

flight of harmony



POWER Barebones Pack
~v1.0~

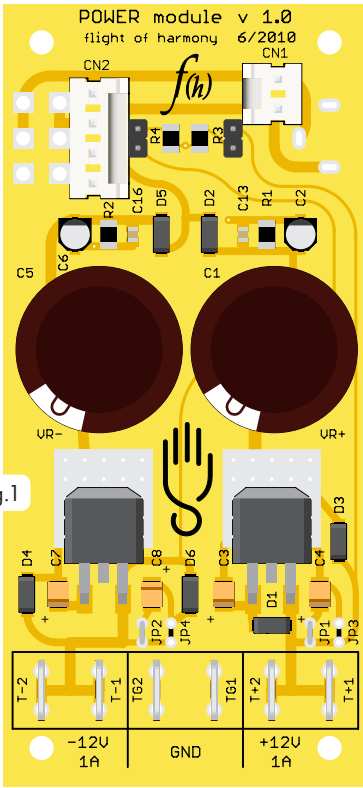


fig.1

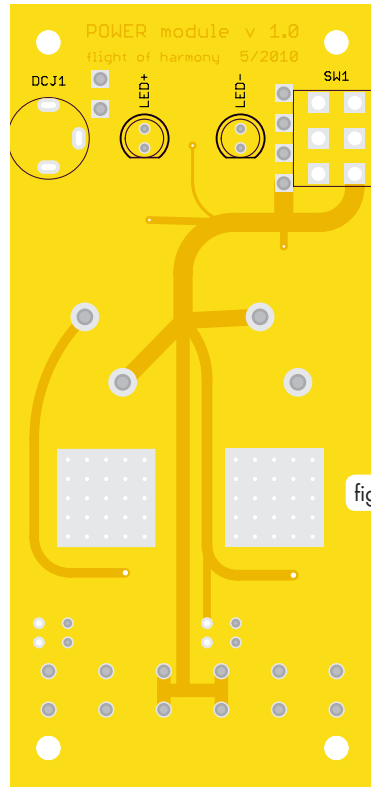


fig.2

Components

1	Assembled POWER PCB
1*	12VAC 1000mA wall adapter
1	13" 18AWG DC power harness
1	DPDT power switch with hardware
1	2.1mm x 5.5mm x 9.5mm barrel-style AC jack with hardware
1	MTA156 4-pin 22AWG IDC connector (switch)
1	MTA156 2-pin 22AWG IDC connector (AC jack)
1	Red 5mm LED (V+)
1	Yellow 5mm LED (V-)
2	Molex SL-series 0.1" 2-pin housing (PCB end)
2	Molex SL-series 0.1" crimp terminals (PCB end)
2	Molex KK-series 0.1" 2-pin housing (LED end)
4	Molex KK-series 0.1" crimp terminals (LED end)

* Only part of standard PWBP

Specifications

Module width	10 h.p.	
Input voltage	12VAC	
Maximum current output	$I_{V+} = 1A$	$I_{V-} = -1A$
Output voltage	$\pm 12VDC$	

What is it?

This one is pretty straightforward: a power supply for your modular synthesizer rig. No sweet spots, no easter eggs, it just makes juice.

POWER was designed with portable racks in mind — shallow depth, reduced weight, and keeping the mains transformer outside of the case to eliminate related noise and heat — but it can be used to supply any compatible system.

Usage

The standard AC wall adapter (if you purchased the standard unit) is rated for 1 Ampere (A. K. A. 1 Amp, 1A, 1000mA), as is the POWER module itself. For best performance – and this applies to ALL electronics, by the way – you should never run POWER at its maximum rating. A 60% load (600mA) is the practical limit for best performance.

If you need/want to run it up to 75% or 80%, a greater capacity adapter is needed to maintain performance. Adapters get hotter as more power is drawn from them, which increases the internal resistance and thusly reduces the performance. A 1500mA rated adapter is recommended.

The adapter plug must be a 2.1mm x 5.5mm x 9.5mm barrel-type plug.

Input Connections

AC jack: CN1 is for the AC adapter jack. Tip wire to the top pin, sleeve wire to the bottom pin (as shown in fig. 1).

Power switch: CN2 is for the power switch. When the switch is turned ON, pin 1 is connected to pin 4, pin 2 is connected to pin 3.

Output Connections

LED+: From the front side, this is the header next to R3 and is the +12V LED (red). Anode (longest leg of the LED) to the top, cathode (shortest leg of the LED) to the bottom.

LED-: From the front side, this is the header next to R4 and is the -12V LED (yellow). Anode (longest leg of the LED) to the top, cathode (shortest leg of the LED) to the bottom.

IMPORTANT

The LEDs are required for stable operation at low levels of current draw.

This means they must be attached, even if you do not plan to panel-mount them. Just put them on short leads (or even just solder them to the headers).

Power Connections

The power output connectors are standard 0.25" width male quick-connect terminals, compatible with the standard Doepfer PSU harnesses and distribution board terminals.

T+1 & T+2: +12V

T-1 & T-2: -12V

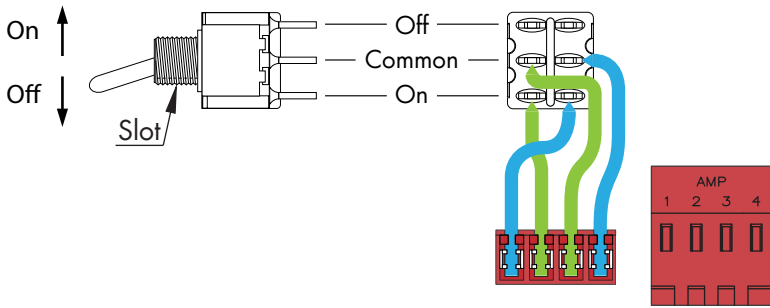
TG1 & TG2: System ground

Compensation jumpers

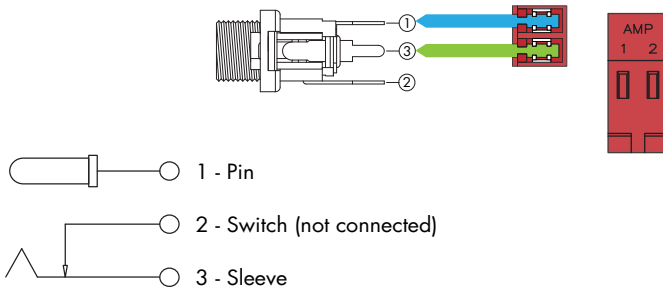
Power supplies are infamous for mysteriously becoming unstable. Their performance is dependent upon the type of load they are powering, and no two systems are the same. As I have dealt with this sort of problem in the past, there are provisions on the PCB to adjust the regulator output capacitors to tailor output performance to your specific load characteristics.

The existing jumpers – JP1(V+) & JP2(V-) – bypass these provisions, and are required for normal operation. The positions marked JP3 & JP4 are connected in parallel with C4 and C8, respectively, and can be used to increase the regulator output capacitance. Cut JP1 or JP2 as necessary to reduce the output capacitance.

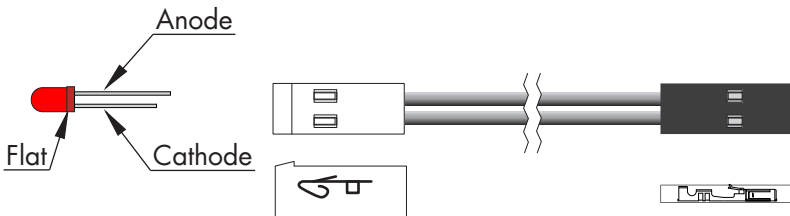
Power switch connection



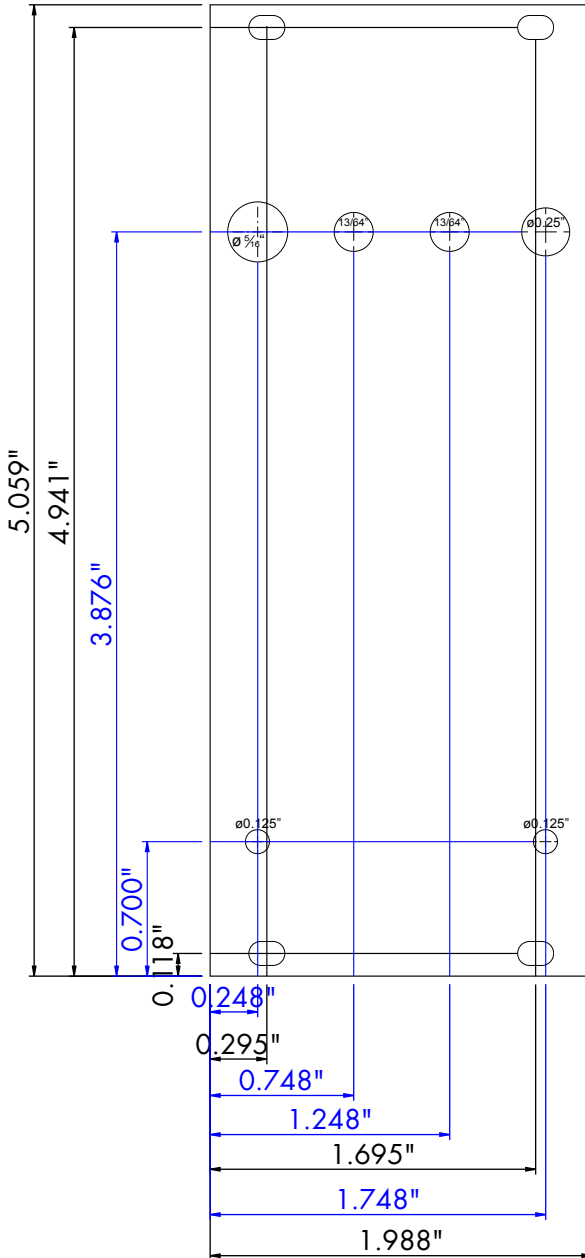
AC input jack connection



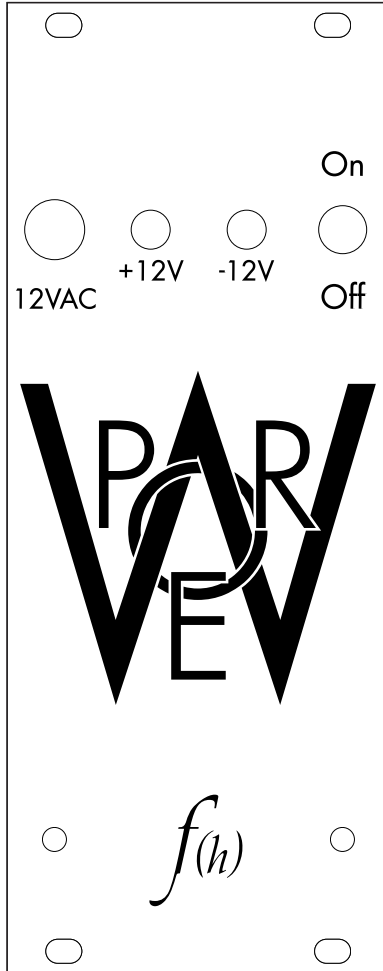
LED connection



Panel template



Graphics



Stuff

There is a lot of discussion about POWER on the Muffwiggler forums, come check it out! People have posted some excellent examples on there. I haunt the forums as well, and new things are posted there long before they hit the f(h) web site.

<http://www.muffwiggler.com/forum/index.php>

A big thank you to those who have sent in suggestions and comments, keep them coming!

Send samples to: samples@flightofharmony.com

Comments, suggestions, complaints to: flight@flightofharmony.com

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<http://www.flightofharmony.com>

Revised Aug, 2010. (first printing)

A large, elegant cursive logo consisting of a lowercase 'f' followed by '(h)' in parentheses. The 'f' has a long, sweeping tail that curves under the '(h)'. The '(h)' is also in a cursive style, with a small loop at the top.