



# Data logger and analysis tools

## General description

This application note explains and shows how to optimally analyse data of Xtender and/or VarioTrack systems by means of the data logging function.

The data logging function is very useful for precise analysis of the functioning of a system. For example, to see the consumption evolution of a system, to perform all sorts of statistics, etc...

Composed of two parts, this process save electrical values of the Xtender and/or VarioTrack systems (Voltage and current of the battery, output power, etc...) and then analyze the data graphically with a Microsoft® Office Excel® 2007 or 2010 document.

**Free download** of this analysis tool on our website:  
[www.studer-innotec.com/support](http://www.studer-innotec.com/support)

## Features

- Daily, weekly, monthly and yearly reports automatically generated.
- Saving of the electrical values such as the consumed and produced energy, the battery current and voltage, the output power, the relay status, etc...
- Measurement resolution: 1 point every minute.

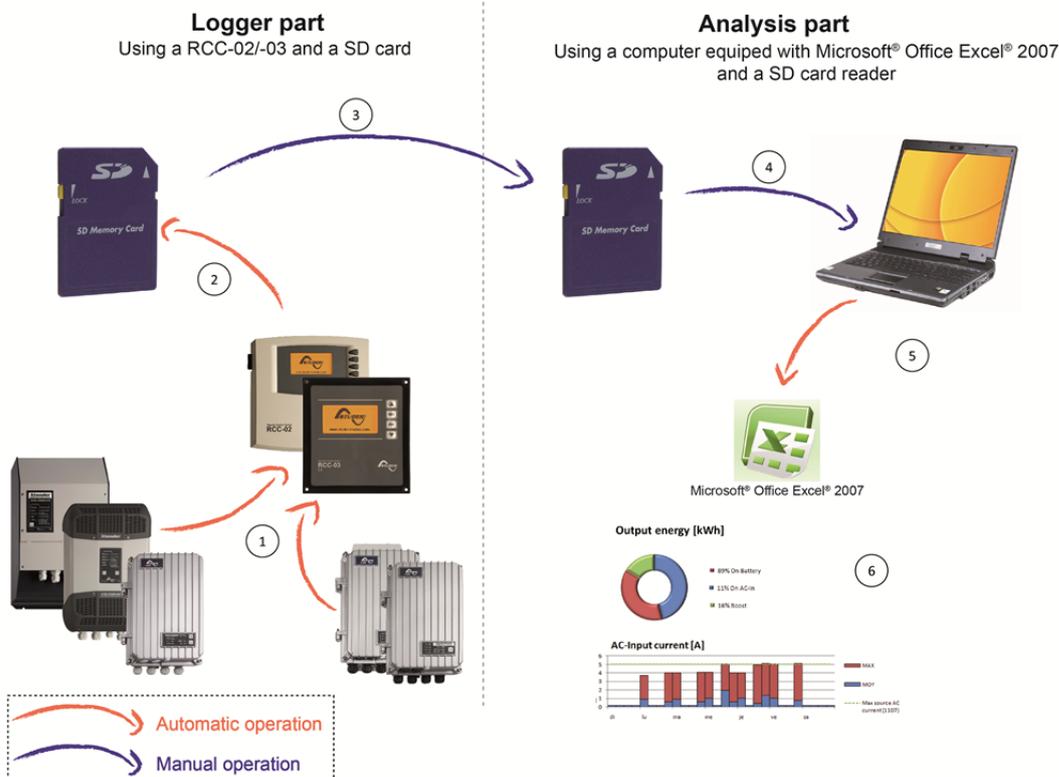
## Minimal configuration

**Range of inverters: all Xtender series**  
 Software version: 1.3.28 and higher

**Range of MPPT Solar charge controllers: all VarioTrack series**

**RCC-02/03**  
 Software version: 1.3.34 and higher  
 RCC User level : EXPERT

## Principle of operation



(Figure 1) Data logger and analysis tool for the Xtender series

## Detailed description

The RCC-02/-03 includes a recording function of electrical values. These values can be displayed on a computer and analyzed for statistical purposes or to verify the functioning of a system<sup>i</sup>.

It is therefore important to separate the part of "Data logger" (requiring at least an Xtender, a RCC-02/-03 and a SD card) and the part of "Data analysis" (done with a PC).

For this reason, this application note describes at first the "Data logger" and then the "Data analysis".

### The Data logger

The data logger function is by default disabled, it is necessary to activate the parameter {5058} "Datalogger enabled" to start the recording. (See page 5)

When the data logger is turned on, a file is created on the SD card inserted in the RCC-02/-03 at the end of each day (midnight). This file contains the components data of the Xtender system and the recordings of the electrical values minute after minute.

The file is registered in CSV format on the SD card and can be read by many programs. The filename contains the date of the day in the form :

- **LGyymmdd.csv** (*LG+year+month+day*)

Data are saved at the end of the day. To obtain data from the current day, it is possible to manually create a file during with the data already recorded. (See page 5)

After retrieving data, it is necessary to reinsert the SD card. So, a new file with the complete data will be created at midnight.

### Warning

- The update process of the software causes the erasure of the daily data.
- At midnight the daily data are saved on the SD card. If no SD card is present in the RCC-02/-03 the data of the day will be lost.
- The RCC-02/-03 does not support SD XC cards whose memory size exceeds 32 Gb and SD cards in FAT32 formatted.
- A SD card of 2Gb is sufficient to save 1 year of data from a system composed of 9 Xtender interconnected.
- The SD card provided with a RCC-02/-03 is of 2 Gb.
- If a SD card has reached its maximum capacity, all new data will be lost.

- The data logger is not compliant with the RCC-02/-03-32 (Remote control with a RS-232 port).

### The Analysis part

To process the data saved on the SD card, Studer Innotec provides an Excel based analysis tool.

- **XTENDER Data Analysis Tool (Excel® 2007 or 2010 document)**

The **XTENDER Data Analysis Tool** is an analytical tool in the form of a Microsoft Excel® 2007 or 2010 file<sup>ii</sup> which allows you to read the datalogger files and generate reports daily, weekly, monthly and yearly.

### Notes

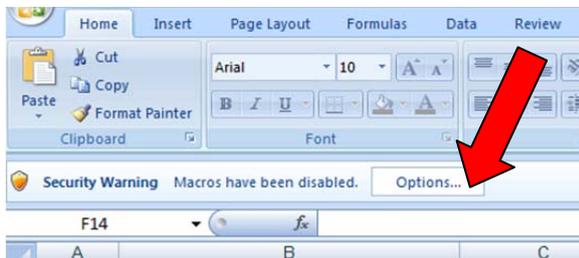
- <sup>i</sup> A system may consist of 1 to 9 interconnected Xtender and/or a BSP and/or an Xcom-MS and/or a RCC-02/-03 and/or 1 to 15 VarioTrack.
- <sup>ii</sup> The use of this file implies the use of Microsoft Excel® version 2007 SP3 or later.

**XTENDER Data Analysis Tool**

**User guide**

For security reasons Windows® sometimes disables macros. In order to open and view the collected data in a Excel® document, it is necessary to enable them as follows:

Options > Activate these contents > OK



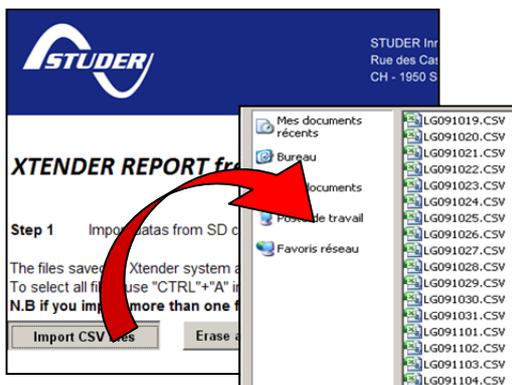
(Figure 2), Options of Security



(Figure 3), Enable Macros & ActiveX contents

**Step 1**

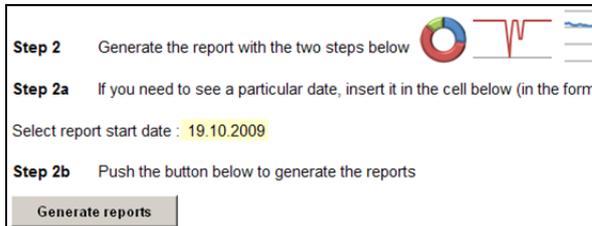
Import the data generated by the system by using the IMPORT CSV FILE BUTTON, and locate the data files. You can chose to load a single data file or select multiple files to import. To select all files in the directory, use the key combination CTRL+A. On the SD card, the files are located in the directory CSVFILE in the subfolder LOG. The import of many data files (for example 1 year of data) may require several minutes to load.



(Figure 4), Import of CSV files

**Step 2**

Once the data are loaded, choose a date (in the yellow insert) to generate reports relating specifically to it (daily, weekly, monthly). To view a report of another day, week or month, it is necessary to enter a new date and generate the report again.



(Figure 5), Report generation

**Step 3**

After generating the report, simply select the type of report “daily, weekly, monthly, yearly” at the top of the page to view graphs of various recorded data.

With the buttons “L1 L2 L3” you may select which phase you would like to view. If you have a mono-phase system, chose L1.

If the macros are working correctly, changes in the settings will automatically update the view.

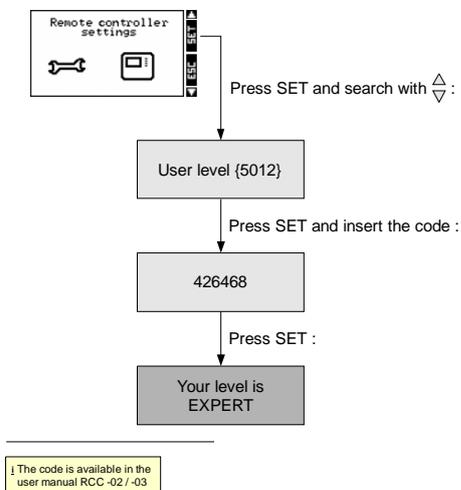
The scale and time periods in the graphs are fully adaptable according to your needs. To be able to modify these settings make sure that the box within the “lock” button is not ticked. These changes are temporary and will return to the initial settings once you refresh the data.



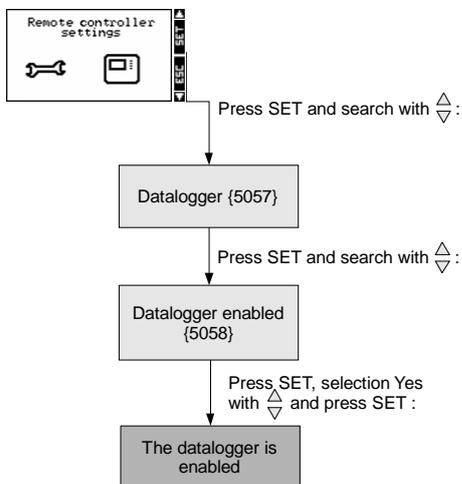
(Figure 6), Possible views and settings

## RCC -02 / -03 programming guide

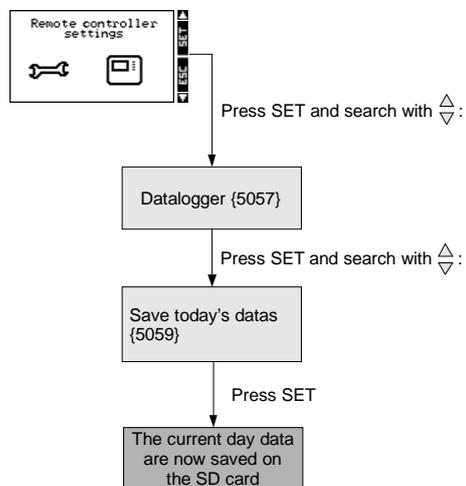
## 1. User level to EXPERT



## 2. Datalogger enabled



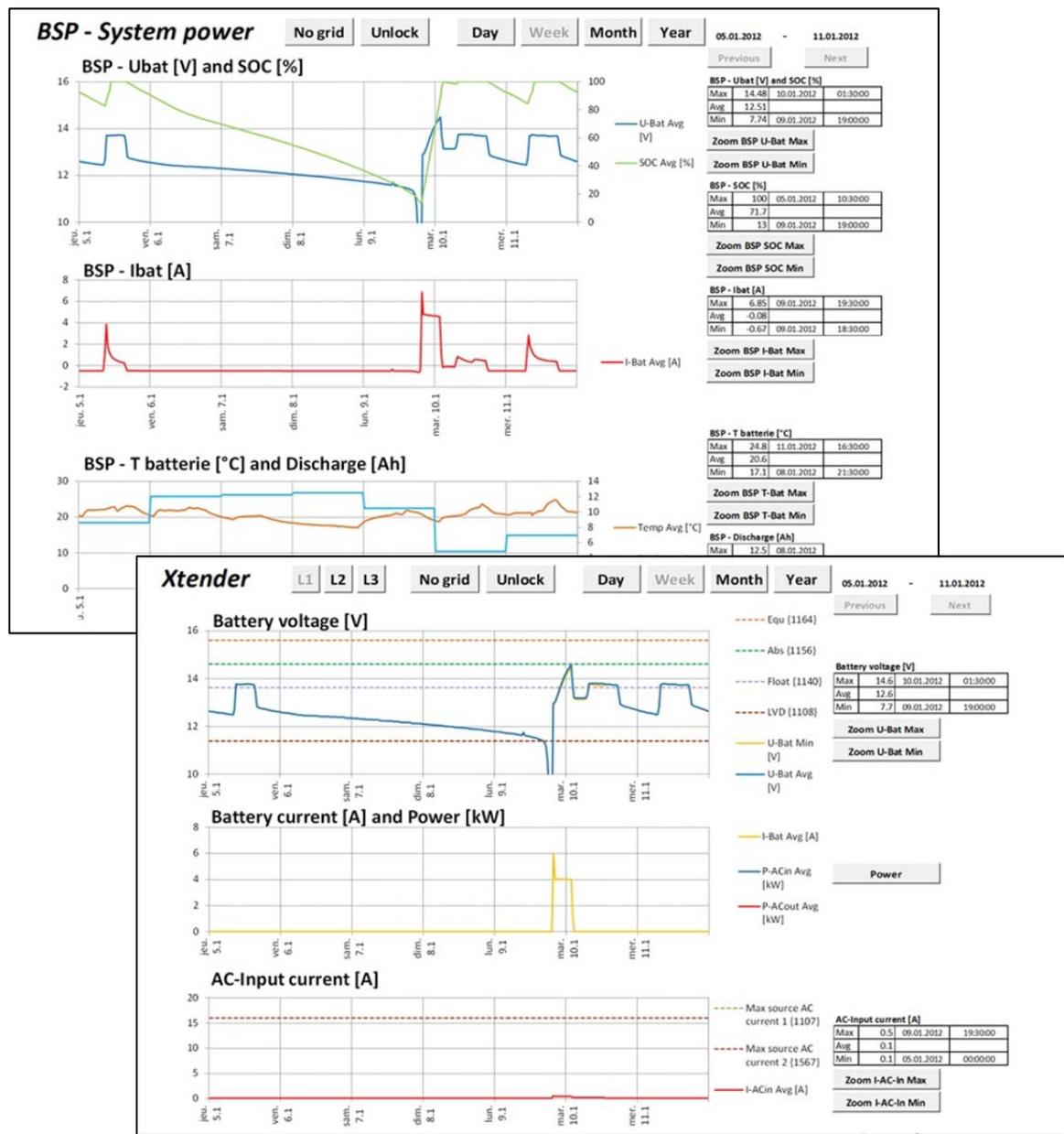
## 3. Save today's datas



# XTENDER Data Analysis Tool

## Example

Fieldtests and pictures by STUDER Innotec (<http://www.studer-innotec.com>)



(Figure 10), View of the XTENDER Data Analysis Tool

