

## Calibration Instructions for: MicroLog EC600/650 MicroLogPRO EC700/750


### *Temperature Calibration Instructions*

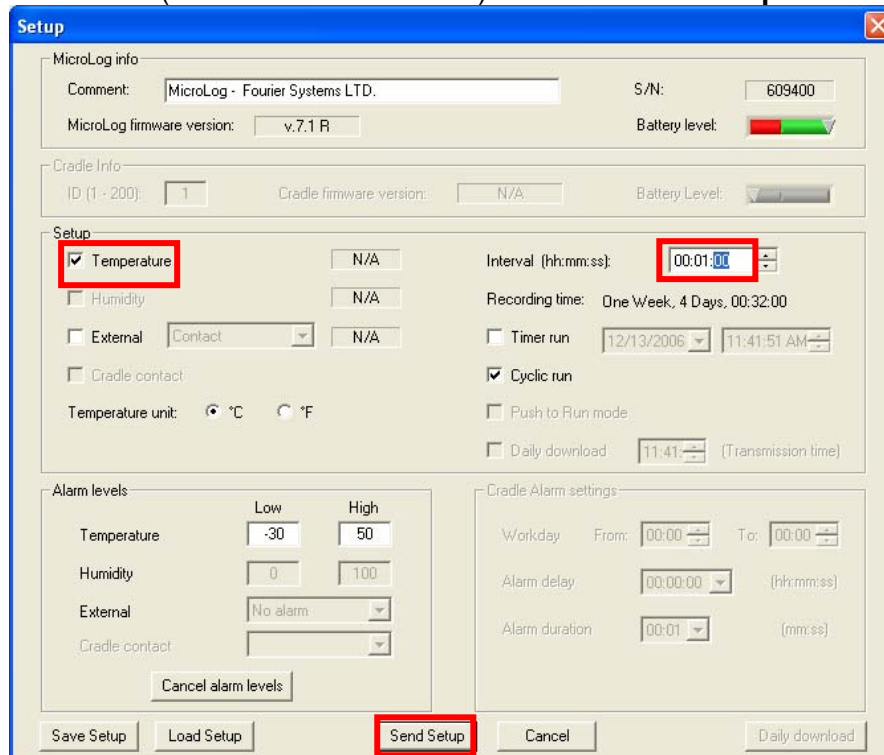
This section explains the necessary steps for calibrating the MicroLog and MicroLog PRO internal temperature sensor.

You will perform a two-point calibration. The recommended values are 0 °C to 50 °C. However, you may use other values as you see fit. For instance, if your chamber has a smaller range.

**Note:** Calibration of the internal temperature sensor on the EC600 and EC650 only is limited to the software. The logger itself doesn't record the calibrated data, it is only displayed when downloaded the data to the PC which performed the calibration.

### Pre-calibration Procedure


1. Install the MicroLab software on your PC. For installation instructions, refer to the *MicroLog User Guide*.
2. Connect the logger to the PC using the PC communication cable provided with the MicroLog. Connect the cable to the connector at the back of the logger, and to the serial port of your PC.
3. From the main MicroLab window, click **Setup**  to enter the **Setup** window.
4. Ensure that the logger's temperature sensor is selected. Define the sampling interval (1 minute recommended) and click **Send Setup**.





The screenshot shows the 'Setup' window with the following details:

- MicroLog info:** Comment: MicroLog - Fourier Systems LTD., S/N: 609400, MicroLog firmware version: v.7.1 R, Battery level: [Green bar]
- Cradle Info:** ID (1 - 200): 1, Cradle firmware version: N/A, Battery Level: [Grey bar]
- Setup:**
  - Temperature (highlighted with a red box)
  - Humidity
  - External
  - Cradle contact
  - Temperature unit:  °C  °F
  - Interval (hh:mm:ss): 00:01:00 (highlighted with a red box)
  - Recording time: One Week, 4 Days, 00:32:00
  - Timer run
  - Cyclic run
  - Push to Run mode
  - Daily download
- Alarm levels:**

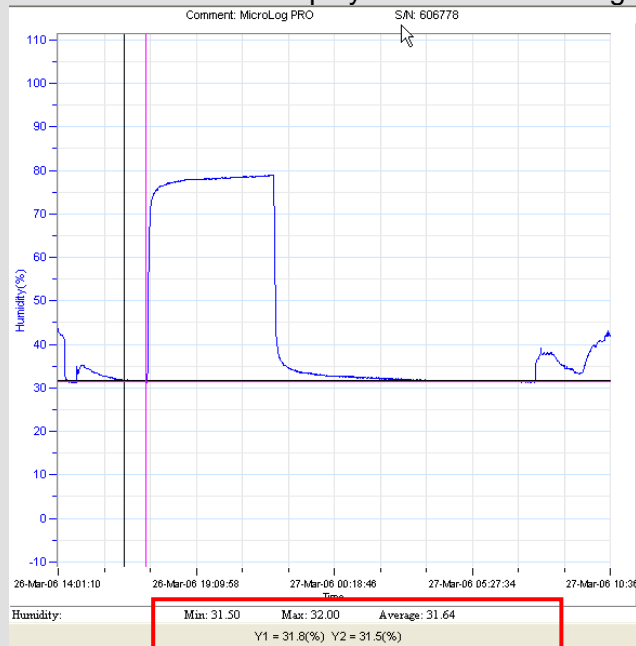
	Low	High
Temperature	-30	50
Humidity	0	100
External	No alarm	
Cradle contact		
- Cradle Alarm settings:**
  - Workday: From: 00:00 To: 00:00
  - Alarm delay: 00:00:00 [hh:mm:ss]
  - Alarm duration: 00:01 [mm:ss]
- Buttons:** Save Setup, Load Setup, Send Setup (highlighted with a red box), Cancel, Daily download

5. Click **Run**  to start the logger.
6. Place the logger in a temperature calibration chamber. Set the chamber to 0 °C (or other value).
7. After two hours, set the temperature to 50 °C (or other value). After another two hours, remove the logger/s from the chamber.
8. Using the communication cable, connect the logger to the PC.

9. Click **Stop**  to stop the logger from sampling more data. (**Note:** Be very careful not to press the **Run** button again before downloading the data as this will erase all data sampled in the chamber).

10. Click **Download**  to download the data from the logger to the PC. You will see the data displayed in a graph in MicroLab.
11. Calculate the average MicroLog reading at the two reference points you used. You need to locate the graph cursors (see text box below) over the stabilized (flat) area of the plot at each reference point.

To calculate the average value over a specific part of the plot, first mark the area using two cursors (using the **First Cursor** and **Second Cursor** buttons). Then, select **Statistics** from the **Analysis** menu in MicroLab and you will see the Average value of that marked area displayed underneath the graph.



12. After performing calibration for all loggers in the batch you should build an Excel file listing the loggers according to their Serial Numbers and the recorded temperature values for the corresponding points of -0 °C and 50 °C. (The serial numbers are automatically recognized by the software during the download operation).



The screenshot shows a Microsoft Excel spreadsheet with the following data:

	A	B	C
1	MicroLog Serial Number	MicroLog value at 33%RH	MicroLog value at 76%RH
2	703978	42.5	80
3	703979		
4	703980		
5	703981		
6	703982		
7	703983		
8	703984		
9	703985		
10	703986		
11	703987		

## Calibrating the MicroLog/MicroLog PRO

1. Make sure the logger is connected to the PC. In MicroLab, go to **Logger > Calibration**.
2. Enter the Calibration Password: **1234**. This password protects the loggers from accidental change of the calibration values by an unauthorized user.
3. In the **Calibration** dialog box, ensure **Internal Temperature** is selected in the drop-down menu.
4. Make sure the first and second reference values are set to -0 °C and 50 °C (or whatever values you used for the reference points).
5. In the MicroLog value fields, enter the corresponding values for the logger currently connected to the PC.
6. Click **Calibrate**.

## Verifying the Calibration

1. Repeat the calibration process as described above.
2. Once you have downloaded the data to MicroLab, record the post-calibration values and add to the Excel file.
3. If the read values for a specific logger deviate more than 0.6 °C (for the MicroLog) or 0.2 °C (for the MicroLog PRO) from the recorded values, then perform another round of calibration and verification.
4. Please note that a further round of calibration is not expected.


## MicroLog EC650 MicroLogPRO EC750

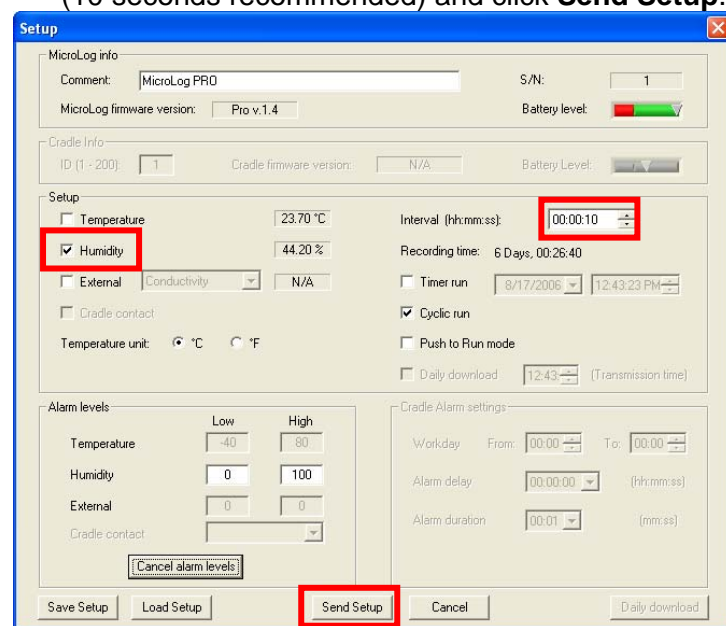
### *Humidity Calibration Instructions*


This section explains the necessary steps for calibrating the internal humidity sensor on the EC650 and EC750 data logger.


You will perform a two-point calibration. The recommended values are 33% and 76%.

### Pre-calibration Procedure


1. Install the MicroLab software on your PC. For installation instructions, refer to the *MicroLog User Guide*.
2. Connect the logger to the PC using the PC communication cable provided with the logger. Connect the cable to the connector at the back of the logger, and to the serial port of your PC.
3. From the main MicroLab window, click **Setup**  to enter the **Setup** window.
4. Ensure that the logger's humidity sensor is selected. Define the sampling interval (10 seconds recommended) and click **Send Setup**.

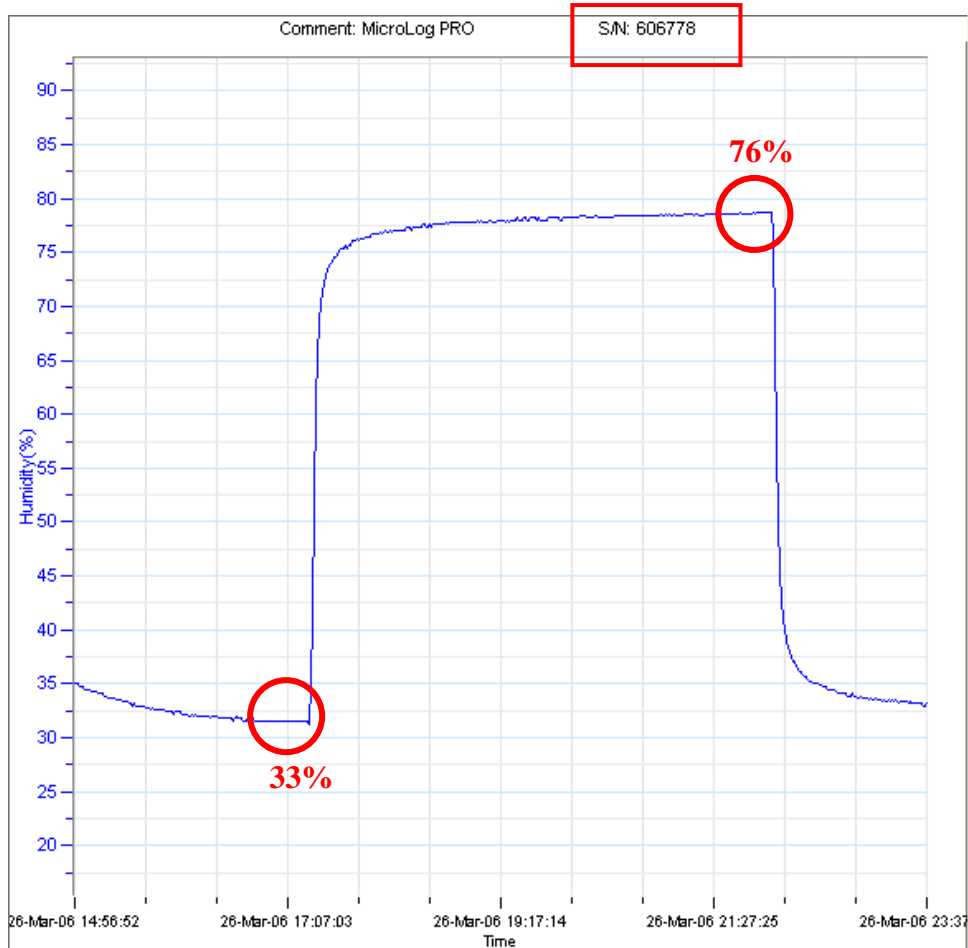



5. Click **Run**  to start the logger.
6. Place the logger in the humidity chamber. Set the humidity chamber to 33% RH and 23 C. It is important that the ambient room temperature will also be approximately 23C (+/- 1 C).
7. After two hours (including about an hour for humidity stabilization time), set the humidity chamber to 76% RH and leave the temperature at 23 C.
8. Wait another two hours and then remove the loggers from the chamber.
9. Using the communication cable, connect the logger to the PC.

10. Click **Stop**  to stop the logger from sampling more data.

(**Note:** Be very careful not to press the **Run** button again before downloading the data as this will erase all data sampled in the chamber).

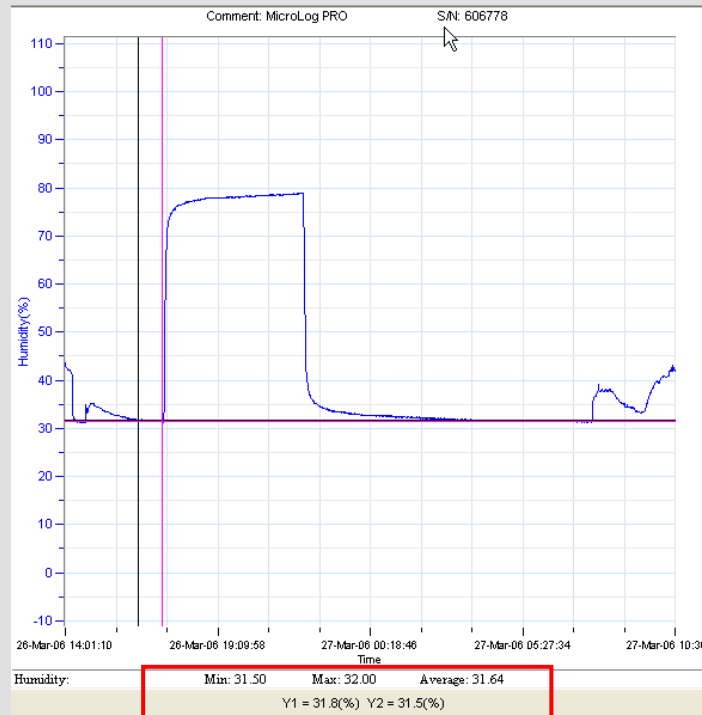
11. Click **Download**  to download the data from the logger to the PC. You will see the data displayed in a graph in MicroLab.



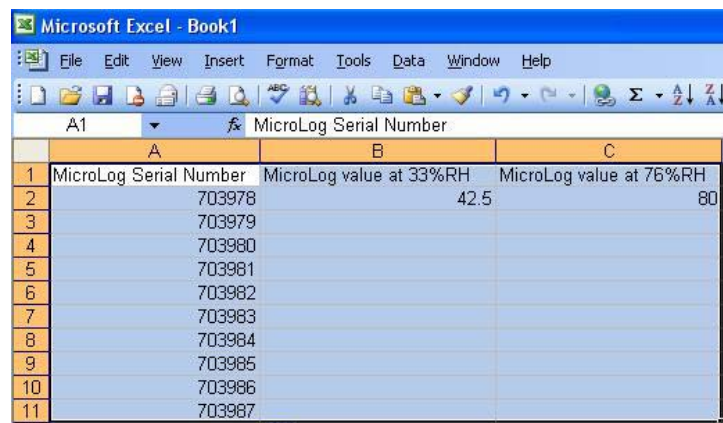
12. Click the **First Cursor** button  on the lower toolbar underneath the graph. Move the cursor (click and drag on the cursor) to the first stabilized area (33% RH) and write down the average value.

13. Move the cursor to the second stabilized area (76% RH) and write down the average value read by the MicroLog.

**Note:** To calculate the average value over a specific part of the plot, first mark the area using two cursors (using the **First Cursor** and **Second Cursor** buttons). Then, select **Statistics** from the **Analysis** menu in MicroLab and you will see the Average value of that marked area displayed underneath the graph.



14. After performing calibration for all MicroLogs in the batch you should build an Excel file listing the loggers according to their Serial Numbers and the recorded humidity values for the corresponding points of 33% RH and 76% RH. (The serial numbers are automatically recognized by the software during the download operation).



	A	B	C
1	MicroLog Serial Number	MicroLog value at 33%RH	MicroLog value at 76%RH
2	703978	42.5	80
3	703979		
4	703980		
5	703981		
6	703982		
7	703983		
8	703984		
9	703985		
10	703986		
11	703987		



## Calibrating the Logger

1. Make sure the logger is connected to the PC. In MicroLab, go to **Logger > Calibration**.
2. Enter the Calibration Password: **1234**. This password protects the loggers from accidental change of the calibration values by an unauthorized user.
3. In the **Calibration** dialog box, ensure **Humidity** is selected in the drop-down menu.
4. Make sure the first and second reference values are set at 33% RH and 76% RH respectively (or to whatever values you used to the reference points).
5. In the MicroLog value fields, enter the corresponding values for the logger currently connected to the PC.
6. Click **Calibrate**. A message stating *Humidity was calibrated* will be displayed.

## Verifying the Calibration

1. Repeat the calibration process as described above.
2. Once you have downloaded the data to MicroLab, record the post-calibration values and to the Excel file.
3. If the read values for a specific MicroLog deviate more than 3% RH (for the MicroLog) or 2% (for the MicroLog PRO) from 33% and 76% respectively, then perform another round of calibration and verification.
4. Please note that a further round of calibration is not expected.