Dendrometers
DRL26D / DRS26 / DR26 / DR26E

Sensor installation

Scan
for video manual

General notes:

- The more careful installation, the more reliable results.

- Two-person team makes installation more comfortable, mainly at large trees.

- Avoid hurting by tape – it is quite sharp!

Related tools and accessories:

Tape

Gloves

Brush

Drawknife

Scissors

Marker

Initial tension tool

for logging dendrometers

IrDA/USB cable holder

IrDA/USB cable

Height of sensor location

- Breast height (1.3 m above soil surface) as a standard

- High enough above the root swelling

- Between the branches

- At relatively smooth place without irregularities around the circumference

- Over 3 meters when is necessary to prevent the manipulation by strangers

Ideal placement principles

- Sensor base should sit perfectly **only** and just on **all four** spikes. Avoid waggling.

- In case of non-cylindrical shape of the stem install the sensor on the "sharpest" point: The greater is the angle α, the larger is the force holding the sensor to the stem.
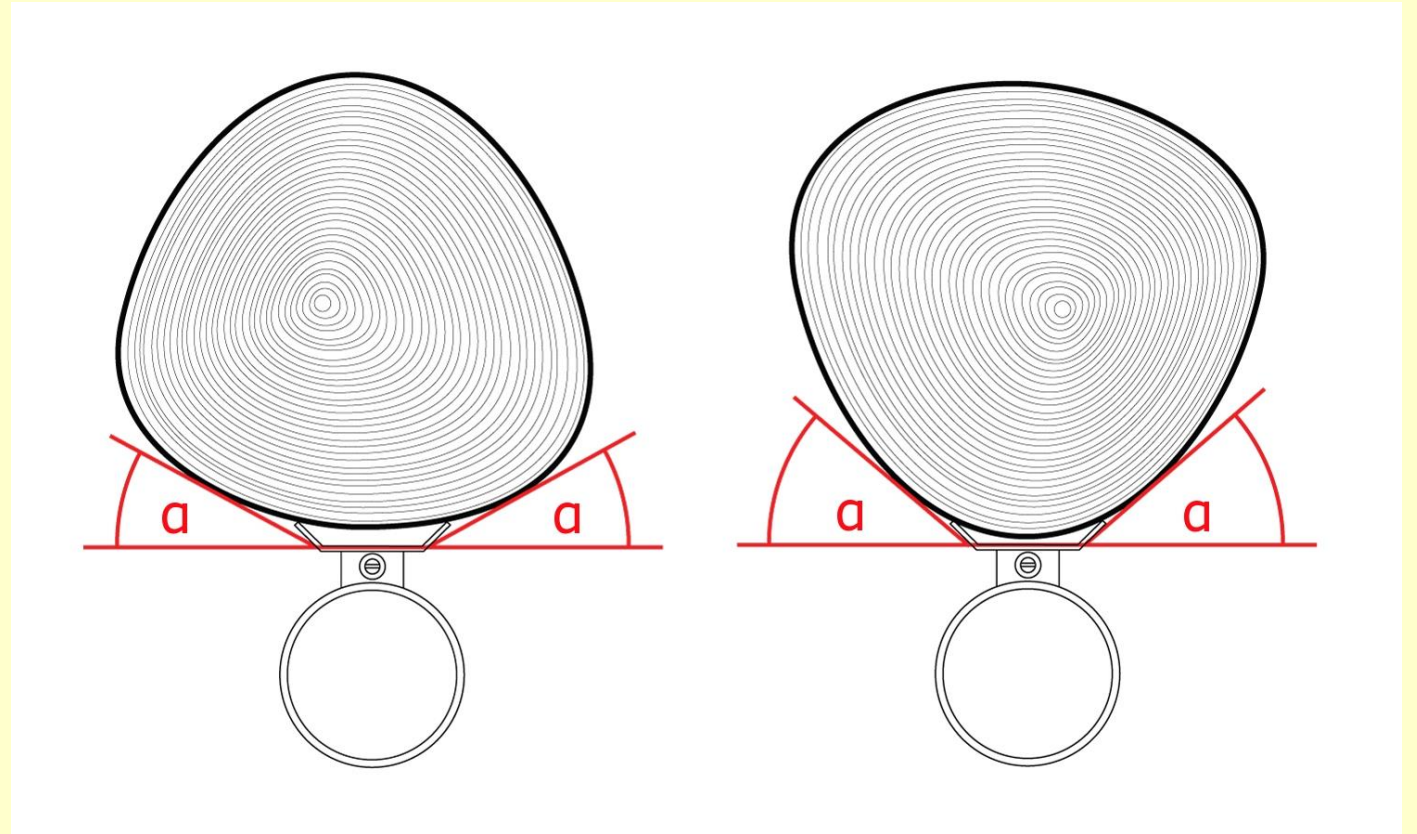
Cleaning the bark

Below the sensor
- Use brush, gloves, piece of wood etc. to make the bark smoother. The sensor must sit only and on all four spikes, it must not waggle. Cleaning of bark should be made with respect to this demands.

- In case of some trees with very wrinkled bark, it is recommended to flatten mature bark by a drawknife or a similar tool. Don't make the flat area too large – it might reduce the force holding the sensor on the trunk (lower angle α – see picture). In such a case peel the bark in a cylindrical way.

Below the tape
- It is not necessary to make the bark totally smooth, however, it is good idea to remove protruding parts of raw bark as well as rest of small branches etc. (mostly on Oak, Pinus etc.).
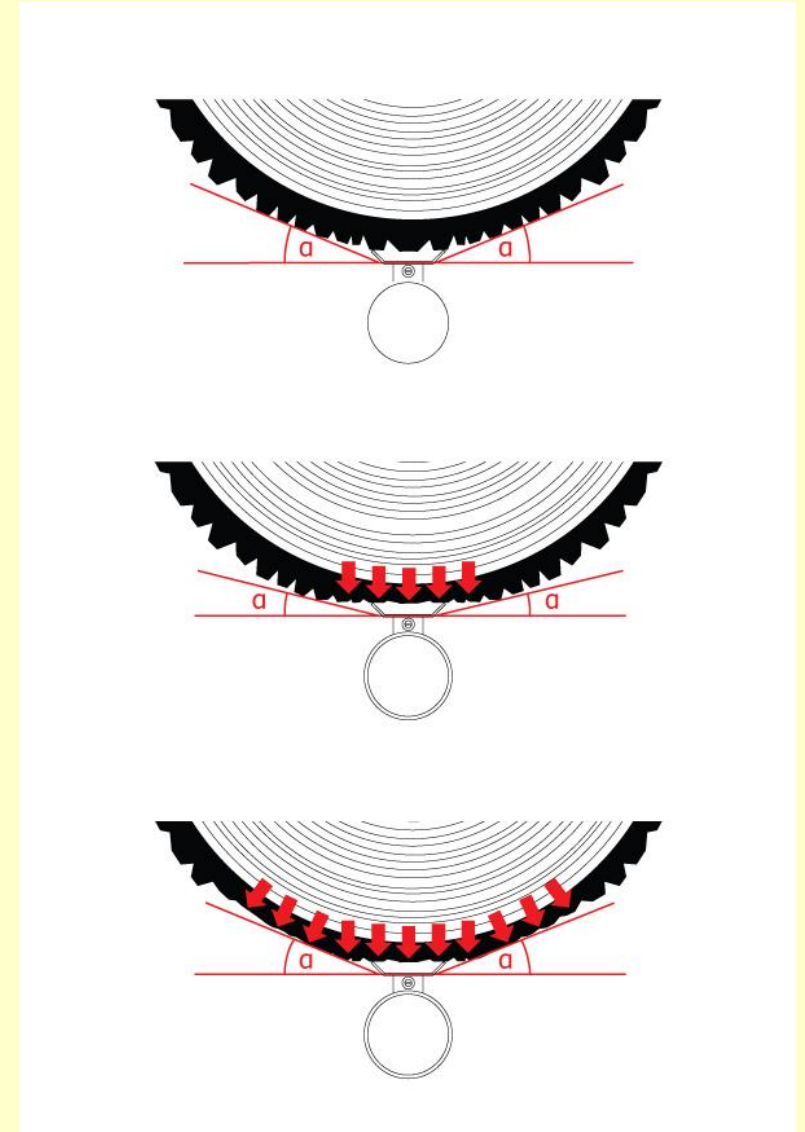
Cable fixing
for DR26, DR26E and DRS26 only

Please do not forget to fix the cable with cable tie according to following picture:

Sensor placement

- Sensor axis should be in parallel with the axis of the stem at the level of installation.

- Push the base plate towards the bark and double check the position with respect to potential waggling on diagonal spikes.

- It is good idea to mark the sensor position on the bark with a marker, so you easily find the place again when you move with the base plate accidentally during the installation.
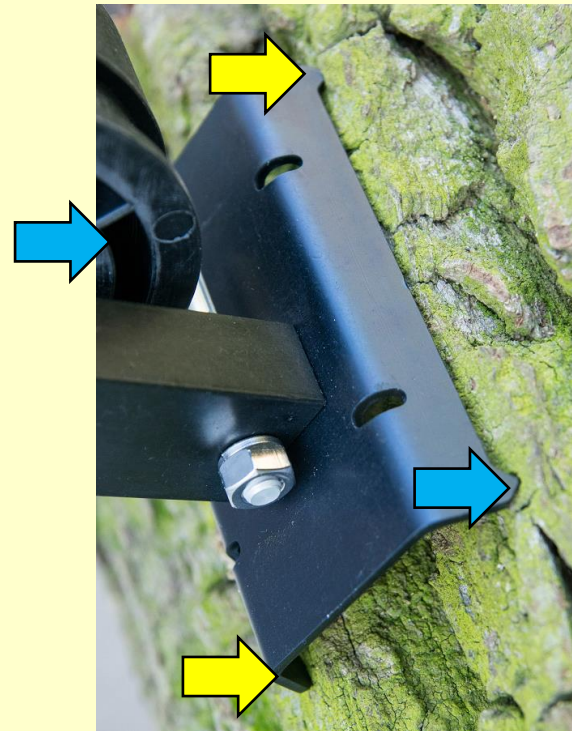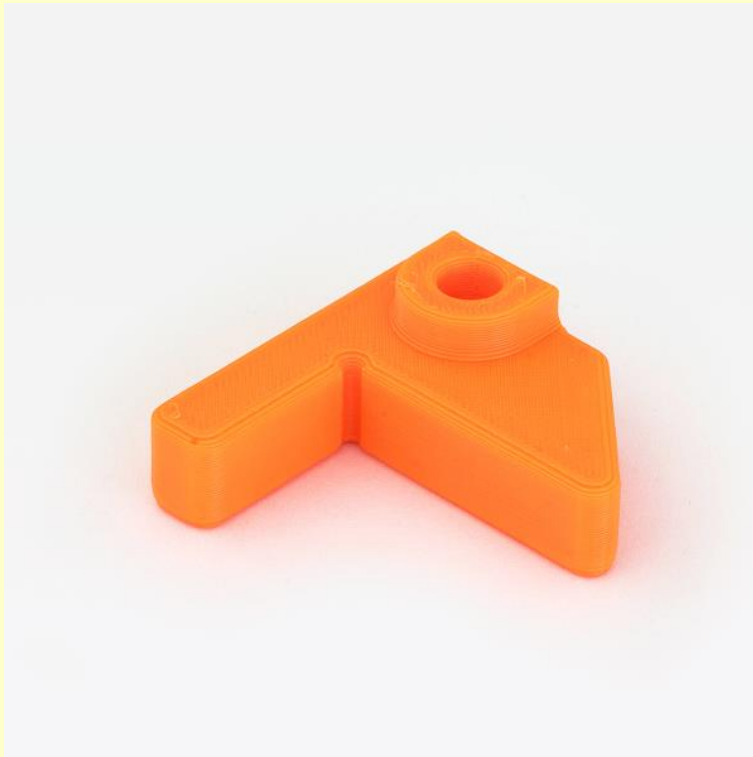
Sensor preparation

Set the sensor to ca middle of its range using the initial tension tool:
- turn the sensor head counterclockwise
- put the tool's hole on black pin sticking out of the sensor head bottom

*If you do not have this tool, continue without it – the tool just makes the operation more comfortable.*

Stainless tape

- The tape length is calculated from circumference of stem at sensor height plus 25 cm for folds and wrapping around the sensor; plus 10 cm for future release of the tape after the trunk outgrow. Make sure that the opposite end of the tape is flat and therefore ready for easy lacing below the pin on the sensor head.
- Fold ca 5 cm of tape for putting the tape on the sensor pin.
- Ensure the proper position of the tape fold.

Tape leading

- Wrap the tape around the stem. The tape must lay at the same level as the sensor, however, with respect to possible stem tilt.

- Be sure to lead the tape in the correct way.
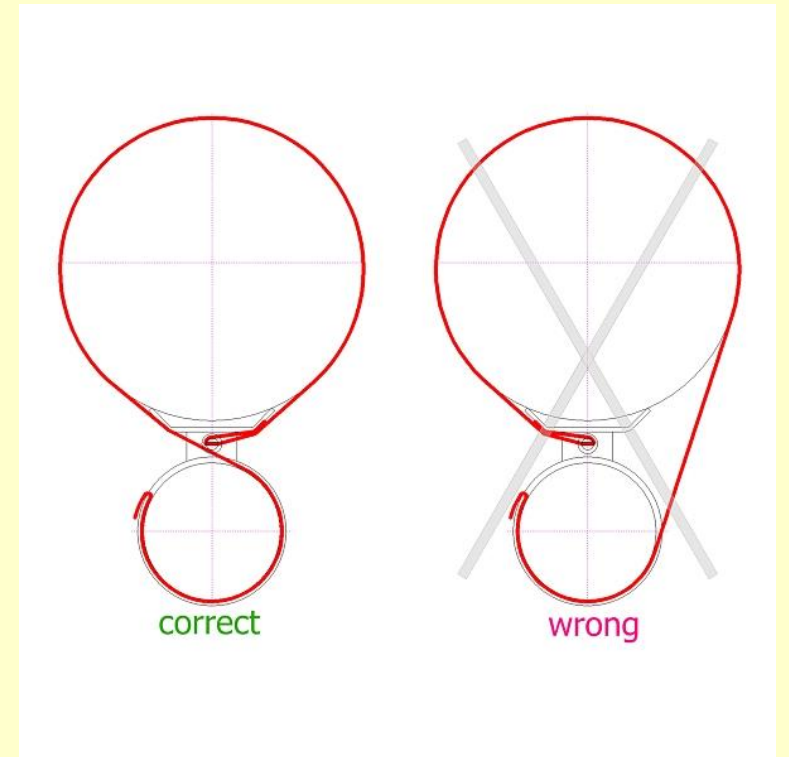
Stainless tape adjustment

- Wrap the tape around the sensor head and lace it behind the pin.

- Turn the sensor head a bit counter clockwise. Let the tool for initial tension fall down, but all the time hold the sensor head.

- Set the tape on the sensor head such a way that the arrow points approximately to 10 mm tick. Keep in mind that the stem may shrink.

Stainless tape adjustment

- Bend the tape end around the pin and push the protruding part of the tape towards the sensor head.

- Turn the sensor head slightly clockwise to tighten the sensor head and the tape.

Correct sensor installation

Double check the position of the sensor and the tape on the stem:

- Sensor axis

- Waggling of sensor (pushing on diagonal spikes)

- Perpendicularity of the tape towards the sensor axis

Important note: Folds on the tape increase the thermal property of the sensor! The tape should be fold-free and if there are an accidently made folds, they should be straighten with hand or with pliers.

Software configuration
of logging sensors DRL26x

Run Mini32, connect the IrDA/USB cable to the PC and open "Configuration" menu
*Use the IrDA/USB cable holder for comfortable operation.*

Device initialization

The sensor should be initialized always at the beginning of new measuring campaign. Initialization erases the whole memory content, sets datalogger time and the way of memory use. During this process, the system can keep existing configuration or to renew the factory setting.

Procedure:

- Run Mini32 and press "Configuration" > "More" > "Init" buttons
- Make sure that all old data are safely saved
- Let the software synchronize the datalogger time clock with PC time. Be advised that Mini32 sets always the solar time independently on "summertime". If the PC time is not set according to actual latitude, set the time accordingly.
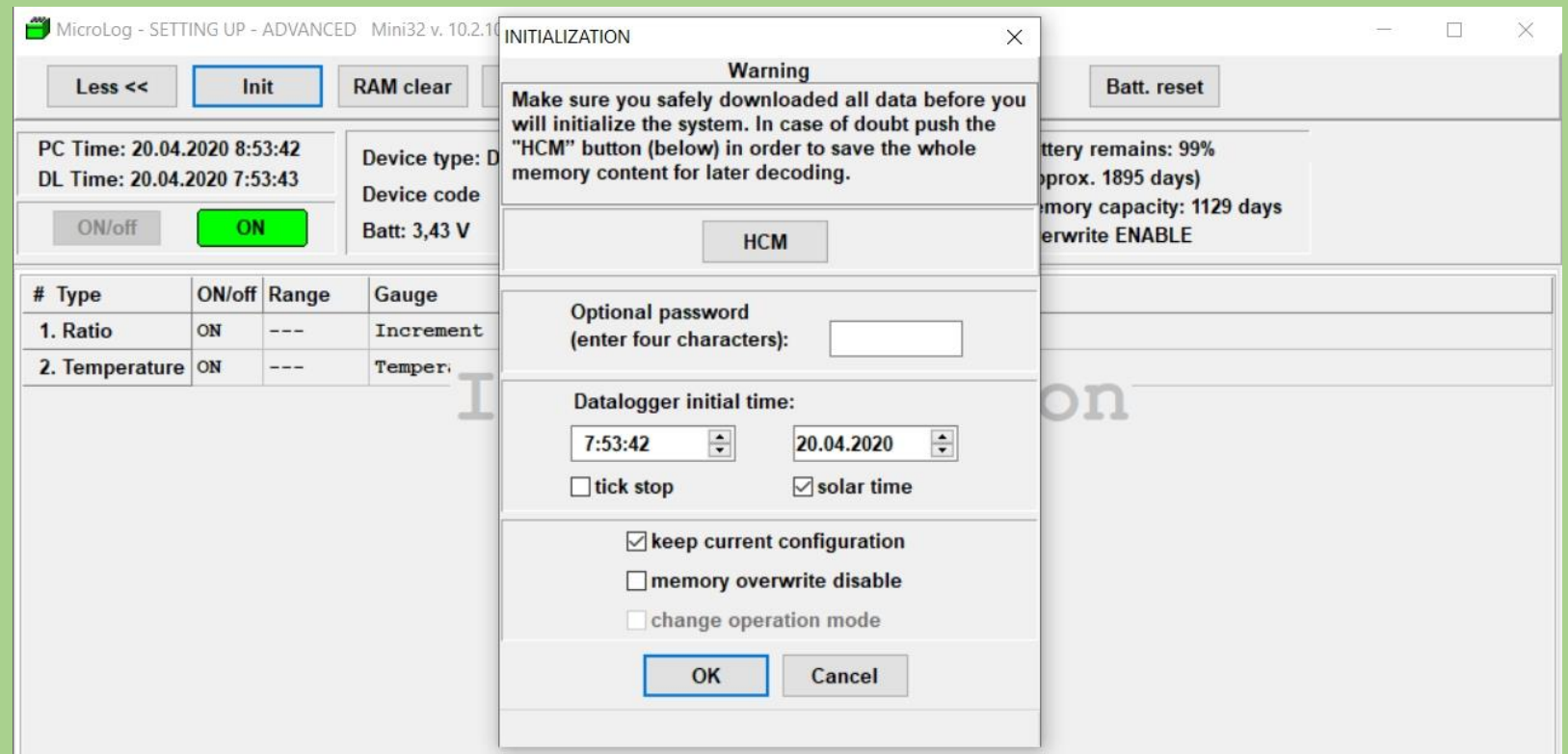
Device code

The meaning of the device code is to distinguish between different sensors or between the files originates by the same sensor but with different configuration. Because of compatibility with older systems manufactured since 1998 the device code can have two characters only. New devices uses as the device code two last digits of the serial number.

Recommendation:

- Using letters instead of numbers brings more combinations (when there is a lot of sensors installed in a limited area).

- Device code should identify the tree and also the locality or a treatment.

- Think twice of the structure of codes for easier and sure later identification of data files.

Measurement interval set up

- Consider the balance between **data resolution**, **battery lifetime** and **frequency of your visits**.

- Frequent measurement reduces battery lifetime, short data storing interval reduces the memory capacity.

- Remember that dendrometer measures increment of circumference. The range of the sensor is 64 mm which means 10 mm of radial increment. Estimate the time when it will be necessary to replace or ease the tape.

Measurement interval set up

The battery lifetime and the total time period of data recording as a function of configuration is shown in "Mini32" > "More" > "Capacity info".

Choose the system and enter the values of according to intended configuration.
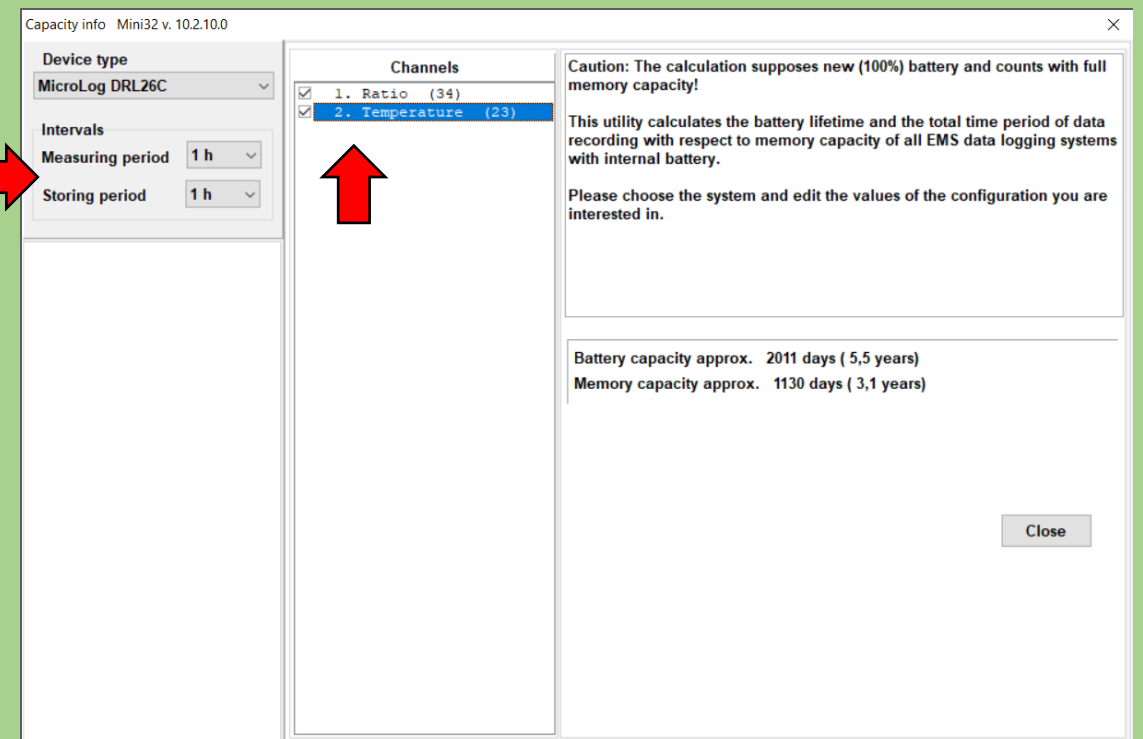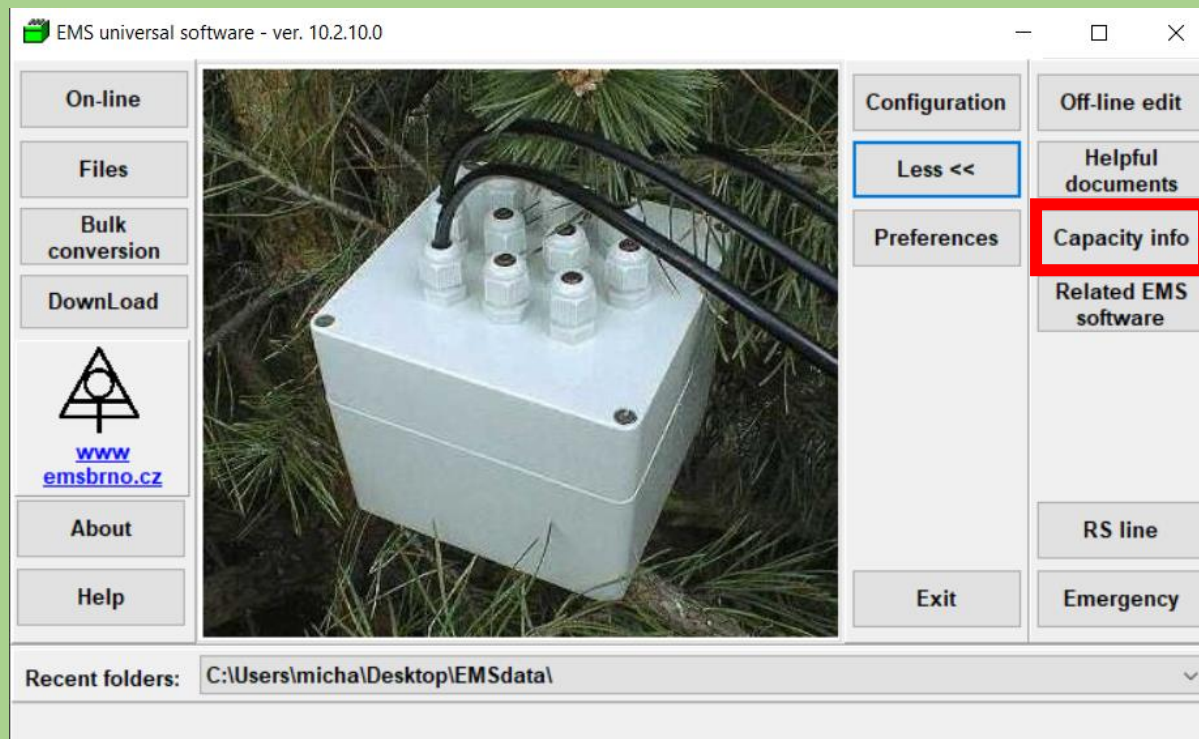
Final check

Go back to Mini32 main screen and press "On-line" button. Check all configuration values. Read actual (current) values and check its relevancy. You might also download data in order to save the configuration for any future use.

Sequential download

This tool allows fast download and checking of many sensors located close to each other. Run Mini32 and press "Download">"Sequential". Choose number of days for download and prefix of downloaded files.
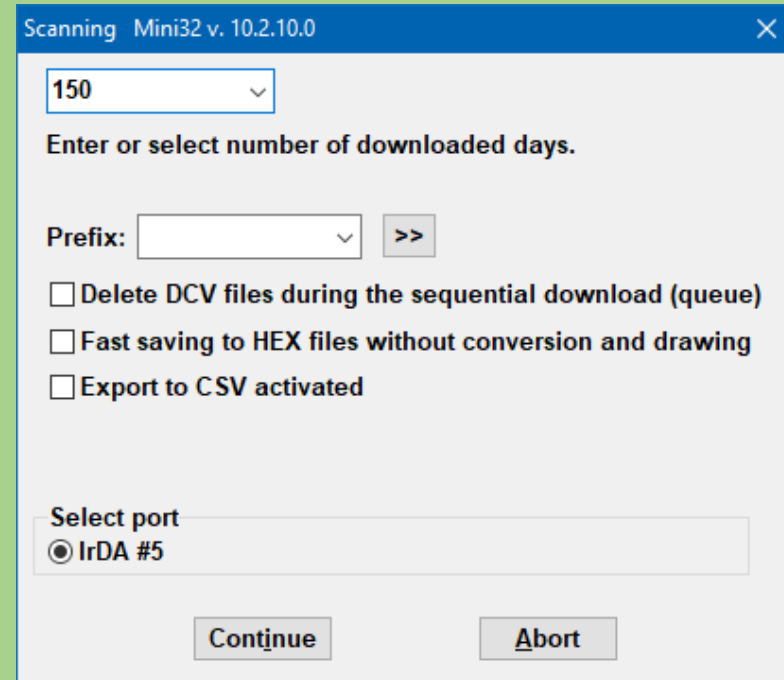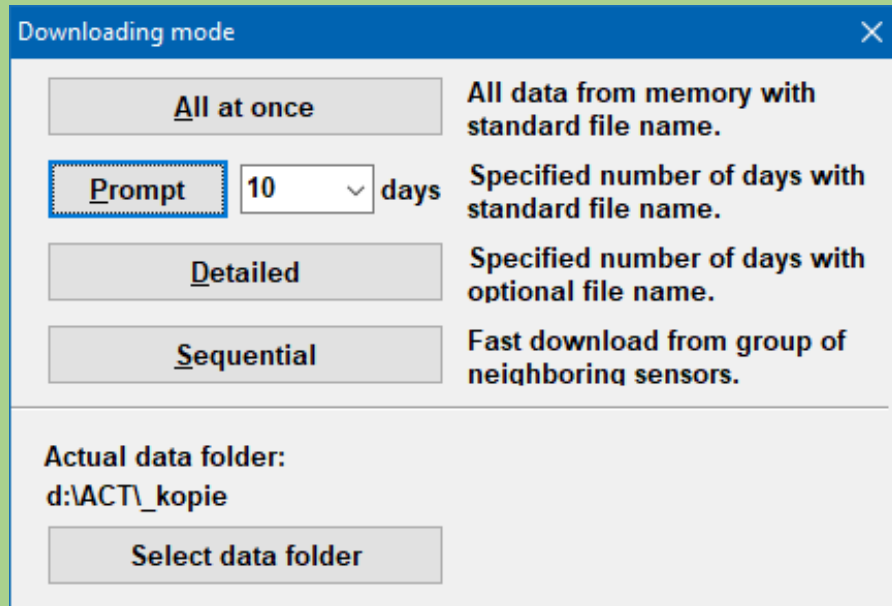
Go along sensors and activate IrDA connection (or connect cable). Data will be automatically downloaded and immediately displayed. Look at the data, then push Space and move to next sensor.

Good luck!