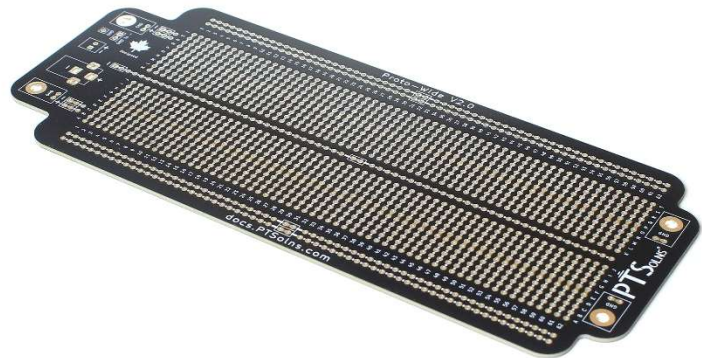


# Proto-Wide

## 1 DESCRIPTION

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The PTSolns *Proto-Wide* is a prototyping board to provide the user flexibility in realizing their circuit design. This extra-wide board, based on the *Proto-Full*, which resembles a traditional breadboard, has two rows-of-five that can be joint via solder jumper pads.



The board features two different power input options for conveniently connecting a battery or a benchtop power supply. Multiple power rail configurations can be used to support different voltage levels simultaneously. Silkscreen printing and component footprints exist on both sides of the board allowing the user to work on two layers.

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## 2 DOCUMENT REVISION HISTORY

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Current document revision is Rev 0.

### 3 PRODUCT FEATURES

This section highlights notable features of the *Proto-Wide*.

#### 3.1 Power Input

The *Proto-Wide* has the following power input options:

- 1) 2-Pin screw terminal (2.54 mm/0.1 in).
- 2) Female barrel jack (2.1 mm X 5.5 mm).

These power input options are shown in Figure 1.

Note that the positive terminal of Option 1 is electrically connected to the positive terminal of Option 2. The negative terminal of Option 1 is electrically connected to the negative terminal of Option 2. **It is not recommended to use both power input options simultaneously.**

Both power input options can be soldered onto the front or back of the PCB. For this reason, the footprint of the female barrel jack of option 2) is unconventional. An additional, electrically isolated, through-hole exists such that the female barrel jack can be connected on either side while keeping the barrel opening in the same direction (away from the PCB). An example can be found in Section 6.1

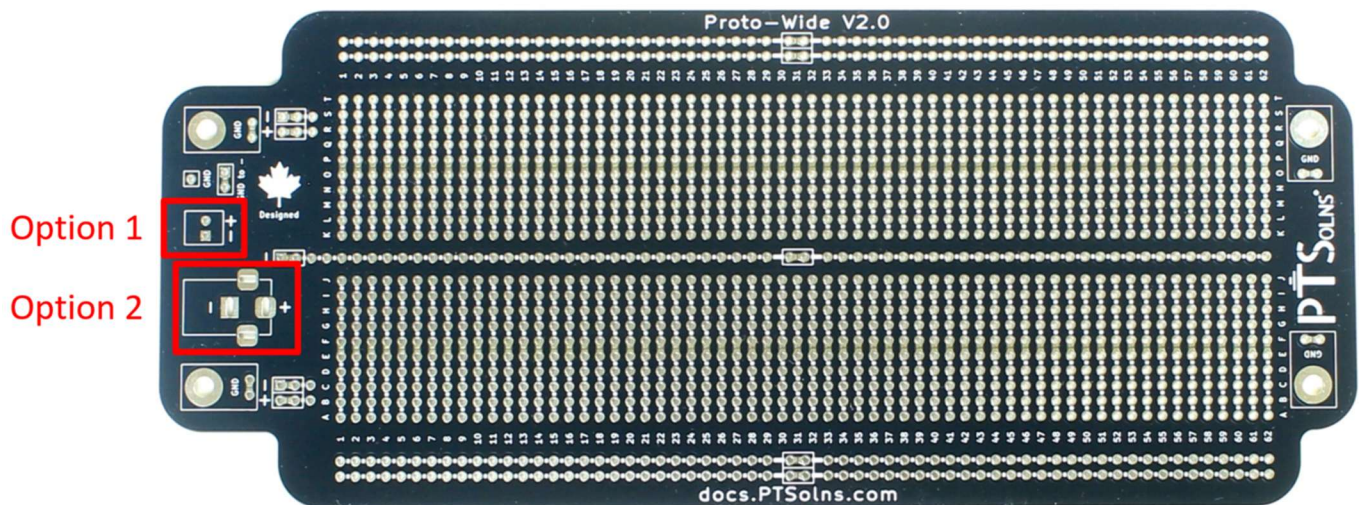


Figure 1: Two power input options for the *Proto-Wide*.

### 3.2 Power Rails

The *Proto-Wide* features ten rails, each consisting of 30 tie-point through-holes, as shown in Figure 2. The rails can be electrically connected in different configurations. By default, all rails are initially electrically disconnected. Four of the rails can be connected to the positive terminal. Similarly, four other rails can be connected to the negative terminal. The remaining two rails are suggested to be used in one of two ways:

- 1) Use the provided footprint connection to the negative “-” terminal.
- 2) Don’t connect to negative “-” terminal and use it for a data signal instead.

Connecting rails is suggested to be done in one of two methods:

- 1) Solder across the jumper pads to make a permanent connection.
- 2) Using male header pins connected with 2-Pin jumper caps. This is a temporary connection in which the user can easily disconnect the rail. This allows the jumper cap to act as an enable/disable for the rail and allows the rail to be easily reconfigured to transmit a different signal or voltage. An example can be found in Section 6.2.

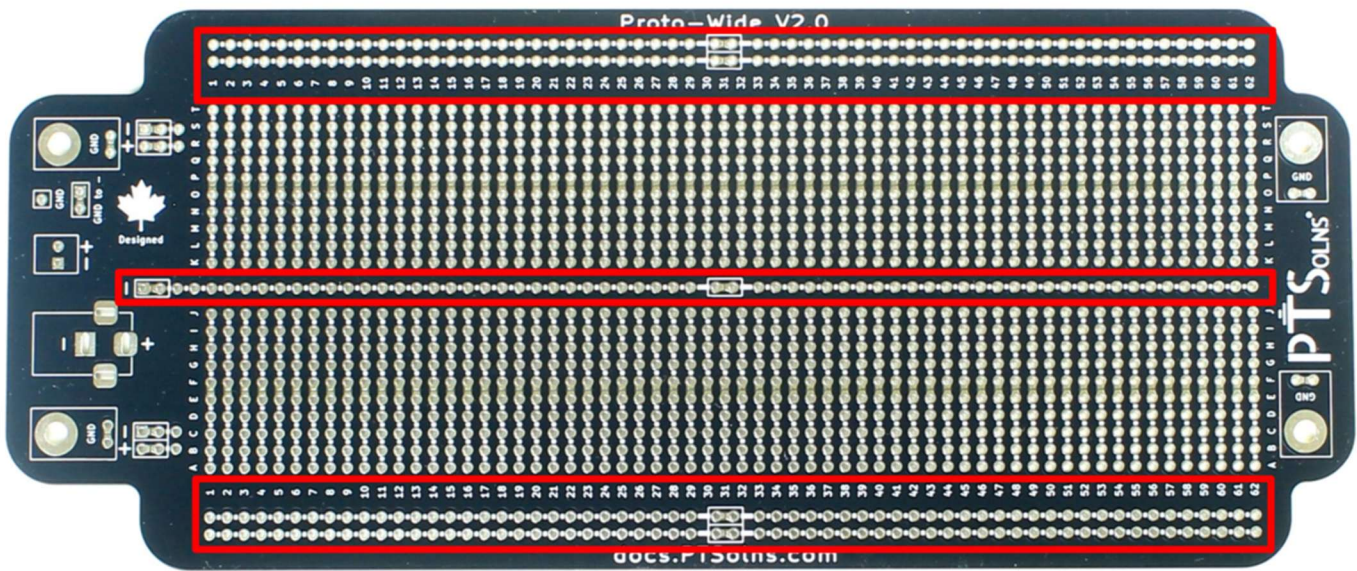


Figure 2: Ten rails of the Proto-Wide.

### 3.3 Extra Wide

The *Proto-Wide* is the “wide” version of the *Proto-Full*, providing two sets of rows-of-five on either side of the central rail. Each set of rows-of-five can be joined together to make a long row-of-ten. To join the rows together, the corresponding solder jumper pads can be bridged. All jumper pads on the board are boxed in with white silkscreen printing.

### 3.4 Ground (GND), Negative, and Positive Terminals

The *Proto-Wide* separates the grounding “GND”) for the mounting holes from the negative (“-”) terminal of the supplied power source. Although it is possible to electrically connect the “GND” and “-” terminals by bridging the solder jumper pads marked “GND to -”.

All of the “-” terminals are shown in Figure 3. Note that all solder jumper pads are disconnected by default. If all the solder jumper pads are connected that relate to the “-” terminal everything outlined in the red box in Figure 3 would be electrically connected. Similarly, all of the “GND” terminals are shown in Figure 4.

All of the positive “+” terminals are shown in Figure 5. Note that all solder jumper pads are disconnected by default. If all the solder jumper pads are connected that relate to the “+” terminal everything outlined in the red box in Figure 5 would be electrically connected.

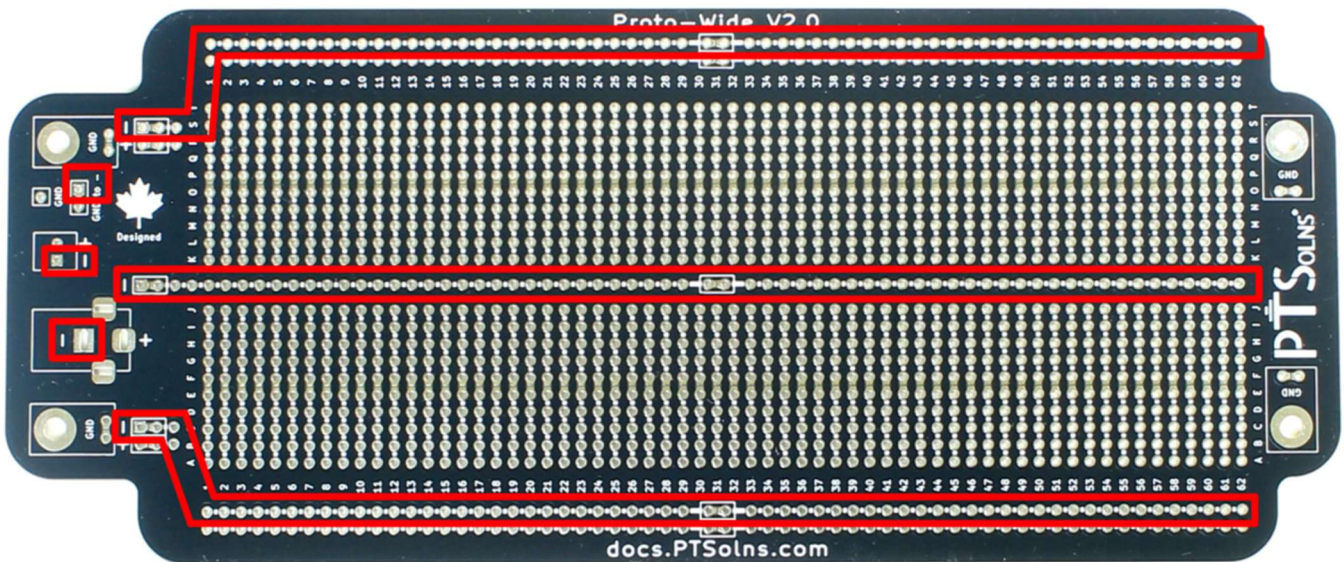


Figure 3: Negative “-” terminals on the Proto-Wide.

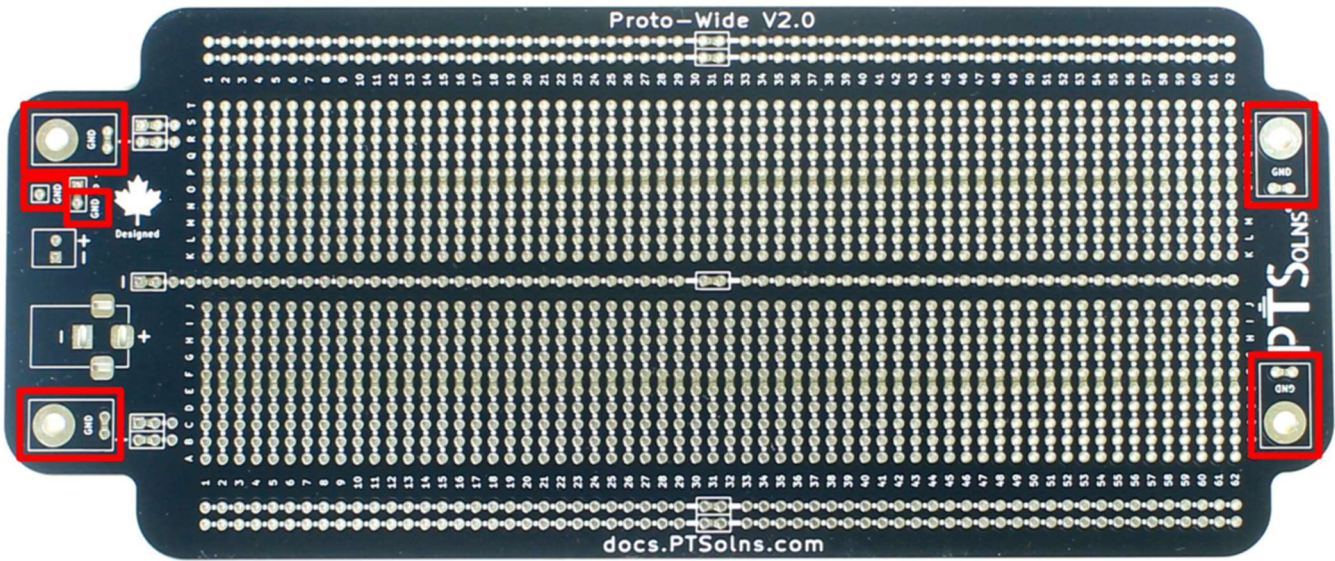


Figure 4: Ground "GND" terminals on the Proto-Wide.

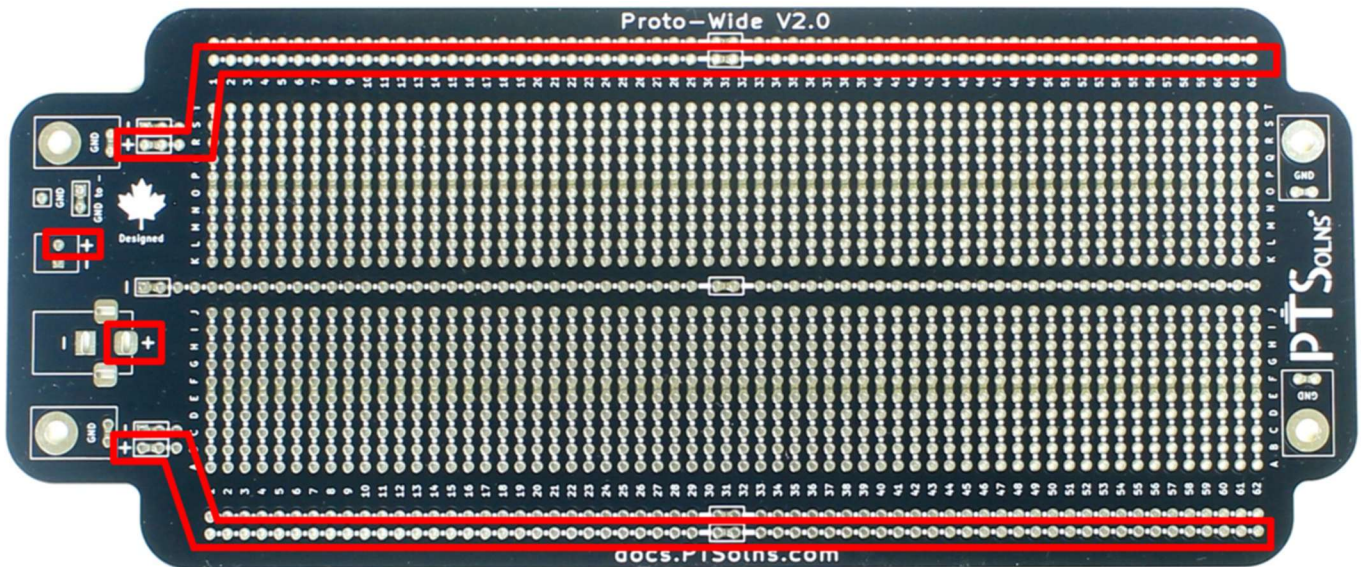


Figure 5: Positive "+" terminals on the Proto-Wide.

### 3.5 Silkscreen Printing

The breakout section of the *Proto-Wide* is fully labelled along the rows and columns. For ease of use, the silkscreen printing exists on both sides of the board. White dashed silkscreen lines between tie-points indicate an existing hardwired electrical connection. All components can be soldered on either side of the board, including asymmetrical components such as the female barrel jack.

### 3.6 Mounting

There are four 3.2 mm diameter mounting holes on the PCB as shown in Figure 6. These mounting holes are intended for hardware such as standoffs, of size M3. Each mounting hole has a 6.4 mm diameter copper pad and can be connected to the main ground (GND) of the PCB separately by bridging the respective solder jumper pads. Figure 9 shows the dimensions of the mounting holes.

Note that the dimensions and spacing of the mounting holes match those of the *Proto-Full*, *Proto-ESP* and *Proto-N2RF*.

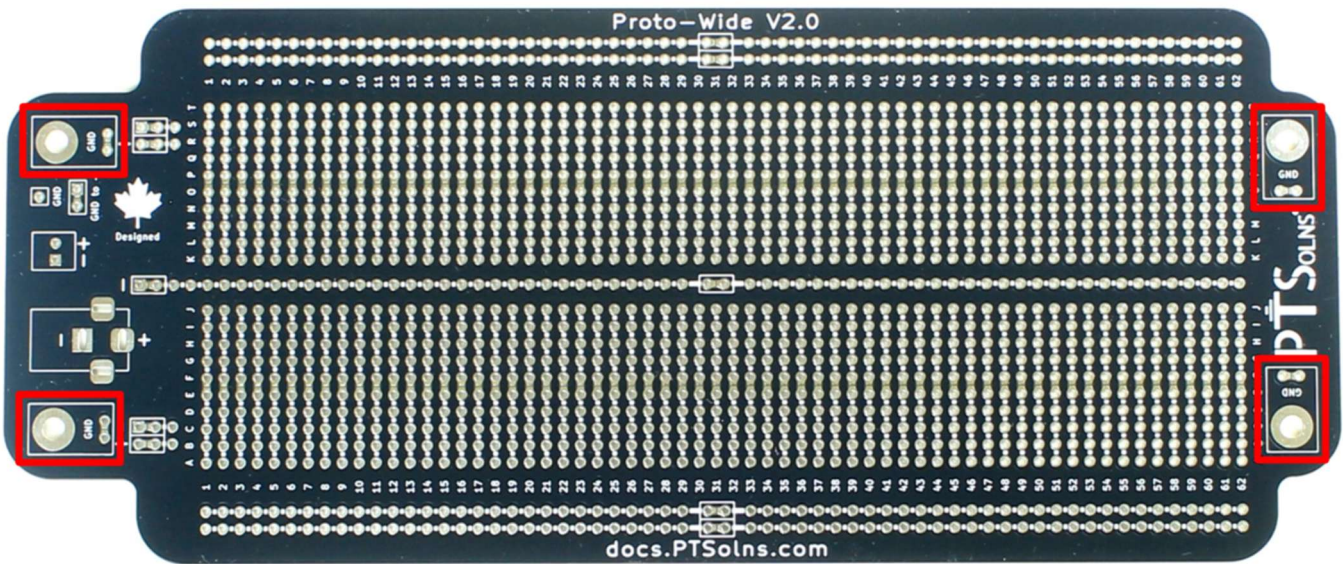


Figure 6: Four mounting holes of the Proto-Full.

### 3.7 Mark of Authenticity

Authentic PTSolns PCBs have a black solder mask color and are marked with the “PTSolns” logo in white silkscreen printing. The “Canadian Designed” symbol, consisting of the Canadian Maple Leaf with the word “Designed” underneath, can also be found on the PCB in white silkscreen printing. The “PTSolns” trademark and the “Canadian Designed” symbols are shown in Figure 7.

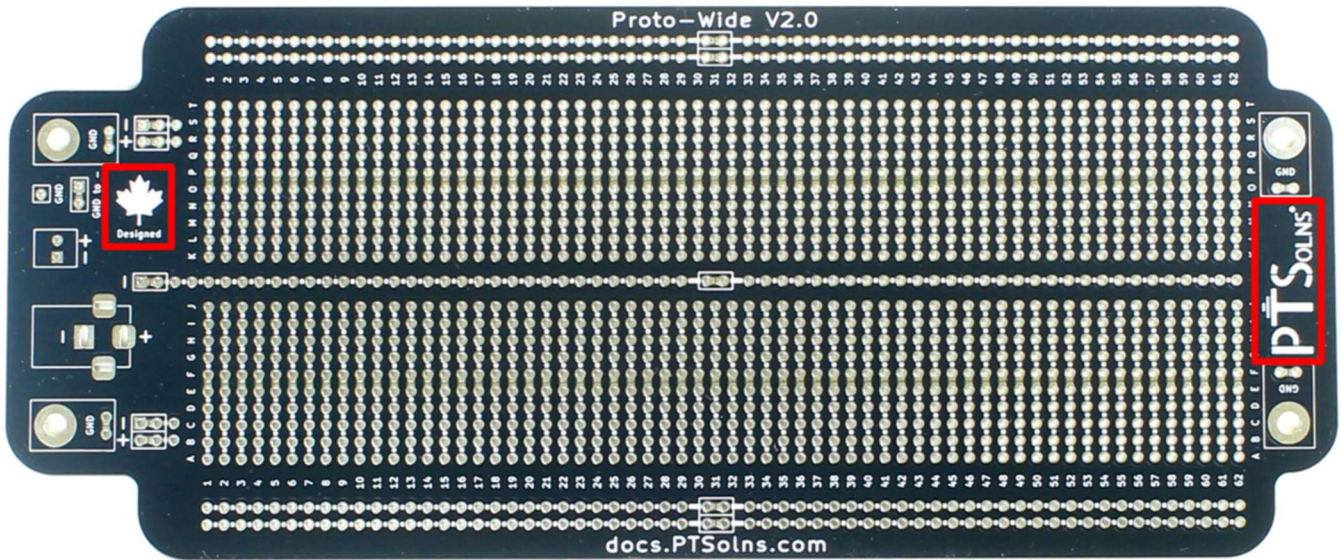


Figure 7: The "PTSolns" trademark and the "Canadian Designed" symbol found on authentic PTSolns PCB.

## 4 PHYSICAL PROPERTIES

The physical properties of the *Proto-Wide* are outlined in Table 1.

Table 1: Physical Properties.

	Quantity	Value	Reference
<b>PCB</b>	Length (longest)	200.7 mm	Figure 8
	Width (longest)	83.8 mm	Figure 8
	Thickness	1.6 mm	Figure 8
	Corner radius	7.6 mm	Figure 8
	Weight	51 g	--
	Color	Black	--
	Silkscreen	White	--
<b>Tie-point</b>	Number of tie-points	1550	Figure 8
	Tie point spacing	2.54 mm/0.1 in	Figure 8
	Tie-point hole diameter	1.0 mm	Figure 9
	Tie-point copper pad diameter	1.7 mm	Figure 9
<b>Mounting</b>	Hole diameter	3.2 mm	Figure 9
	Copper pad diameter	6.4 mm	Figure 9
	Center-to-center distance along length	185.4 mm	Figure 8
	Center-to-center distance along width	43.2 mm	Figure 8
<b>Material</b>	Lead free HASL-RoHS surface finish		--
	FR-4 base		--

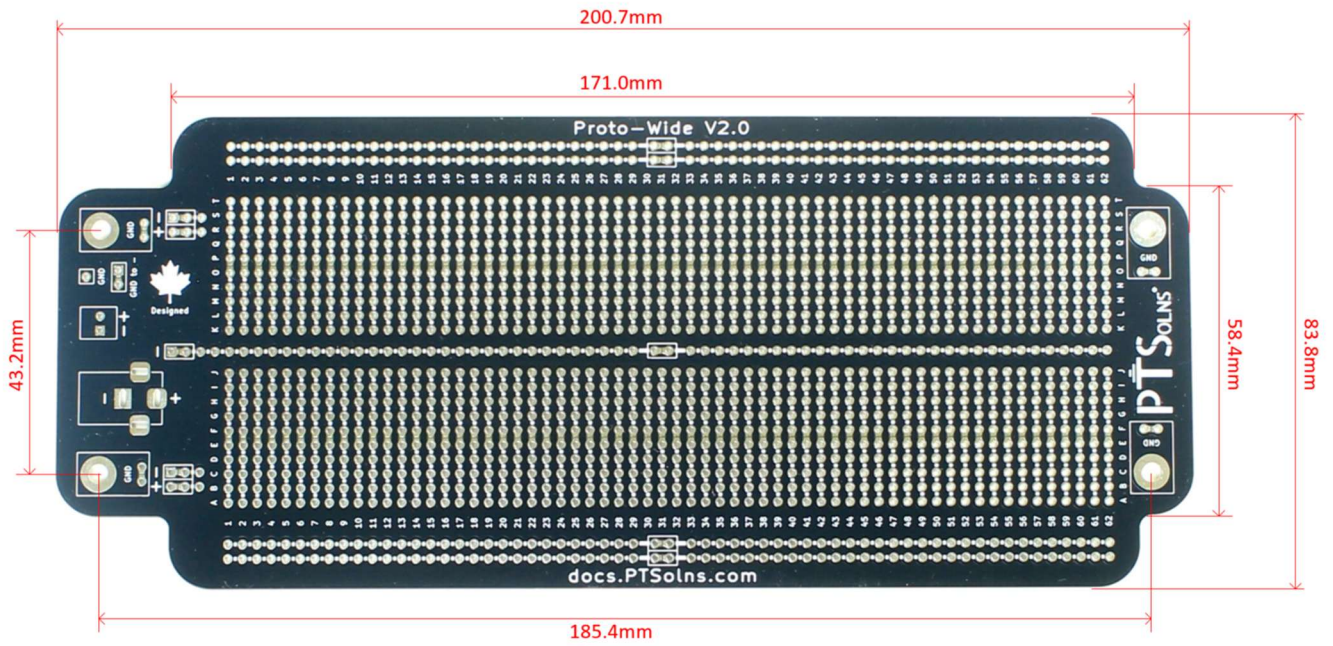


Figure 8: Dimensions of the Proto-Wide PCB.

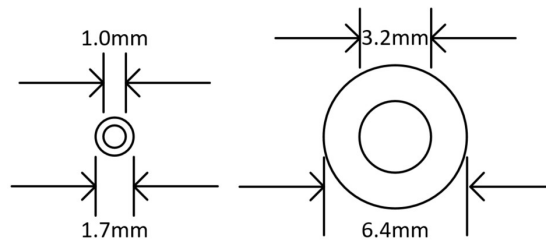


Figure 9: Dimensions of tie-point (left) and mounting hole (right).

## 5 ELECTRICAL PROPERTIES

The current ratings of the *Proto-Wide* are outlined in Table 2. Electrical connections made by copper traces are shown in Figure 10, with red being the top side of the PCB and blue the bottom side. Note that all traces are exclusively on the back side of the PCB, with the top side only having a ground plane. All traces have a thickness of 1mm and a weight of 1oz/ft<sup>2</sup>.

Table 2: Current rating for *Proto-Wide*

Type of trace	Current rating <sup>1</sup>
Positive power rails	2.3 A
Negative power rails	2.3 A
Central ground rails	2.3 A
Power input female barrel jack	2.3 A
Power input 2-Pin screw terminal	2.3 A
All GND connections	2.3 A
5-Pin breakout rows	2.3 A

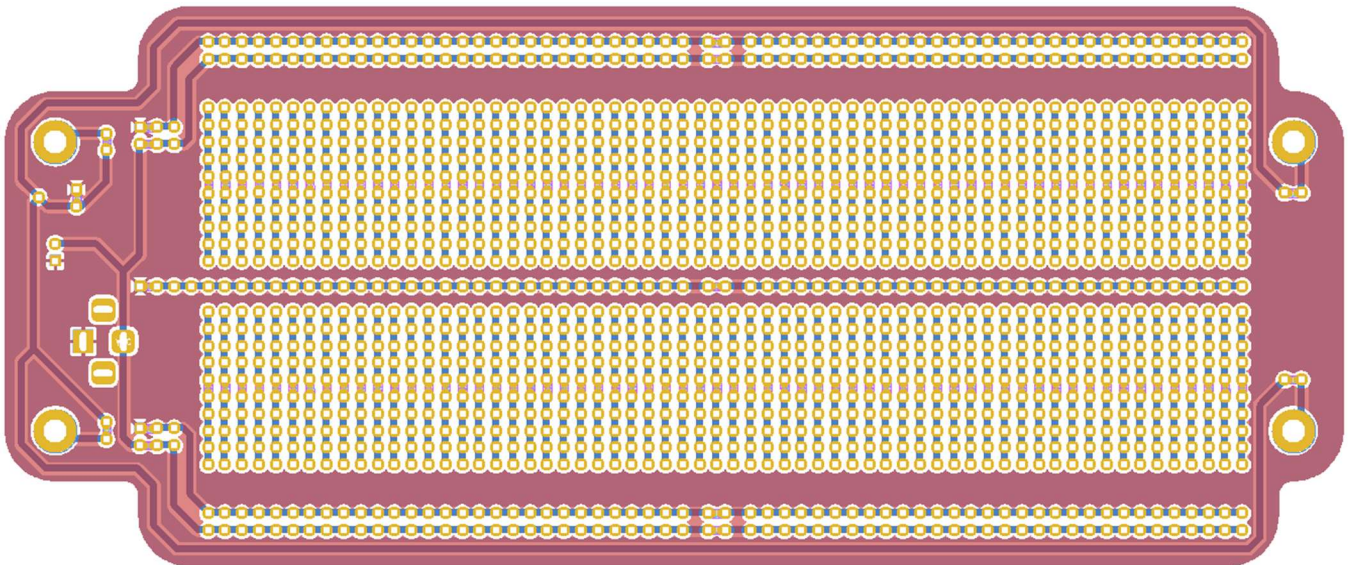


Figure 10: Electrical connections of the *Proto-Wide*.

<sup>1</sup> Current ratings based on IPC-2221B and are in part determined assuming a maximum temperature rise of 10 °C.

## 6 REFERENCES

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This section lists relevant references.

- PTSolns' Documentation Repository:  
<https://docs.PTSolns.com>
- PTSolns website:  
<https://PTSolns.com>
- Instructional video "How To Solder Jumper Pads":  
<https://www.youtube.com/watch?v=AOkdQ0txKpA>
- PTSolns support:  
<https://ptsolns.com/contact-us>