METEOTRACKER STANDALONE

QUICK START GUIDE

TABLE OF CONTENTS

1. Overview and package content

MeteoTracker Standalone is the MeteoTracker solution of choice for urban climate mapping, seamlessly deploying city buses or other service fleets as a mobile weather network to provide ultra-high spatial resolution mapping of the urban thermal and hygrometric fields.

The MeteoTracker Standalone product includes:

- Two physical devices:
  - **MeteoTracker IND (MT IND)**
    An industrial-grade weather device that measures temperature, relative humidity, and atmospheric pressure plus seven additional derived parameters (dew-point, vertical temperature gradien, etc…).
  - **Teltonika FMC130 4G/GNSS modem**
    A modem that connects to the MT IND device via BLE, geo-tags the acquired data, and sends them to the cloud.
- An integrated software infrastructure for data visualization and processing

2. Registration to the MeteoTracker platform and devices enablement

In order to register and enable the MeteoTracker Standalone devices within the MeteoTracker platform, the following steps must be completed:

- Register an account on the MeteoTracker platform at:
  app.meteotracker.com
  During the registration process, select the **email + password** authentication method in order to enable access to the MeteoTracker API services (if included in the purchased package).

- Send an email to: **standalone@meteotracker.com** indicating the email address used for the registration, so that the account can be configured and enabled as a **MeteoTracker Standalone account**.

3. Devices installation

3.1. MeteoTracker-IND

- Place the MT-IND device on the rooftop of the vehicle using its integrated magnetic base. If the mounting surface is not ferromagnetic, use the supplied adhesive pads featuring a metallized upper surface. **Make sure that the device ADV is on** (BT ADV led blinking every 5 seconds)
- The installation resistance has been tested up to speeds of 150 km/h.
- Where additional safety requirements apply, the device can be secured with a safety wire passing through the lateral hole provided on the MT-IND enclosure.

3.2. Modem FMC130

- Position the internal modem **with its top side (identified by the white markings) facing upward toward the sky**, ensuring it has a clear, unobstructed view of the sky in all directions. This is essential to ensure reliable reception of GNSS signals by the module's integrated receiver.

- If needed, use **double-sided adhesive tape** to ensure stable positioning.
- Connect the power cables of the modem (red and black wires) to a **12 V - 30 V power source**
- The **LED status** indicates what is the modem operating status according to the below tables
- The **modem's IMEI**, printed on its top side, is used by the MeteoTracker dashboard to identify the measurement sessions generated by the corresponding MeteoTracker Standalone system.

NAVIGATION LED INDICATIONS

BEHAVIOUR	MEANING
Permanently Switched On	GNSS signal is not received
Blinking Every Second	Normal mode, GNSS is working
Off	GNSS is turned off because: • Device is not working or • Device is in sleep mode

STATUS LED INDICATIONS

BEHAVIOUR	MEANING
Blinking Every Second	Normal mode
Blinking Every Two Seconds	Sleep mode
Blinking Fast For A Short Time	Modem activity
Off	Device is not working

3.3. MeteoTracker and modem reciprocal distance

The MeteoTracker device communicates with the modem via a Bluetooth connection; therefore, the distance between the two devices should not exceed 10–15 meters. If a metal structure is located between the two devices, the maximum recommended distance may decrease to 2–3 meters.
The nRF Connect app (available on the Play Store) can be used to measure the MeteoTracker Bluetooth signal strength at the modem installation position. The signal level should be higher than -95 dBm, while values around -85 dBm indicate a good signal quality.

3.4. Battery life

The MeteoTracker-IND device has a sophisticated electronic design aimed, among other features, to be extremely low-power consumption.
The rechargeable 320 mAh battery typically lasts 8+ months.
When the optional solar panel is used, the battery life is virtually infinite.

4. Starting measuring

Once the steps described in Sections 2 and 3 have been completed, the system is ready to collect data in a fully automated way, triggered by the modem's internal accelerometer.

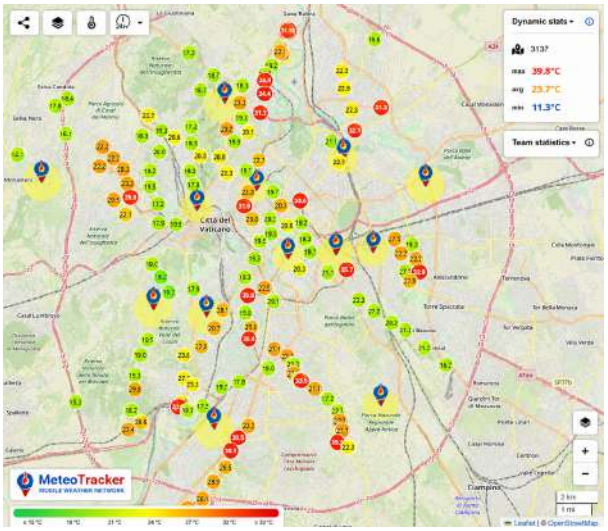
- When the vehicle **starts moving**, the modem wakes up and the data measured by the MT-IND device are transferred to the modem, which geo-tags them and sends them to the server.
- When a **stop longer than 5 minutes** is detected, the session is automatically closed. This is the default value, but different time intervals can be configured.
- **Data quality is primarily ensured by the patented Radiation Error Correction System**, which corrects solar radiation errors even at very low speeds.
- To manage the **initial transient phase and zero-speed conditions**, the Guard-time and Autopause software functions are activated:
    - **Guard-time** is activated when a session starts and prevents data from being recorded until at least 10 points at a speed of at least 10 km/h have been detected. This allows the system to discard initial values that may be affected by overheating, for example when the vehicle has been parked under direct sunlight.
    - **Autopause** is activated when a temperature variation greater than ±0.5 °C is detected while the vehicle speed is zero.

All the time intervals mentioned above are default values and can be customized to better suit specific use cases, such as city buses, cable cars, boats, or trains.

5. Data visualization and data services

5.1. MyMobileWeatherNetwork

The **MyMobileWeatherNetwork (MMWN)** package, included with the MeteoTracker Standalone purchase, provides a comprehensive set of tools for data visualization, processing, and export.



MMWN is automatically activated during the registration process. Once the setup is completed, the URL of the interactive map is generated and communicated via email from **standalone@meteotracker.com**, together with the activation of all related functionalities described below.

MyMobileWeatherNetwork package

Mobile network map: View real-time and archived data on an interactive map. Easily embed the map in any website using a simple i-frame.

Smart URL: Generate custom URLs that link to the selected map area, parameters, and time range—ideal for sharing and integration.

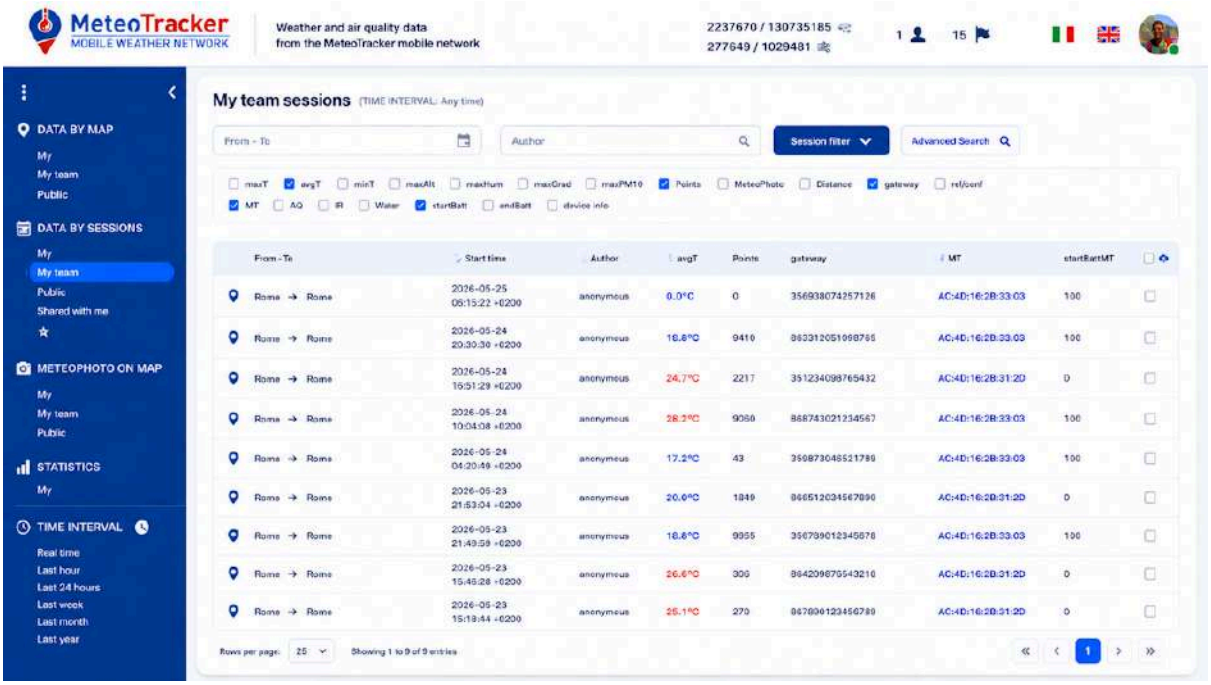
Virtual Fixed Stations: Select any point on the map and automatically collect MeteoTracker data each time a vehicle passes nearby (geo-fencing).

Mobile network statistics: Access key metrics with a single click—sessions completed, total kilometers traveled (overall and per vehicle), temperature extremes, and more.

Dynamic statistics: Instantly view statistics for the area and time range currently displayed on the map.

CSV batch download: Select the mobile network sessions you need and download them as CSV files with one click.

5.2. MeteoTracker dashboard

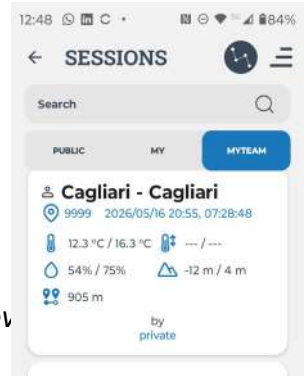


Accessible from **app.meteotracker.com**, the MeteoTracker dashboard is designed for advanced analysis of measurement sessions.

Main features include:

- **Interactive map and graph analysis**
  Each session can be analyzed through synchronized maps and graphs. Selecting a point on the map highlights the corresponding point on the graph, and vice versa.
- **Advanced session filtering**
  Measurement sessions can be filtered using multiple criteria, including time range, author, device ID, and other metadata.
- **CSV batch export**
  Easily export selected sessions in CSV format through batch download functionality. Exported files use descriptive filenames including the related session identifiers.
- **MyTeam management**
  Dedicated tools for managing and analyzing data collected by the user's MeteoTracker fleet.

5.3. MeteoTracker+ App (Android)



The **MeteoTracker+** Android application includes the **"MyTeam"** section, where all sessions belonging to the user's MeteoTracker fleet can be viewed both in real time and as archived data.

The **MyTeam** functionality is part of the **MyMobileWeatherNetwork (MMWN)** service, enabling centralized access to fleet measurements and collaborative monitoring activities.

6. FAQ and Troubleshouting

a) I have completed the installation but I cannot see any data

1) Verify that the modem is properly connected to a 12–30 V DC power supply.

2) Ensure that the vehicle has been driven for **at least 5 minutes** at a speed **above 15 km/h**.

3) Verify that the modem is installed with its **top side (identified by the white markings) facing upward toward the sky** and that it has a **clear, unobstructed view of the sky**. If the GNSS signal cannot be received correctly, the modem will not start a measurement session.

4) Verify that the modem is installed within reliable Bluetooth range of the MeteoTracker device. A separation of several meters is normally not an issue, provided that large metal structures do not obstruct the radio link.

b) I see many discontinuities in the recorded track. What do they mean?

The MeteoTracker Standalone system implements data quality algorithms that automatically suspend data recording whenever measurement conditions are considered unreliable (e.g.: long stops under solar exposure). These algorithms are described in the **Guard-time** and **Auto-pause** sections of this manual.

As a result, the recorded track may contain discontinuities. For example, when the **Auto-pause** function is activated, data recording is temporarily suspended while the vehicle is stationary. To resume recording, the vehicle must satisfy the **Guard-time** conditions, which require traveling a minimum distance under valid operating conditions before data acquisition restarts.

7. References

For additional information about MeteoTracker products, documentation, and support, please refer to the following resources:

- **Manuals and datasheets:** https://meteotracker.com/manuali/
- **Website:** https://www.meteotracker.com
- **Email:** info@meteotracker.com
- **LinkedIn:** https://www.linkedin.com/showcase/meteotracker/