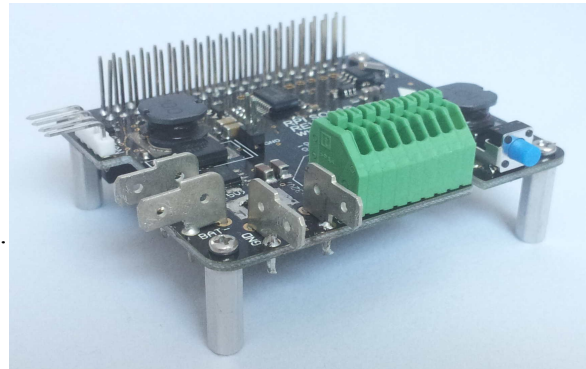


Raspberry Pi Solar Power Module

Overview

The Raspberry Pi Solar Power Module is a compact power controller for the Raspberry Pi. It has everything a Pi needs for remote deployments including a solar panel interface, battery backup and charging, analog to digital inputs, a PWM fan controller, and a real time clock for accurate time keeping and wake up from sleep.



Applications

- Remote Sensing and Telemetry
- Remote Video Capture and Security
- Robotics

Main Features

- Wide input range solar panel interface, 6V-32V
- Flexible battery interface and charger, 6V-15V.
- Automatic switching and sharing between solar panel and battery, allows solar panel to supplement battery during overcast periods, or take over completely in low light conditions.
- Real time clock for accurate time keeping, programmable low power sleep and wake up alarm.
- 4 pin pwm fan controller
- 4 analog to digital converter inputs, also configurable as digital I/O
- Temperature sensor
- Real time sensing of solar panel voltage and current, battery voltage, and Raspberry Pi 5V current.
- Stackable Architecture(other add on boards can be added on top), configurable i2c address

Electrical Characteristics

Solar Panel Voltage	6V - 32V
Battery Voltage	6V – 15V
DC/DC 5V Output	3A continuous 4A peak, Note 1
Battery Charger	2A, Note 2
Active Current	~ 4mA
Sleep Current	~ 0.12mA
Fan Controller	Standard 4 wire, 1A max current, Note 3
User I/O	5 pins configurable as inputs, outputs or A/D(10 bit resolution) Note 4

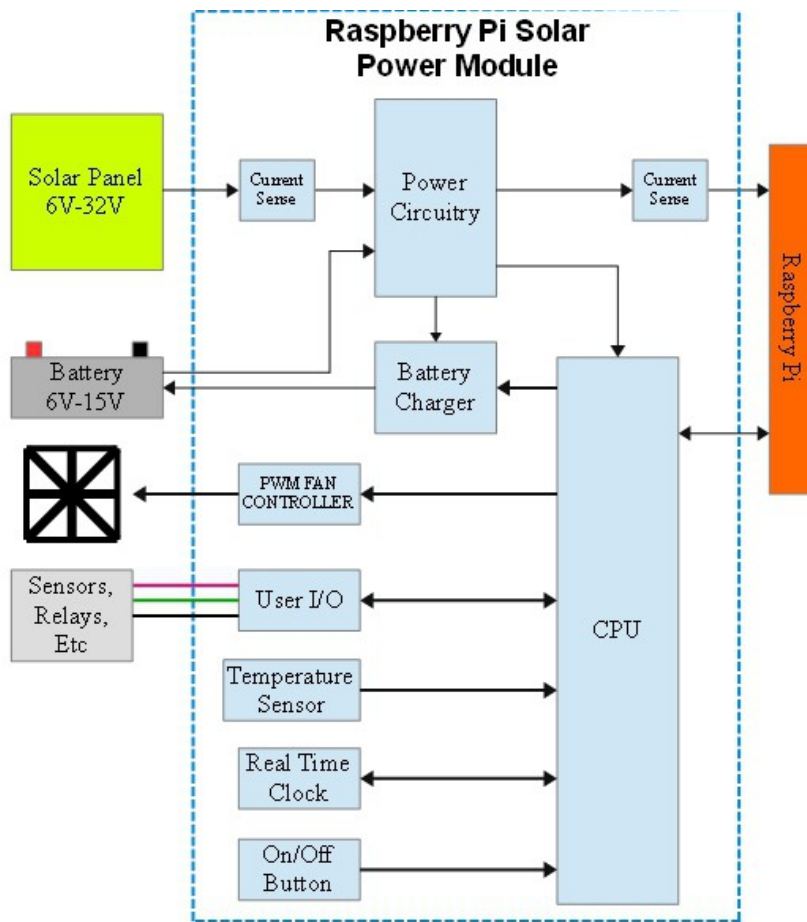
Note 1: Measured at 30C ambient with direct active cooling.

Note 2: Battery charging current can be adjusted by the user depending on the battery. Reducing charging current reduces stress on the battery and improves its operating life.

Note 3: Fan is powered from the battery, so any fan can be chosen as long as its voltage rating is at least equal to the battery voltage. For example do not connect a 5V fan to a 12V battery.

Note 4: Input voltage range is 0-3.3V, use a resistor voltage divider to interface with higher voltages, output impedance is 1k ohm.

Block Diagram



List Of Connectors

Fan Connector	
PWM	Standard 4x1 Right Angle Header
TAC	
+	
-	

8 Contact Push Release Quick Connect Block for wires 20-26AWG	
I/O 1	Quick connect 20-26AWG
Ground	Quick connect 20-26AWG
I/O 2	Quick connect 20-26AWG
Ground	Quick connect 20-26AWG
I/O 3	Quick connect 20-26AWG
Ground	Quick connect 20-26AWG
I/O 4	Quick connect 20-26AWG
Ground	Quick connect 20-26AWG

High Current Quick Connectors, Male 0.8mm Thick, 4.75mm wide. Mates with typical crimp female connectors such as (digikey:A27824CT-ND)	
Battery +	Spade Male
Battery -	
Solar Panel +	
Solar Panel -	

0.1"(2.54mm) 1x2 male headers	
<i>5V,Ground</i>	<i>0.1"(2.54mm) 1x2 male header</i>
<i>Ground,Ground</i>	<i>0.1"(2.54mm) 1x2 male header</i>