

PROTORIGJR



FX TYPE: Breadbuddy

Enclosure Size: n/a

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Overview

The ProtorigJR has the same functionality as the mbp Protorig, but has been stripped down to a smaller PCB footprint. Whereas the Protorig was limited to just two small and permanently fixed breadboards, the ProtorigJR can be expanded to include as many breadboards as you want. This makes it a powerful tool for breadboarding larger and more complex designs. Rather than repeating all the previous documentation here, I suggest you have a look at the [Protorig pdf](#) which goes into great detail on construction and use. Then, just adapt the JR version to your needs.

One extra switch was added to turn DC power on and off so you no longer have to disconnect your power supply when not in use or swapping in components in real time.

Use

Building pedals is a lot of fun, but spending time and money on something that doesn't work correctly (or at all) is extremely frustrating. And, every pedal builder will experience that frustration at some point. If you are me, it's almost guaranteed. That's why it is critical for every serious pedal maker to have the ability to quickly identify and diagnose problems to get to the fun part - making lovely noise.

The ProtorigJR has the essentials tools to make the testing, debugging and prototyping easy. The other critical part is thinking and patience, of course! With this simple tool, you can:

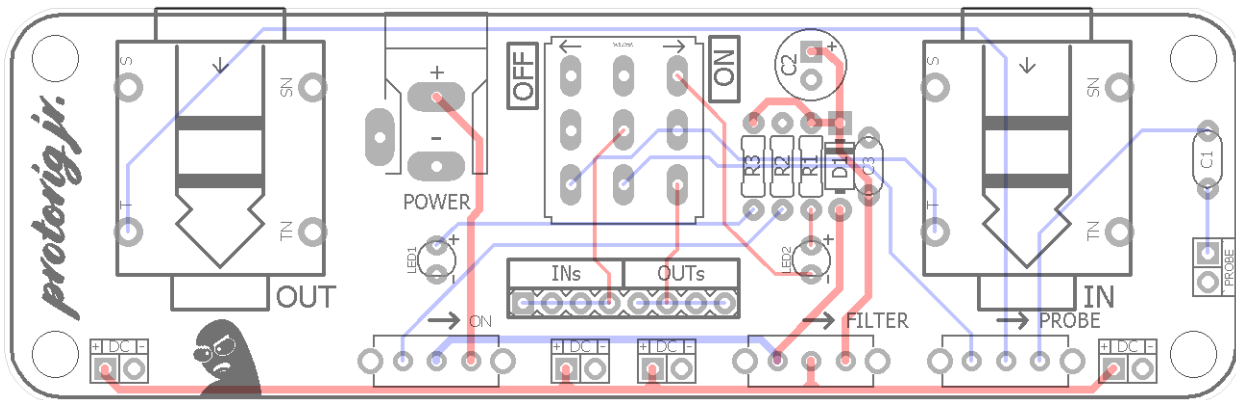
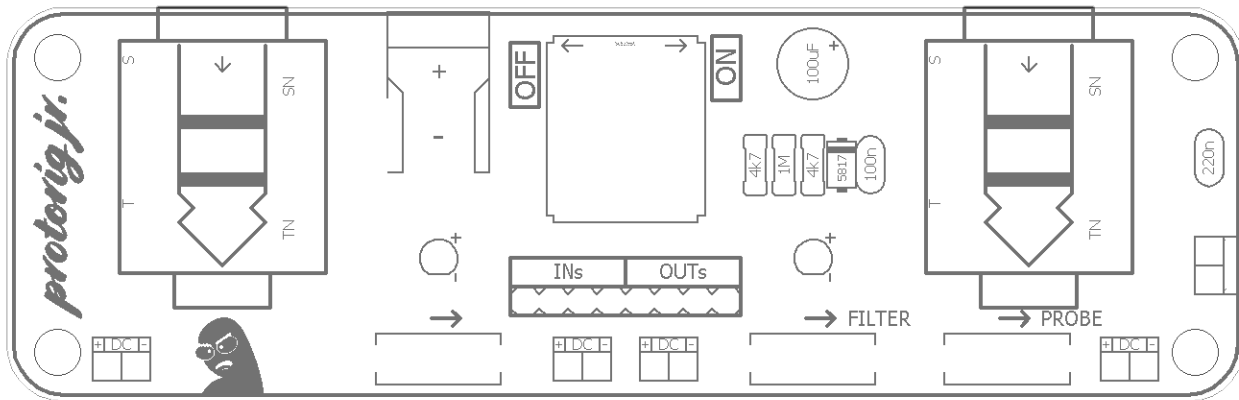
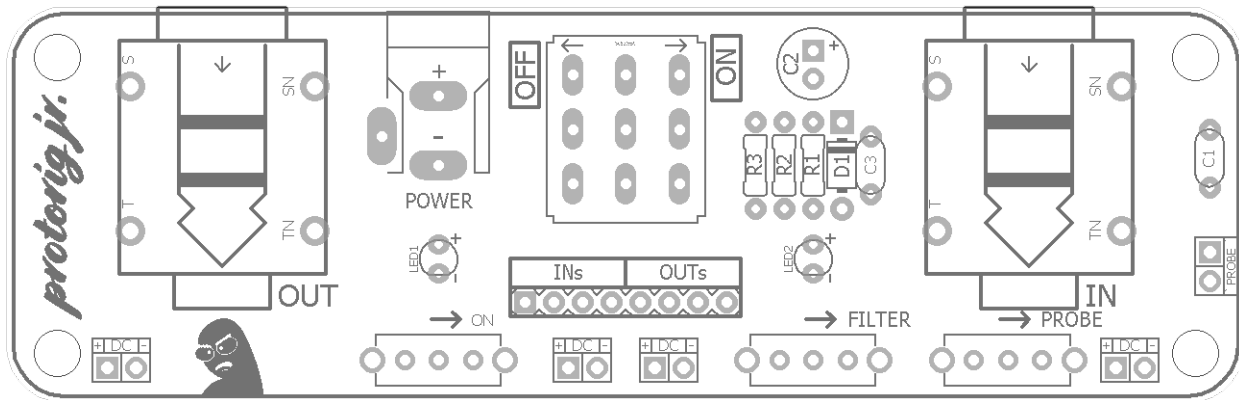
- Quickly breadboard circuit snippets and even a complete pedal circuit for testing, evaluation and experimentation.
- Test built PCBs for proper function *before* final pedal assembly.
- Debug problem areas in misbehaving builds.

Switches

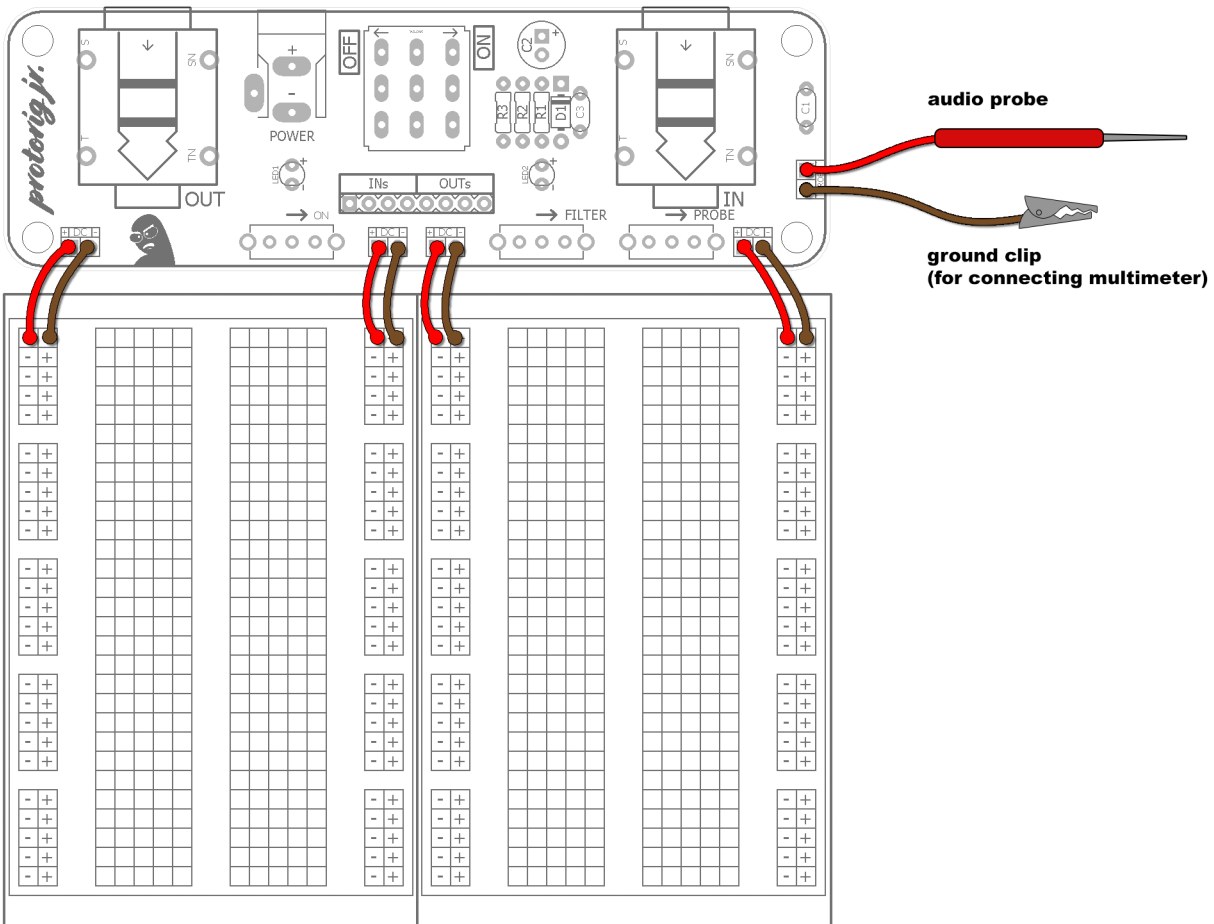
- The **ON** switch powers the ProtorigJR from your DC supply. You can use 9-18v DC depending on the needed voltage for your testing.
- The **FILTER** switch has two modes. In the left position, no power decoupling is utilized. Use this mode when testing pre-built PCBs. In the right position a reverse polarity diode, 100uF and 100n cap are used for decoupling the supply. Use this mode when breadboarding circuit to emulate how a completed circuit board would be designed.
- The **PROBE** switch activates the audio probe. This sends audio from where the probe touches directly to the OUT jack.. Use the audio probe to trace audio signals through your circuit. The ground probe is used to attach to your multimeter to take voltage readings. It's active no matter where the Probe switch is set.

Terms of Use: You are free to use purchased **ProtorigJR** circuit boards for both DIY and small commercial operations. You may not offer **ProtorigJR** PCBs for resale or as part of a "kit" in a commercial fashion. Peer to peer re-sale is fine, though.

Technical assistance for your build(s) is available via the [madbeanpedals forum](https://madbeanpedals.com/forum). Please go there rather than emailing me for assistance on builds. This is because (1) I'm not always available to respond via email in a timely and continuous manner, and (2) posting technical problems and solutions in the forum creates a record from which other members may benefit.



The On/Off labels for the 3PDT are actually in the wrong order!



Note the “+” and “-” orientation of the breadboards. The switch is set up to be in effect mode to the right position, and the bypass to the left. **Unfortunately, I put the labels on the wrong way!** If this bothers you, just black them out with a Sharpie like I did. I will correct this on the next batch of PCBs.

Using some sort of strain relief on the two probe wires might be a good idea. It will prevent the solder joints from weakening over time.

| B.O.M. | | ShoppingList | | | |
|-----------|-----------|--------------|-----|----------------------------|----------|
| Resistors | | Values | Qty | Type | Rating |
| R1 | 4k7 | 4k7 | 2 | Metal Film | 1/4W |
| R2 | 1M | 1M | 1 | Metal Film | 1/4W |
| R3 | 4k7 | 100n | 1 | Film | 25v min. |
| Caps | | 220n | 1 | Film | 25v min. |
| C1 | 220n | 100uF | 1 | Electrolytic | 25v min. |
| C2 | 100uF | 1n5817 | 1 | | |
| C3 | 100n | LED | 2 | 5mm, diffused, any color | |
| Diodes | | Header | 1 | SIL female pin | 2.54mm |
| D1 | 1n5817 | Audio Jacks | 2 | TS | 1/4" |
| LED1 | 5mm | Power Jack | 1 | TRS | 2.1mm |
| LED2 | 5mm | SPDT | 3 | Slide | |
| Header | | 3PDT | 1 | Toggle, PCB or Pin Mounted | |
| HDR_1 | 8PIN | Clip | 1 | *see link | |
| Jacks | | Probe | 1 | *see link | |
| POWER | 2.1mm TRS | | | | |
| IN | 1/4" TS | | | | |
| OUT | 1/4" TS | | | | |
| Switches | | | | | |
| F/UF | SPDT | | | | |
| ON | SPDT | | | | |
| PRB | SPDT | | | | |
| BYP | 3PDT | | | | |
| Misc | | | | | |
| PROBE1 | Probe | | | | |
| PROBE2 | Clip | | | | |

Resistors:

<https://www.taydaelectronics.com/resistors/1-4w-metal-film-resistors.html>

100n cap:

<https://www.taydaelectronics.com/capacitors/polyester-film-box-type-capacitors/0-22uf-100v-5-jfj-polyester-film-box-type-capacitor.html>

220n cap:

<https://www.taydaelectronics.com/capacitors/polyester-film-box-type-capacitors/0-22uf-100v-5-jfj-polyester-film-box-type-capacitor.html>

100uF Electrolytic:

<https://www.taydaelectronics.com/capacitors/electrolytic-capacitors/100uf-25v-105c-jrb-radial-electrolytic-capacitor-6x11mm.html>

1n5817:

<https://www.taydaelectronics.com/1n5817-diode-schottky-1a-20v.html>

LEDs (2):

<https://www.taydaelectronics.com/leds/round-leds/5mm-leds.html>

For connecting from the IN/OUT pads to the breadboards, you can use SIL sockets or female pin headers.

1. 4 pin 2.54mm SIL Sockets: <https://www.taydaelectronics.com/connectors-sockets/sockets/sip-sockets/4-pin-dip-sip-ic-sockets-adaptor-solder-type-single-row.html>
2. 4 pin 2.54mm Pin Header: <https://www.taydaelectronics.com/connectors-sockets/pin-headers/4-pin-2-54-mm-single-row-female-pin-header.html>

Mono jacks (2):

<https://www.taydaelectronics.com/hardware/6-35mm-1-4-plugs-jacks/6-35mm-1-4-stereo-insulated-switched-socket-jack-pcb-mono.html>

2.1mm DC Jack:

<https://www.taydaelectronics.com/dc-power-jack-2-1mm-barrel-type-pcb-mount.html>

3PDT Toggle:

<https://www.taydaelectronics.com/electromechanical/switches-key-pad/toggle-switch/mini-toggle-switch-1m-series-3pdt-on-on-short-handle.html>

SPDT Slide Switch (3):

<https://www.taydaelectronics.com/slide-switch-1p2t-through-hole-0-5a-50vdc.html>

Alligator clip:

<https://www.taydaelectronics.com/black-alligator-clip-crocodile-35mm.html>

Philmore Test Probe:

<https://smallbear-electronics.mybigcommerce.com/test-probes/>

<https://www.ebay.com/itm/232638424136>

Check the mbp [ProtoRig documentation](#) for more info on how to use this Philmore probe as an audio probe:

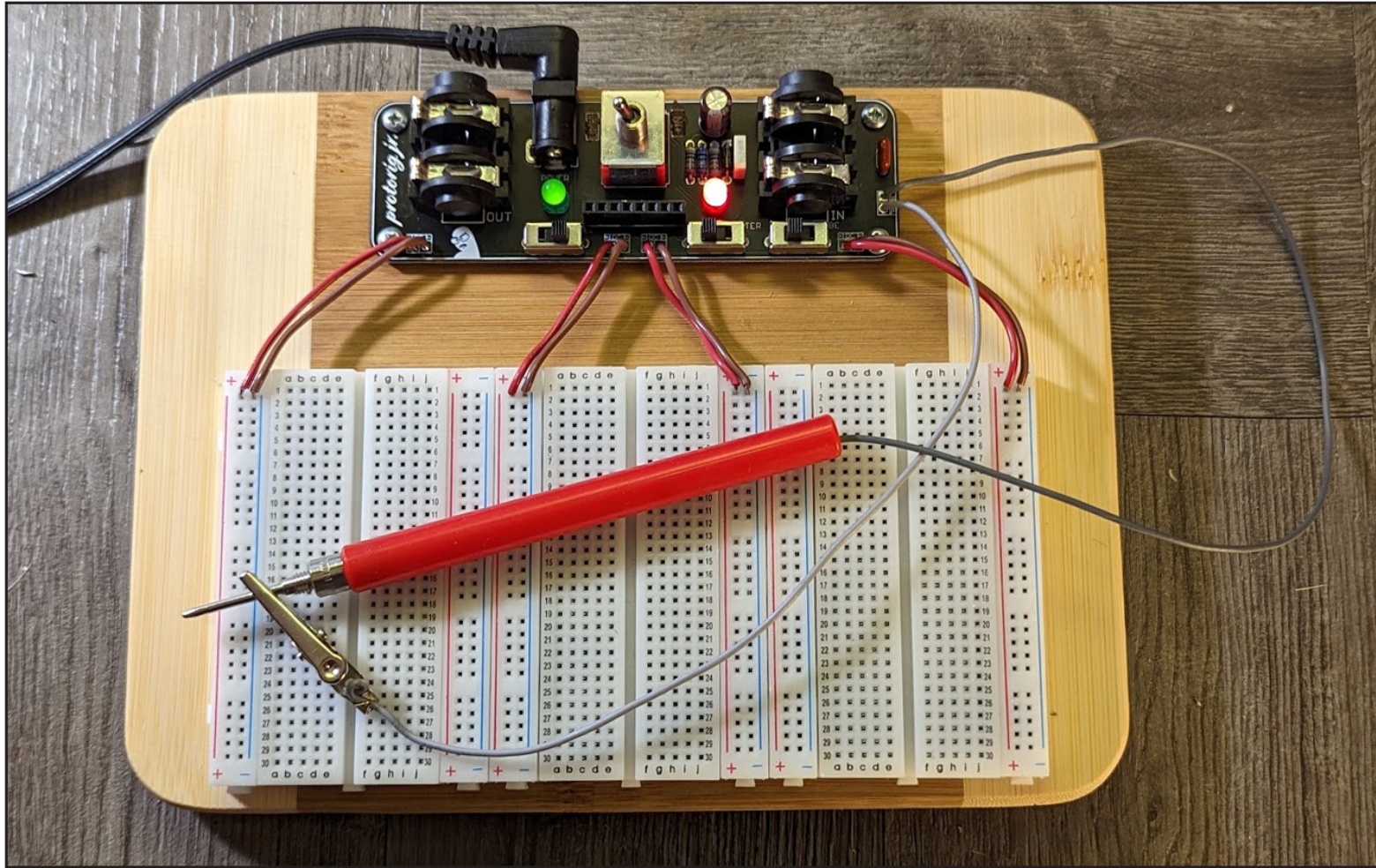
You can use a cheap multimeter/test probe and simply strip the connector end to solder it to the ProtorigJR PCB. So long as the probe tip is insulated (IOW, has a plastic covering) it will work fine as an audio probe.

Ex:

<https://www.tritekelectronics.com/electronic-test-equipment/clips-leads-probes/test-leads/philmore-sa15-test-lead-kit>

<https://www.tritekelectronics.com/electronic-test-equipment/test-leads/test-leads-philmore-473>

<https://www.tritekelectronics.com/electronic-test-equipment/test-leads/philmore-467-test-leads>



I used a \$5 cutting board from Amazon to mount everything. For the PCB, I used #4 sheet metal screws to secure it to the cutting board. Underneath, I used stick on rubber feet in the corners.

