

Specification Document

Solar Controller Monitor for TRACER series



REG/COM/PC

SPECIFICATION

The Tracer series solar charge controllers with MPPT have a proprietary RJ45 connector with a digital output of the system values. The **Solar Controller Monitor** (code REG/COM/PC) allows to connect the Tracer series to a PC with Windows and to read the data from the Tracer controller.

The connection to the Tracer series is using a RS-232 serial port. For modern PCs with no RS-232 there is an USB to RS-232 adaptor provided in the package.

The main component of the Solar Controller Monitor is a **custom made conversion board** to convert the proprietary Tracer Series protocol to the standard RS-232 format.

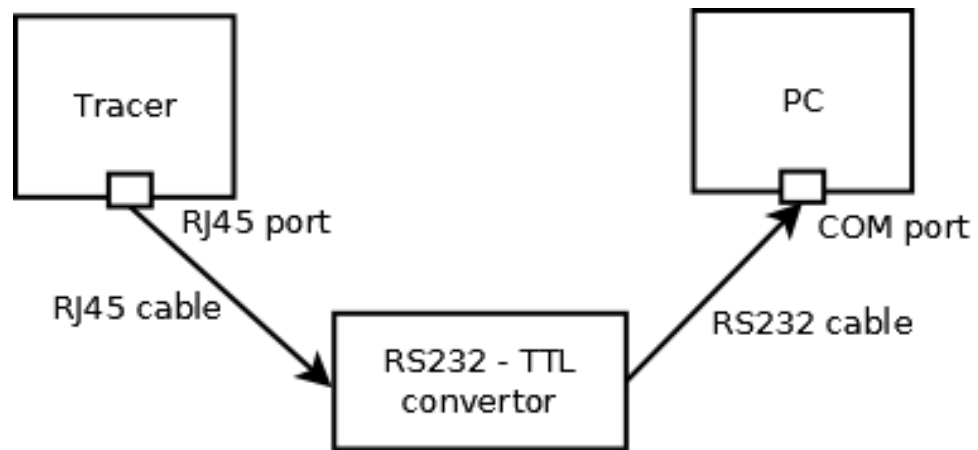
The Solar Controller Monitor is supplied with a **PC application to read the data**. This application is provided as it is, free of charge. The source code is also supplied to allow other users to continue the development of more advanced applications with for Windows PCs or for other systems.

The PC application is READ-ONLY. It allows reading the data and logging the data to a file. The logged data can be later used to analyze the charging/discharging cycles.

INSTALATION

Connect the **Tracer series** to the battery. After startup, connect the **Solar Controller Monitor** to the RJ45 port as shown on the picture. Using the **USB to RS-232 adapter**, connect the **Solar Controller Monitor** to the PC.

The block diagram of the installation of the **Solar Controller Monitor**



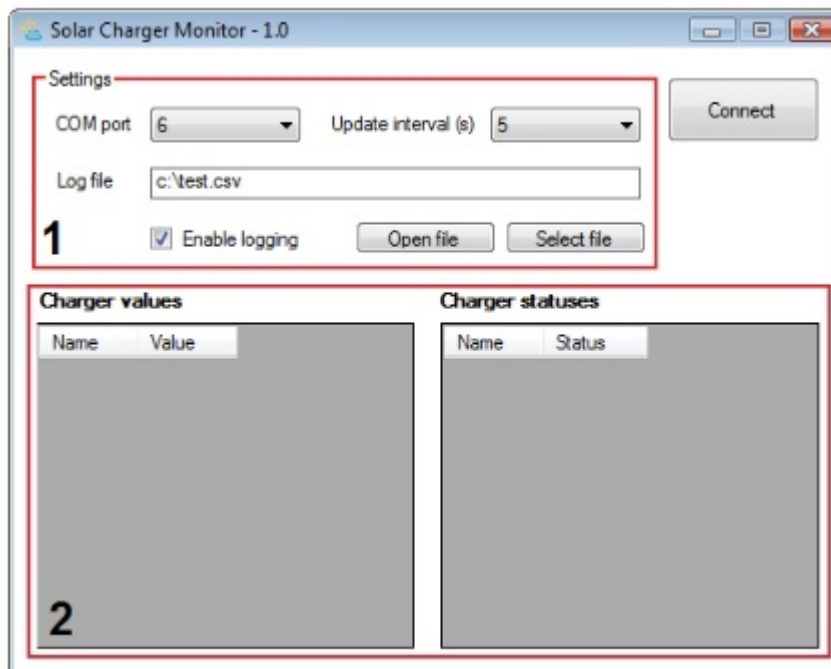
PC SOFTWARE

The software for PC is a simple application (EXE file) to be run directly at Windows based X86 PC. The application supports WIN XP and WIN7. The MS .NET Framework 2.0 must be installed on the PC.

The application consists of **3 files that need to be together in a folder.**

SolarChargerMonitor			
Name	Type ^	Size	Date modified
SolarChargerMonitorWindows.exe	Application	234 KB	18.9.2012 12:06
SolarChargerMonitorLib.dll	Application extension	21 KB	18.9.2012 12:06
SolarChargerMonitorWindows.exe.config	CONFIG File	1 KB	18.4.2013 12:27

Run the application using the EXE file. The application window will appear.



The main window of the software application consists of two main parts

1. The settings and control area

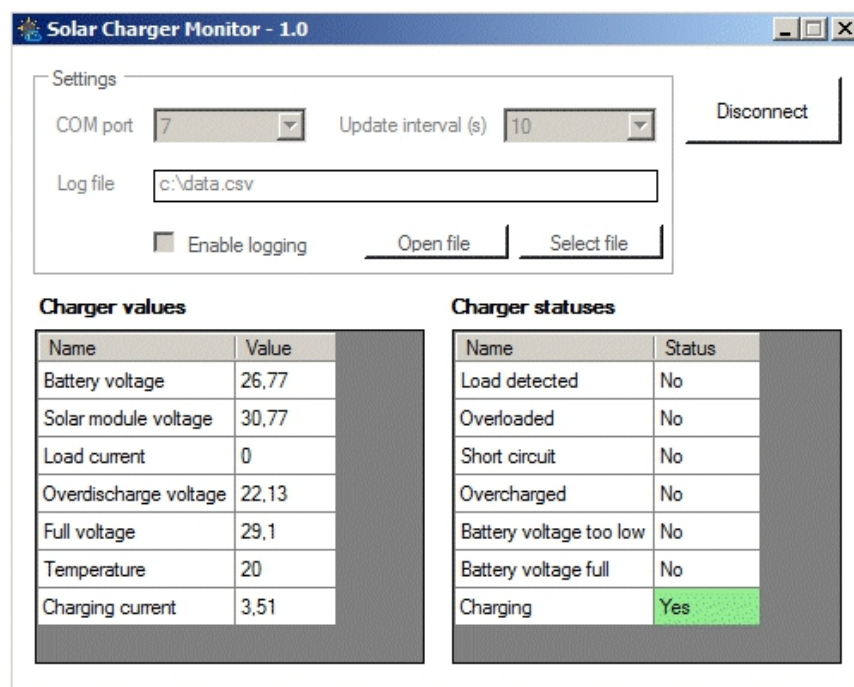
In the settings area you can set **the COM port number** used to connect the Tracer series and **the interval (in seconds)** in which data will be read.

If you wish to save the recorded data to a CSV file, then you need **to enable logging** and select **the file name** for saving the data.

Press the **Connect** button to start the operation.

2. The data area

In the data area, the data from the Tracer series is displayed. On the left side there is a table where you can see the voltage and current values, on the right side there is a second table with Tracer status flags indicating the battery, charger and load statuses.



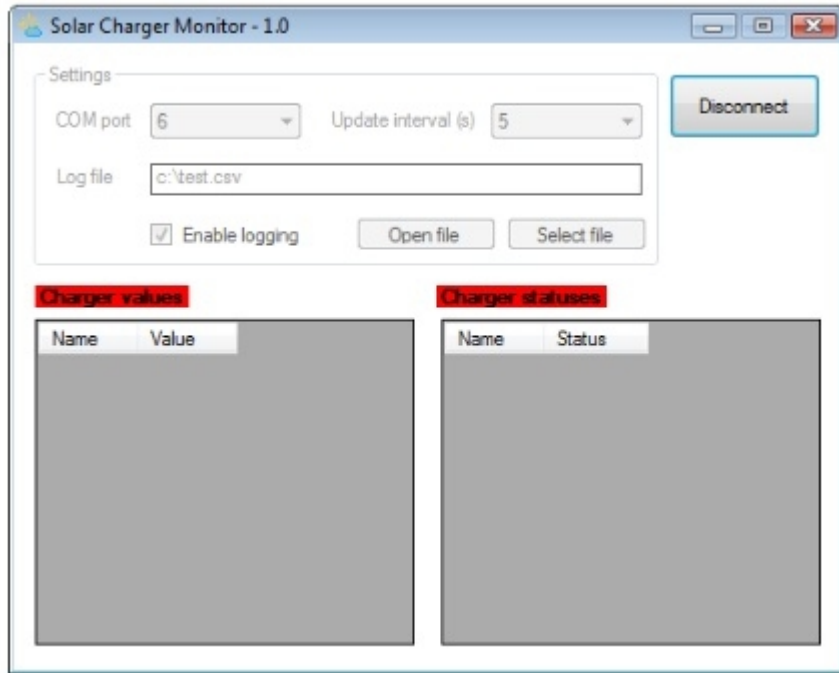
The Tracer series report following **values** regarding the battery voltage and current

- battery voltage
- solar module voltage
- load current
- over discharge voltage
- full voltage
- temperature
- charging current

Following **operational statuses** of charging/discharging are reported (values Yes/No)

- load detected
- overloaded
- short circuit
- overcharged
- battery voltage too low
- battery voltage full
- charging

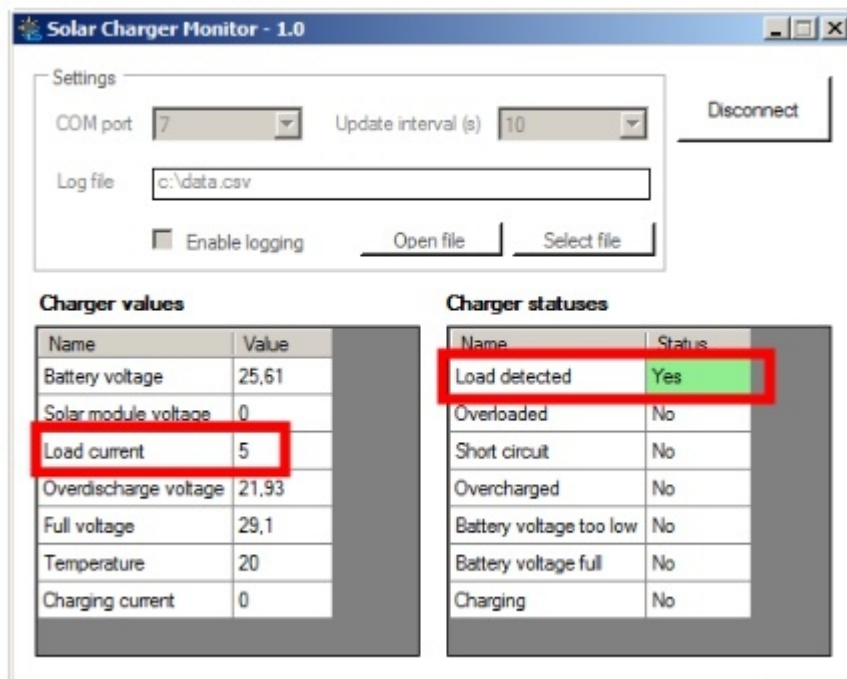
If there is **an error** during reading the data from Tracer or the Tracer unit is not connected, then both labels 'Charger values' and 'Charger statuses' will be **in a red color** as an indication that data could not be read. See the picture below.



To disconnect from Tracer series click the button '**Disconnect**' or **exit the application**.

Operational examples

Example of discharging with 5 Amp current (load)



Example of charging with 3.51 Amp current (charge from panels)

The screenshot shows the 'Solar Charger Monitor - 1.0' application window. It features a 'Settings' section with a 'COM port' dropdown set to '7', an 'Update interval (s)' dropdown set to '10', and a 'Log file' text box containing 'c:\data.csv'. There are 'Open file' and 'Select file' buttons, and an 'Enable logging' checkbox. A 'Disconnect' button is also present. Below the settings are two tables: 'Charger values' and 'Charger statuses'. In the 'Charger values' table, the 'Charging current' row is highlighted with a red box, showing a value of 3,51. In the 'Charger statuses' table, the 'Charging' row is highlighted with a red box, showing a status of 'Yes' in a green cell.

Name	Value
Battery voltage	26,77
Solar module voltage	30,77
Load current	0
Overdischarge voltage	22,13
Full voltage	29,1
Temperature	20
Charging current	3,51

Name	Status
Load detected	No
Overloaded	No
Short circuit	No
Overcharged	No
Battery voltage too low	No
Battery voltage full	No
Charging	Yes