

Content

1.	INTRODUCTION	2
2.	DEVICE DESCRIPTION	2
3.	TURNING ON THE DEVICE	3
4.	INITIAL CONFIGURATION	3
5.	COMMUNICATION TEST	3
6.	MEASUREMENT PROCESS	3
7.	WEB INTERFACE – AIRLM-200	3
8.	COMMUNICATION SETTINGS	4
8.1.	LoRAWAN.....	4
8.2.	WiFi.....	4
9.	MAIN CONFIGURATION OF DEVICE ON SERVICE TAB	5
10.	SENSOR CONNESTION AND SETTINGS	6
10.1.	MEASURING ELECTRIC ENERGY WITH EXTERNAL OPTICAL SENSORS LS.....	6
10.2.	MEASURING ELECTRIC ENERGY VIA SO OUTPUT.....	6
10.3.	MEASURING GAS CONSUMPTION WITH EXTERNAL MAGNETIC SENSORS MS.....	7
10.4.	MEASURING WATER CONSUMPTION WITH EXTERNAL MAGNETIC SENSORS WS.....	7
10.5.	MAGNETIC SENSOR.....	7
10.6.	MEASURING EXTERNAL TEMPERATURE	8
10.7.	FLOOD / LEAK DETECTION	8
10.8.	MOTION DETECTION – PIR SENSOR	8
10.9.	POSITION TRACKING – GPS.....	9

1. Introduction

The AirIM-200 device is a wireless multifunctional sensor designed for external use. It is capable of monitoring various environmental parameters and measuring energy consumption through different types of external sensors, making it suitable for a wide range of applications, including industrial, residential, and utility monitoring.



The device communicates via LoRaWAN 868 MHz (AirIM-200L version), WiFi 2.4 GHz (AirIM-200W version), and NB-IoT & LTE-M (CAT-M) (AirIM-200N version). It is also possible to attach a GPS sensor for position tracking in the AirIM-200LG and AirIM-200WG version

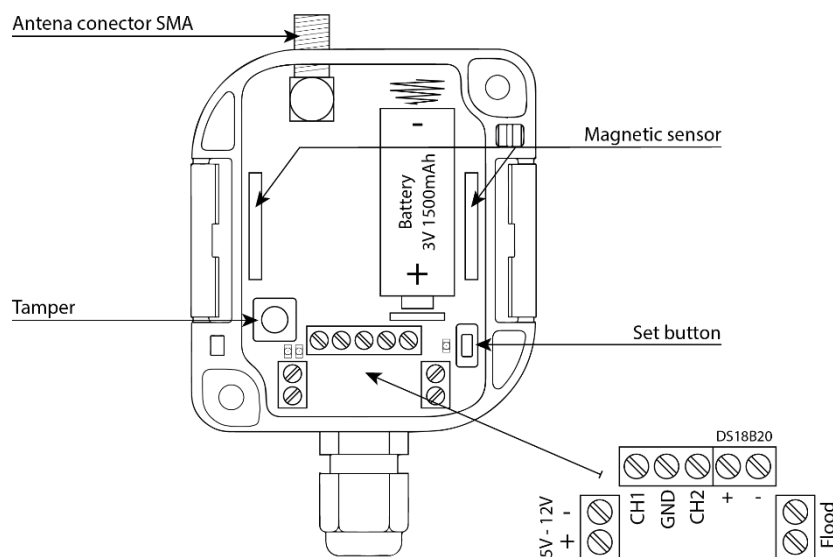
The AirIM-200W version, with WiFi connectivity, is designed for use around residential areas such as houses and gardens, where it can be easily connected to a home WiFi network.

The AirIM-200L version, with LoRaWAN connectivity and long-range capabilities (up to several kilometers), allows the creation of a local network with a central access point (LoRaWAN gateway). This makes it ideal for applications requiring wide-area coverage and low power consumption.

It is also possible to connect device to global operators (in ČR and SK, this is České Radiokomunikace a.s.). Wide-areas coverage of global operators is ideal for use in agriculture.

AirIM-200N with NB-IoT and LTE-M (CAT-M) compability, can be connected to global operators that provide coverage in most European countries.

2. Device description



3. Turning on the device

1. After inserting the battery or connecting external power, the device synchronizes the current time, indicated by a blue LED.
2. If the communication is successful, the blue LED will turn off.
3. In the event of unsuccessful communication, the blue LED will blink and then turn off.
4. If communication fails, check the signal range and ensure that the network settings are correctly configured in the device's configuration web interface
5. The device then enters sleep mode for the duration of the configured communication period.

4. Initial configuration

1. First, connect the AirIM-200 to a 5-12 V power supply.
2. Press and hold the SET button for more than 4 seconds. The yellow LED will light up, indicating the device has entered WiFi AP mode, which is further signaled by the yellow LED blinking.
3. The device should now be visible among available WiFi networks. Connect to it using a phone or PC.
4. Successful connection is indicated by a flashing yellow LED.
5. Configuration is done through the web interface at <http://air.local> (192.168.1.1).
6. Use the web interface to configure the desired functions.
7. Set the communication parameters with the application.
8. You can test the connection to LoRaWAN, WiFi, or NB-IoT according to the selected parameters by pressing the "Connect" button.
9. To exit configuration mode, either press and hold the SET button for more than 4 seconds or click the "Shutdown" button. The device will return to normal operation, and the yellow LED will turn off.

5. Communication test

1. By pressing the SET button, you can trigger a connection test.
2. The blue LED turns on when communication starts.
3. When communication is successful, the blue LED turns off.
4. When communication test failed, the blue LED flashes and then turns off.

6. Measurement process

In normal mode, the device is in sleep mode and wakes up according to the set time interval. Upon waking, the device measures and recalculates the required values.

- When the communication starts – Blue LED turns on.
- If the communication is successful, the blue LED turns off and the device goes to sleep mode.
- If not, the blue LED flashes and turns off.
- Device repeats message which was not sent.

7. Web interface – AirIM-200

To configure the AirIM-200, use the web interface located at <http://air.local>. The web interface consists of the following tabs:

- Channel 1
- Channel 2
- Magnet
- Flood
- Motion
- Location
- Temperature
- Communication
- Service

8. Communication settings

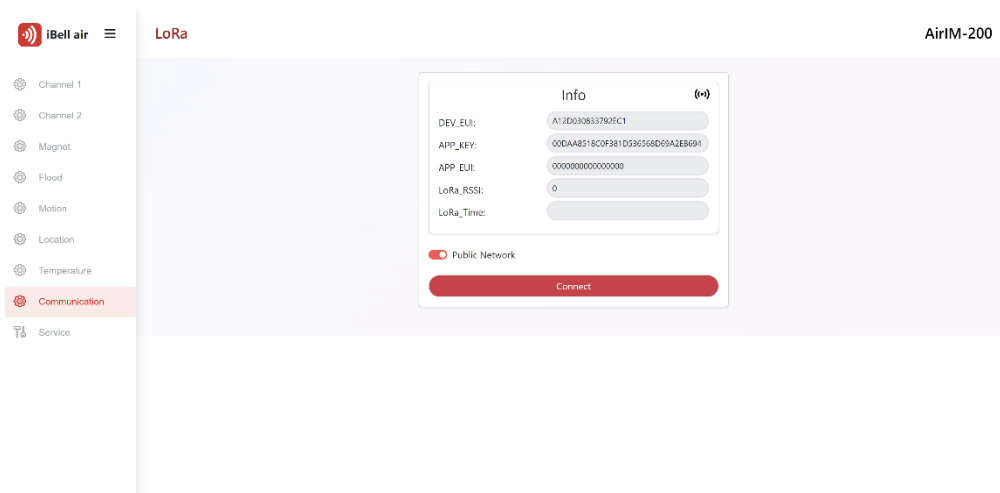
8.1. LoRaWAN

Info:

- LoRaWAN keys.
 - DEV_EUI
 - APP_KEY
 - APP_EUI
- Information about LoRaWAN network
 - RSSI
 - LoRaTime

Public network:

- Public or private network.

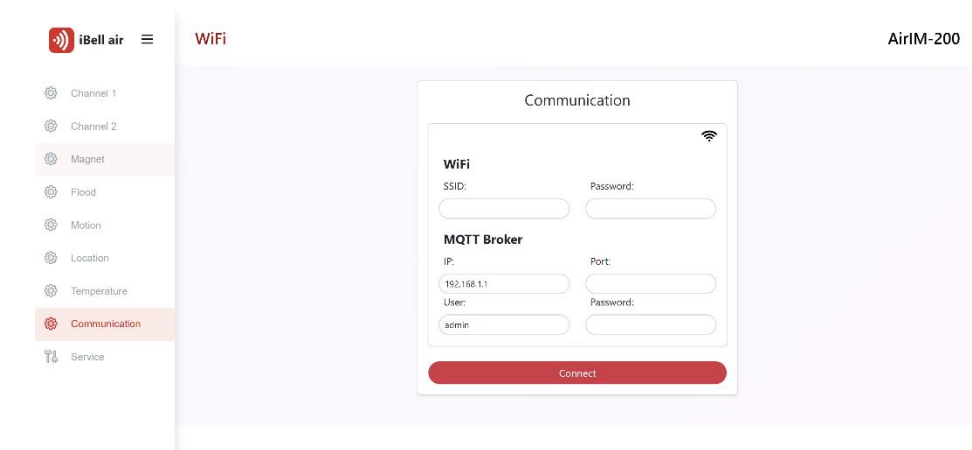


8.2. WiFi

Connection to MQTT broker and WiFi network on **Communication** tab.

Communication:

- **WiFi**
 - SSID
 - Password
- **MQTT Broker** – mqtt broker credentials



9. Main configuration of device on Service tab

Setting up a device and configuring power and other

Device name – device name for network.

Communication – communication period – the time in sleep mode between sending messages.

Alarm – allowing alarms for device:

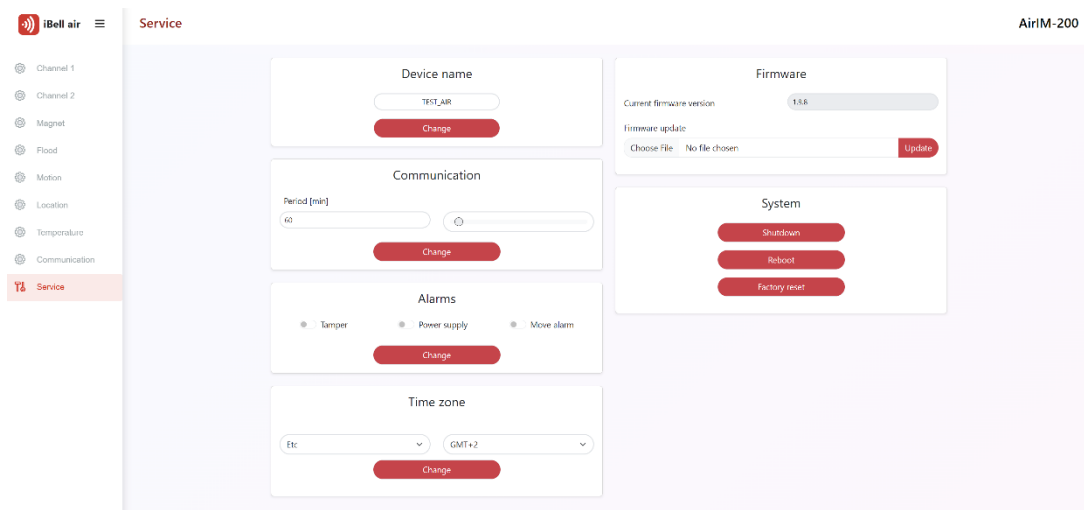
- **Tamper** – a feature that detects unauthorized attempts to open the device
- **Power supply** - alarm when there is a power outage
- **Move alarm** – alarm when a device is unexpectedly moving

Time zone – time zone setting

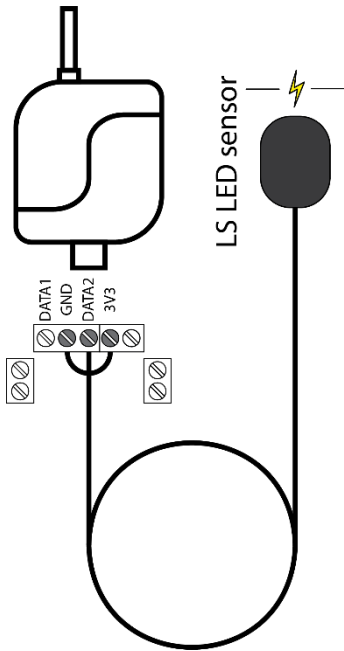
Firmware – firmware update

System:

- **Shutdown** – turn off the wifi and device goes to sleep mode.
- **Factory reset** – factory reset of the device.
- **Reboot.**



10. Sensor connection and settings



10.1. Measuring electric energy with external optical sensors LS

AirIM-200 measures energy consumption using an external LS LED sensor, which is available for purchase as an accessory. Optical sensors can be attached to device with S0 output.

Configuration of measuring is done on the **Channel 1** and **2** web tabs.

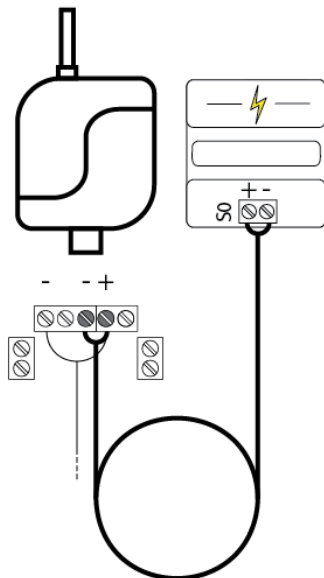
Setup

Input	Type
<input type="text" value="Pulse"/>	<input type="text" value="Electricity-HT [kWh]"/>
Pulse counter [per unit]	
<input type="text" value="10"/>	
<input type="button" value="Change"/>	

Input – Input type of channel

Type – Measured unit

Pulse counter – Pulse count per unit



10.2. Measuring electric energy via S0 output

AirIM-200 measures energy consumption from electricity meter using the S0 output, which is located directly on meter.

Pin S0 is semiconductor switch. It is necessary to take care of its polarity.

Configuration of measuring is done on the **Channel 1** and **2** web tabs.

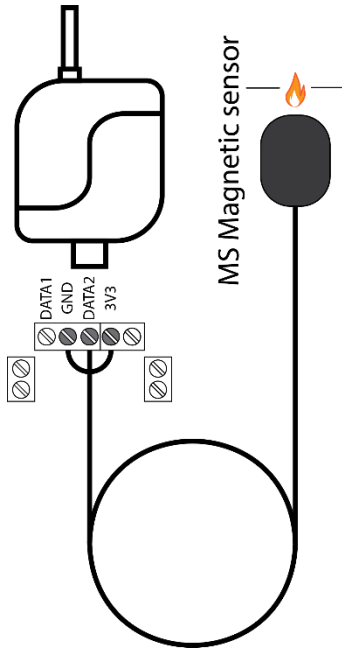
Setup

Input	Type
<input type="text" value="Pulse"/>	<input type="text" value="Electricity-HT [kWh]"/>
Pulse counter [per unit]	
<input type="text" value="10"/>	
<input type="button" value="Change"/>	

Input – Input type of channel

Type – Measured unit

Pulse counter – Pulse count per unit



10.3. Measuring gas consumption with external magnetic sensors MS

AirIM-200 measures gas consumption using an external magnetic sensors MS, which is available for purchase as an accessory.

The correct placement of the sensor is on the dial of the gauge at the digit **with the lowest value**.

Configuration of measuring is done on the **Channel 1** and **2** web tabs.

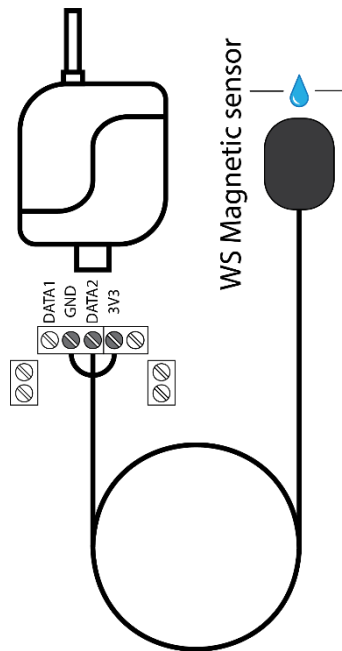
Setup

Input	Type
<input type="text" value="Pulse"/>	<input type="text" value="Gas [m³]"/>
Pulse counter [per unit]	
<input type="text" value="1000"/>	
<input type="button" value="Change"/>	

Input – Input type of channel

Type – Measured unit

Pulse counter – Pulse count per unit



10.4. Measuring water consumption with external magnetic sensors WS

AirIM-200 measures water consumption using an external magnetic sensors for water meters WS, which is available for purchase as an accessory.

The correct placement of the sensor is on the dial of the gauge at the digit **with the lowest value**.

Configuration of measuring is done on the **Channel 1** and **2** web tabs.

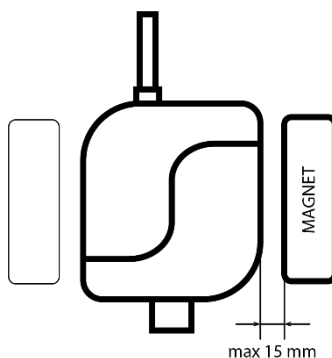
Setup

Input	Type
<input type="text" value="Pulse"/>	<input type="text" value="Water [m³]"/>
Pulse counter [per unit]	
<input type="text" value="1000"/>	
<input type="button" value="Change"/>	

Input – Input type of channel

Type – Measured unit

Pulse counter – Pulse count per unit



10.5. Magnetic sensor

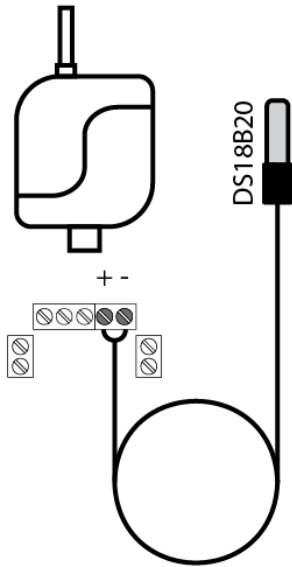
Magnetic sensor is configured via web tab **Magnet**.

Alarm

<input checked="" type="checkbox"/> Open	<input checked="" type="checkbox"/> Closed
<input type="button" value="Change"/>	

Open – alarm message, when is magnet out of position

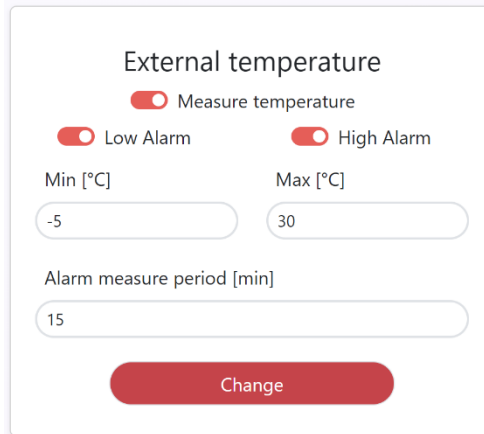
Closed – alarm message, when the magnet is near.



10.6. Measuring external temperature

AirIM-200 use for temperature measuring external sensors DS18b20, which is available for purchase as an accessory. The temperature measurement range is from -50 to +125 °C with an accuracy of ±0.2 °C.

Teh configuration is done on the **Temperatue** web tab.

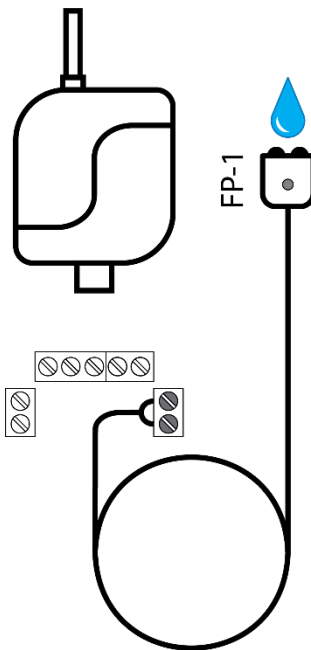


Measure temperature – allow temperature measuring

Low Alarm – alarm message when the temperature drops below the set level

High Alarm – alarm message when the temperature exceeds the set level.

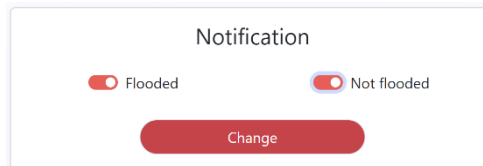
Alarm measure period – the interval for temperature measurement.



10.7. Flood / leak detection

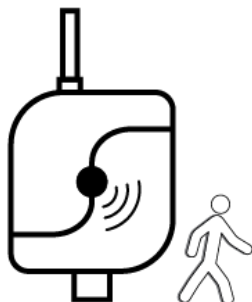
By connecting the FP-1 flood probe, an alarm message can be triggered after flooding and unflooding of the measuring contacts. The external probe can be connected with any polarity to the corresponding terminals.

The configuration is done on the **Flood** web tab.



Flooded – alarm message when the contact is flooded.

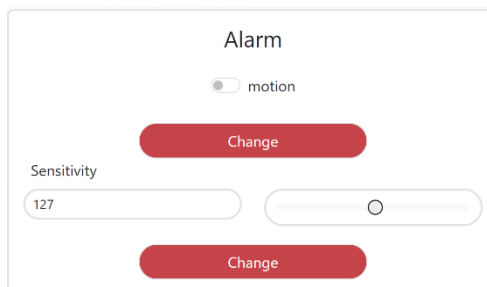
Not flooded - alarm message when the contact is unflooded.



10.8. Motion detection – PIR sensor

PIR sensor is used only in **AirIM-200LR** version. Alarm message can be triggered after the motion is detected.

The configuration is done on the **Motion** web tab.



Motion – alarm message when is motion detected.

Sensitivity – Sensitivity setting of sensor.



10.9. Position tracking – GPS

The **AirIM-200LG** version can be connected to a GPS and provides information about the current position.

It is possible to send the current position depending on the acceleration of device, when the alarm message is created.

The configuration is done on the **Location** web tab.

GNSS

GNSS ON
 Change

TEST

Actual position

Move detection alarm

Move detection

Alarm delay [min]

Change

Rest detection alarm

Rest detection

Alarm delay [min]

Change

GNSS – allow get the current position

TEST – testing GNSS connection

Move detection – Alarm message when device is moving for a set period of the time.

Alarm delay – Period for moving alarm.

Rest detection – Alarm message, when the device is no longer moving.

Alarm delay – Period for rest alarm.