Wattmons

The Wattmon (short for Watt Monitor) is a highly flexible and versatile platform which can be configured for countless applications. The in-built web server provides all of the tools necessary to customize the device. No programming is required to set up actions based on various triggers, which can control I/O lines, send emails and more.

It is well suited for energy monitoring, but it can do much more. Unlike most internet-enabled data loggers, the Wattmon does not only upload data to a cloud server but also stores it locally on an SD Card. The WattmonMEGA is capable of storing several years worth of data locally. However, it can also upload the logged data to the Wattmon Energy Monitoring Solution (EMS) which is a customizable cloud portal that displays real-time data in the form of graphs and widgets. Multiple devices are integrated into the EMS interface, providing for monitoring of large installations. Users can select the parameters they wish to monitor and create separate accounts for individual clients. Data can be downloaded in CSV format.

The real power of the device lies in the automation of outputs or alerts based on inputs from the data being logged. It has been designed to be used by non-programmers. A simple configuration tool allows for the setting up of the device quickly for a range of inverters and energy meters from various manufacturers.

The Wattmon currently has drivers for devices from the following manufacturers: *ABB, Consul Neowatt, Delta, Eastron, Fronius, Growatt, Hitachi, Huawei, Ingeteam, Kaco, Kernel Sistemi, L&T, Polycab, Refusol, Schneider, Secure, SMA, SolarEdge, Solis Ginlong, Sungrow, Zeversolar ... and more*.

The Wattmon is compatible with a very wide range of Modules and Accessories that are available from us or 3rd-party manufacturers.

The Wattmon hardware and software platform is the most flexible in the industry. The Wattmon can be used for ***any*** application in monitoring, control and data logging for the IoT. But particularly noted applications include:

- **Inverter Monitoring** - Inspect generation and efficiency of gridtie and hybrid inverters
- **AC Power Monitoring** - Supervise load and performance of substations and mini-grids
- **Off-Grid Battery Monitoring** - Observe battery voltage, current, SoC, charging trends and health over time
- **Zero Export & DG Protection** - Reduce active output power of multiple inverters to regulate energy generation.

The Wattmon is used for monitoring Grid-Tie, Hybrid and Off-Grid setups, Solar Water Pumping, Building Loads ... and it is a manufacturer-agnostic Zero Feed-in and Diesel Generator Protection solution compatible with the leading inverter brands of today.

Four Wattmon Variations

To date four different Wattmons have been produced. However, only three variations of the Wattmon device are currently being fully supported and circulated: **WattmonPRO**, **WattmonMINI** and **WattmonMEGA**.


The original Wattmon is no longer being produced.


The **WattmonPRO** was introduced next, as a more flexible device with multiple interfaces, built in I/O ports and 128KB RAM.


The **WattmonMINI** is a reduced version of the WattmonPRO with a single Modbus RTU port.


The **WattmonMEGA** has 512KB RAM, 100mbps Ethernet, and operates at 200MHz making it over twice as fast as the PRO.

Quick Start Guide

The Quick Start Guide is a regularly updated manual that sheds light on some of the basic and/or essential configuration for all the Wattmons running the latest WattmonOS version.

- **Quick Start Guide**

User Manuals

These User Manuals, while initially written specifically for the WattmonPRO, are helpful for any of the Wattmons:[1)]

- **Overview**
- **Chapter 1, Hardware Installation**
- **Chapter 2, Connecting to the Web Interface**
- **Chapter 3, Using the Wattmon Operating System**
- **Troubleshooting**

Why Wattmon?

In this article I will try and explain how this little device came into being.

I have always been fascinated by numbers and measurement, including but not limited to time, humidity, temperature, and so on. As a programmer I work with numbers a lot anyway, but in 2009 I started work on an ebike battery monitor which coulomb counts both generation and load. It works pretty well and gives me a fair idea of what is left and for our users the best part is that it took out the guesswork making a vehicle with limited range a useful reliable one nonetheless. This is what I want to achieve with Wattmon as well.

Where I live, power cuts are part of every day life. Most people have a battery and inverter to bridge the gaps in supply for some if not all loads in a house or office. But, information on battery state is mostly unavailable. So people either underutilize or overextend their batteries which of course shortens their lifespan. In addition to grid charging, more and more people are hooking up solar panels or micro wind turbines to supply power to their batteries.

Definitely, monitoring all these inputs and loads greatly improves one's understanding and ability to manage energy better. But in addition, intelligent decisions based on the state of the battery and inputs can save money. For example, in a hybrid setup with a set of solar panels, grid charger and inverter, I may need to top up batteries once in a while but my loads could run mainly on solar. Wattmon can be programmed to switch on or off the charger based on certain preset conditions.

In another example, imagine you have an off grid system that runs a few lights and a solar fridge. On a cloudy day the batteries may not be charged, and the available amp hours in the battery would be less than normal. Wattwon could be set to switch off your fridge relay in case the battery drops below 70% thus ensuring that your lights and other essential loads stay on. You could even switch multiple devices on or off around the house based on such events, or on time.

This total flexibility and feature set is what I kept as my goal while extensively researching existing products on the market, and it turns out that I couldn't find anything like it. Software solutions exist but require a pc for data logging. The raspberry PI came out just before I started development and is of course a fantastic solution but still aimed more at hackers than end users. So, I decided to use the microchip pic32 which is pretty powerful but limited in memory and flash. Together with an interpreted language running off an SD card this solution provides the ultimate flexibility. The language and core OS run off the internal flash while the entire application runs off the SD card. I will explain the workings of the system in greater detail in a future post.

I hope this helps you better understand my reasons for spending such a lot of time on such a little box :)

Akash Heimlich, 28 February 2013

1)
These User Manuals are somewhat “dated,” having been written during times when the newer Wattmons had not yet been released, and they sometimes feature or show specific Modules or Hardware that are obsolete (no longer available). However, the OS is the same for all of the Wattmons. Therefore the hardware differences are the only thing to keep in mind when using these manuals, especially the Original Wattmon and WattmonMINI which do not have the additional I/O ports that are provided on the WattmonPRO and WattmonMEGA.

From:
http://wattmon.com/dokuwiki/ - **Wattmon Documentation Wiki**

Permanent link:
http://wattmon.com/dokuwiki/hardware/wattmons?rev=1562646929

Last update: **2021/09/13 05:56**