Solar Power Manager with Panel (5V 1A)

$25.40 SKU: DFR0559-I

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Introduction

Note: Includes Solar Power Manager 5V and Semi Flexible Monocrystalline Solar Panel.

The DFRobot Solar Power Manager series are designed for IoT projects and renewable energy projects, providing safe and high-efficiency embedded solar power management modules for makers and application engineers.

Solar Power Manager 5V is a small power and high-efficiency solar power management module designed for 5V solar panel.

It features as MPPT (Maximum Power Point Tracking) function, maximizing the efficiency of the solar panel. The module can provide up to 9500mA charging current to 3.7V Li battery with USB charger or solar panel. The ON/OFF controllable DC-DC converters with 5V output are suitable for the needs of various solar power projects and low-power applications. The module also employs various protection functions for battery, solar panel and output, which greatly improves the stability and safety of your solar projects.

Check the brief specification for all Solar Power Manager Series Products.

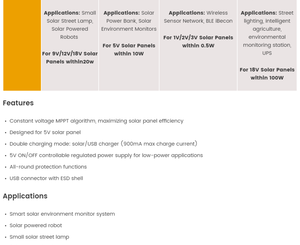
Version History

V1.0: It is highly recommended to use a 3.7V lipo battery with protection circuits to improve battery safety. V1.1(Newest): Battery (BAT IN) overcurrent and overdischarge protection is added to improve battery safety. It can be use for 3.7 lipo battery no matter it is packed with protection circuits or not.

Board Overview



Front



Back

Solar Power Manager 5V

Connection Diagram



Build a solar powered system
Solar Power Manager Series



Name	Solar Power Manager V1.0	Solar Power Manager No IO V1.0	Solar Power Manager Mini V1.0	Solar Power Manager V2.0
SKU	DFR0535	DFR0559	DFR0579	DFR0580
Solar Power Management IC	LTC3652	CN3165	SPV1050	CN3767
Solar Input Voltage	7V~30V	4.4V~6V	0.5V~4V	15V~25V
Maximum Charge Current	2A(Solar/USB)	900mA(Solar/USB)	70mA(Solar)/100mA(USB)	4A(Solar)
Topology	DC-DC Buck	Linear Regulator	DC-DC Boost	DC-DC Buck
Battery	3.7V Lithium Battery	3.7V Lithium Battery	3.7V Lithium Battery	12V Lead-Acid Battery
MPPT	9V/12V/18V Optional	5V Fixed	75% Open Voltage	Fixed 18V
Battery Protections	Over Charge/Over Discharge/Over Current/Reverse Connection Protections	Over Charge/Over Discharge/Over Current/Reverse Connection Protections	Over Charge/Reverse Connection Protections	Over Charge/Over Discharge/Reverse Connection Protections
Output Protections	Short Circuit/Over Current/Over Heat Protections	Short Circuit/Over Current Protections	Short Circuit/Over Current Protections	Short Circuit/Over Current/Over Heat Protections
USB Charge IN	Yes	Yes	Yes	No
USB OUT	5V 1.5A	5V 1A	No	5V 2.5A x2
Regulated OUT	Three Regulated Outputs 3.3V 1A、5V 1.5A、9V/12V 0.5A	One Regulated Output 5V 1A	One Regulated Output 3.3V	Two Outputs 5V 5A、12V 5A
Dimension	78.0mm×68.0mm	33.0mm×63.0mm	30.0mm×30.0mm	68.0mm×68.0mm
Features	**A complete multifunction solar power management module.**	**A small and easy-to-use 5V solar power management module.**	**A micro power solar power management module for low-power sensors and controllers.**	**A medium power solar management module for 12V lead-acid batteries.**
	Applications: Small Solar Street Lamp, Solar Powered Robots	**Applications:** Solar Power Bank, Solar Environment Monitors	**Applications:** Wireless Sensor Network, BLE Beacon	**Applications:** Street lighting, intelligent agriculture, environmental monitoring station, UPS
	For 9V/12V/18V Solar Panels within20W	**For 5V Solar Panels within 10W**	**For 1V/2V/3V Solar Panels within 0.5W**	**For 18V Solar Panels within 100W**

Features

- Constant voltage MPPT algorithm, maximizing solar panel efficiency
- Designed for 5V solar panel
- Double charging mode: solar/USB charger (900mA max charge current)
- 5V ON/OFF controllable regulated power supply for low-power applications
- All-round protection functions
- USB connector with ESD shell

Applications

- Smart solar environment monitor system
- Solar powered robot
- Small solar street lamp
- Solar power bank

Specification

- Solar Power Management IC: CN3165
- Solar Input Voltage (SOLAR IN): 4.5V~6V
- Battery Input (BAT IN): 3.7V Single cell Li-polymer/Li-ion Battery
- Charge Current(USB/SOLAR IN): 900mA Max trickle charging, constant current, constant voltage three phases charging
- Charging Cutoff Voltage (USB/SOLAR IN): 4.2V±1%
- Regulated Power Supply: 5V 1A
- Regulated Power Supply Efficiency: 73%@3.7V BAT IN)、85%@5V/1Load
- USB/Solar Charge Efficiency: 73%@3.7V 900mA BAT IN
- Quiescent Current: <1 mA
- Operation Temperature: -40℃ ~ 85℃
- Dimension: 33.0mm*63.0mm
- Protection Functions:
- BAT IN: over charge/over discharge/over current/reverse connection protection
- 5V/USB OUT: short circuit/over current/over heat protection
- SOLAR IN: reverse connection protection

Documents

- Product wiki
- More Documents

Shipping List

- 1 x Solar Power Manager 5V x1
- 1 x Semi Flexible Monocrystalline Solar Panel x1
- 1 x 2.54mm Black Jumper x1
- 1 x M3*10mm Nylon Pillar x3
- 1 x M3*5mm Stainless Steel Screw x4
- 1 x M14*1mm Black Aluminum Cooling Fin x1
- 1 x M14*0.5mm Thermal Conductive Silicone Pad x1

Review

Mark Bell Oct 27, 2024 ★★★★★

Working exactly as described. An excellent product for sustaining low-powered projects. Currently using mine as part of an outdoor WX station kit. ★★★★★★★★★★

IoT Projects

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