

Analysing the Recorder mode data

Seeeix III OX 7062

Processing of Scopix data In Recorder mode

For maintenance purposes, it can be useful to monitor a process over a longer period, ranging from ten minutes to several weeks, in order to qualify a problem which occurs at random or at considerable intervals. Data recording then proves a particularly useful tool, as the maintenance technician does not have to be present during this period because the instrument will store the data in its memory. The Scopix[®] oscilloscope is a product for use in the field equipped with a 2,500 or 50,000-point RECORDER mode.

After recording, it is useful to carry out more thorough analysis of the data on the oscilloscope.

Scopix® supports two recording formats:

- text format (*.txt),
- binary format (*.rec), which can be opened subsequently in Sx-Metro and exported into Microsoft Excel.

There are several methods for recovering the files, as required:

- transfer via USB,
- µSD card,
- FTP via Ethernet.

These various transfer methods will not be examined in this case study, which focuses instead on processing the data from the .rec or .txt files recorded in the instrument.

Measurements

Recording

Analysis

Text file (*.txt)

You can use the spreadsheet software of your choice: Excel or free. The text file created contains the values of the 2,500 points (or 50,000 points^{*}) recorded by the oscilloscope.

*If the HX0077 "Extended acquisition memory" option is installed.

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Important note: all the measurements must have the same recording duration for correct display on the template supplied.

1 - Setting the time base

To ensure consistency with the graphs, you must first set the time base. This can be done with the drop-down list indicating all the recording times proposed by the oscilloscope.

If you cannot remember the recording duration, it is indicated in the first line of the text file. The correspondence between the time base and the total duration is shown by the table below:

2 sec	10 sec	30 sec	1 min	10 min	30 min	1 h	12 h	24 h	2 d	7 d	31 d
0.00004	0.0002	0.0006	0.0012	0.012	0.036	0.072	0.864	1.728	3.456	12.1	53.57

Once the time base has been set in accordance with the measurements, you must import the data recorded beforehand.

2 - Import

To import the data, you are advised to use the relevant function in Excel or another spreadsheet program. In Excel, choose "Data" / "Import External Data" / "Import Data" and then search for the .txt file.



Example with Excel 2007 ".xlsx" file

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When you have selected the text file to in opens. Then select "Delimited" and enter the line to Click on Next .		nt, sinon choisissez le type de donr	ions séparent chaque champ.	ées.	
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On page 3 , click on Advanced , and then change the decimal separator to "." (if necessary).	Paramètres utilisés dans la reconnaissance des d Séparateur de gécinale : Séparateur des gillers : V Remarque : l'affichage des nontres utilisers le dans le Panneau de configuration, à la section	onnées numériques s paramètres solicifiés Paramètres Régionaux. fin des nombres négatifis	Annuler e Pré	cident Sulvant> D	aniner

Then click on Finish, and insert the data in cell A2, B2, C2 or D2 (for example).

Repeat the import for each of your sensors.

The following graphics are available:

- The "Graph" tab offers a view of the 4 curves over the total duration of the recording.
- In the "zoomed graph" tab, the display area has been extended to provide greater accuracy for viewing the curves and temperature variations over time.

You can also create your own Excel spreadsheet or use a different processing software product to complete your study.



Recorder file (*.rec)

1 - The ".rec" files cannot be processed directly by an Excel spreadsheet. To use these data, you must import them using the Sx-Metro software. To do this, once you have opened the software, click on File / Open and open the ".rec" file which you have transferred onto your computer.



2 - It is also possible to import the ".rec" file from the oscilloscope with Sx-Metro by clicking on File / Import.

Once you have completed the import, a window opens showing the saved traces. You must now process these data.



3 - Option / Export to EXCEL can be used for simple, effective transfer into a spreadsheet.

Options	Display	Window
Comm	unication	
Export	to EXCEL	

An interface opens in which you must indicate the working directory, i.e. the directory where the Excel file generated will be saved.

In the example opposite, this directory is "E:/Mesure_temperature". The second parameter is the name of the Excel file generated ("Mesure_temperature.xls" in this example).

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4 - You must then click on Start to open Excel. Once it is ready, you are prompted to click on Export to begin the data transfer.



The length of the transfer varies according to the options on your oscilloscope. If the "**HX0077** acquisition memory extension" option is present on your Scopix, the acquisition memory is 50,000 points instead of 2,500. Once the transfer has finished, you can quit the import interface.

Recorder file (*.rec)

5 - Reading in the spreadsheet

The Excel spreadsheet then contains all the values from each sensor, associated with the acquisition date and time.

- **6** A graph based on the data can be displayed as follows:
- In Excel 2003 or lower:

Select all the columns containing the data (slide the mouse over the column names - A, B and C in our example). Click on "Inserti and "Chart" and then, in the a new "Line" window opened, select the first in the list.

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8	30/10/2105 18:4	13-59 184		11,24948511		ZZ. 79.90	
9	30/10/2105 18	44:00.048		11,38620386		22.8327	
10	30/10/2105 18:4	44:00.912		11,24948511		23,3405	4956

The curve is then plotted automatically using the data from the sensors as a function of time.

TIP

With Excel 2003, each graph is limited to 32,000 points. When the curve is displayed, the total points are divided into 2 x (25,000 points).

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	A	10	0		C	
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	30/10/2105 18:43:56:592		11,38620386		23, 16476831	
	30/10/2105 18:43:57.456		11.03464136		22,79367456	
	30/10/2105 18:43:58 320		11,46432886		23,00851831	
	30/10/2105 18:43:59 184		11,24948511		22,79367456	
	30/10/2105 18:44:00.048		11,38620386		22,83273706	
	30/10/2105 18:44:00.912		11,24948511		23,34054956	
	30/10/2105 18:44:01.776		10,81979761		22,91086206	
	30/10/2105 18:44:02:640		11,11276636		22,98898706	
	30/10/2105 18:44:03:504		11,07370386		22,67648706	
	30/10/2105 18:44:04 368		11,11276636		22,63742456	
	30/10/2105 18 44 05 232		10,93698511		23,18429956	
	30/10/2105 18:44:06.096		11.30807886		22,91086206	
177	30/10/2105 18:44:06 960		11,48386011		23 24289331	



• In Excel 2007 and higher:

Select all the columns containing the data (slide the mouse over the column names - A, B and C in our example).

In the "Insert" tab, choose "Line" / "2D curve" / "Curve".



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