LOLLY SOFTWARE

HANDBOOK

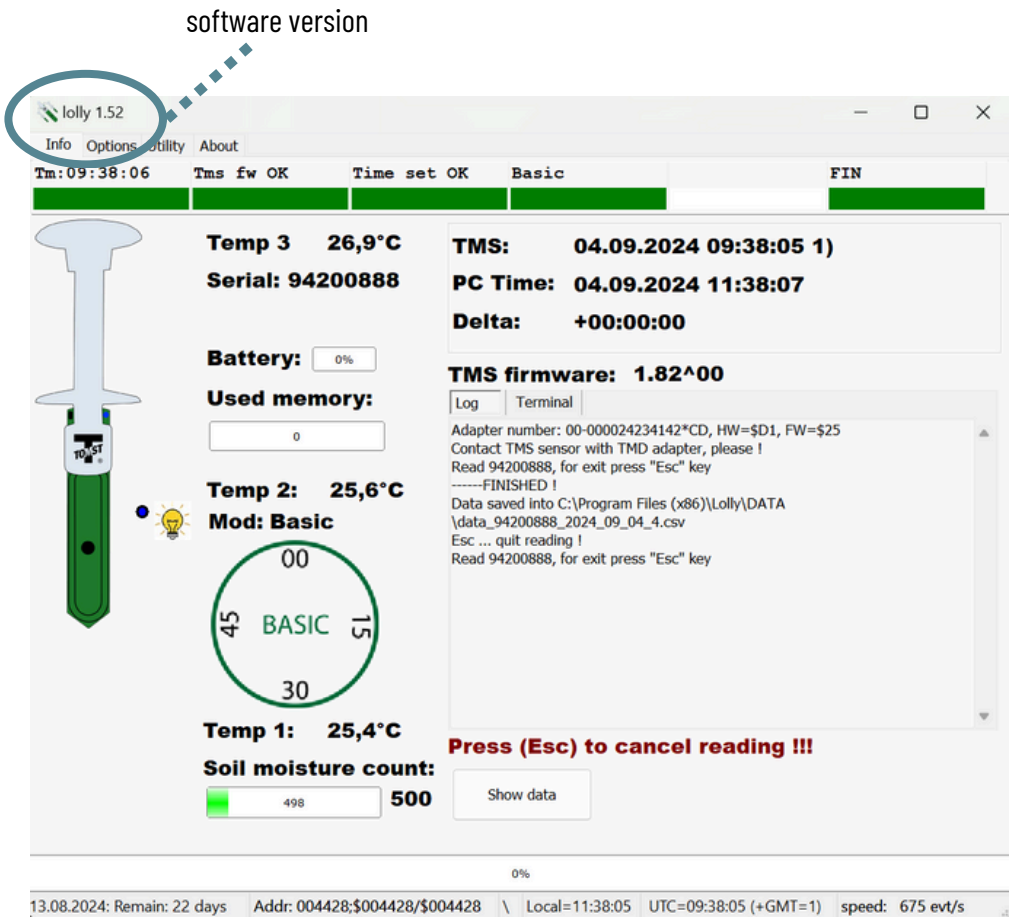
CONTENTS

Installation

1. Connect the TMD adapter via the USB port of your computer.
2. Download the Lolly Software and the program will automatically guide you through the installation.
3. Attach the sensor to the adapter. The information about the current condition and settings of the sensor will be displayed in the *Info* window.

The latest software version can be found at:
http://tomst.com/web/en/systems/tms/software/

The software is continuously updated and improved, so please check for the latest updates before downloading data or heading into the field.

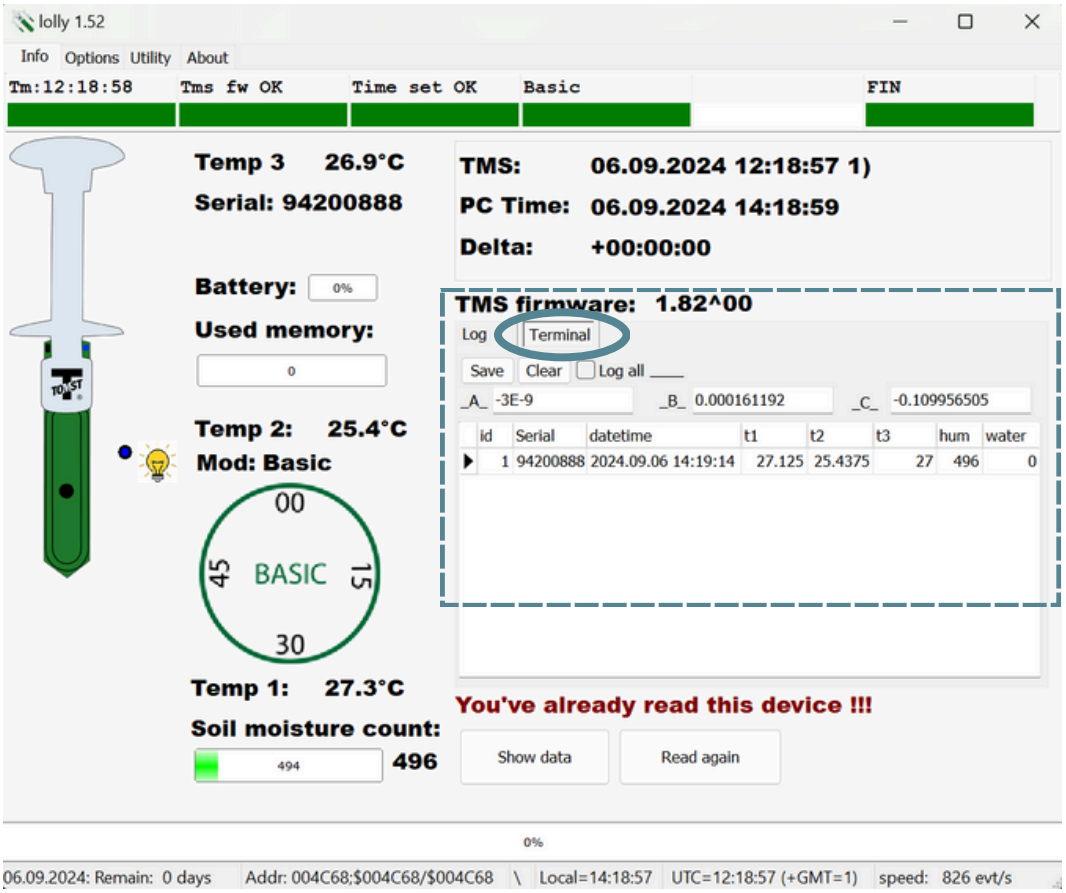


Info & Utility

Displaying data in real-time

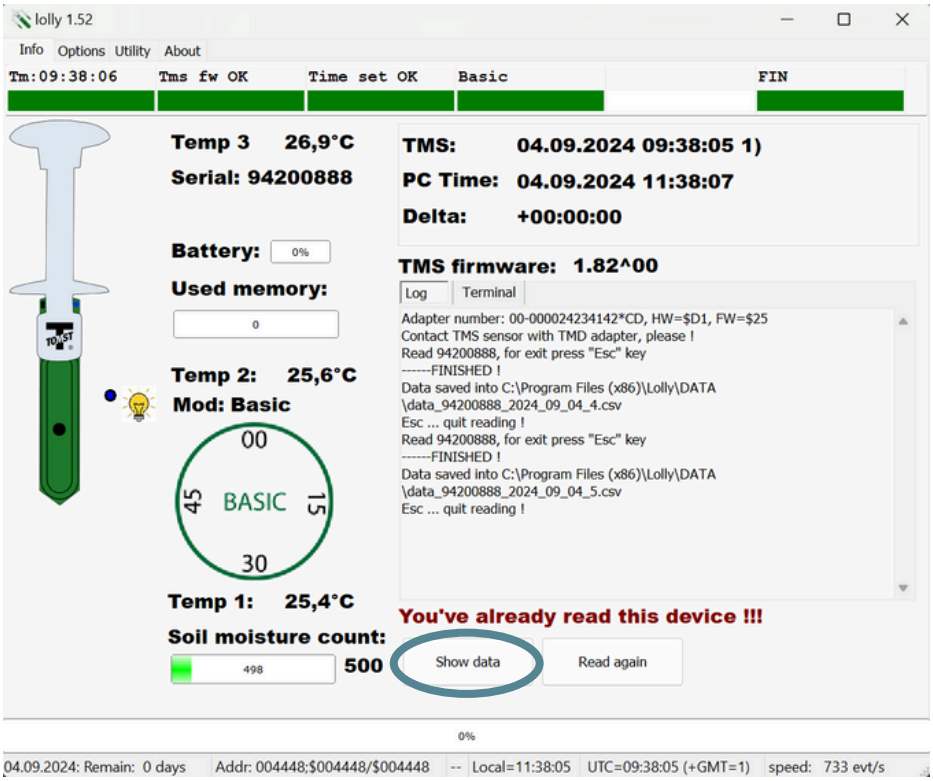
To display data in real-time, select 'Terminal'.
Tick 'Log all' to temporarily start logging every second. Click 'Save' to export the record. By default, it will be saved to C:\Program Files (x86)\Lolly\DATA under file name TERMINAL_*date*.csv.

Go to *Utility* to view the corresponding graph in real-time.

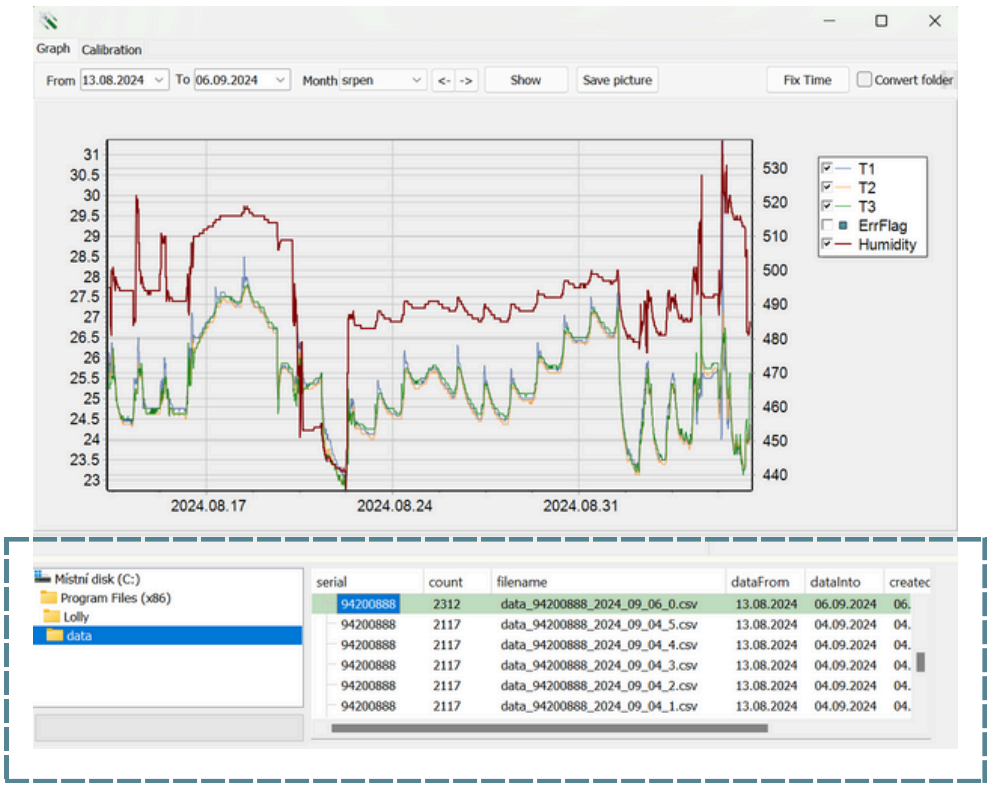


Show data

If you wish to browse through data that has already been downloaded to your computer, select 'Show data'.

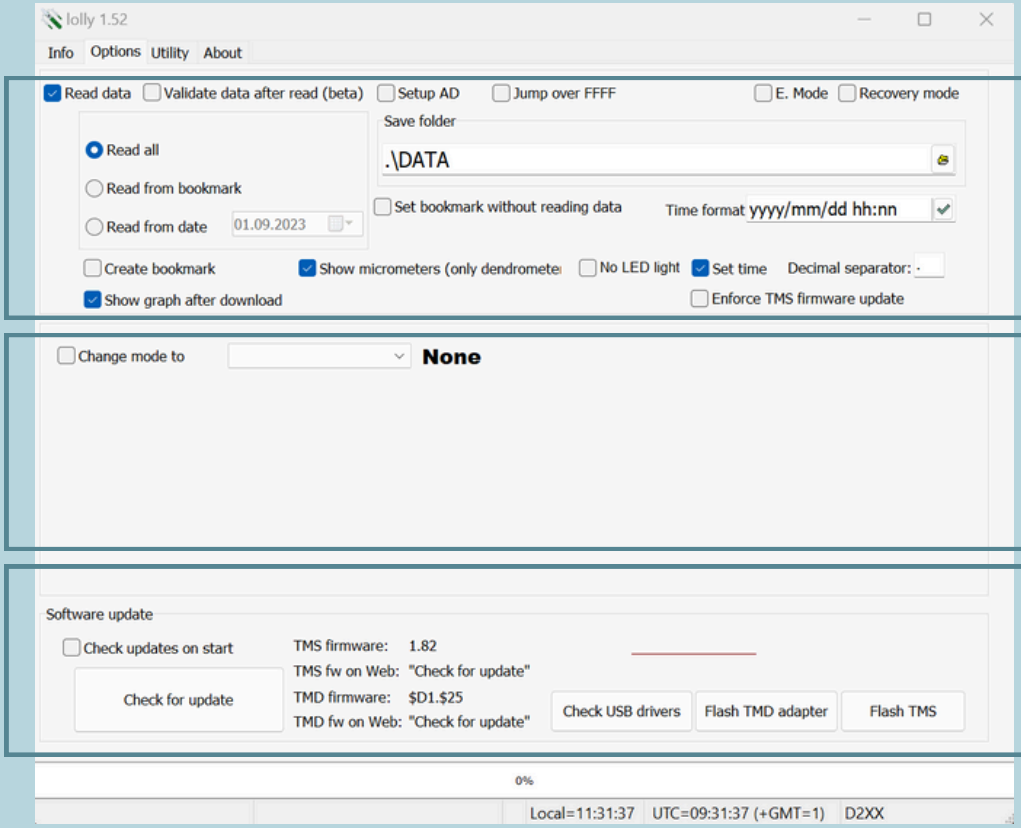


You can then choose the file you wish to display.



OPTIONS

In the second window *Options* you can manage the settings of both the software and the device.



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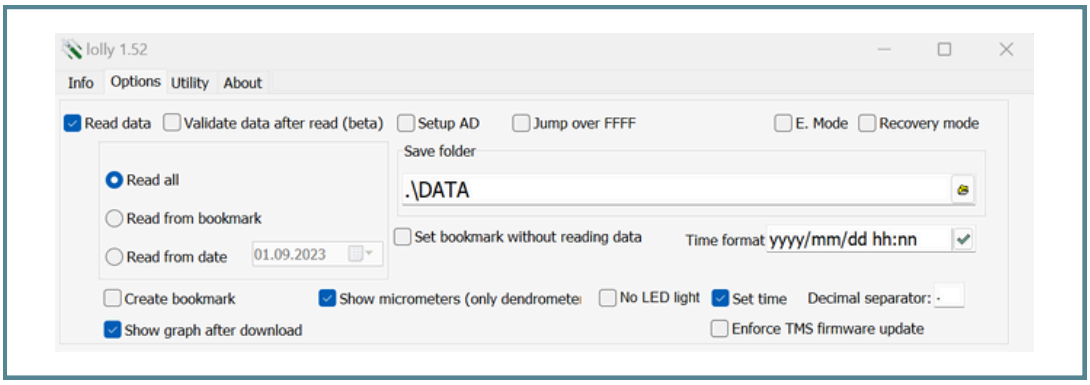
Section 1



Read data ☑

By ticking this box, you can choose to automatically begin downloading data after attaching the device to the TMD adapter.

Setup AD ☑

Point Dendrometers ONLY. See relevant section (p. 16).

Jump over FFFF ☑

E.mode ☑

Recovery mode ☑

These can be used when issues with data downloading occur. However, they usually result in longer download times, so they should generally remain unchecked.

Read all

select to read out all the data

Read from bookmark

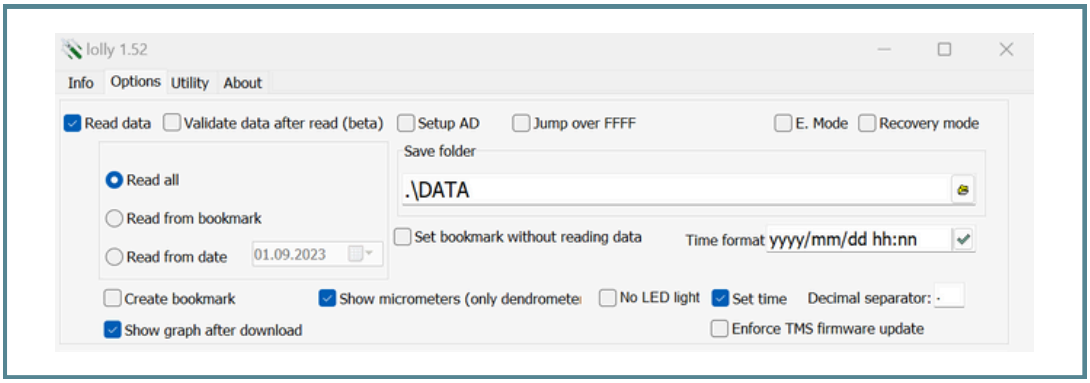
select to read from bookmark (see *Create bookmark* below)

Read from date

select to read out data only from a specific date

Save folder

Here you can specify the folder where the data will be saved. The default setting is C:\Program Files (x86)\Lolly\DATA.



Create bookmark ☑

Use the bookmark function if you want to download data from a specific point onwards. Select 'Set bookmark without reading data' to only set a bookmark.

Time format

Do not change unless absolutely necessary. The format accepted by the myClim R package is yyyy/mm/dd hh:nn.

No LED light ☑

Tick to disable the LED light. This can be used to make the device less noticeable, but for the most part, we would advise against it.

Set time ☑

Tick to allow for time synchronization with your PC.

Decimal separator ☑

Here you can set the decimal separator for your data. Please make sure it aligns with the separator used by the program of choice for data analysis.

Show graph after reading data ☑

Tick to see graph after reading data.

Show micrometres ☑

Point Dendrometers ONLY. See relevant section (p. 16).

Section 2: Time Modes

By default, all dataloggers are set to Basic mode, which collects data at 15-minute intervals. You can change this interval to any of the modes listed below through the *Options* window in Lolly by selecting 'Change mode to'. To modify the interval, ensure the datalogger is connected to the Lolly software using a TMD adapter.

Basic Mode
Measurements are recorded every 15 minutes.

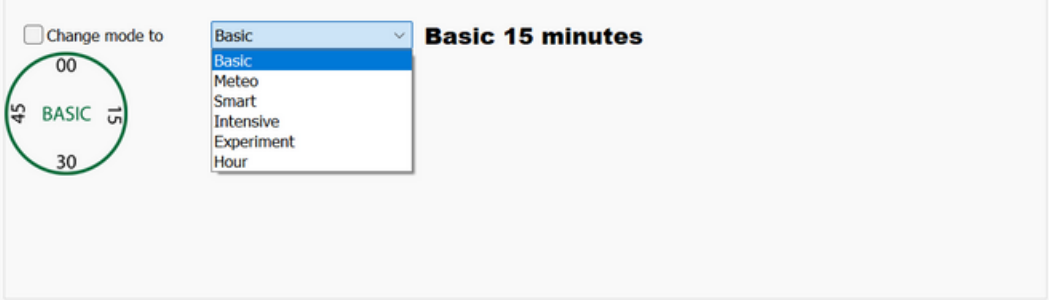
Meteo Mode
Measurements are recorded every 10 minutes.

Smart Mode
Measurements are recorded at 10th, 15th, 20th, 30th, 40th, 45th, 50th and 60th minute in every hour.

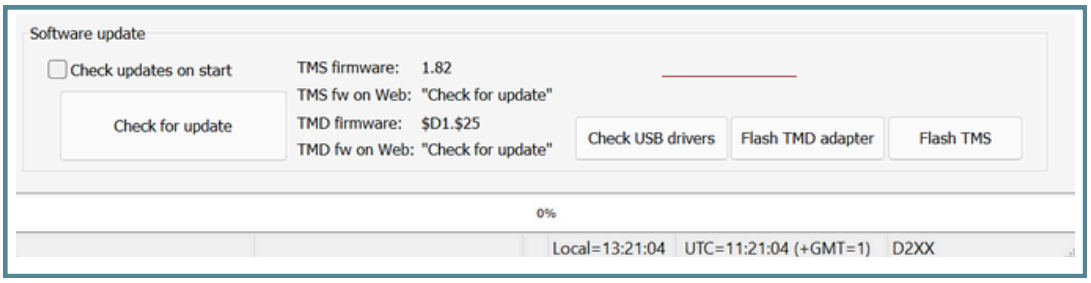
Intensive Mode
Measurements are recorded every 5 minutes.

Experiment Mode
Measurements are recorded every 1 minute. Do not use this mode for long-term data collection! Prolonged use of this mode may lead to memory overflow.

Hour Mode
Measurements are recorded every 1 hour.



Section 3



Check for update

In this section, you can update the software using the 'Check for update' button. Updating the software does require an internet connection, so please make sure to do this before heading out into the field.

It is recommended to select 'Check for updates on start'- the automatic control of new updates of the Lolly software. The newest firmware will also be downloaded and this will enable you to update specific sensors while downloading data.

Check USB drivers
Flash TMD adapter
Flash TMS

These can be used in case of issues with data downloading.
If your TMD adapter is not being recognised by the Lolly software, select *Check USB drivers* and then *Flash TMD adapter*.

If the issues persist, please contact us at tomst@tomst.com.

DATA

To download data, attach your device to the TMD adapter. Once the download is complete, the data will be displayed in a new window as a graph and will also be saved to the dedicated folder in CSV text format, typically located at C:\Program Files (x86)\Lolly\DATA.

Only the data file labelled with the datalogger's serial number (e.g. data_95329651_2024_09_04_0) will be relevant to you. Any other files generated (such as command files) are for diagnostics only and do not contain the collected data.

Data format

Each measurement is recorded in a separate row in the following format:

5;2024.08.13 09:45;4;25,875;25,625;25,375;495;202;0;

Individual values are separated by a semicolon and are ordered as follows:

index number of the measurement; date and time in UTC; time zone; T1; T2; T3; soil moisture count; shake; errFlag

Time & time zones

All measurements are recorded in UTC. A time zone parameter is included to indicate the local time difference. This parameter shows the number of additional quarter-hour increments. For example, a time zone parameter of 4 indicates UTC +4 quarter hours, which equals UTC +1 hour.

Shake

A default value of 202 (TMS), 204 (Thermologgers), 206 (Dendrometers). This parameter was developed for a previous generation of sensors and is no longer relevant.

errFlag

Should be 0. If =1 the device couldn't convert time from PCF chip.

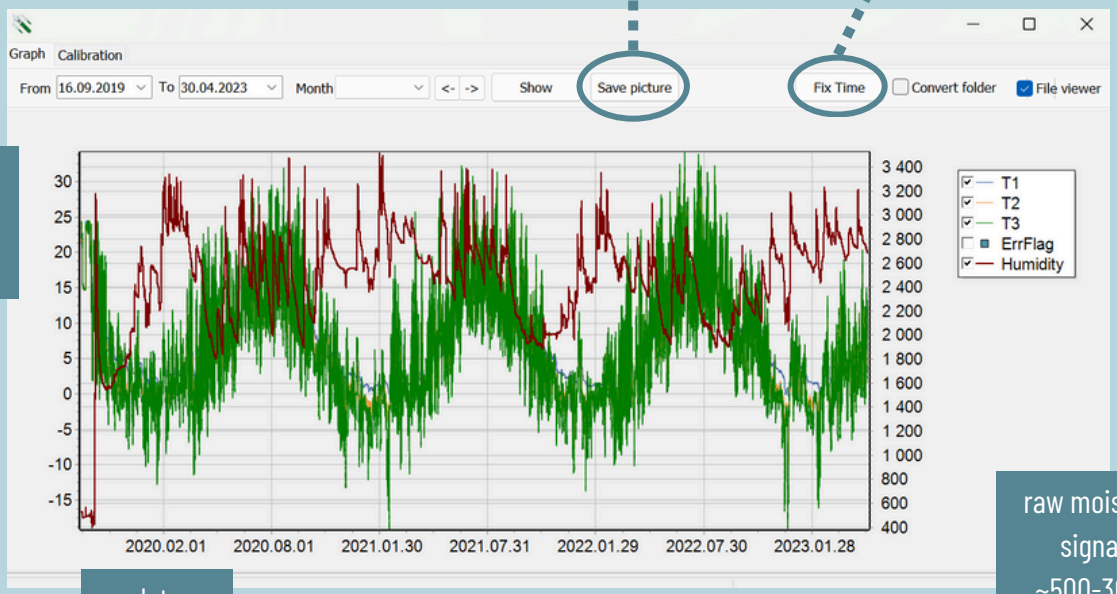
To change the decimal separator see p. 8.

Graph

sample data

enables converting time data based on the time format set in *Options*

enables downloading the graph as an image



air temperature (°C)

raw moisture signal ~500-3600

date yyyy.mm.dd

Zoom in & out

To **zoom in**, click and drag your cursor from the top-left corner to the bottom-right corner of the area you want to enlarge. Refer to the image on the right for guidance.

To **zoom out**, drag your cursor in the opposite direction, from the bottom-right corner to the top-left corner.

Calibration

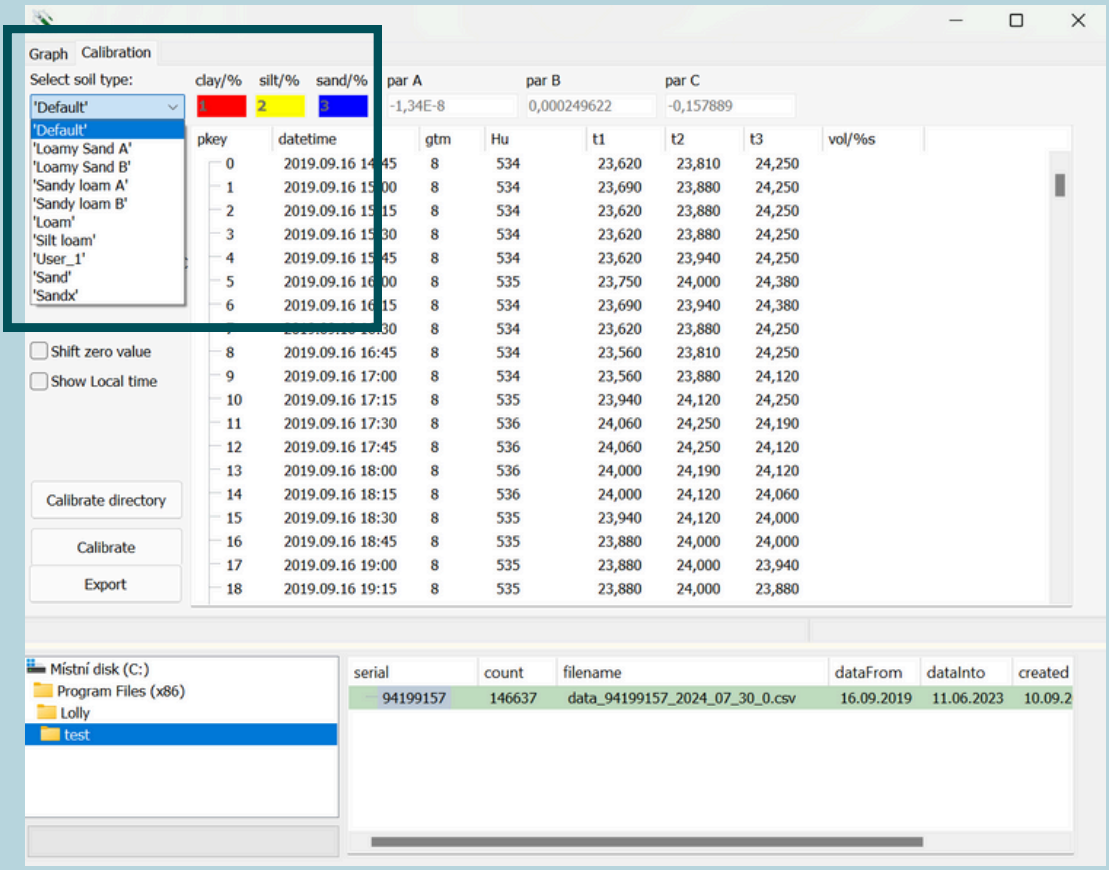
sample data

ⓘ **DISCLAIMER: This function contains pre-set soil types. If you are looking to obtain more precise values, we would recommend calculating your own calibration curve based on a soil sample. For more details, please refer to our >>Calibration guide<<.**

All TMS dataloggers collect raw soil moisture values (~500-3600) that must then be converted into volumetric soil moisture (0-100% vol.). This is enabled by the Calibration function in Lolly.

Soil type

First, select your soil type from the dropdown menu. Note that the Default setting is recommended. See below for instructions on how to insert your own soil composition and calibration curve parameters.



Calibrate

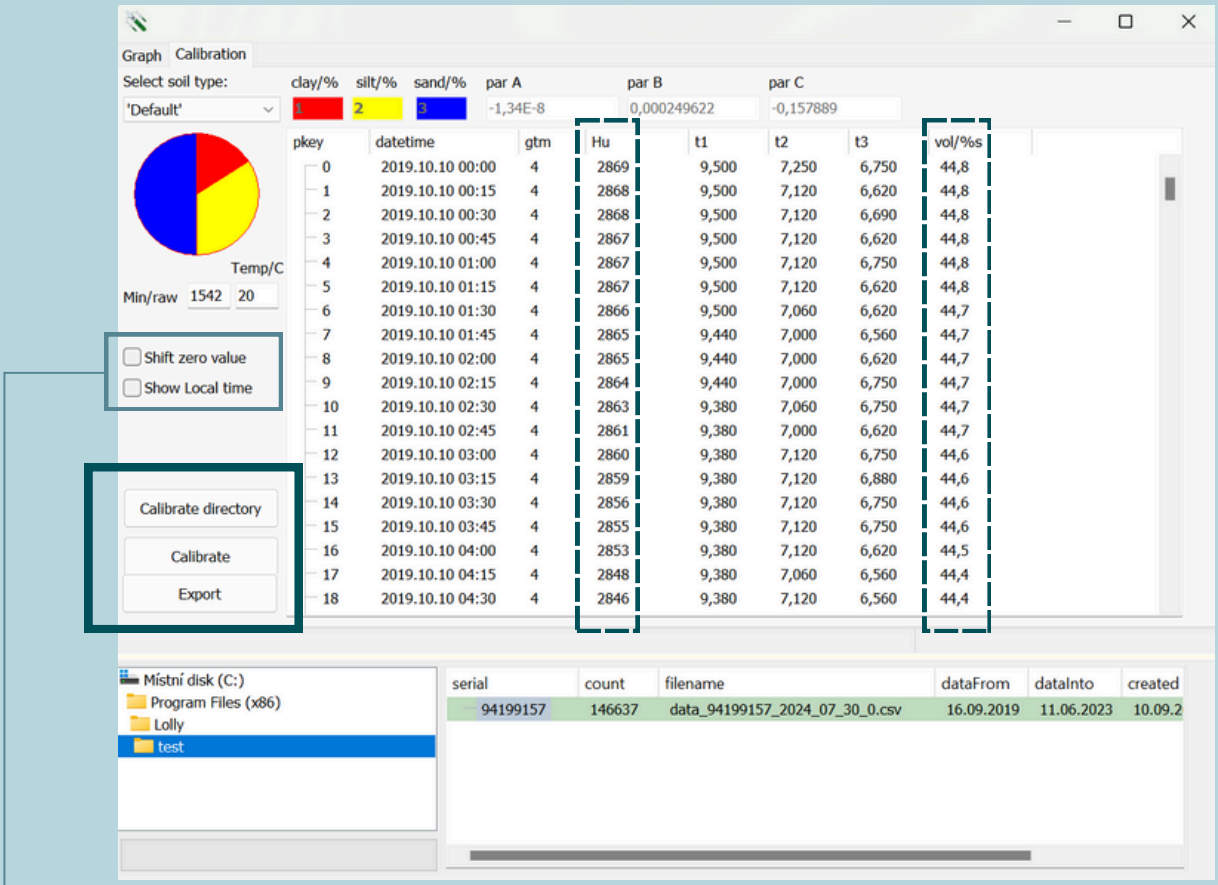
Once you have selected the soil type, click *Calibrate* and the data displayed in column Hu (raw moisture signal ~500-3600) will be converted into volumetric soil moisture (0-100% vol.) in column vol/%s.

Calibrate directory

Select to convert all the data files (in csv format) from a folder of your choosing.

Export

Select to generate a file of converted data.



Shift zero value ☑

This function will align the vol/%s values if needed.
For the most part, however, it should be left unticked.

***Please make sure to crop any irrelevant data. If there is a raw moisture signal from the air (typically values around 500), the calibration will not go through.**

Custom soil moisture composition

To customise the soil moisture composition and calibration curve parameters, follow the instructions below.

- Navigate to C:\Program Files (x86)\Lolly and open the calib.txt file.
- To customize your setting, insert a line in the following format:

id;name;par_a;par_b;par_c;dens_q;perc_clay;perc_silt;perc_salt;zero

id	number your setting
name	name your setting
par_a	parabola A
par_b	parabola B
par_c	parabola C
dens_q	density
perc_clay	percentage of clay
perc_silt	percentage of silt
perc_salt	percentage of sand
zero	default value of 0

- When you save changes, your custom setting will appear in the dropdown menu of the *Calibration* window.

POINT DENDROMETERS

Using the Lolly software to read out Point Dendrometers is very similar to using it with the TMS devices. However, there are a few differences as described below.

Setup AD ☑
This function will allow you to check the preloading of the Point Dendrometer spring in real-time.

Show micrometres ☑
Select if you wish to display the values in micrometres. Otherwise, digital numbers will be shown. The conversion can be summarised as follows:

The full range of digital numbers is from 1 279 up to 34 000. The curve intersects with the y-axis at point 1 279; here the measurement is 0 µm.
From this we may deduce the proportionality constant: 8 890/(34 000 – 1 279)
And finally the formula for converting the digital number to micrometres:

µm = (Value – 1279)*{8 890/(34 000-1 279)}

Keep in mind:
- Only T1 values will be of relevance to you. You can therefore opt to hide T2 and T3 values. The Point Dendrometer only has one temperature sensor, while TMS devices have 3.

What to do in case of persisting issues

If you are experiencing issues with the Lolly software and with downloading data, there are a few things you can check before contacting us. If you have tried all of the below and the problems persist, please get in touch via email at tomst@tomst.com.

- Check that you have the latest version of the software.
- Check that the cable of your TMD is fully functional.
- Select *Flash TMD.*
- Try downloading the data on a different computer/using a different TMD adapter.
- Make sure you have ticked the required boxes (see *Options* for guidance).
- Try to 'Read all' instead of 'Read from date'.

When you get in contact with us, please send the following along with a description of the issue:

- All generated files (e.g. data, command).
- We would also appreciate a screenshot of the error if relevant.

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