METOS®
BY PESSL INSTRUMENTS

iMETOS 3.3
USER MANUAL
Version 1.2, 12-2021

Thank you for choosing a METOS® station for monitoring your agrometeorological and other environmental needs. The iMETOS 3.3 has been designed to monitor data with a wide variety of sensor sets. Like all products of the METOS® family, it measures, logs and sends data to the FieldClimate cloud. The users have free access to data through web and mobile applications. Additional services (like plant disease models and hyper localized weather forecasts) are available upon a license fee. Web API is available for interface with other custom applications.

iMETOS 3.3 systems will be mainly used for:
- Meteorological monitoring
- Site Specific weather forecast corrected with local measurements
- Frost warnings via SMS
- Plant disease models (depending on the configuration of the equipment)
- Soil moisture and irrigation systems monitoring
- Crop monitoring
- Hydrology and flood warning applications
- Environmental monitoring

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YOUR iMETOS 3.3

BASIC COMPONENTS INCLUDED
- 1x Standard METOS® casing
- 1x Battery 6V 4.5Ah
- 1x Solar panel 1.5W
- 2x Brackets
- 1x Cable tie
- 1x Rain gauge filter
- 12x leaf wetness filter paper (optional)

iMETOS IMT280-USW

1. Temperature and relative humidity sensor
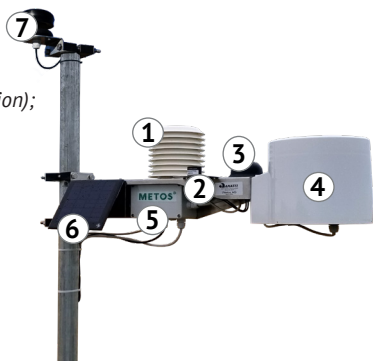
with radiation shield;

2. Global radiation sensor;

3. Dual antenna (GPS/communication);

4. Rain gauge;

5. Logger and modem;

6. Power supply (solar panel

and battery);

7. Ultrasonic wind sensor.


MAIN VARIATIONS:
- **iMETOS IMT200**: Sensors for the calculation of most Disease Models: Air Temperature and Relative Humidity, Rain Gauge and Leaf Wetness.
- **iMETOS IMT280-USW**: Rain Gauge and all the sensors for Evapotranspiration calculation: Air Temperature and Relative Humidity, Global Radiation and mechanical Wind Speed. IMT280-USW includes Ultrasonic Wind speed and direction.
- **iMETOS IMT300-USW:** Sensors for Evapotransporation and Disease Models calulation: Air Temperature and Relative Humidity, Rain Gauge, Global Radiation, Wind Speed and Leaf Wetness. IMT300-USW includes Ultrasonic Wind speed and direction.

## INSTALLING YOUR iMETOS

TOOLS REQUIRED FOR SETTING UP:
- Head screwdriver
- 2x Wrenches 13 mm or adjustable wrench
- Big hammer to set the metal pole
- Level
- Compass

1. *Set the 48.2 mm mounting metal pole for at least 50 cm into the ground, keeping the pole as vertical as possible using a level. Hammer the metal pole, keeping it protected with a piece of wood.*

2. *Insert the thinner pole into the grounded one and fix it with the locking ring at the desired height with the use of a 13 mm wrench.*

3. *Install the iMETOS 3.3 station at 1.5 meter above the ground or depending on the crop height. Fix the iMETOS 3.3 with the two clamps on the vertical pole using two 13mm-wrenches. Check the bubble level on the rain gauge to ensure the iMETOS 3.3 is installed verticality of the pole and align the solar panel to face south (north in southern hemisphere).*
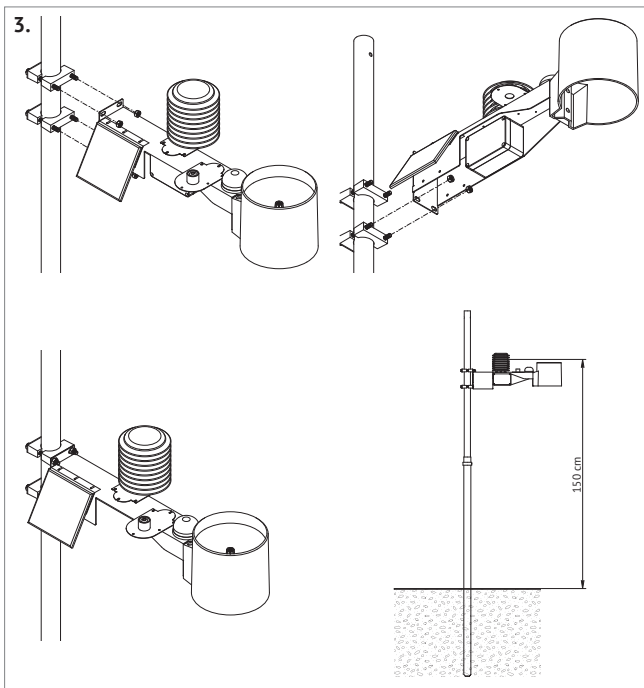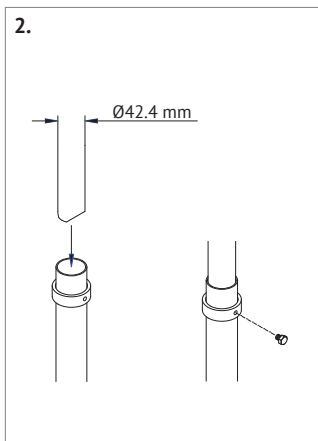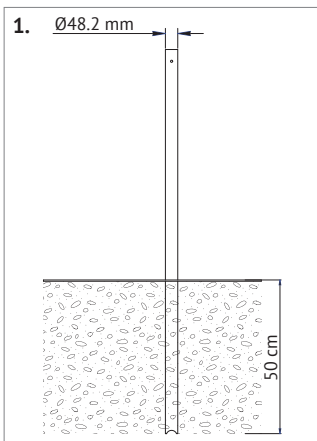
SENSORS INSTALLATION:

- **Temperature and relative humidity sensor** should be mounted between 1.25 m and 2 m above the ground, depending on the crop.
- **Leaf wetness sensor** can be tied to a branch of the plant or to the station holder (next to the rain gauge), slightly inclined, with the filter paper looking up. Mount it in a position that allows the sensor to pick up early rain and to stay wet in the shade.
- **Soil temperature sensor** should be buried in the ground. The depth will depend on the application. To monitor root growth and nitrogen mineralization in vines or apples in early spring, it is best to install it at 10 to 20 cm depth. If you want to assess the emergence of seeds, install it at the sowing depth.
- **Ultrasonic Wind Sensor** is mounted on top of the pole; carefully oriente it to the North pole guided by the "north mark" indication on the sensor; if you also ordered a mechanical **wind speed sensor**, you will find a "T" shaped holder with two clamps provided. The wind direction sensor should point to north and the wind speed sensor should point towards south. Both sensors are sensitive to obstructions and turbulence.
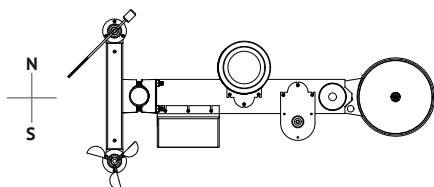
Note: 12 sensors can be connected directly to the iMETOS 3.3 board; an extended set of sensors (up to 600) can be connected via RadioNodes or cable chain nodes. There is a connector on the top of the motherboard for the radio access point. An alternative use of this connector is to read up to two soil moisture profile probes or the snow depth sensor.

For detailed info about the installation of sensors refer to *metos.at/imetos-3-3-manual* where you'll find the extended manual.

START-UP THE iMETOS 3.3

On GPRS, UTMS, LTE (i.e. G2, G3, G4) networks a SIM card from a provider is required. In CDMA network, you do not need a SIM card.

To insert the SIM card:

Your device is now up and running. The three LEDs on the motherboard will turn on for an instant indication that the station has reset. After this, the connection with FieldClimate will start and the LEDs will give you information about the communication process (for more details see *Blinking code and SIM card* sections on *metos.at/imetos-3-3-manual*). In case you need further support, please create a ticket on the *metos.freshdesk.com* platform.

iMETOS 3.3 is a durable and flexible data logger for all weather conditions, but if you remove it during the winter months and store in a warehouse, please disconnect the battery to avoid discharge.
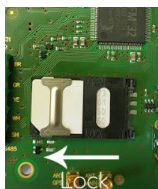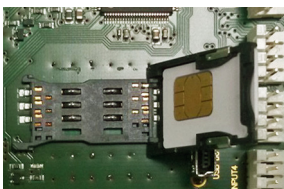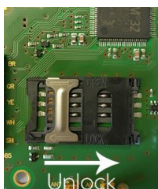
1. Slide the metal part of the SIM card holder to unlock it.

2. Place the SIM card into the holder so the gold contacts on the SIM face down on the board.

3. Lock the holder by sliding the metal lock.

**Note:** Check that the PIN request for the SIM is disabled and that you have data transfer service enabled.


4. Plug the battery cable (yellow circle) into the BAT connector on the PCB (red circle).

USE YOUR iMETOS 3.3

To see the data from your iMETOS 3.3 station, you need to register on the FieldClimate Dashboard. This provides you with access to your station data in graph or table form. 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
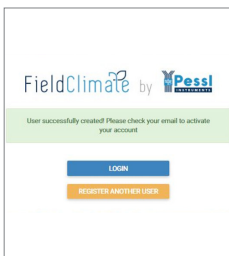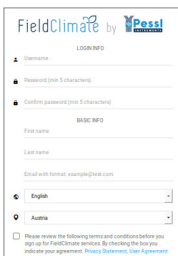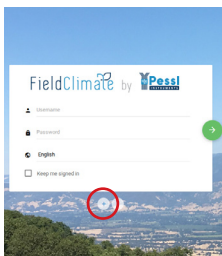
1. Go to *fieldclimate.com/ login* and click the button "+".

2. Insert your personal data & e-mail.

3. Check your e-mail and click on the link to activate the user account you created.

ADD YOUR iMETOS 3.3 DEVICE TO YOUR ACCOUNT

Once registered, you can login to FieldClimate. com. To add your iMETOS 3.3 device, click on the icon in the top right corner **User Menu > Add/**

Serial: 00000000
Key 1: xdes7
Key 2: g25am
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Remove station. It will ask you for a Station Serial number (SN) and a station key. This information is found on the silver sticker (in the figure) which came with your iMETOS 3.3 station. Key 1 gives you full
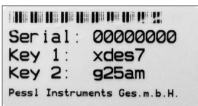
(admin) access and enables you to change all the settings and set up the iMETOS 3.3 (e.g. data transfer interval, SMS warning, etc.); with Key 2 the user is not allowed to change the station parameters, but you can access all the weather data.
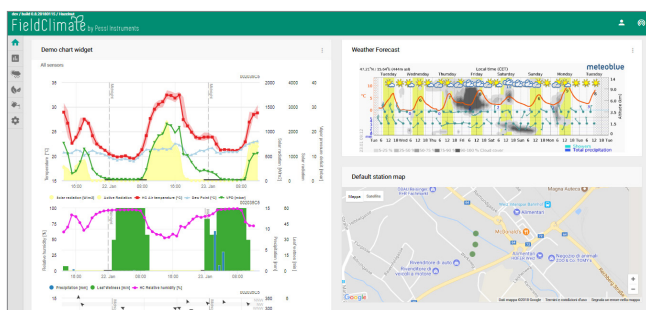

THE FieldClimate DASHBOARD, STATION DATA AND SETTINGS

The new **Dashboard** is designed with a widgeted structure, which allows the user to customize access to the services of highest interest. On the top right corner, **Station List** allows the user to choose among all the METOS® devices and select a single one.

On the left side, the **Station data** page displays the data measured by your iMETOS 3.3 station. 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 image/table format.

In the **Soil Moisture** page you will find all your sensors connected to your iMETOS 3.3 station displayed in graphs and tables. You can set lower and upper thresholds based on colored bands, which are visible on the graph indicating the range of acceptable soil moisture conditions.

With the activation of licenses for site specific localized **weather forecast** and plant **disease models**, it is possible to set these services for each of your METOS® stations. To activate them please contact your local distributor or license@metos.at.

On **Station settings** page you can configure your iMETOS 3.3.

Station settings > Configuration: Under Time zone and location, you need to provide the precise information, as weather forecast and other services require it for accuracy. Under Logging and transfer settings, you can define how your iMETOS 3.3 station logs and sends data. Please note that the iMETOS 3.3 station is delivered with the default factory settings (as in the figure below). More options are available by clicking the "Advanced options" button.

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.

Station settings > Warnings: You can add phone numbers and set thresholds for each sensor, at which the warning SMS should be sent.

Station settings > Notifications: You can set alerts for each sensor and you will receive a notification from the server to your e-mail or Fieldclimate mobile app.

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

MAINTAINING THE iMETOS 3.3

The iMETOS 3.3 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 and ensure correct rainfall measurements by making sure the rain gauge is levelled (check the bubble indicator), and not obstructed by leaves, insects or debris. Check if leaf wetness sensor has the appropriate filter paper intact and positioned correctly (it should be replaced once, preferably twice a year).

When the solar panel of the iMETOS 3.3 is exposed to the sun and gets enough sunlight it should constantly recharge the battery of the system. The lifespan of the battery is expected to be 5 to 6 years with sufficient recharging from the solar panel. Deep discharge shortens its lifetime. The iMETOS 3.3 will prevent this from happening and protect the battery by limiting the data transfer to the safe level of charge. In

doing so, data is not lost and battery recovers faster.

UPDATING YOUR iMETOS 3.3

Every time the iMETOS 3.3 connects to FieldClimate, it checks for the latest firmware version. If it finds a newer version, it automatically downloads it and updates itself. iMETOS 3.3 can also be updated manually via the USB connection.

For full user manual please visit:
metos.at/imetos-3-3-manual