mppt_dashboard

Version 0.3.0

Introduction

mppt_dashboard is an application designed to display and graph log information from the MPPT Solar Charger via the daemon running on the computer the charger is attached to via I2C. It can get data directly, in real-time, from the daemon via the TCP port (which must be enabled) or by reading log files generated by the daemon for post-processing.

It can run on Mac OS X, Windows and Linux computers.

Linux

The application is compiled for 64-bit systems supporting a graphic user interface such as Mint, Ubuntu or Debian.

First make sure the binary, `mppt_dashboard`, is executable with the appropriate permissions for the logged in user.

```
chmod 755 mppt_dashboard
```

Then the program may be started, either from a command line in a terminal or usually by double-clicking it from a file viewer.

Mac OS X

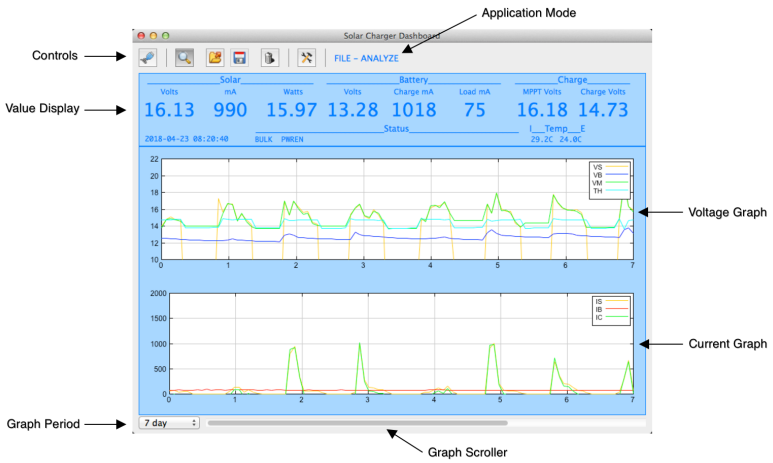
The application should appear as a proper Macintosh application bundle that can be started by double-clicking the bundle icon. There are both 32- and 64-bit versions.

Windows

The application is compiled as both a 32- and 64-bit version.

Use the file viewer to descend into the `mppt_dashboard` folder and then double-click the `mppt_dashboard.exe` file to start the application.

Main Window



Section	Description
Controls	Control operation of the application. See description in the following section.
Application Mode	Current operating mode of the application. - IDLE : Application idle, not in analysis mode - CONNECTED : Application connected to daemon via network, displaying current values - CONNECTED - ANALYZE : Application connected to daemon via network, displaying data from cursor over graph - ANALYZE : Application disconnected from daemon, display data from cursor over graph - FILE- ANALYZE : Data loaded from log file, display data from cursor over graph
Value Display	Displays real-time data from the daemon or during analysis from data logged by the application either from the daemon or from a file. Various sections of the value display are made visible or invisible based on availability of data. The following items may be displayed: FW ID, VS, IS, Solar Power (W), VB, IC, IB, VM, TH, STATUS, Internal Temp, External Temp, Buck Status. Data points are timestamped.
Voltage Graph	Display voltage graphs from available data: VS, VB, VM, and/or TH may be displayed.
Current Graph	Display current graphs from available data: IS, IB and/or IC.
Graph Period	Selects the range of time displayed on the graph at one time. Ranges from 60 seconds to 7 days. Graph data is sub-sampled so that a maximum of 100 data points are displayed.
Graph Scroller	Scrolls through data when it exceeds an amount that can be displayed in the selected graph period.

Clicking over the temperature section toggles between °C and °F.

Status items Internal Watchdog Detected (SWD) and Power Watchdog Executed (PWD) that only exist for one read of the Status register are sticky. The remain displayed in the Value Display Status section until data is deleted or the user clicks over the status display.

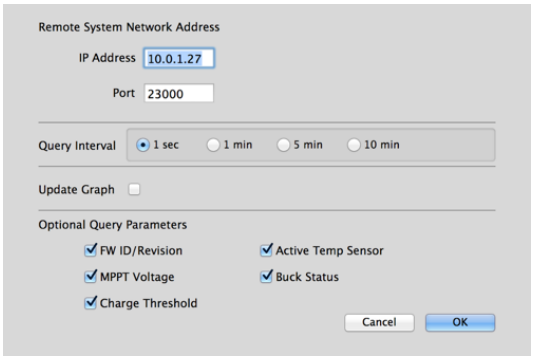
Controls

Control	Description
 Connect	Toggles network connection to the daemon. The IP address and selected port the daemon must be setup in the preferences window before this control is enabled.
 Analyze	Toggles data analysis mode. In data analysis mode dragging the cursor into the graph area displays the data points on the graph. Dragging the cursor over a data point displays the value of all items on the value display at that time point in the data.
 File Open	Open a log file generated by the daemon for analysis. Replaces any existing data. The log file is parsed and only register values in the log file are displayed in the graph area and value display.
 File Save	Save a log file from data recorded over the network connection to the daemon.
 Delete Data	Deletes current data.
 Preferences	Open the preferences window.

Controls may not be available depending on the mode of the application. For example the preferences window cannot be opened while the application is logging or analyzing data from the daemon. This is to prevent changes in the queried data while data is being collected. Another example is the file save function

is not available for data loaded from a file.

Preferences Window

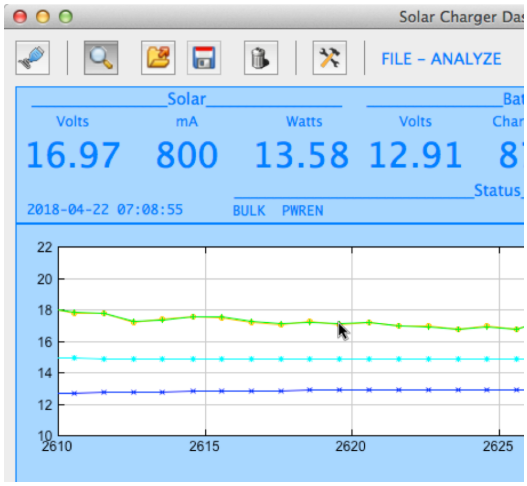


The preferences window allows configuration of the following items.

1. Daemon IP Address
2. Daemon Opened Port
3. Query Interval to set the sampling interval used by the application when connected to the daemon.
4. Update Graph toggle that is useful when you only want to update the Value Display with real-time data from a remote system.
5. Optional Query Parameters. By default the application queries ID, VS, IS, VB, IC, IB, VM, TH, STATUS, Internal and external temperatures and the Buck status. Optional query parameters listed here may be disabled.

The correct IP address must be set initially but it and other preferences are stored and restored each time the application is restarted. The IP address is initially set to the IP address of the computer running the application. If the computer running the daemon is on the same network only the low 8-bits needs to be changed.

Analyzing Data



During analysis the graph displays a marker over each data point when the cursor is anywhere over the graph area. When the cursor crosses a marker the values of all data points at that time stamp, along with the time stamp are displayed in the value display.

Note that the data points may be displayed at intervals higher than sampled depending on the sample rate and the graph period.