

User Manual

for

gO Measurement-System[®]

1. Delivery overview: gO Measurement-System

1 Gateway
1 to 3 Nodes Type 1
1 to 3 Nodes Type 2
Node Type 3 (optional)
1 Power Supply
2 to 6 Sensor Clips
48 3M Mounting Pads

By E-Mail:

Login for the cloud-based analysis tool



Figure 1: Overview of the gOMS transportation box

2. How to install the gO Measurement-System

In the following the correct installation and putting into service of the system is explained.

1. Start-up of the gateway

1. Place the gateway inside the building/object where you would like to do the measurements, at a location where it has GSM network connection. We highly suggest to plug the power supply in during the measurement, since the batter life is only 2-3 days (it will be further optimized through software updates, shortly)
2. Turn on the gateway by pressing the «power»-button until the connection indicator starts to flash. When pressing the «power»-button only shortly the battery charging status can be seen.

2. Installation and startup of the nodes.

2.1 Inside Node (Type 1):

1. Mount the node at the wall with min. 3 3M adhesive pads or place it on a suitable spot nearby the wall (for example a shelf).
2. Mount the combined heatflux/surface temperature sensor with two 3M adhesive pads. Note that the red side of the pad is the “sensor-side”, while the black side should face the wall. It is also important, that the two strips of the pads do not show towards the same direction as the cable of the sensor (see Fig. 2).
3. Mount the ambient air temperature sensor with the enclosed sensor clip and one 3M adhesive pad.
4. Turn on the node by holding the power-button until the connection indicator starts to flash yellow. The node now automatically builds up a connection to the gateway, which can take up to 2-3 minutes. As soon as the connection is established, the indicators color changes from yellow to green. When the power-button is pressed shortly the battery charging status can be seen.

2.2 Outside Node (Type 2):

1. Mount the node at the wall with min. 3 3M adhesive pads or place it on a suitable spot nearby the wall (for example a window sill).
2. Mount the surface temperature sensor at the wall with two 3M adhesive pads. Note that the red side of the pad is the “sensor-side”, while the black side should face the wall. It is also important, that the two strips of the pads do not show towards the same direction as the cable of the sensor (see Fig. 2).
3. Mount the ambient air temperature sensor with the enclosed sensor clip and one 3M adhesive pad.
4. Turn on the node by holding the power-button until the connection indicator starts to flash yellow. The node now automatically builds up a connection to the gateway, which can take up to 2-3 minutes. As soon as the connection is established, the indicators colour changes from yellow to green. When the power-button is pressed shortly the battery charging status can be seen.

2.3 Additional nodes can be added by repeating step 2.1 and 2.2. Note that it is also possible to connect multiple inside nodes with one outside, if the outside conditions can be assumed to be the same for both objects. It is then however only possible to assess an U-value and no additional R-value since the exact surface temperature of the outside wall is missing.

2.4 Humidity Measurements (Type 3)

1. Place the node at the spot where you would like to measure the humidity.
2. Mount the combined ambient air temperature and humidity sensor with the enclosed sensor clip and one 3M adhesive pad.
3. Optional: If you would like to measure an AW-value, you have to measure also the surface temperature with an additional node type 1 or 2.



Figure 2 How to correctly mount and detach the sensor (left) and how to do it incorrectly (right).

2.5 After a successful completion of the measurements, the nodes and the gateway can be turned off through holding the power button until the lights turn off.

Caution: Greatest caution is needed when detaching the heatflux and surface temperature sensors. You must NOT pull at the cable since you can easily brake the connection between cable and sensor. Only pull at the adhesive pad strips if they do not show towards the same direction as the cable (see Fig. 2)..

3. Analysis Tool

Analysis and monitoring of the data can be done on: goms.greenteg.com.

1. First Login

During the first login the new password must be changed. For that use the login which was sent to you with delivery and follow the three steps shown below (see Fig. 3).

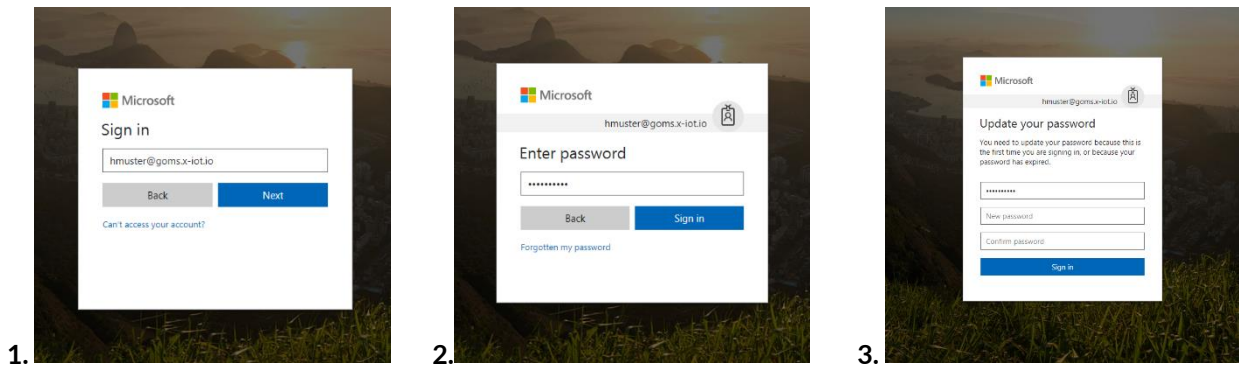


Figure 3: Screens for first login

2. Design of the analysis tool

The data analysis has basically two different views. In Live-Data the currently connected nodes and the last 30 minutes of measurement data can be seen. It helps you to check if all nodes are connected and measuring.

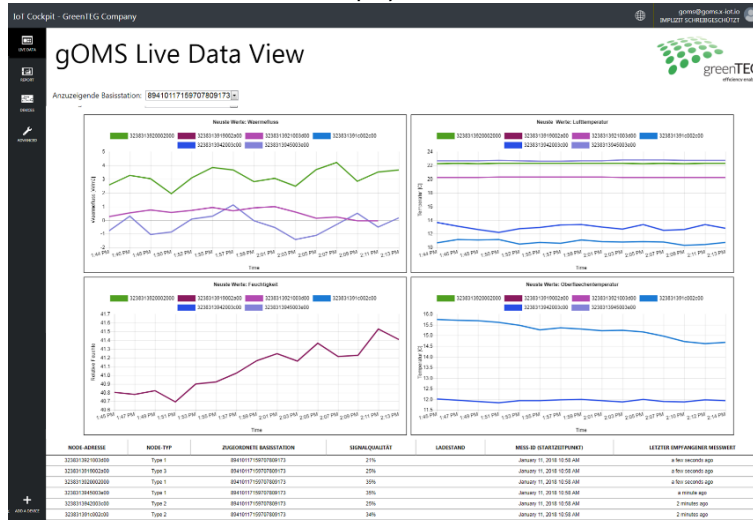


Figure 4: Live View

The report tools can be accessed by clicking on “Report” in the menu on the left-hand side. Then the four different menus “U-value calculator”, “AW (humidity) calculator”, “Raw Data export” and “Glossary” can be chosen.

The design of the U-value calculator can be seen below. In both tools the data updates every 30 minutes. To analyze the data one has to select a gateway, a measurement start and nodes. Then the measurement data gets processed and an U-value (or AW-value) gets calculated. In the U-value calculator it is also verified if the measurement fulfills the ISO 9869 conditions. If needed the data can be downloaded. The AW-value calculator works the same way.

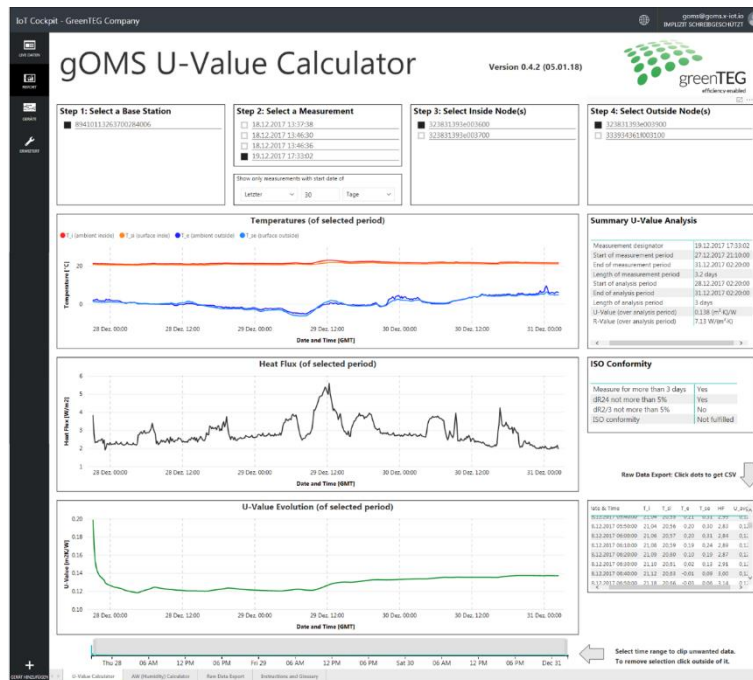


Figure 5: U-value calculator view

It is important to mention, that there is a difference between the raw data export in the U-value or AW-value calculator and the raw data export function. In the raw data export function one can download simply all the measurement data of one data. This means it is not possible to download the raw U-value, R-value and AW-value data, since this always needs the combined data of two nodes.. To get AW-value, U-value and R-value data one has to download the raw data in the U-value respectively AW-value calculator after going through the steps described above.

4. Requirements for an ISO 9869 compliant U-value measurement

In the following the most important aspects for an ISO 9869 compliant U-value measurement are listed. For more detailed information the reader is referred to the complete ISO 9869 documentation-

Mounting of the surface temperature sensor and the (combined) surface temperature/heat flux sensor

- Always use the 3M mounting pads to mount the sensor since it has been calibrated for it.
- Inside and outside sensors must be mounted exactly opposite to each other at the same wall for good results.

Mounting of the ambient air temperature sensor

- Use the supplied sensor clips to mount the sensor.
- Avoid direct solar radiation onto the sensor.
- Place the sensor right next to the heatflux or surface temperature sensor.

General:

- The duration of the measurement should be at least 72h and an integer multiple of 24h.
- A temperature difference between inside and outside temperature of at least 5°C over the entire period is recommended.
- If surrounding conditions are strongly fluctuating it possibly takes longer than 72h to assess an ISO 9869 compliant U-value.

5. Charging of the measurement system

If the battery of the gateway or a node is empty, it has to be recharged before starting a new measurement if it is not intended to run the measurement with constant power supply. Basically, the devices can be charged with a standard USB-C power supply. However, the charging time can be longer than with the supplied 60W high performance power supply with which the gateway can be fully charged within 6 hours and a node within (approx.) 2 hours.

Disclaimer

The above restrictions, recommendations, materials, etc. do not cover all possible cases and items. This document is not to be considered to be complete and it is subject to change without prior notice.

Revision History

Date	Revision	Changes
15.01.2018	0.1 (preliminary)	Initial version