gSKIN®

Instruction Manual

for

gSKIN® DLOG Data Logger

1. Package content

1 gSKIN® DLOG Data Logger
1 USB cable (PC to data logger)
1 installation CD for read-out software

2. Requirements & Introduction

The read-out software needs to be installed on the computer used for adjusting the data logger settings. In order to change settings of the data logger, it needs to be connected to the PC via the USB cable.

Make sure to connect the data logger properly. The connector needs to be placed correctly on both sides into the notches and needs to be locked to the data logger. If connected correctly you will hear a click.

Figure 1: Data logger with correctly adapted connector

If the data logger is not connected correctly to your PC or laptop, neither data transfer nor charging will work.

3. Changing the measurement unit

The data logger can record your measurements either in voltage (V), heat flux (W/m^2) or power (W). By default, the data logger is set to record heat flux (W/m^2).

In order to change the measurement unit, follow these instructions:

1. Connect the data logger to the PC.
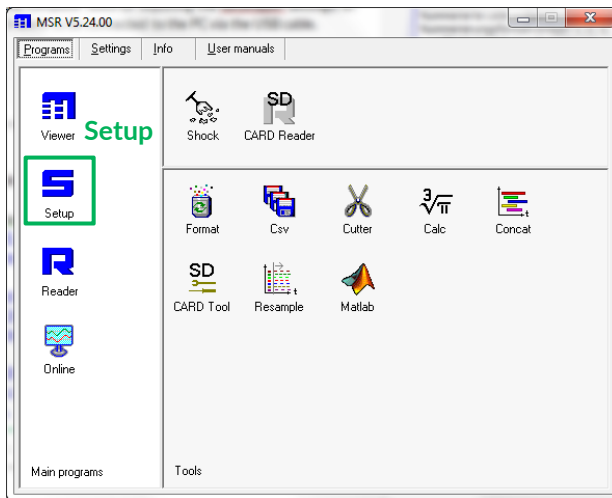2. Open the software.
3. Figure 1 shows the start screen.

Figure 2: Start screen of read-out software

4. In the **Setup** section (see Figure 2) of the read-out software, choose the tab **User settings.**
5. If multiple data loggers are connected, first choose the data logger for which you want to change the settings.
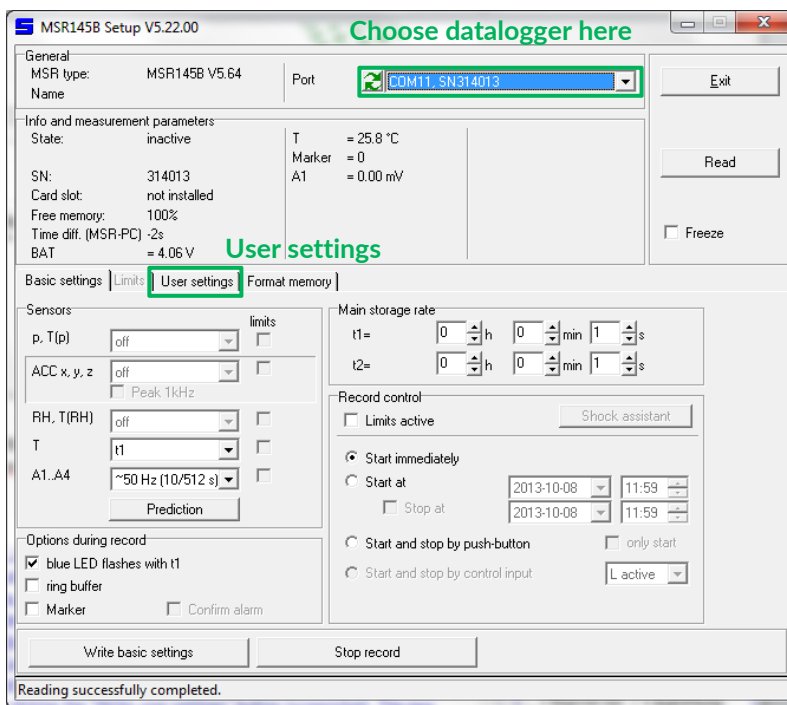

Figure 3: Setup dialog

6. Click the **Calibrate** button in the **Analog inputs** box shown in Figure 3. The window shown in Figure 4 will pop up.
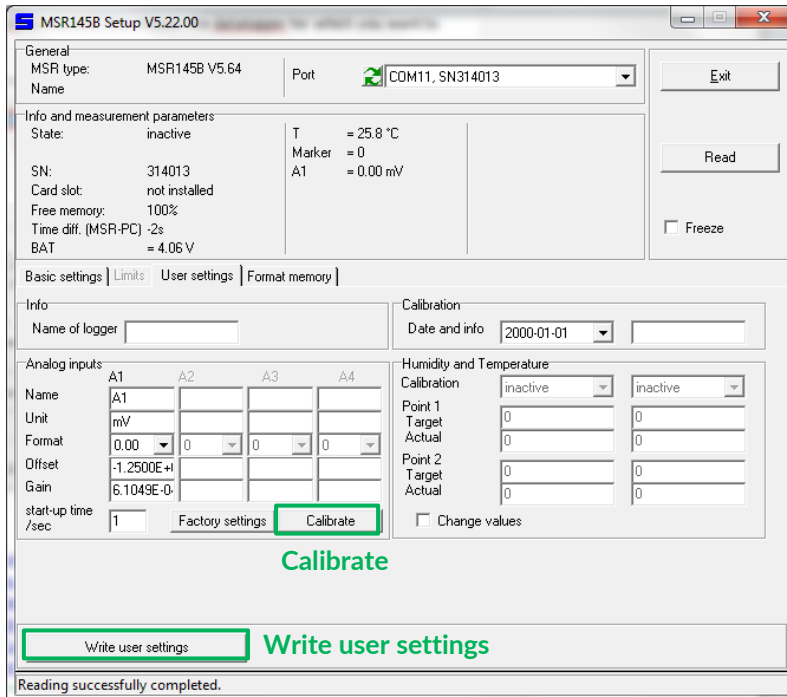
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Figure 4: User settings dialog

7. In the "Analog inputs" window, overwrite the current target values according to Table 1.

   E*xplanatory note:* The data logger carries out an analog digital conversion (ADC) of the sensor input. The 12-bit resolution leads to a total of 4095 digital levels, which correspond to the voltage input of the sensor. In the **Calibration** window, a two point calibration is done by defining target values for specific digital levels (ADC value). Typically, the target values for the center level (ADC 2047) and the highest value (ADC 4095) are used.
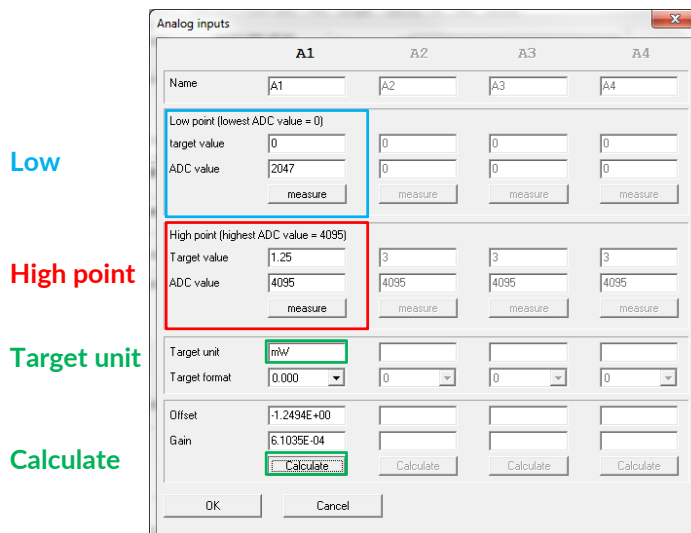

Figure 5: Window used for input of gSKIN® calibration values

The output signal of the gSKIN® Sensor is a voltage. In order to get the values for the recorded heat flux in W/m², the sensitivity S of the sensor needs to be included in the field "Target value" of the "High point". Please calculate this value by using the formula in the corresponding field in Table 1. You find the respective constant S for your gSKIN® Sensor in the delivered calibration protocol. To obtain the incident

power in W, the value S needs to be divided by the area A of the sensor. The other fields do not need any calculation.

Table 1 lists the values that should be entered into the window shown in Figure 4. The values depending on the data logger model you are using.

		gSKIN® DLOG-4217		gSKIN® DLOG-4218		gSKIN® DLOG-4219		gSKIN® DLOG-4231	
		mV	W/m^2 W	mV	W/m^2 W	mV	W/m^2 W	mV	W/m^2 W
Low point	Target value	0	0 0	0	0 0	0	0 0	0	0 0
	ADC value	2047	2047 2047	2047	2047 2047	2047	2047 2047	2047	2047 2047
High point	Target value	62.5	0.0625/S 0.0625/(S/A)	12.5	0.0125/S 0.0125/(S/A)	1.25	0.00125/S 0.00125/(S/A)	3.125	0.003125/S 0.003125/(S/A)
	ADC value	4095	4095 4095	4095	4095 4095	4095	4095 4095	4095	4095 4095

Table 1: List of calibration values for gSKIN® DLOG-4217, DLOG-4218, DLOG-4219 and DLOG-4231

8. Adapt the target unit according to the measurement unit desired. You can determine the format of the recorded data in the field target format.

Examples:
1. gSKIN® DLOG-4217 with a gSKIN® Sensor sensitivity of S = 2 µV/(W/m²) set to W/m².
    a. In the fields of the **Low point** (see Figure 4), enter the following values:
        i.   Target value: 0
        ii. ADC value: 2047
    b. In the fields of the **High point**, enter:
        i.   Target value: 0.0625/0.000002 = 31 250
        ii. ADC value: 4095
    c. Change the **Target unit** to W/m².

2. gSKIN® DLOG-4219 with a gSKIN® Sensor sensitivity of 2 µV/(W/m²) set to mW.
    a. In the fields of the **Low point** (see Figure 4), enter the following values:
        i.   Target value: 0
        ii. ADC value: 2047
    b. In the fields of the **High point**, enter:
        i.   Target value: 0.00125/(0.000002/(0.0085*0.0085))*1000= 45.1
        ii. ADC value: 4095
    c. Change the **Target unit** to mW.

9. Adapt the target unit according to the measurement unit desired. You can determine the format of the recorded data in the field target format.
10. Calculate the offset and gain by clicking the **Calculate** button. This will determine the parameters, which are used by the software to transform the ADC scale into the units you have entered (i.e. mV, W/m² or W).
11. Click **OK** to save the new settings and to return to the User settings dialog.

12. Activate the new settings by clicking the **Write user settings** button (see Figure 3). The new settings are now written to the data logger and will be applied to all acquired data.
13. Return to the start screen of the read-out software by clicking **Exit**.
14. Continue/Start your measurements.

4. Defining and changing the data acquisition rate

DLOG data loggers allow to define the data acquisition rate. If you have more than one sensor connected (heat flux, temperature, humidity etc.) you can define two different data acquisition rates and assign them to the sensors.

Please follow these instructions:

1. Connect the data logger to the PC.
2. Open the software.
3. Figure 1 shows the start screen.
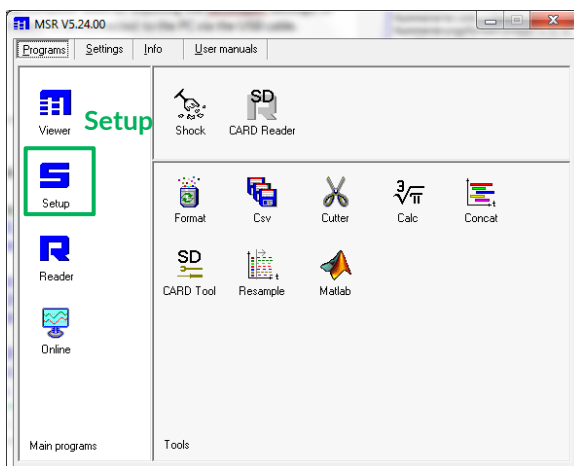4. Enter the Setup menu

Figure 6: Start screen of read-out software

5. Set the t1 and t2 storage according to your needs. Choose two different storage rates if you intend data from different sensors with different acquisition rates.
6. Choose either t1 or t2 for the different sensors you are using. The analog streams (A1…A4) are the channels which acquire the heat flux sensor signal.
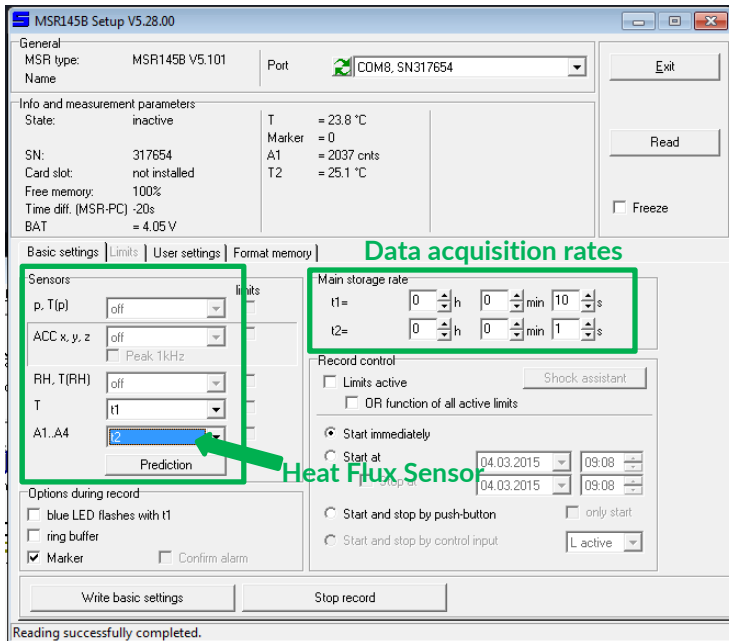
Figure 7: Set-up menu with highlighted areas for setting the data acquisition rates

5. Data read-out

Logged data can be read-out, displayed and saved via the "Viewer". Open the Viewer and click on "File" and "Open" and chose the logged data (make sure to have saved the data when acquiring it in the "Online" modus).
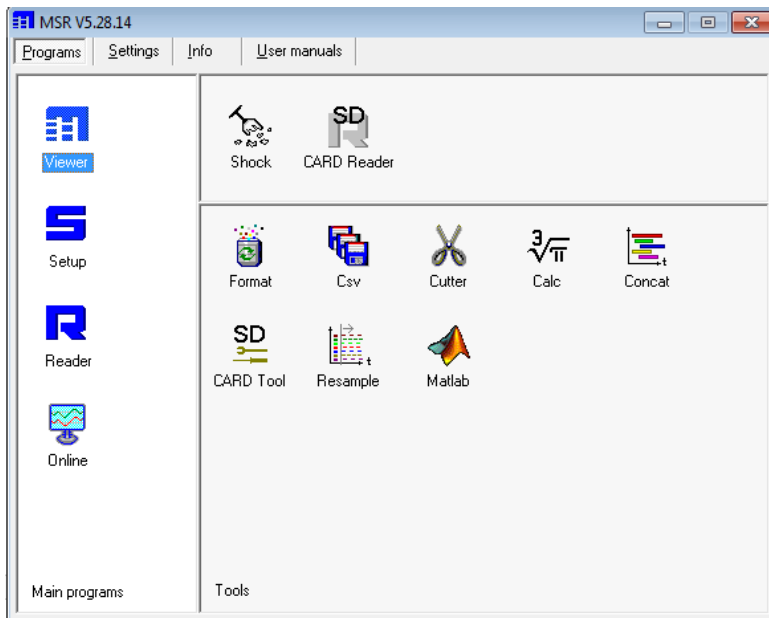

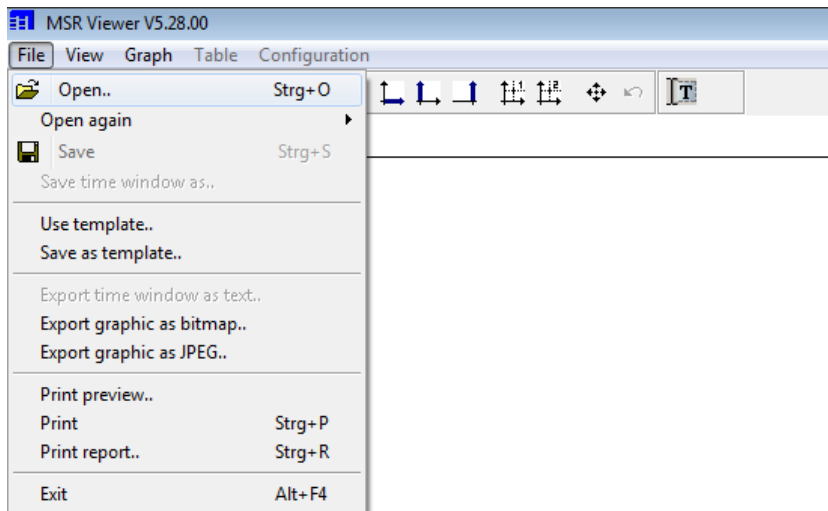*Figure 8: Start-screen with button to enter the "Viewer"*

Figure 9: Open a file in the Viewer window

A graph will display your logged data after opening it. Clicking on "File" and "Export..." will allow you to
- save the data as CSV file ("Export time window as text")
- save the graph as bitmap ("Export graphic as bitmap")
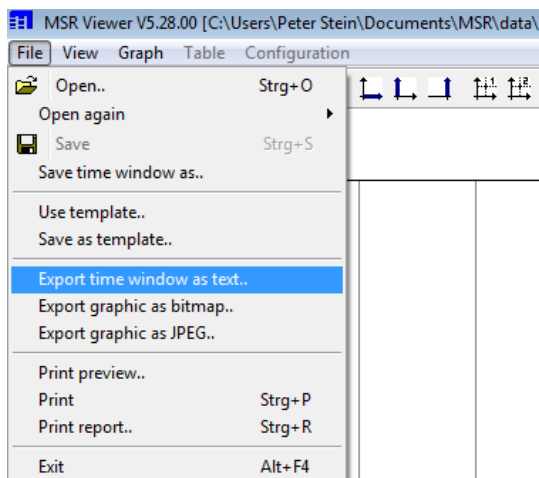- save the graph as JPEG ("Export graphic as JPEG")

Figure 10: Export the logged data from the "Viewer"

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
11. November 2013	0.1 (preliminary)	Initial revision
3. March 2015	1.2	Updated calibration info for DLOG 4231
4. March 2015	1.3	Description data acquisition rate
23. March 2015	1.4	Data read-out