MyMakerTools™

Maker Power™
Power Monitor USB/BT

Features
USB Power Input
Flexible Connection Scheme
Optional USB/BTLE monitoring
Up to 4 Channels
Input Voltage up to 20 VDC
Input Current up to 2 A
Record up to 65,000 records
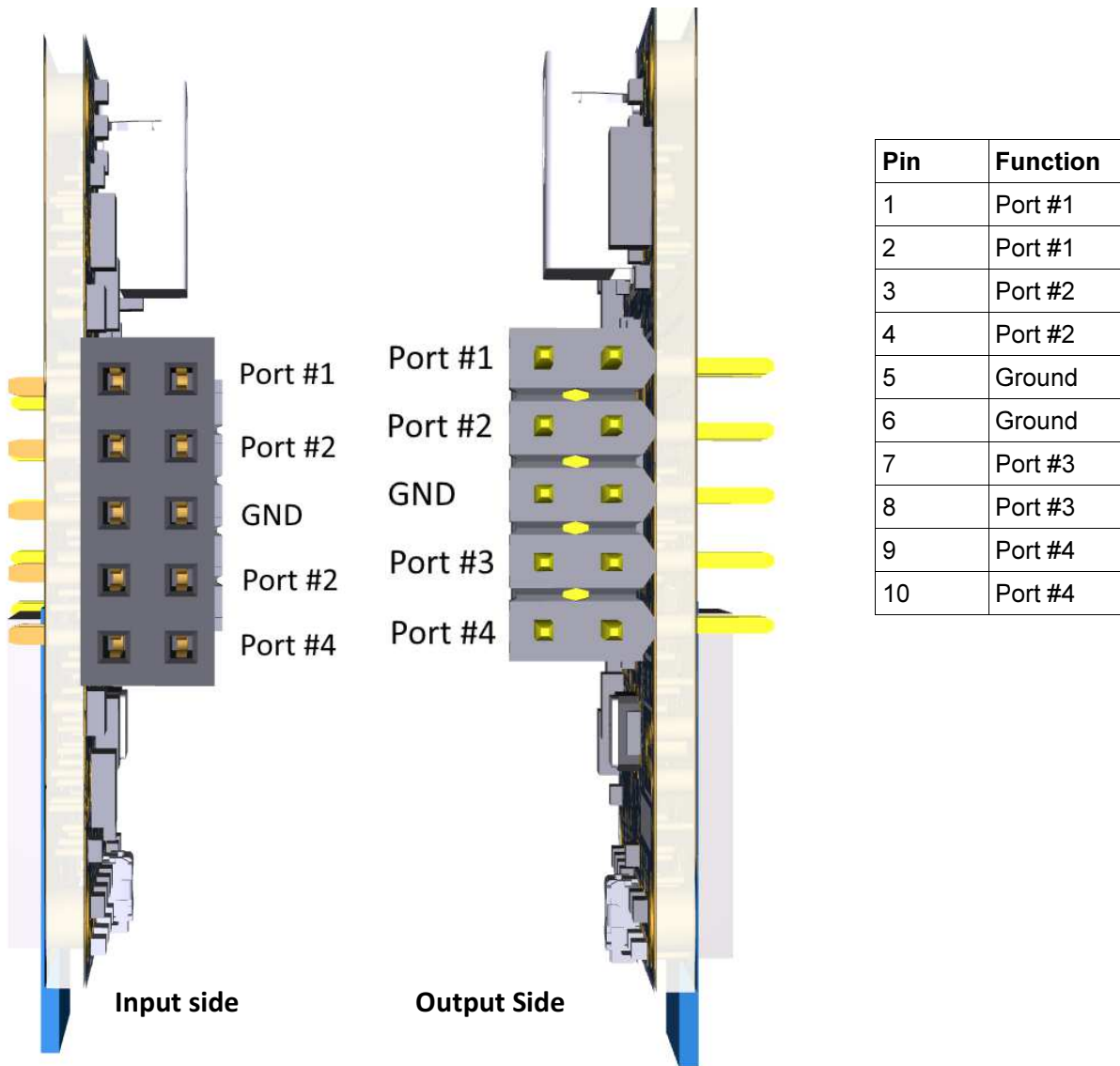Data Rates from 500ms to 1min
Open API (USB & BTLE)

Applications
Maker Applications
Circuit Prototyping
Field/Remote testing
Battery Sizing
Long Term Testing

Description
The Power Monitor will monitor the voltage and current on up to four input channels. The Power Monitor is designed to plug directly into the **Maker Power™** DC-DC and 3LDO power modules. A 12V type power module can be used with the 12V Extension adapter. The Power Monitor contains a complete Volt/Amp monitoring system that uses a PC Program via USB or a mobile device via BTLE. In addition there is a standalone mode where the Power Monitor will record up to 65,000 records of all four channels (over 18 hours at a data rate of once per second). The results are provided in a CSV file on the PC.
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Electrical Characteristics

Parameter	Min	Max	Unit
Input Voltage (measurable)	1.0	20.0	VDC
Input Current (measurable)	1.0	2000	mA
Module Quiescent Current		30	mA

Pin	Function
1	Port #1
2	Port #1
3	Port #2
4	Port #2
5	Ground
6	Ground
7	Port #3
8	Port #3
9	Port #4
10	Port #4

Input side   **Output Side**

<u>How to use the Power Monitor</u>

Steps for monitoring the voltage and current of a Maker Power^{TM} USB Module.

1. Plug in the Maker Power^{TM} USB Module into the female connector of the Power Monitor, Input Side in figure above.
    a. If using either a 3 LDO or DC-DC module plug the USB module directly in.
    b. If using either a 12V or Adjustable USB Module, you will need the adapter interface to plug those USB Modules in.

WARNING

Do NOT attempt to plug either one of these modules directly into the Power Monitor. It will cause a catastrophic failure of either or both modules.

PRELIMINARY

2. Plug the Power Monitor into the device to be powered. Attach a USB cable to the side of the Power Monitor and then to the PC. Finally plug a USB cable into the USB Power Module and then to the power source.
3. At this point the PC program will show the voltage and current on each port.
4. Continue to monitor visually or program the standalone mode as described above.

In the Stand Alone Mode use step #1 to setup the system. Then press the small button on the side of the module to toggle the state of collection. The tables below state of the module as indicated by the LEDs.

Module Status LEDs
There are 3 possible states and they are indicated by the blue and yellow LEDs on the side next to the button as shown in this table.

State	Blue LED	Yellow LED
Connected to and recognized by the PC	Flashing	ON
Standalone and not recording	OFF	ON
Standalone and recording	Alternating	Alternating

PC Program Operation

Please consult the help screen for operation of the program. The help screen is accessed by pressing F1.

Bluetooth Operation

Bluetooth operation is dependent on the mobile application used and thus exact operation is not discussed here. There are three LEDs on the other side of the button from the Module Status LEDs. These indicate the state of the Bluetooth connection.

LED	State
BLUE	Bluetooth powered on and operating
GREEN	Bluetooth connected
RED	Application Dependent

CSV File Format

Program Start on 5/13/2016 2:15:40 PM App Version: 1.0.0.6
Collection Started on 5/13/2016 2:16:18 PM S/N: MMA10001 Firmware Ver: 1.2

secs	hours	P1V	P1A	P2V	P2A	P3V	P3A	P4V	P4A

The first line indicates when the program started and the version of the PC program that was used to record the data.

The second line indicates when the collection cycle started, the serial number of the Power Monitor and the Power Monitor firmware version.

The data columns are:

Secs – number of seconds from the start of collection

Hours – number of hours from the start of collection

PxV – is the port voltage where x is the port number

PxA – is the port amperage where x is the port number

Collection Stopped on 5/13/2016 2:48:53 PM

This is the collection footer, indicating when the collection was stopped.