BMETERING NFC CONFIG

User Manual_v1.8

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1. Introduction

The Android™ and iOS application described in this manual is used to configure the new pulse emitter, wireless M-BUS, wired M-BUS, LoRaWAN devices. It allows, through NFC technology, to read and write all the parameters necessary for the correct operation of the device, based on your needs.
What's NFC (Near Field Communication)?
It's a technology that allows two devices, in close contact, to exchange data wireless. This module, available on all modern smartphones, tablets and all the devices that support this technology, allows the devices to communicate with each other in a simple and immediate way.

2. System requirements

Hardware

› Android™ smartphone or iPhone with a 4.3" display or higher
› NFC interface support

Software

› Android™ operating system from version 10 (SDK 29) to version 16
› iOS operating system version 16 or higher

3. Installation

Download for Android

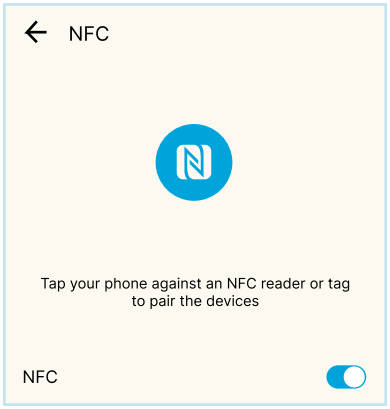
To install the app on Android, click here or scan the QR code

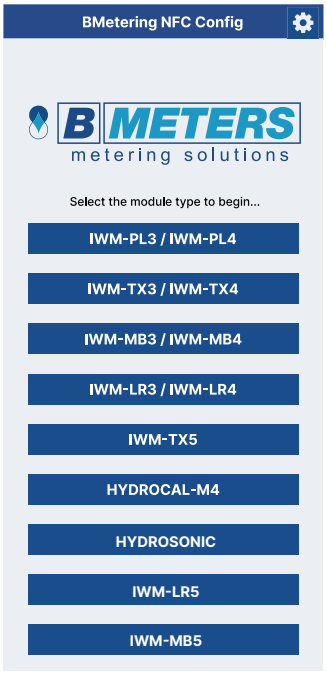
Download for iOS

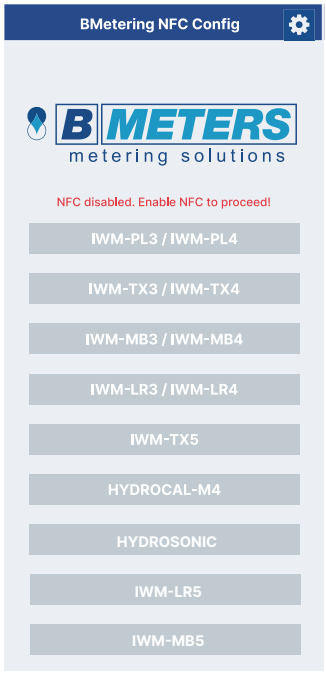
To install the app on iOS, click here or scan the QR code

4. Main screen

Here you can select the module to read and/or configure.
If the message "NFC disabled. Enable NFC to proceed!" appears, enable NFC in your smartphone's connectivity settings.







5. NFC tag positioning

To verify that the NFC antenna is working properly, put the android device in close contact with the module to allow the device to correctly detect the NFC TAG.

IWM-PL3 | IWM-PL4 | IWM-MB4 | IWM-MB3

IWM-TX3 | IWM-TX4 | IWM-LR3 | IWM-LR4

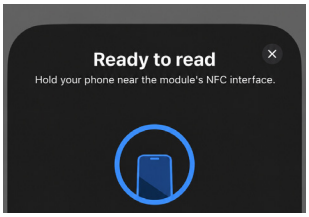
IWM-TX5 | IWM-LR5 | IWM-MB5

HYDROCAL-M4

HYDROSONIC

NOTE 1: on the configuration screen for the **IWM-PL3/PL4**, **IWM-MB3/MB4**, **IWM-TX3/TX4**, and **IWM-TX5** products, press the **READ** button located at the bottom of the screen to start the configuration.

NOTE 2: On the configuration screen for the **IWM-LR3/LR4**, **IWM-LR5**, **IWM-MB5**, **HYDROCAL-M4**, and **HYDROSONIC** products, as soon as the selected product page is opened, the image shown here will appear, prompting you to place the smartphone over the NFC antenna housing to start the configuration.



6. Fields description

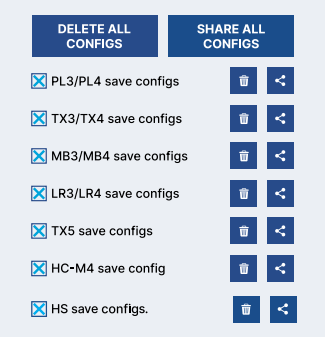
Allows to access the settings screen.

Password NFC/AES for every product: Allows to set a password of 8 hex characters to protect the device configuration as well as the settings of the password NFC/AES for the WM-BUS modules.

Note: If the password is lost, the device will no longer be accessible while retaining the last settings. For the password recovery it is necessary to send the device to the manufacturer.

Save encryption keys - Allows to save and export or delete the encryption keys file.

Saving configurations
Allows you to save the individual configurations of the selected modules. It is also possible to export or delete the configurations for single models or export and delete them globally. **Note:** Lora keys of the configured devices are saved in the configuration file.



Status - This field shows the NFC connection status between the device and the smartphone with different messages and colors:

Reading done	All parameters set on the device have been read correctly.
Writing done	All the selected parameters have been written correctly.
Wrong values	Some parameters haven't been selected or haven't been inserted correctly.
TAG detected	The NFC TAG has been detected correctly; the android device has been correctly positioned on the module.
TAG lost	The NFC TAG has been lost. Better position the android device on the module, making sure that the antenna is centered in relation to the TAG (move away and bring the android device closer to the module).
Password written	The device has been correctly locked and/or unlocked using the LOCK/UNLOCK button.
Wrong password	The password saved on the first setting is not the one used to block the module.

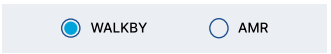
Water meter type
The first parameter to be set in the entire configuration (when present), it allows to automatically set the K index by selecting the correct water meter.

Mechanical serial number - Allows you to enter or scan the barcode containing the serial number of the mechanical meter associated with the module being configured. Field not available on Hydrocal-M4/Hydrosonic.

K index - Allows to select the inductive index value on water meter. The K index represents the ratio Liters/impeller rotation.
The selection of the water meter forces the correct assignment of the value.

Allows to consult the "Help" page.

This button allows to activate or deactivate the module or meter data transmission without detecting 5 absolute litres.



Allows to select the preferred WMBus mode configuration.

Transmit every - It is a specific value that indicates the transmission interval (WALK-BY 60 seconds and AMR 200 seconds).

Phone date and time - Allows to check if the date and time of the android device are corret before updating the radio module.

Transmit only in these hours - It's a specific value that indicates the hours of transmission of the module during the week (from Monday to Friday) - (WALK-BY 6:00–20:00 and AMR 0:00–24:00).

Historical acquirement day - Allows to set the day of the month in which historical data is saved.

Transmit during the weekend - Allows the data to be sent during the weekend.

Litres counter - Allows to view the liters read from the module and modify them if needed.

Data encryption

Not encrypted	data will not be encrypted.
Global encryption	data will be encrypted by global key (AES key password request).
Individual encryption	the data is encrypted using an automatically generated key (you can export them using the "Save Encryption Keys" function).

Alarms

Magnetic Alarm	Active when a magnetic fraud is detected on the water meter.
Tamper Alarm	Active when removal of the external sensor module/ perturbation of the inductive sensor is detected.
Wrong Pulse Setting	Active when an incorrect setting of the values related to the pulse output is detected. Note: check the pulse ratio and the pulse length with the water meter flow rate.
Low battery Alarm	Active when a battery voltage close to the minimum threshold is detected.
Sensor Alarm	Active when someone attempts to fraud the inductive sensor.
Water Loss Alarm	Active when extended water leakage is detected.
Reverse flow Alarm	Active when the reverse flow threshold is exceeded.
Qmax Overflow Alarm	Active after the meter works at a flow rate above Qmax for a few minutes.
NFC Tamper Alarm	Active when a NFC fraud is detected on the IWM-TX5 module.

Block/Unblock - Allows to block or unblock the module or meter configuration with the security password set in the settings (recommended).

Update - Positioned near a single parameter, it allows to rewrite only that parameter without overwriting all the configuration.

Read/Write - Allows to write the selected parameters or read the module/counter data.

ONLY FOR: IWM-PL3 IWM-PL4

Pulse ratio X - Allows to select the value liter/pulse of the module's output (multiple of K only). You can select the following values: "Disabled" (the device doesn't send pulses), 1, 5, 10, 25, 50,100, 250, 500, 1000. This index refers to the OUT1(white) cable and the OUT3 (green, excluding the dosing function).

Pulse length - Allows to enter the pulse length in ms (milliseconds) on OUT1 (white), OUT2 (yellow) and OUT3 (green). You can enter a value between 50 and 300 extremes included. If the pulse length is too long compared to the number of pulses (pulse overlap), the "Wrong pulse setting" alarm may occur. In this case it is advisable to lower the value of the pulse length (ms). It is advisable to keep the default value (100 ms).

Pulse ratio Y - Allows to insert the value liter/pulse of the dosing output. You can select a value between 1 and 65535. In this field you must insert only multiples of K: the value refers to the dosing function only.

OUT3 Setting - Allows you to select the OUT3 (green) cable function. It's possible to select one of the following functions:

Absolute count	Sends a pulse every (Pulse Ratio X / Index K) rotations considering the rotations in the opposite direction and subtracting them. It represents the litres actually passed through the water meter.
Backward Flow Count	Sends one pulse every (Pulse Ratio X /Index K) rotations in the opposite direction.
Dosing	Sends one pulse every (Pulse Ratio Y / Index K) rotations in the forward direction. It works only with the Pulse Ratio Y field.
Disabled	No pulses. Selecting this item completely disables the OUT3 behavior.

ONLY FOR: IWM-MB3 IWM-MB4 IWM-MB5

Primary address - Allows to set the primary address of the device (from 0 to 250). The secondary address is the serial number of the module.

ONLY FOR: IWM-TX5 IWM-LR5 IWM-MB5

Qmax (m³/h) - Allows to set the activation threshold of the maximum flow rate. The selection of the meter forces the default assignment of the value.

Water leakage threshold - Allows to set the interval for the activation of the water leakage alarm.

Reverse flow threshold - Allows to set the threshold for the activation of the reverse flow alarm.

Send date and time/Send historical (no MB5) - Enables the internal date and time to be sent by the radio module. It is a mandatory option if individual or global encryption is enabled. Send Historical: allows to send the last 12 months historical data.

ONLY FOR: IWM-LR3 IWM-LR4

→ RESET

Reset button - Allows to perform a factory reset of the module and restart the LoRa join procedure.
Note: this operation involves resetting the liters and date and time, it is recommended to update both fields with subsequent reading and writing.

ONLY FOR: IWM-LR3 IWM-LR4 IWM-LR5 HYDROCAL-M4 HYDROSONIC

○ ABP ◉ OTAA

Association through **Over The Air Activation - OTAA**.

DevEUI - Is an IEEE unique identification code for the end device (64 bit). The field is not editable.

AppEUI - Allows to set a unique identifier for the application, used for the OTAA join (64 bit). E4-1E-0A-90-00-0F-FF-FF is the default value.

AppKey - Allows to set a securely generated authentication code (AES-128 bit). Preassigned field.

◉ ABP ○ OTAA

Association through **ABP - Activation By Personalization**.

DevAddr - Allows to set the identification address of the device (32 bit).

AppSKey - Allows to set a session key for the end-to-end encryption of the application payload (64 bit).

NwkSKey - Allows to set a session key to encrypt and verify the integrity of packets (AES-128 bit).

Transmit every - Allows to set the transmission frequency. Available options: 21600s (6h) or 43200s (12h).

7. Step-by-step guide for IWM-PL, LR, MB and TX modules

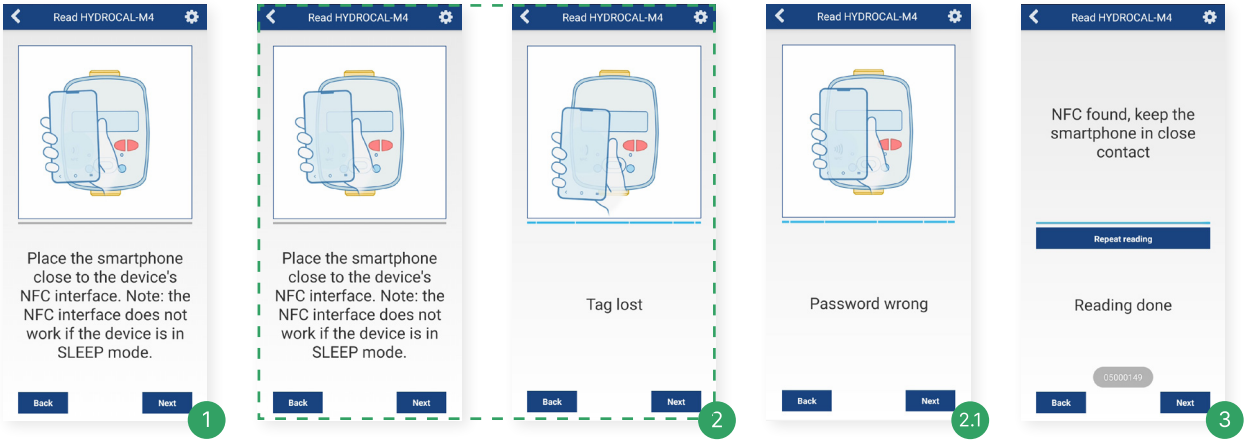
After checking the activation on the smartphone and the position on the module of the NFC antenna, proceed as follows:

1. Select your module on the main menu.
2. Read the module to load the configuration (refer to NFC TAG position table).
3. Modify the parameters to obtain the desired configuration.
4. Update date and time (optional).
5. Update litres (optional).
6. Reset Alarms (optional).
7. Write configuration settings.
8. Recommended, make another read to check the correct configuration of the module.

Note: when configuring LoRa modules, be sure to READ the module you want to configure FIRST to avoid duplication of keys.

For more detailed information use the "Help" page which can provide specific tips on each screen of the app.

8. Step-by-step guide for HYDROCAL-M4

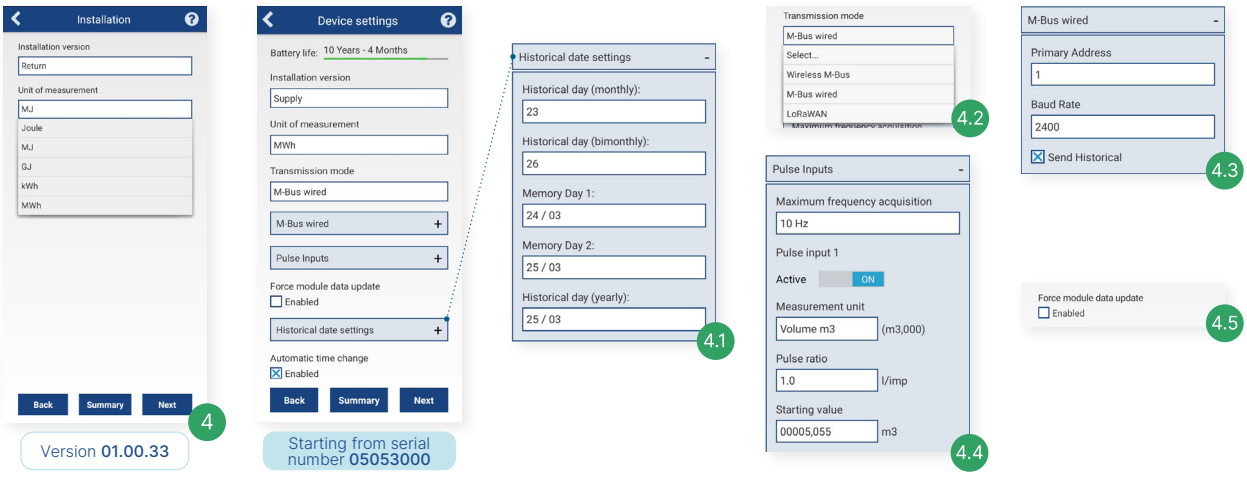


1) The first screen shows how to find the NFC on the device.

2) Prompt of NFC detected. If the tag is lost during the reading process reading, the app shows a message with instructions for finding the NFC tag.

2.1) Device with NFC password already enabled and not corresponding to the one set in the app (change the NFC password in the settings).

3) When the read is successful, the serial number of the device will appear at the bottom of the screen.



4) The first parameters to set are the install version (supply or return) and the unit of measurement. **Note**: if the install version has already been configured, it will not be possible to change the parameter.

4.1) Allows to select the configuration for historical and update the date and time.

4.2) Allows selection of data transmission mode between Wireless M-Bus, wired M-Bus and LoRaWAN.

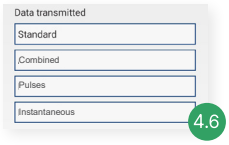
4.3) By selecting transmission via wired MBus, it is possible to set the primary address of the IR-MB-PULSE module, the Baud Rate communication and the meter historical to be sent.

4.4) Enabling and configuring pulse inputs. Through this menu it is possible to enable, disable, configure the pulse inputs individually and select the sampling frequency (10 or 25 Hz).

4.5) By enabling this function, the counter will “force” the writing of data on the IR-MB-PULSE external module, overwriting any previous values.

List of alarms:

Leakage ☐	Incorrect installation ☐	Display Overflow ☐	C1 pulses too frequent ☐
Burst ☐	Delta T non-compliant ☐	No C1 consumption ☐	C2 pulses too frequent ☐
Reverse flow ☐	Delta T too low ☐	No C2 consumption ☐	MBUS readings too frequent ☐
No consumption ☐	Delta T too high ☐	Loss on C1 ☐	MBUS disconnected ☐
Qmin underflow ☐	Excessive temperature ☐	Loss on C2 ☐	



Standard	Data of energy in heating and volume useful for accounting.
Combined	Standard data with the addition of optional energy and volume data in cooling for heating/cooling version.
Pulses	Standard data with the addition of optional data regarding pulse input 1 and 2 (if used).
Instantaneous	Standard data with optional data addition for all instant data.

4.6) wM-Bus packets: it allows you to set the transmission type, packets, transmission time, and historical data types.

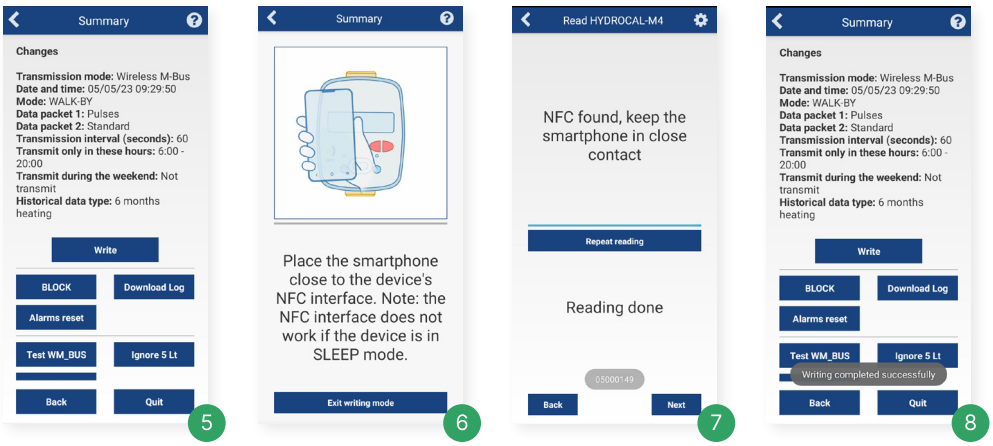
LoRaWAN settings

4.7) LoRaWAN settings:
- Selection between ABP and OTAA (default)
- OTAA keys already present at the factory
- Package selection by number of transmissions

4.8) LoRaWAN packets**:
- Compact
- Extensive
- Calories Datalogger
- Refrigeration Datalogger
- Monitoring
- Alarm History
- Arranged
- Form

4.9) Immediate Alarms (maximum 3)

**refer to the LoraWan specification of the product available upon request by writing to ticket@bmeters.com



5) Summary screen of the selected configuration and specific commands:

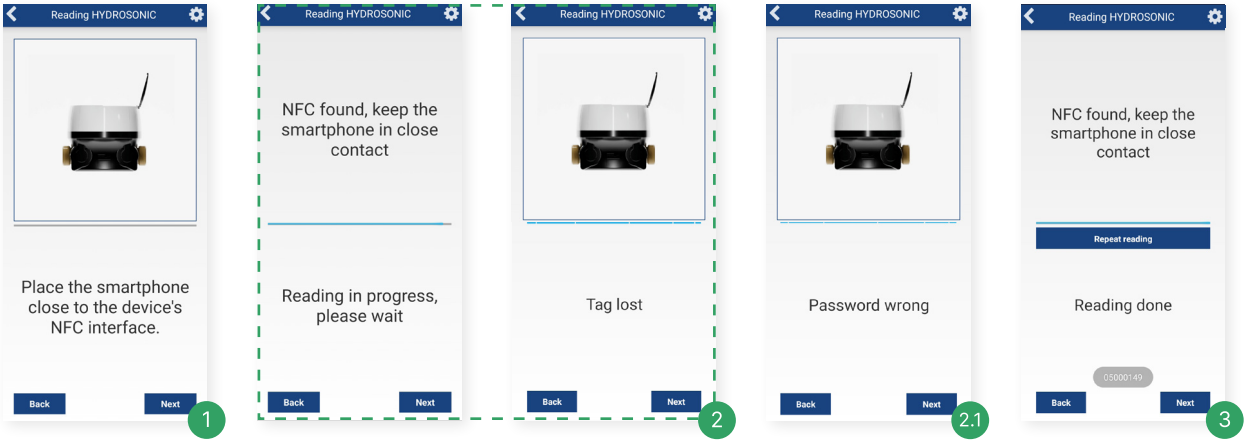
Summary	Settings or changes of previously configuration.
Block/Unblock	Allows to block/unblock the devices via NFC.
Alarms reset	Allows to reset all alarms.
Test WM_BUS	Allows to test W-MBus transmission (only before ±5 Litres).
Ignore 5 Lt	Allows to start transmission without the passage of ±5 Litres.
Download Log	Allows to download device Log file.
Write	Allows to WRITE the configuration.
Radio reset	Allow to reset the radio module.
Force Join	It makes a new attempt to join. If ±5 liters have not passed, the radio turns off again after sending the packet.

6) The Writing screen will ask you to position the smartphone on the NFC tag of the device (you can also exit without writing the configuration by pressing the related button).

7) When the NFC is found, the configuration writing begins (any error screens displayed during the writing process are the same as the first reading of the module).

8) When the configuration is done correctly the app will return to the summary screen and a confirmation message will appear at the bottom of the screen.

9. Step-by-step guide for HYDROSONIC / IWM-LR5



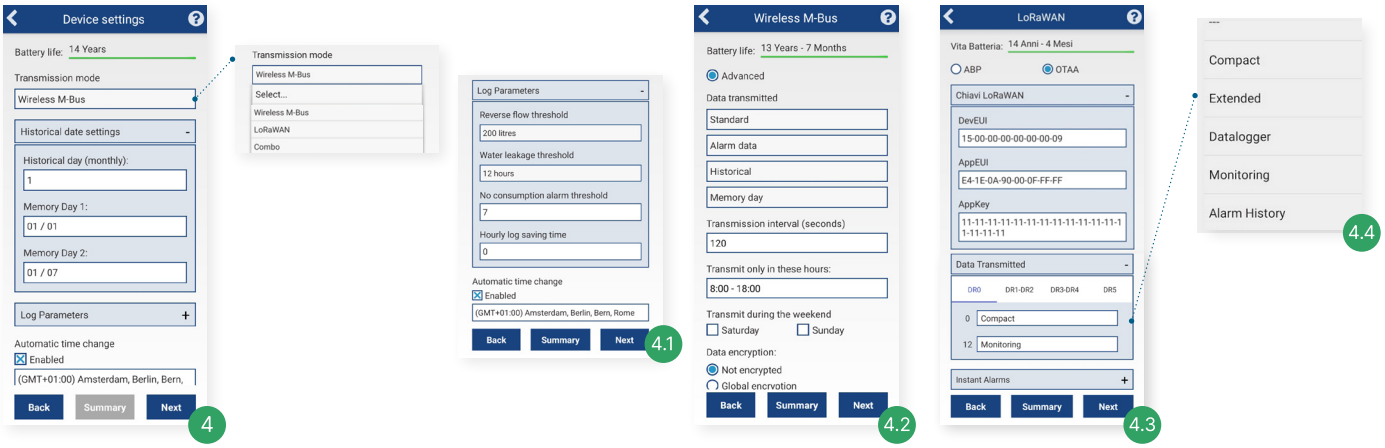
1) The first screen shows how to find the NFC on the device, in the example shown in the photo, the meter is an ultrasonic Hydrosonic.

2) Prompt of NFC detected. If the tag is lost during the reading process reading, the app shows a message with instructions for finding the NFC tag.

Note: the screens and parameters may differ between the two products.

2.1) Device with NFC password already enabled and not corresponding to the one set in the app (change the NFC password in the settings).

3) When the read is successful, the serial number of the device will appear at the bottom of the screen.



4) Allows selection of data transmission mode between Wireless M-Bus, LoRaWAN and Combo.

Note: For the IWM-LR5 product, only LoRaWAN can be selected.

4.1) Allows selecting the configuration for historical data acquisition: Monthly Day, Memory Day 1 e Memory Day 2.
Log parameters settings: Reverse Flow Alarm Trigger Threshold, Leak Alarm Trigger Threshold, Alarm Trigger Threshold No Power Consumption, Time Saved Hourly Log.
Automatic time change and time zone selection.

4.2) Wireless M-Bus configuration screen (for HYDROSONIC only). Allows setting the transmission type, packet type, and transmission time:

> Standard: current data (water consumption, reverse flow, flow rate and temperatures).

> Alarm data: 'standard' package with added alarm dates.

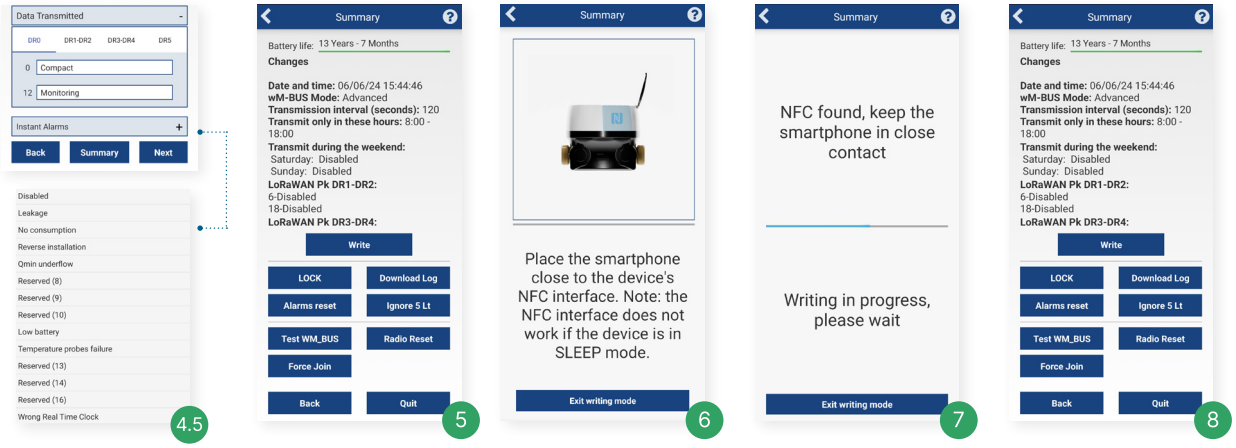
> Historical: 'standard' package with the addition of the previous 12 months historical data.

> Memory Day: 'standard' package with addition of memory day 1 and 2 data.

4.3) LoRaWAN Configuration Screen:
- Selection between ABP and OTAA (default)
- OTAA keys already present at the factory
- Packet selection by number of transmissions (DR0 only for COMBO mode).

4.4) LoRaWAN packets**:
- Compact
- Extended
- Datalogger
- Monitoring
- Alarm History (for HYDROSONIC only)
- JSON (for IWM-LR5 only)

**please refer to the LoraWan specification of the product available upon request by writing to ticket@bmeters.com



4.5) Immediate Alarms (maximum 3)

5) Summary screen of the selected configuration and specific commands:

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Alarms reset	Allows to reset all alarms.
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6) The Writing screen will ask you to position the smartphone on the NFC tag of the device (you can also exit without writing the configuration by pressing the related button).

7) When the NFC is found, the configuration writing begins (any error screens displayed during the writing process are the same as the first reading of the module).

8) When the configuration is done correctly the app will return to the summary screen and a confirmation message will appear at the bottom of the screen.