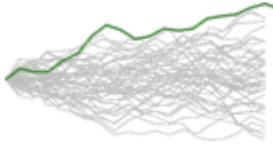iButtons manual - Version 19-10-2018

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This manual describes the steps to be taken for reading out the two temperature and one temperature-humidity iButtons and for resetting the iButtons. Please follow this manual carefully. It is very important that no valuable climate data gets lost during this procedure.

Steps to be taken and described in different sections in this manual:

(1) **Deciding the moment to download data from the iButtons**
(2) **Installing the software** - Make sure that you go through this part and have the software installed and functioning before you take the iButtons from the site.
(3) **Downloading the data from the iButtons**
(4) **Resetting the iButtons**
(5) **Procedure for the temperature-humidity iButton** - Beware: this is slightly different from the temperature-only iButtons.

(1) Deciding the moment to download data from the iButtons

Make sure that you can collect the iButtons from the field site for reading out the data and for resetting them within a short time span, so that the iButtons can continue to record weather data without any gaps. Ideally this should be done within one day. When a field site is far away from your office, we recommend you to bring a laptop and read out the data in the field.

IMPORTANT: Please read out the loggers **before 14 August!** The temperature iButtons can hold 2048 readings. (The temperature-humidity iButtons can hold twice as much.) The iButtons have been set to record 6 readings per day. This means that it can record 341 days. The GrENE-net iButtons were set from 7 September onwards, so this means that the data should be read out by 14 August. Perhaps the iButtons for your site were set at a later date. If you are not able to read out the data before 14 August, get in touch with us and we can check if there is more time available. Make sure that you have installed the OneWireViewer software before taking the iButtons from the site (see point 2 below).

(2) Installing the software

Please read the instructions on this webpage. Use the link halfway through that page to switch to this webpage which contains a button "Click to go to download page" that brings you to this webpage where the program OneWireViewer and drivers can be downloaded. Pick the right operating system and select either the 32 or the 64 bit version and click download. Install the software using the automatic installer. Continue the instructions on the first webpage.

## (3) Downloading the data from the iButtons

From here on, we presume that software installation was successful. You can now remove the three iButtons from the site. **IMPORTANT**: Make sure that you keep track of which iButton was installed in which tray. The temperature-humidity iButton can be unscrewed from the wooden holder, or the whole construction can be pulled out and taken to the computer.

3.1 Connect the iButton reader to the adapter and plug the reader's adapter into the USB socket.
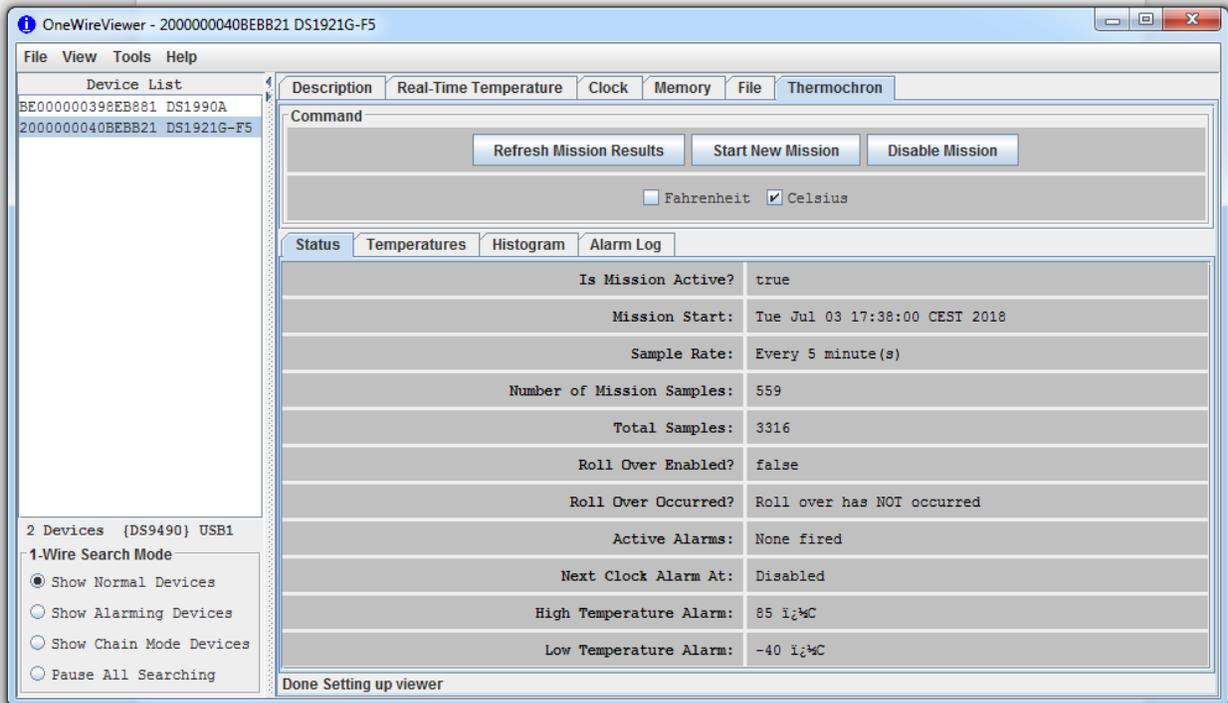

3.2 Open the program OneWireViewer. The following window should appear.
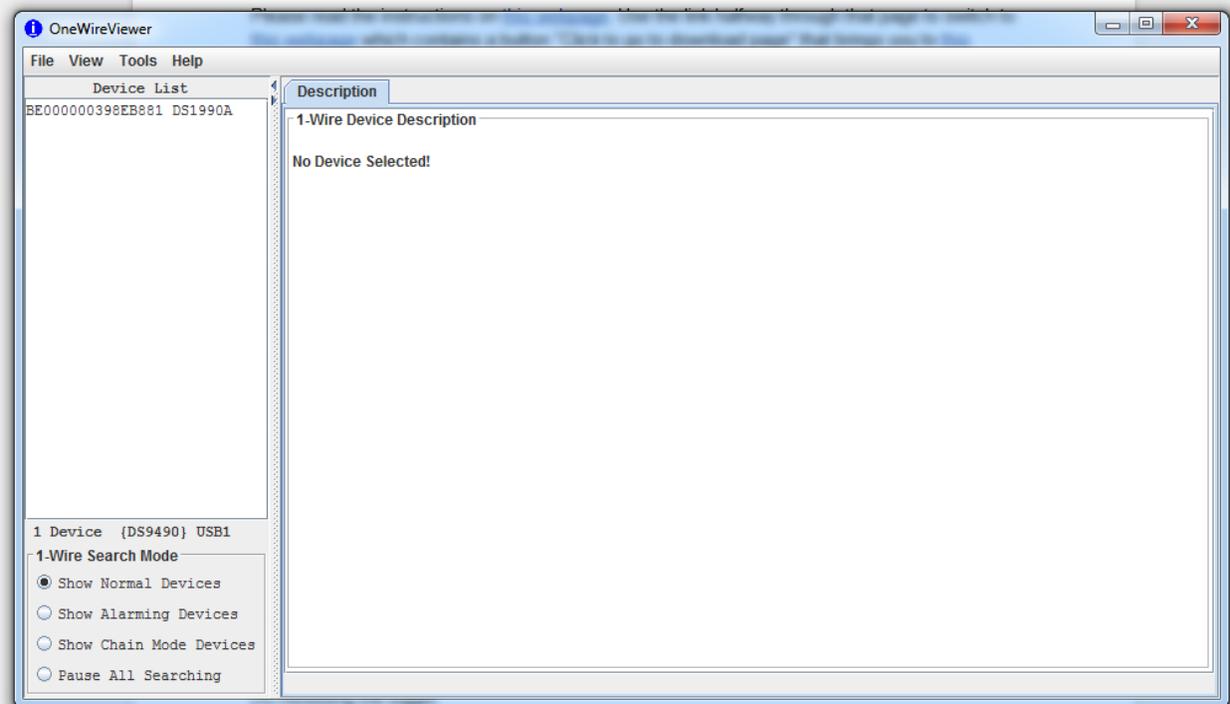
3.3 Take one of the two temperature iButtons out of its plastic bag. Push the iButton in the reader. It should appear in the left window "Device List" below the code of the reader itself. See the screenshot below.
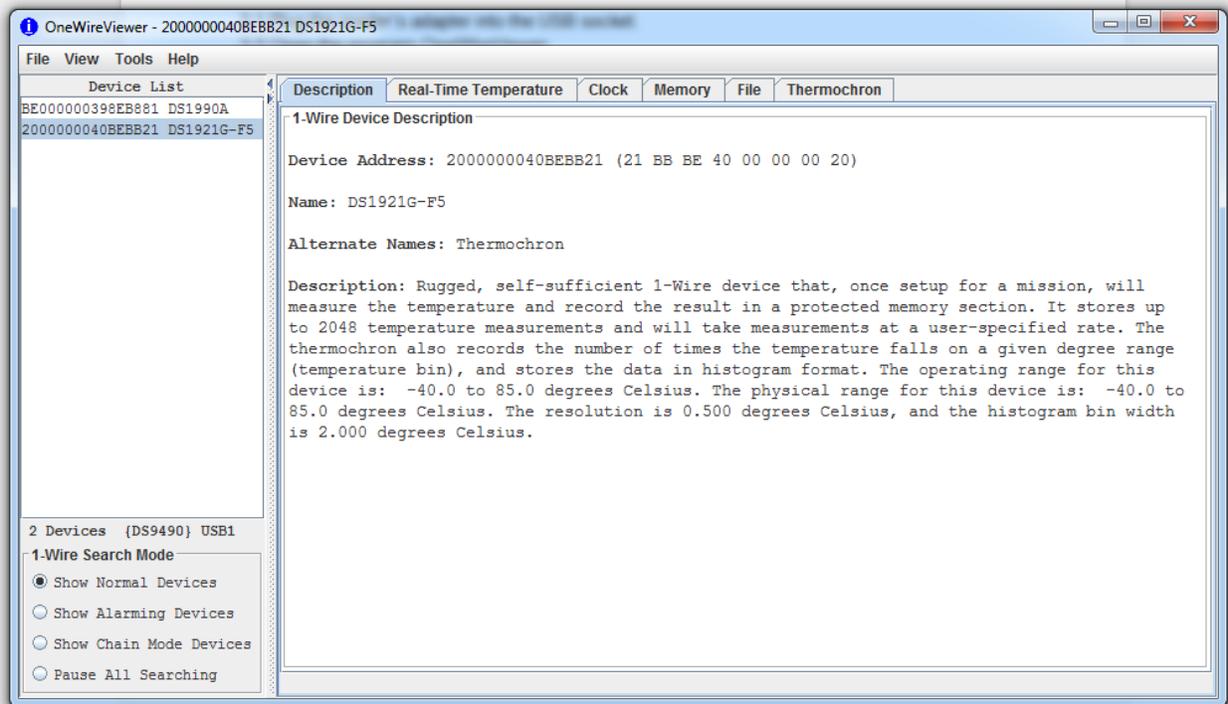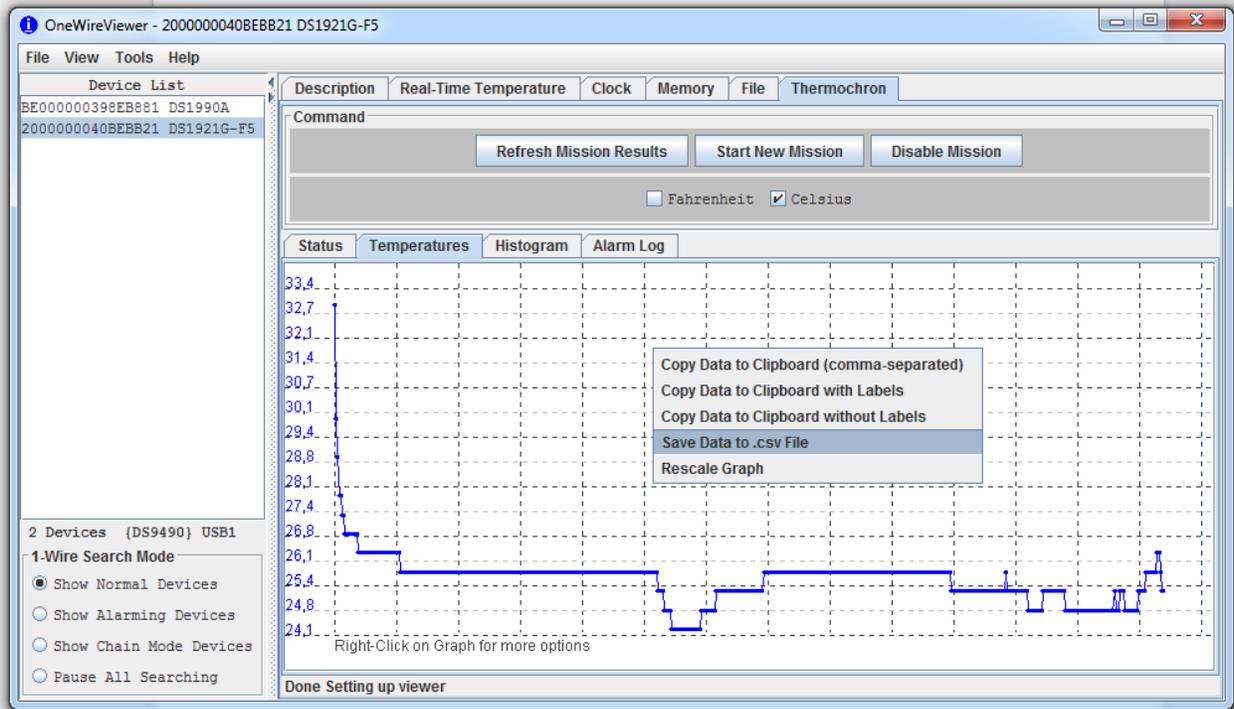

3.4 Click on the tab "Thermochron". See screenshot below.

3.5 Click on the tab "Temperatures". See screenshot below.
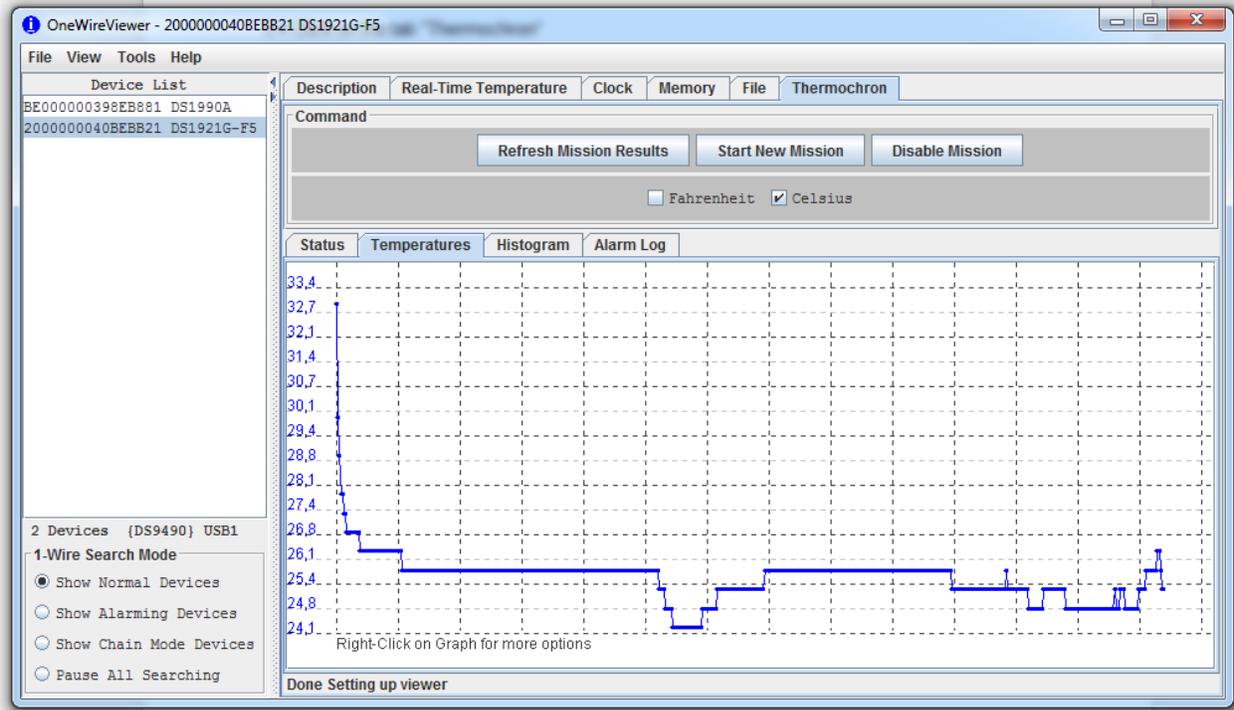
3.6 Right-click within the plot area and select "Save data to .csv file". See screenshot below.

3.7 Save the data and name the file using the following coding: 01-04-40BEBB21-20180705.csv

In this code, "01" is the site number and "04" is the tray number in which the iButton was buried. (For the temperature-humidity iButton, please enter "TH-T" for the temperature data and "TH-H" for the humidity data. See also section **5**.) "40BEBB21" are the last 8 characters of the iButton code which you can find in the main window in the top-left corner listed below the reader code. "20180705" is the date on which you download the data, using the format "yyyymmdd"

3.8 To be sure that the downloaded data is functional, we will import it in MS Excel. To have a backup file, we will save this Excel file.

Open MS Excel and open a blank worksheet. Click the "DATA" tab and click the button "From Text". Select the csv file you just downloaded and click "Import". Keep selection on "Delimited" and press "Next >". Select "Comma" and press "Next >". Keep selection on "General" and press "Finish". Import the data in the "Existing worksheet".

Note: Since the decimal separator of the temperature values is a comma just as the cell separator is, the temperature data are given in two columns with the second column either empty or 5. This can be solved by writing the following formula in the next column which concatenates the two columns and renders the result into a number:

=NUMBERVALUE(CONCATENATE(C16;".";D16))

See the screenshot below where this function is entered in a sheet with sample data.

| | E16 | ▾ | ⋮ | ✕ | ✓ | *fx* | =NUMBERVALUE(CONCATENATE(C16;".";D16)) |

	A	B	C	D	E	F
1	1-Wire/iButton Part Number: DS1921G-F5					
2	1-Wire/iButton Registration Number: 2000000040BEBB21					
3	Is Mission Active? true					
4	Mission Start: Tue Jul 03 17:38:00 CEST 2018					
5	Sample Rate: Every 5 minute(s)					
6	Number of Mission Samples: 559					
7	Total Samples: 3316					
8	Roll Over Enabled? false					
9	Roll Over Occurred? Roll over has NOT occurred					
10	Active Alarms: None fired					
11	Next Clock Alarm At: Disabled					
12	High Temperature Alarm: 85 ◆C					
13	Low Temperature Alarm: -40 ◆C					
14						
15	Date/Time	Unit	Value		Temp	
16	03.07.2018 17:38	C	33		33	
17	03.07.2018 17:43	C	30		30	
18	03.07.2018 17:48	C	29		29	
19	03.07.2018 17:53	C	28		28	
20	03.07.2018 17:58	C	28		28	
21	03.07.2018 18:03	C	27	5	27.5	
22	03.07.2018 18:08	C	27	5	27.5	
23	03.07.2018 18:13	C	27		27	
24	03.07.2018 18:18	C	27		27	
25	03.07.2018 18:23	C	27		27	
26	03.07.2018 18:28	C	27		27	
27	03.07.2018 18:33	C	27		27	
28	03.07.2018 18:38	C	27		27	

Save the Excel file in the same location. Now you should have the original .csv file as well as the Excel file.

3.10 Please send the .csv and .xlsx files to grene.net@gmail.com.

(4) Resetting the iButtons

4.1 Click on the "Thermochron" tab, and then click on the "Status" tab. Click the button "Disable Mission". Check if the first row "Is Mission Active?" changes from "true" to "false". This may take 1-2 seconds.

4.2 IMPORTANT: In OneWireViewer, after downloading, saving and sending us the data, click on the "Clock" tab on top. Click the button "Synchronise Clock to PC Time". Check that "current time" is indicating the correct time in your time zone.

This step is important because the iButtons that you received were synchronised with Central European Time and their recording times were adjusted to fit with your time zone. Now, you will set the iButtons to your time zone. Also, by synchronising the time, we will also get rid of any slight deviations from the true time that may have build up over time since we set the iButtons in 2017.

4.3 Click on the "Real-Time Temperature" tab on the top and check if temperature is being read and whether data is being added into the plot over time. (If the iButton is broken or if it is out of battery, you may see an error message here.)

4.4 Go back to the "Thermochron" tab. Click "Start New Mission". We have already synchronised the time so you can keep the topleft box unchecked.

IMPORTANT: Do **NOT** check the box "Enable Rollover?" because we do not want any data to get lost in case we are too late with downloading the next batch of records in 2019.

4.5 In the field "Sampling Rate (1 to 255 min.)" enter "240". We sample every 4 hours.

4.6 In the field "Mission Start Delay" enter the number of minutes to go until the next reading should take place. We do readings at 00, 04, 08, 12, 16, and 20 hrs. For example, it is now 16:48 on my computer. The next reading will therefore be at 20:00. This is 3 hours and 12 minutes from now, which is 60 + 60 + 60 + 12 = 192, so I fill out "192".

4.7 Do **NOT** change the settings of the Temperature Alarms. These should be "-40" and "85". Also do **NOT** check the box "Enable Clock Alarm".

4.8 Click "OK"

4.9 Check if the first row "Is Mission Active?" changes from "false" to "true". This may take 1-2 seconds.

4.10 Put the iButton into a new small plastic bag. Make a knot and cut off the bag above the knot. You can now bury the iButton into the very same location.

Go back to step **3.1** to read out the data from the second temperature iButton and to set it for the next phase of data logging. For the temperature-humidity iButton, see section 5.

(5) Procedure for the temperature-humidity iButton

5.1 This procedure is fairly similar to the one for temperature-only iButtons, but there are some crucial differences. After inserting the iButton in the reader, it should appear in the left window "Device List" below the code of the reader itself. Click on it and then click on the tab "Mission". Within that window, click on the tab "Temperature Data Log". Download the data as .csv by right-clicking in the plot area. Use the following file name format: 01-TH-T-20180705.

5.2 IMPORTANT: The procedure to import the csv data into an Excel sheet is slightly different. When using the procedure as described in 3.8, records with a "0" value as first decimal disappeared in the Excel file. For instance, numbers like "20.072" are imported into Excel as "20.72". As a solution, do the following: Before importing, create a copy of the csv file and open it. Replace ",C," with "spaceCspace" and use space as separator during importation.

Thanks to Carlos Alonso-Blanco and his team for noticing this and providing a solution.

5.3 Repeat steps **5.1** and **5.2** for the humidity data. Click on the tab "Humidity Data Log".
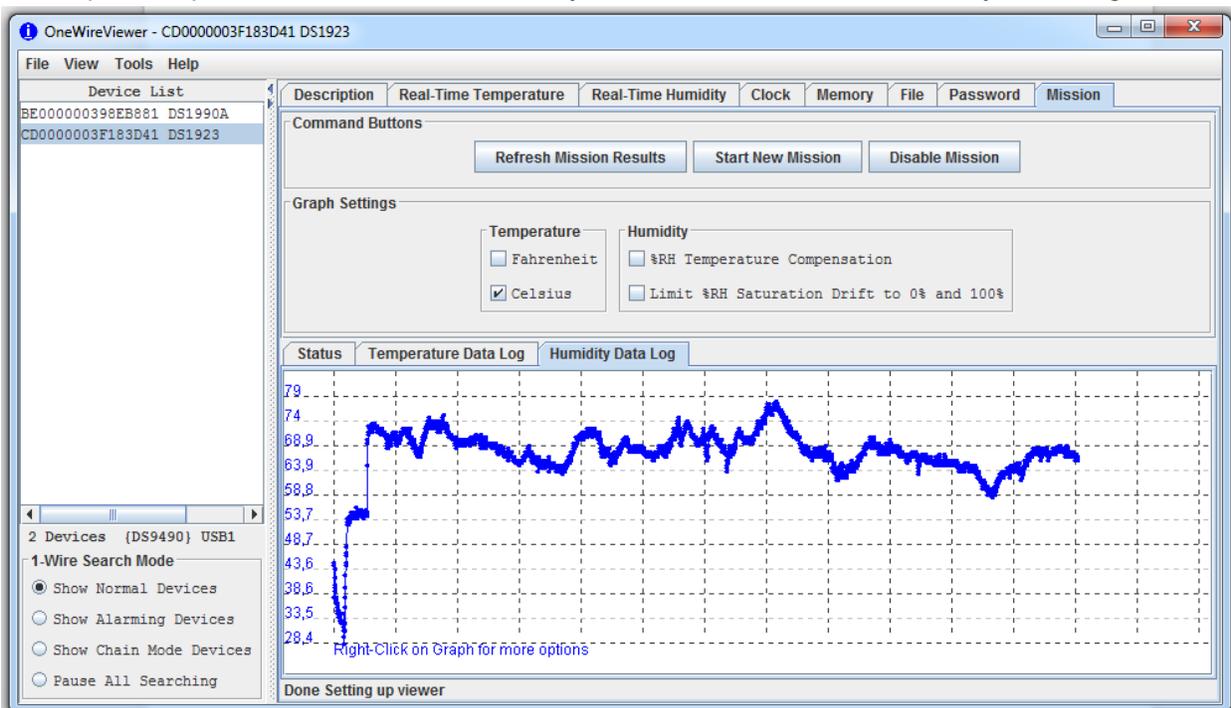
Download the data in the same way, using the name format 01-TH-H-20180705, create the Excel file using the adjusted procedure. Send the two temperature files and the two humidity files to grene.net@gmail.com.

5.4 Click "Disable Mission", check if the field "Mission in Progress?" in the "Status" tab switches to "false". Then set the clock (see 4.1). Then "Start New Mission".

5.5 IMPORTANT: With temperature-humidity iButtons, the "Enable Rollover" box is activated by default. Make sure that you **inactivate** it.

5.6 IMPORTANT: With temperature-humidity iButtons, the "Sampling Rate" should be entered in seconds. So please enter "14400" in this field. The "Start Delay" should be given in minutes as for the other temperature iButtons (see 4.6).

5.7 Make sure that, for both Temperature and Humidity, the boxes "Enable Sampling?" are checked and the boxes "Enable Alarms?" are not checked. The fields for the Low and High Alarms can be left empty.

5.8 Click "OK". The field "Mission in Progress?" in the "Status" tab should switch to "true" again.

5.9 You can now place back the iButton in the very same location on the wooden holder.

That was it! In case you encounter any problems, if you found mistakes in the manual, or if you feel uncertain about how you handled the iButtons, please get in touch with us: grene.net@gmail.com

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