Raspberry Pi Whole Home Power Monitor

By David00

Save Power

Watch the live power dashboard in real time to see what your appliances are actually consuming.

Your Data is Your Data!

Your electrical usage data stays on the Pi and remains under your control. No cloud services here!

DIY Kits Available

Build it yourself with our affordable DIY kit, or purchase a premade power monitor PCB to attach to your existing Raspberry Pi 3B+ or Pi 4.
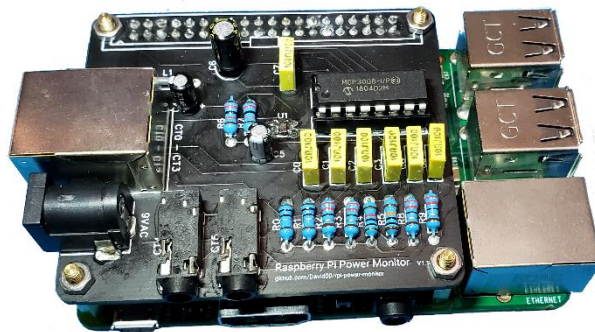
- 100% Open Source hardware and software!

- Seamlessly integrate with your existing Telegraf/InfluxDB/Grafana (TIG) stack, or follow the project instructions to setup your own InfluxDB and Grafana apps!

- Monitor up to 6 individual circuits and see Real Power, Apparent Power, and Power Factor

- Provides real-time views of your entire home's power consumption, solar and/or wind generation, and net power status

OVERVIEW

This custom designed power monitor is intended for tinkerers, DIYers, and technology enthusiasts. Powered by a Raspberry Pi 3B+, you'll be able to see a highly detailed view of up to 6 individual circuits in real time.

Whether your goal is whole-home monitoring or individual appliance level monitoring, this project will provide you with the tools needed to become more informed about your electrical usage patterns. Are your solar panels providing your home with enough power, or are you having to purchase power from the grid? How much power does that large A/C unit use, *exactly*? How much power gets used overnight while you're asleep? Discover these details about your home and more with this project!

TECHNICAL DETAILS

Max Sampling Rate:	25.2K samples per second
Maximum Dashboard Update Frequency:	1 second
Accuracy:	As low as 1% - 2%, depending on calibration source
Supported Power Grids:	All single phase or split-phase systems, regardless of voltage and frequency, are supported internationally. 3-phase systems are not currently supported.
ADC Resolution:	10-bit
CT Input Types:	(2) 3.5mm jacks & (1) RJ-45 8-pin input
Reference Voltage:	~9V AC

Project documentation available at https://github.com/David00/rpi-power-monitor/wiki