Thinger.IO project contest

Victron solar charger controller with Thinger.io integration

Name:

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Context:

Maker, Home Automation

Title and Description:

Providing a gorgeous dashboard environment for Victron solar charge controllers.
The project began as a logger for Victron devices, but got soon another variant to get the battery values from a vendor agnostic shunt.
Since I am frequently on travel, I made also a simulator to test my code without any solar hardware.
It can be used to water mouth on the project's features too, without much hardware.

Hardware Used:

Variant 1: Victron Logger

- Victron solar controller like any one of the SMART MPPT family
  (no Bluetooth version required).
- ESP8266 or ESP32 or both…
- Optionally OLED display or TTGO with integrated OLED display
- 12V/5V buck controller to power the ESP

Variant 2: Smart shunt

- INA226 Power monitor board
- ESP8266 or ESP32 or both…
- Optionally OLED display or TTGO with integrated OLED display
- 12V/5V buck controller to power the ESP

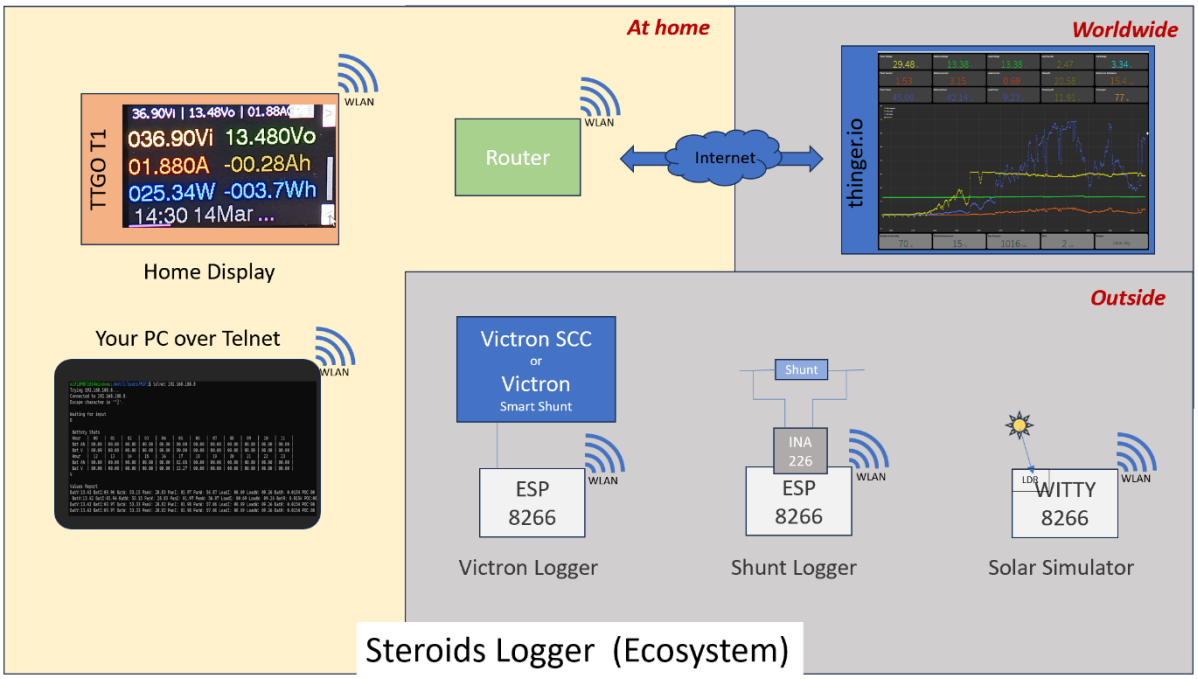
Variant 3: Simulator just to play around and learn to know all the advantages of Thinger.io

- Witty ESP8266 board (which has a light dependent restor built-in to simulate a solar panel)
  ($3)
- Any used smartphone charger to power the Witty

Project Goals:

Victron solar controllers are popular, they provide however only limited reporting features, mainly (if you chose the Bluetooth version) some limited info on your smartphone.

This project uses an ESP and thinger.io to log values from Victron device's serial port and much, much more !



The project intends to deliver the full power of SCC / battery logging on a single ESP8366 device ($4). You just don't need any additional hardware, nor computer, nor gateway, nor subscription.

You see gorgeous dashboards worldwide on the Internet, can downloads historic data to Excel etc. You can also see the Victron device working with a fast monitoring down to the second per point, a feature that no conventional MQTT can provide !
Moreover providing additional information derived from the given data:

- Power values where not provided
- Battery monitoring (internal resistance, SOC)
- long time integrations (battery capacity, Coulomb integration, Hourly statistics etc...)

Since solar operation is heavily dependent on the weather, the internet service OpenWeatherMaps s integrated in the dashboards.

Additionally the devices have a Telnet console to control them and provide fall-back logs to a computer (optional, not required).

Implementation Steps:

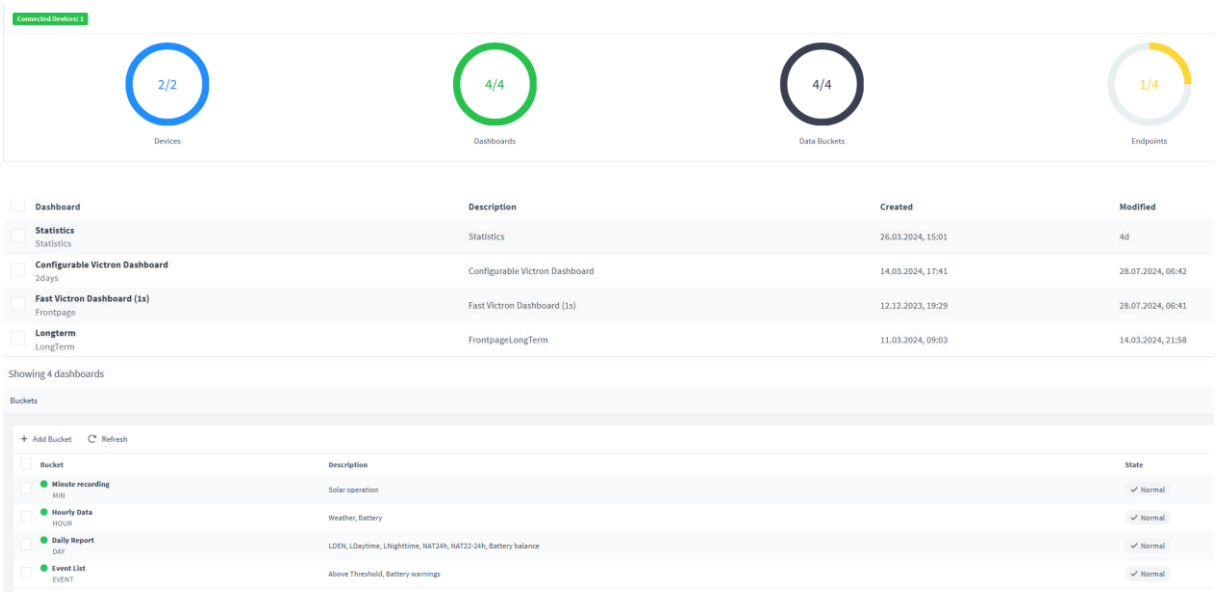
The full project is described on GitHub:
https://github.com/rin67630/Victron_VE_on_Steroids

It is fully documented here:
https://github.com/rin67630/Victron_VE_on_Steroids/tree/main/Documentation

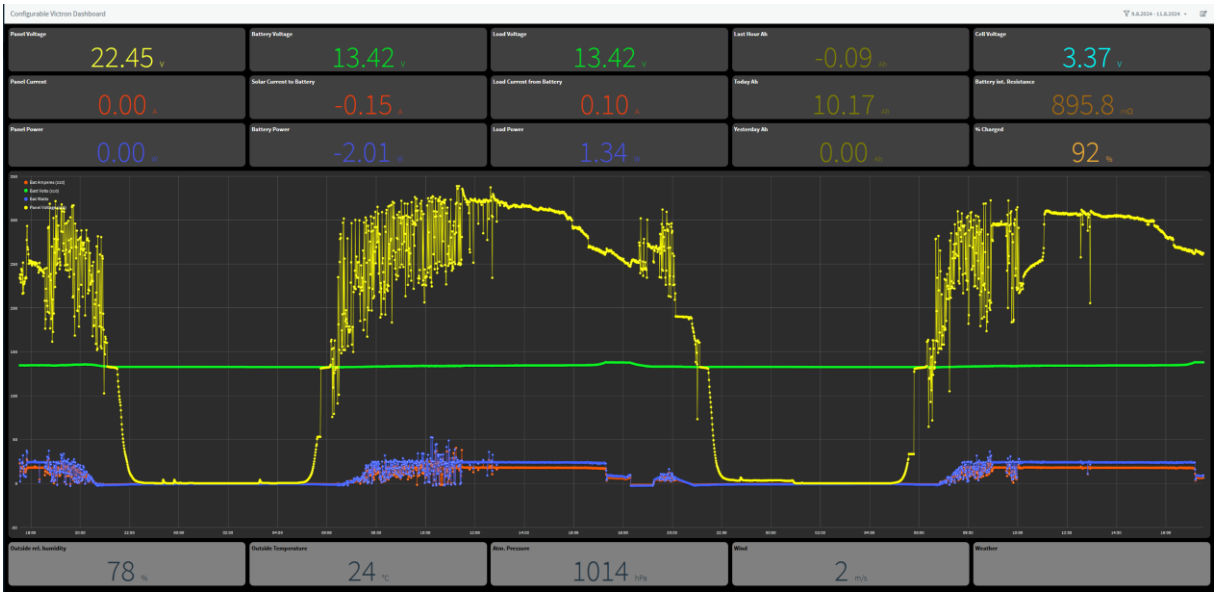
The dashboard’s configuration is also provided as json files to be uploaded as Developer settings.

Screenshots or Videos:

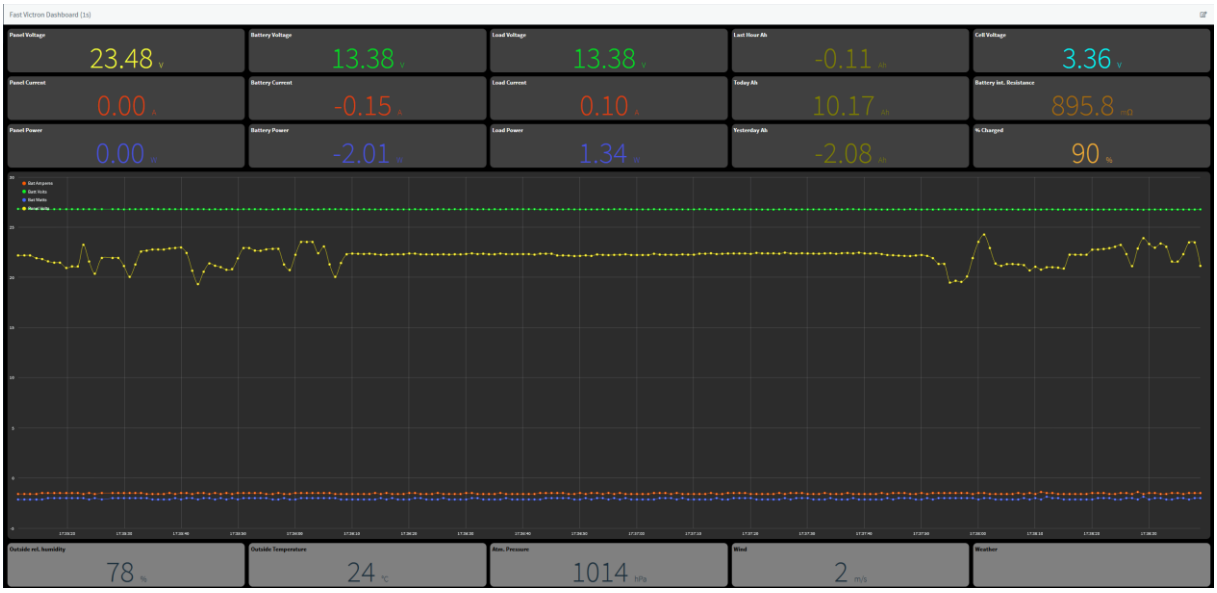
Thinger structures:



Historic dashboard:



Fast dashboard.

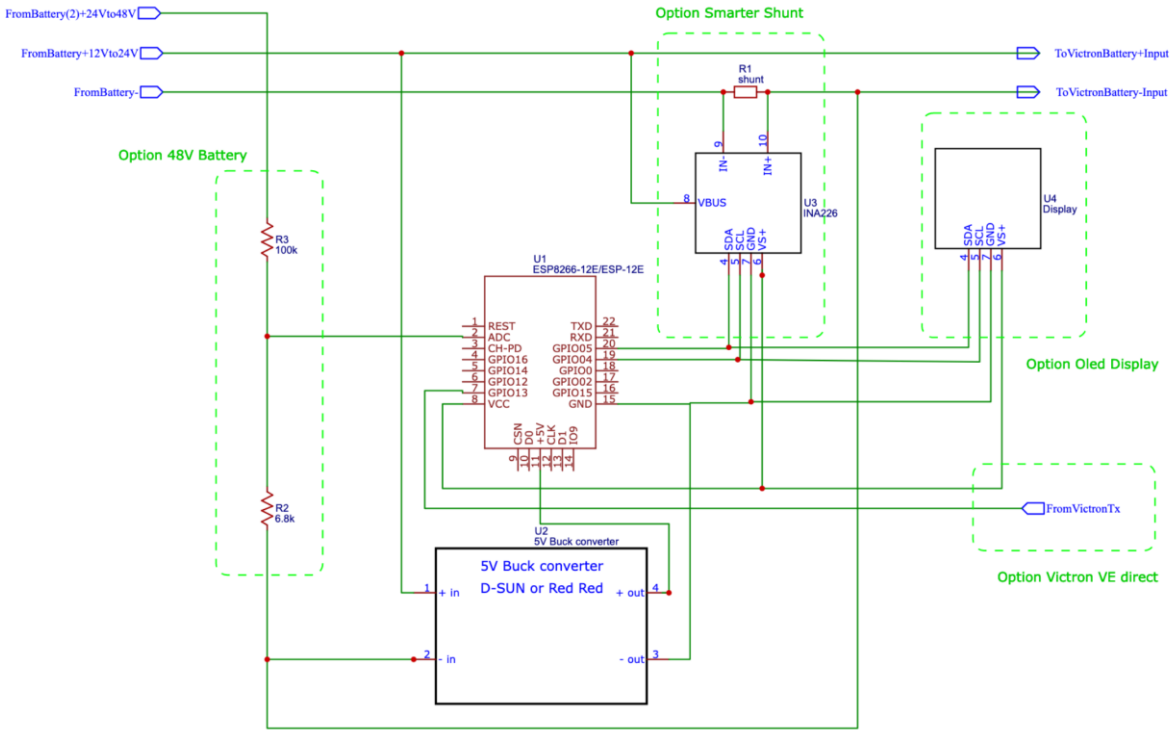


Statistics dashboard

Hourly statistics					Other statistics		
	Current Day		Yesterday			To/from Battery	
From00:00to00:59	-0.08 Ah	13.23 v	0.00 Ah	13.25 v	Last Hour	0.00 Ah	13.27 v
From01:00to01:59	-0.08 Ah	13.25 v	0.00 Ah	13.25 v	Today	10.17 Ah	0.00 v
From02:00to02:59	-0.08 Ah	13.25 v	0.00 Ah	13.25 v	Yesterday	-2.08 Ah	13.32 v
From03:00to03:59	-0.07 Ah	13.25 v	0.00 Ah	13.25 v	D-2	66.02 Ah	13.34 v
From04:00to04:59	-0.06 Ah	13.25 v	0.00 Ah	13.25 v	D-3	-2.07 Ah	13.32 v
From05:00to05:59	-0.06 Ah	13.25 v	-0.00 Ah	13.23 v	D-4	67.78 Ah	13.31 v
From06:00to06:59	-0.09 Ah	13.23 v	-0.01 Ah	13.23 v	D-5	60.46 Ah	13.27 v
From07:00to07:59	0.33 Ah	13.27 v	1.18 Ah	13.32 v	D-6	-2.09 Ah	13.23 v
From08:00to08:59	1.01 Ah	13.33 v	1.68 Ah	13.34 v	D-7	57.52 Ah	13.27 v
From09:00to09:59	1.41 Ah	13.39 v	1.65 Ah	13.37 v			
From10:00to10:59	2.08 Ah	13.42 v	1.56 Ah	13.35 v			
From11:00to11:59	2.59 Ah	13.43 v	1.60 Ah	13.38 v			
From12:00to12:59	0.50 Ah	13.46 v	1.44 Ah	13.37 v			
From13:00to13:59	2.47 Ah	13.50 v	1.63 Ah	13.41 v			
From14:00to14:59	2.53 Ah	13.71 v	1.61 Ah	13.43 v			
From15:00to15:59	-0.14 Ah	13.27 v	1.85 Ah	13.43 v			
From16:00to16:59	-0.36 Ah	13.25 v	1.86 Ah	13.43 v			
From17:00to17:59	-0.41 Ah	13.25 v	1.80 Ah	13.43 v			
From18:00to18:59	-0.42 Ah	13.25 v	1.51 Ah	13.43 v			
From19:00to19:59	-0.40 Ah	13.25 v	1.09 Ah	13.38 v			
From20:00to20:59	-0.24 Ah	13.27 v	0.89 Ah	13.31 v			
From21:00to21:59	-0.15 Ah	13.27 v	-0.03 Ah	13.25 v			
From22:00to22:59	-0.09 Ah	13.27 v	-0.04 Ah	13.25 v			
From23:00to23:59	-0.08 Ah	13.25 v	-0.01 Ah	v			

Local displays

Schematic diagram



Enjoy!