

LoRAIN NBloT

USER MANUAL

Version 1.0, 05-2022



Thank you for choosing a LoRAIN NB-LoT station for monitoring your agrometeorological conditions towards the FieldClimate decisions support system. The LoRAIN NB-LoT has been designed to monitor data with a set of sensors oriented to plant protection and irrigation. Like other products of the METOS[®] family, it measures and sends data to the FieldClimate platform using the NB-LoT service. The users have free access to data through web, mobile applications and decision support system. Additional services (like plant disease models and weather forecasts) are available with a licence fee. Web API is available for interface with other custom applications.

LoRAIN NB-LoT systems will be mainly used for:

- Precipitation monitoring
- Air-Temperature/Moisture monitoring
- Irrigation and plant protection systems

YOUR LoRAIN NB-IoT

The LoRAIN NB-IoT consists of one plastic casing containing the electronics, the battery and the rain gauge. It can be customized with sensors for precipitation, temperature and a sensor-package for irrigation and plant protection systems. In the package with the LoRAIN, you will also find taped to the top of the solar panel, a sticker with a unique serial number and the keys that grants you the access to the FieldClimate platform.

On picture:

LoRAIN NBI-IoT



MAIN VARIATIONS:

- **LoRAIN Rain Only NB-IoT:** rain gauge only
- **LoRAIN NB-IoT:** rain only + air temperature, air humidity
- **LoRAIN Soil NB-IoT:** rain only + air temperature, air humidity, soil water tensiometer, soil volumetric water content

Supported NB-IoT networks:

The LoRAIN NB-IoT stations can be equipped with one of two possible modems:

- **HL7800**

The HL7800 module for Cat-M1/NB1 worldwide networks is fully compliant with the 3GPP Release 13. More about supported frequencies and countries can be found at:

<https://www.sierrawireless.com/iot-solutions/products/hl7800/>

- **HL7802**

The HL7802 module for Cat-M1/NB1 worldwide networks with 2G fallback is fully compliant with the 3GPP Release 13 standard. More about supported frequencies and countries can be found at:

<https://www.sierrawireless.com/iot-solutions/products/hl7802/>

Supported sensors:

List of supported sensors can be found in the extended manual, available on the [metos.at/manuals](https://www.metos.at/manuals) website.

START-UP THE LoRAIN NB-IoT

By default, the LoRAIN NB-IoT station comes with a disconnected battery and based on your order, it can come with or without the SIM card.

To start up the LoRAIN NB-IoT it requires opening the housing,

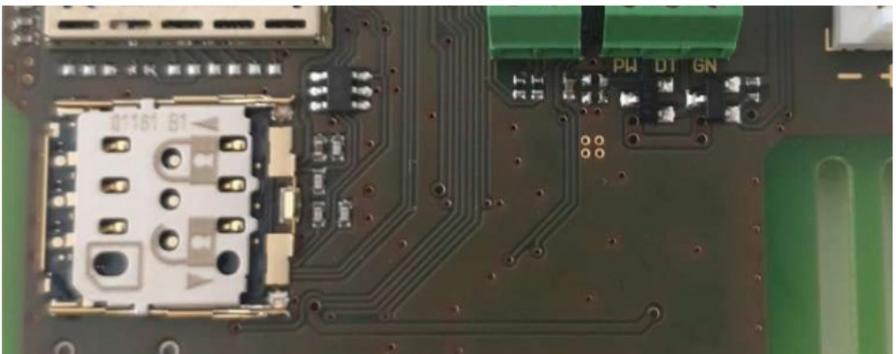
optionally inserting the SIM card and in special cases checking the settings via the USB cable connected to the PC with the PI-Terminal/ TeraTerm application and connecting the battery.

To use the NB-IoT or CAT-M1 connectivity you need a SIM card which is provisioned for the NB-IoT/Cat-M1 network from the network provider and sufficient signal from the radio tower.

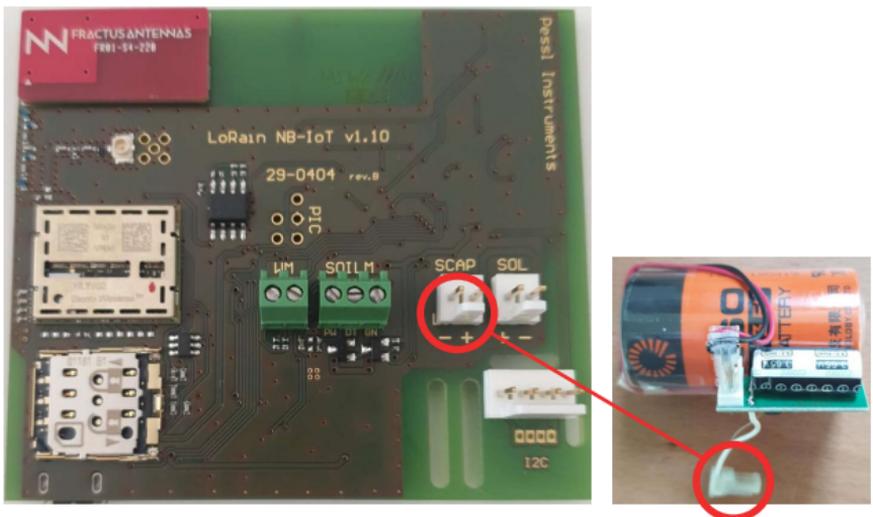
1. Carefully remove the board casing from the rain gauge.
2. Open the housing by unscrewing the 6 screws on the bottom.
3. Remove the board cover.

To use the NB-IoT connectivity, you need to have a micro-SIM card which is provisioned for the NB-IoT network from the network provider.

To insert a SIM card:



1. Slightly push the cover down and towards the centre of the LoRAIN NB-IoT board.
2. The cover should unlock, and you can open it.
3. Insert the SIM card correctly (contacts should be on the bottom side and the marking corner in the upper left position).
4. Close the cover and push it gently outward so the cover gets locked.



5. Plug the battery cable into the SCAP connector on the PCB (red ring).
6. Close the cover to its final position and tighten the screws.

INSTALLING YOUR LoRAIN NB-IoT

The LoRAIN NB-IoT has to be fixed on the pole. At the back of the unit a metal mounting frame is located. Unscrew the small screws, pass the pole through the hole in the frame and fix it with the long screws (to ensure a longer lasting product use the lining disk).

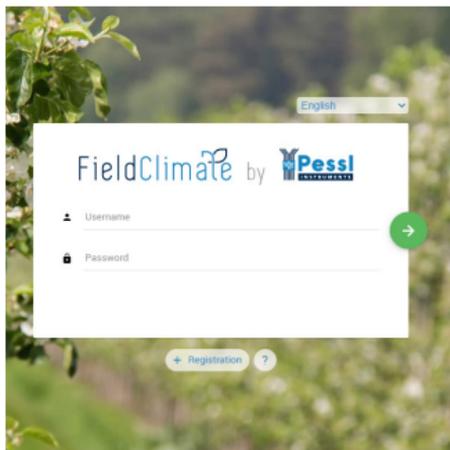
Make sure that the pole is as vertical as possible by checking the bubble level on the rain gauge to ensure the right installation verticality of the pole. Make sure all sensors are installed correctly.

USE YOUR LoRAIN NB-IoT

To start using services we provide, you need to register on the FieldClimate platform, which gives you access to the data in graphs or tables. FieldClimate also provides a powerful decision support system for growing your crops (plant protection, irrigation, sowing, harvesting, fertilizing).

REGISTER AS A NEW USER ON *FieldClimate.com*

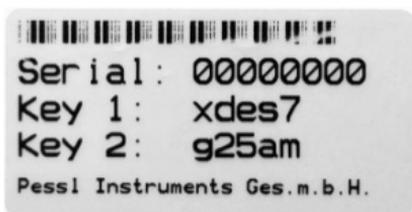
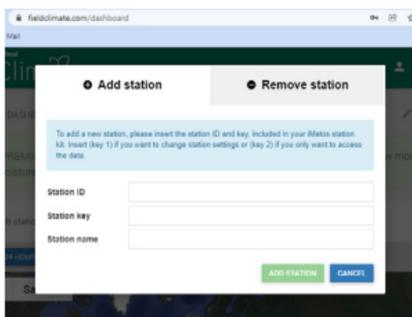
1. Open fieldclimate.com and log in as an existing user or register as a new FieldClimate user.
2. After creating a new account you will receive an email with a confirmation link with which you confirm creation of your FieldClimate profile.



ADD YOUR LoRAIN DEVICE TO YOUR ACCOUNT

To add your LoRAIN device, click on the icon in the top right corner **User Menu > Add/Remove station**. It will ask you for the Station Serial number (SN), the station key and a name of your choosing. Now the silver sticker which came with your station has to be used.

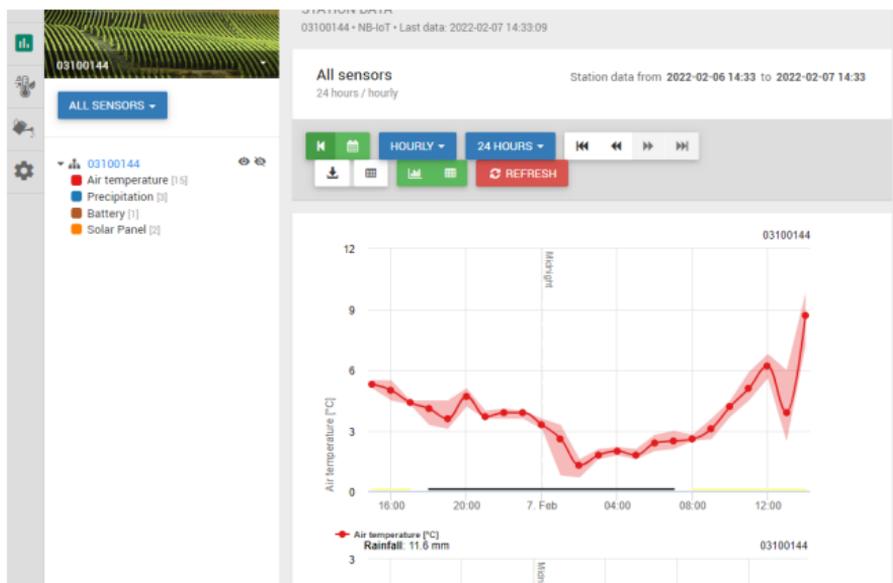
Key 1 gives you full (admin) access and enables you to change all the settings and set up the LoRAIN. With Key 2 the user is not allowed to change the station parameters, but can access all the data.



DASHBOARD, STATION DATA AND SETTINGS

In the new **Dashboard** the user can manage the fast access to the services of highest interest. On the top right corner, **Station List** allows you to choose among all registered devices.

On the navigation bar, **Station data** page displays the data measured by your device. Data can be viewed in detailed graphs and tables. You can access the structured menu, which allows you to define time series-resolution and export data in a chart/table. On the left side, you can see all sensors connected to your LoRAIN NB-IoT.



With the activation of licenses for localized **weather forecast** and **plant disease models**, it is possible to access all data of these additional services (see figure below). To activate them, contact your local distributor or license@metos.at.

On **Station settings page** you can configure your LoRAIN device.

Station settings > Sensors and nodes: You can define a custom name for your station and nodes connected to it. For convenient viewing of data, you can also rename each sensor and customize its color in the graph.

For further inquiries visit metos.at/fieldclimate-manual.

MAINTAINING THE LoRAIN NB-IoT

The weather station should be checked periodically to ensure that sensors are in optimal condition. Regular maintenance is necessary for flawless operation and durability.

At the beginning of the new season, check that the station is working correctly; data must be transmitted at the set interval to FieldClimate. Keep the solar panel and sensors clean, especially the rain gauge.

Clean Rain gauge ensures correct rainfall measurements, also make sure it is levelled by checking the bubble indicator and not obstructed

by leaves, insects or debris that could prevent it from functioning properly.



Cleaning and maintenance

Video instruction:

<https://bit.ly/3J9PmR8>



For full user manual please visit:

<https://bit.ly/35JH9Vo>



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