/B3/B4/B5/B8-/B12/B13/B16/B17B18-/B19/B20/B25/B26/B27-/B28/B66 - WiFi 2401MHz – 2483MHz	- LoRaWAN 868MHZ - WiFi 2401MHz – 2483MHz
Radiated power	- LTE 23dBm max - WiFi 20dBm max	- LoRa 14dBm max - WiFi 20dBm max
Device class		Receiver class 3
Data sent	- Meter value - Battery status	
Encryption	AES-128	
Alarms	Low battery. Other alarms calculated in W-Cloud and W-cloud+	
Battery duration (at hourly transmission rate)	10 years depending on operating conditions.	XX (requires connected power supply).



Annex I: Declaration of Conformity

In accordance with the Radio Equipment Directive (RED) 2014/53/EU

Name and address of the manufacturer or his authorized representative:	Waltero AB Medicon Village Nytänkargatan 4 223 63 Lund	+46 103305500 sales@waltero.com http://waltero.com/
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Ensure that the following product:

W-Sensor	LTE-Model	LTE-01, LTE-02, LTE-03, LTE-04, LTE-05 LTE-06
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Manufactured in accordance with the Directive 2014/53/EU of the European Parliament and of the Council of 16th April 2014 on the harmonization of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC, and all following amendments to date.

Description of the product:

W-Sensor is a digital reader for analog utility meters. The product is manufactured in a black color and with dimensions L:73 W:73 H:23 (mm). W-Sensor has an adapter that is sold separately, and a software.

Manufactured in accordance with other applicable directives:

- Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment and Regulation (EC) No 1272/2008 of the European Parliament and of the council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Manufactured in accordance with the following harmonized standards:

- EN 61010-1:2010 and A1:2016, EN 62311:2020, EN 301 489-1 V2.2.3, EN 301 489-17 V3.2.6, EN 301 489-52 V1.2.1, EN 300 328 V2.2.2 and EN 301 908-1 V15.2.1.

Technical file held by: Waltero AB

CE-marking: 2024

Bureau Veritas, W7L-P23120008

Place: Lund, Sweden	Date: [YYYY-MM-DD]
Waltero AB	
Authorized representative:	

Kristian Storm/ CEO	



Annex II: FCC Compliance Information Statement

47 CFR § 2.1077 Compliance Information

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.

Name and address of the manufacturer:	Waltero AB Medicon Village Nytänkargatan 4 223 63 Lund	+46 103305500 sales@waltero.com http://waltero.com/
Authorized representative:	ABC Corporation Street Address City, State Zip Code	Telephone number or internet contact information

Trade Name & Model Numbers:

W-Sensor	LTE-Model	LTE-01, LTE-02, LTE-03, LTE-04, LTE-05 LTE-06
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Compliance Testing Standards:

Standard Section	Test report No.
FCC Part 22H/24/27	X
FCC Part 15C	X
FCC Part 2.1091	X
FCC Part 15B	X

Technical File Held By: Waltero AB

Compliance Tests Report Date: XXXX

Testing Laboratory: Bureau Veritas, Shenzhen, China

Compliance Statement:

This device was tested to conform to the applicable FCC rules and regulations. The method of testing was in accordance with the most accurate measurement standards possible, and all necessary steps have been enforced to assure that all production units of the same equipment will continue to comply with the Federal Communications Commission's requirements.



Annex III: Adapters

Art.no	Product	Compatible Sensor
2001-01	ADV-01, Adapter V-100 Hinged	W-Sensor
2001-02	ADV-02, Adapter V-100 Fixed	W-Sensor
2001-03	ADV-03, Adapter V-100 IP68	W-Sensor
2002-01	ADG-01, Adapter Generic 75mm - 95mm, Hinged	W-Sensor
2002-02	ADG-02, Adapter Generic 75mm - 95 mm, Fixed	W-Sensor
2002-03	ADG-03, Adapter Generic 75mm - 95 mm, IP68	W-Sensor
2003-01	ADE-01, Adapter Honeywell BKG, Hinged	W-Sensor