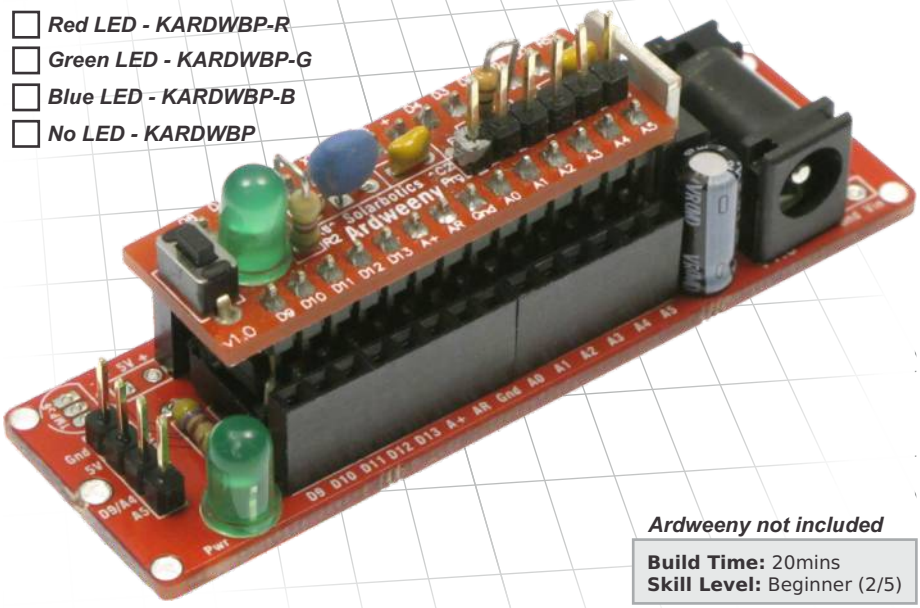
Ardweeny BackPack

Free your Ardweeny from the breadboard and let it help you in the real world!

- ☐ *Red LED - KARDWBP-R*
- ☐ *Green LED - KARDWBP-G*
- ☐ *Blue LED - KARDWBP-B*
- ☐ *No LED - KARDWBP*



Ardweeny not included

Build Time: 20mins
Skill Level: Beginner (2/5)

What's the Ardweeny Backpack offer besides being a mobile home for your Ardweeny?

- Socket mount for easy Ardweeny moving/swapping
- Combination 4-pin header for Servo / Blink-M / I^2C interfacing
- Low-dropout 5V regulator
- Temperature sensor (TMP36) mounting pad
- 2-position power jack (end or side-mount)
- #2 screw mounting holes
- SMT LED version features 8 bottomside LEDs connected to digital pins 0-7 for easy POV (persistance of vision) or bargraph indication

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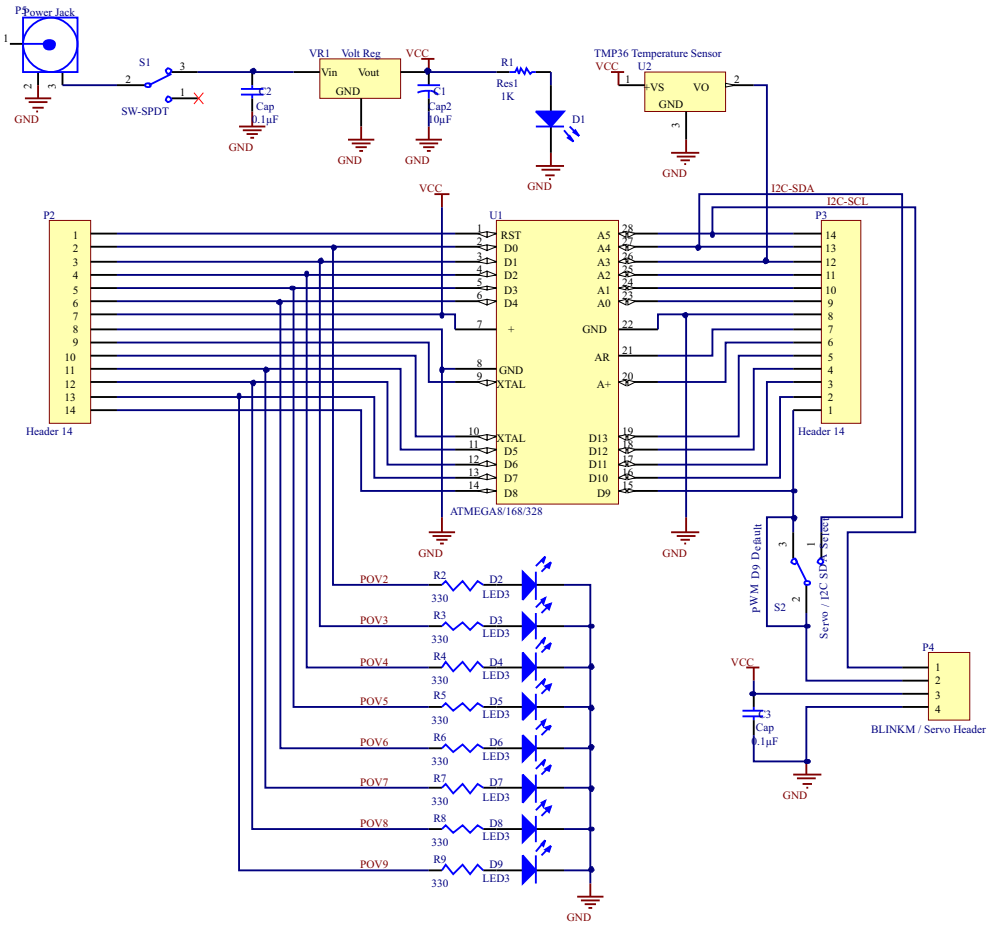
SKU: KARDW http://www.solarbotics.com/products/kardwbp/ Document Revision: Oct 20 2010

Ardweeny BackPack Schematic



Disclaimer of Liability

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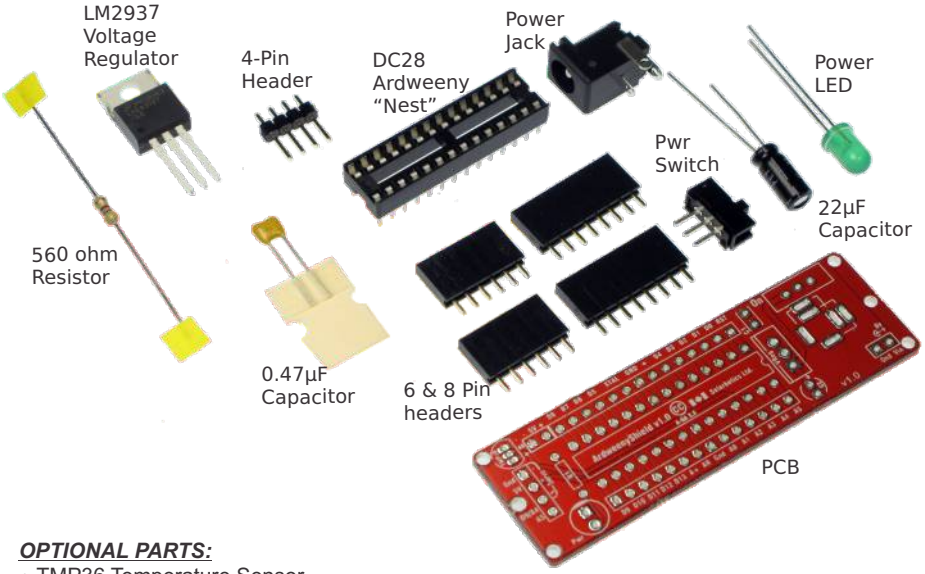
Parts List

- 1 x Printed Circuit Board (PCB)
- 1 x LM2937 Voltage Regulator
- 1 x LED (Power indicator)
- 1 x 560 ohm resistor (Green / Blue / Brown)
- 1 x 0.47µF Ceramic Capacitors (power filtration)
- 1 x CP22uF Electrolytic Capacitor (power filtration)
- 1 x 2.1mm DC Power Barrel Jack
- 1 x SWT1 Power Switch
- 1 x DC28-Pin Socket header (Ardweeny nest)
- 2 x 6-Pin female headers (I/O breakout)
- 2 x 8-Pin female headers (I/O breakout)
- 1 x 4-Pin male header (Blink-M / Servo Header)



OPTIONAL PARTS:

- TMP36 Temperature Sensor
- 0.47µF (or greater) capacitor for TMP36

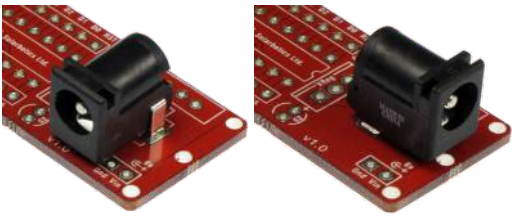
We strongly suggest you count the parts in your kit to make sure you have all the parts listed (c'mon - there's barely a handful of parts, so count them!). If anything is missing, contact Solarbotics Ltd. for replacement parts information.

Construction!

Your Ardweeny needs FREEDOM - let's get to work!

Step 1 - Barrel Jack: . There's one decision you have make right away is how do you want to mount the power jack.

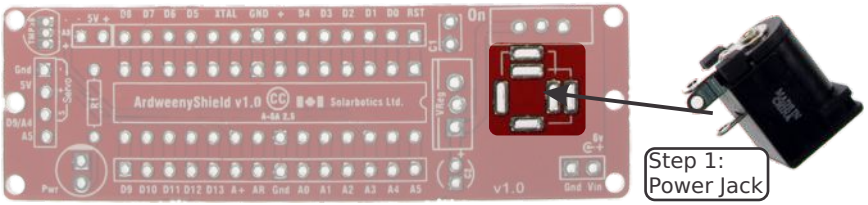
The PCB is designed so you can mount the jack pointed out one side or the end of the board. Pick one direction, plug in the jack, and solder it in!



Choose your jack position:

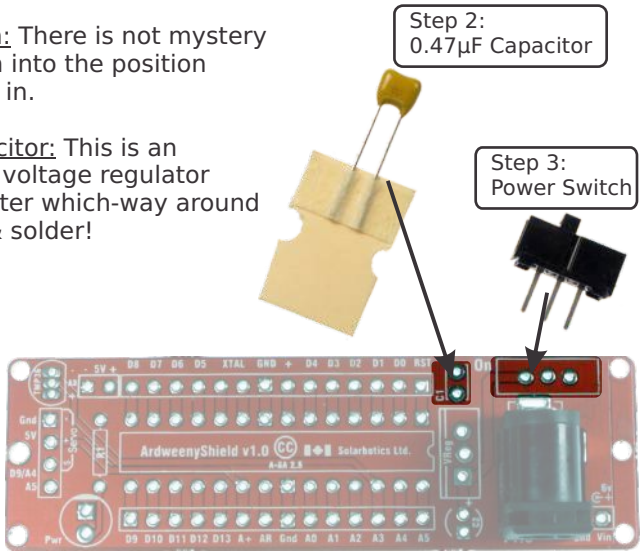
Power Jack Side-mounted

Power Jack End-mounted



Step 2 - Power Switch: There is not mystery here - plug the switch into the position marked, and solder it in.

Step 3 - 0.47µF Capacitor: This is an important part of the voltage regulator circuit. It doesn't matter which-way around you install it. Install & solder!

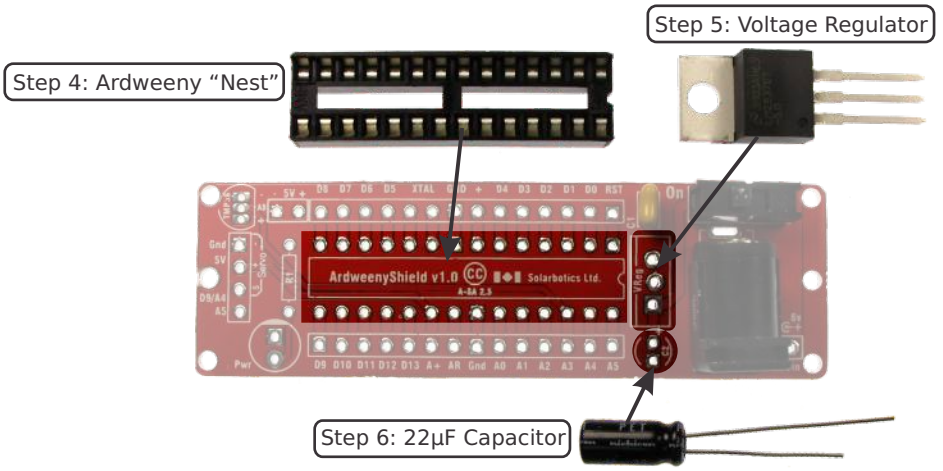


Construction!

Step 4 - Ardweeny “Nest”: This 28-pin DIP carrier is where you will mount your Ardweeny. Or, solder the Ardweeny directly in for a robust installation.

Step 5 - Voltage Regulator: Install the voltage regulator so the big metal tab is *away* from the barrel jack, just like it’s drawn on the circuit board.

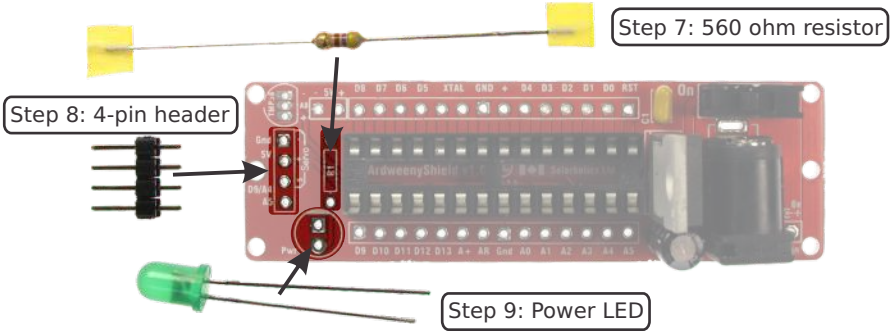
Step 6 - 22µF Capacitor: This is part of the voltage regulation circuit, and *does* care how it is installed. The longer lead of the capacitor is installed in the hole marked with the ‘+’ sign (shorter lead going into the square pad).



Step 7 - 560 ohm (green / blue / brown) resistor: This current limiting resistor is used with the Power indication LED.

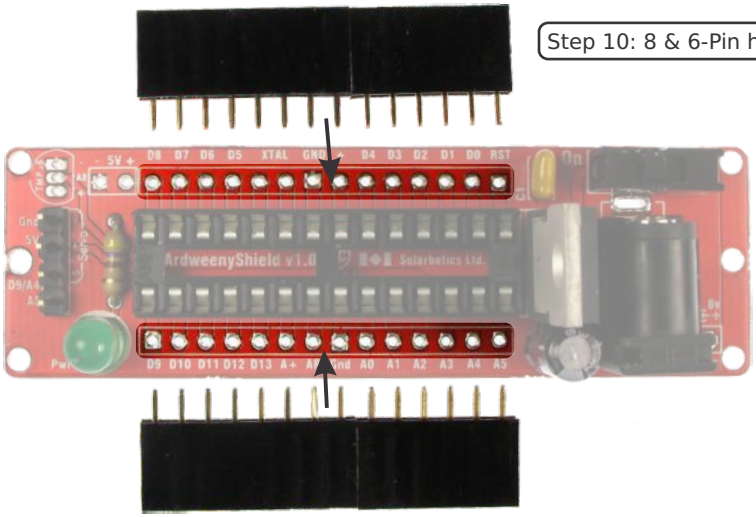
Step 8 - 4-Pin Male Header: Specially designed to interface a servo or BLINK-M to your Ardweeny Backpack!

Step 9 - Power LED: Make sure the shorter lead goes into the square pad!



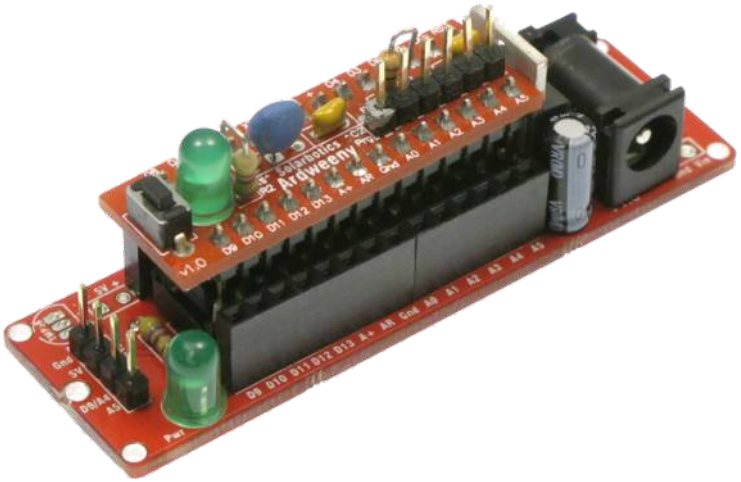
Construction!

Step 10 - Install the 8-pin & 6-pin headers: Only install these if you want to still make connection modifications to your portable Ardweeny application (solder is always much, *much* more secure).



Now you're ready to test! Plug in a 6~18VDC 2.1mm (tip positive) adapter into the jack, and hit the power switch. If the power LED lights up, your BackPack is ready to take an Ardweeny!

Gently plug your Ardweeny into the carrier, with the LED side closest to the Power LED on the BackPack. Now you're ready to go portable, and use some of the extra features offered by the BackPack!



Enhancing It!

Besides the obvious “Plug it in, and let it go” method of use, the Ardweeny BackPack has other features:

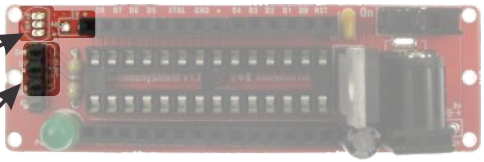
TMP36 Temperature Sensor: Solder in a TMP36 and a 0.47µF capacitor next to it at the “5V” pads, and use A3 to monitor the temperature.

Servo Port: A quick way to drive a standard servo. Plug in, and drive a PWM signal through digital line D9! Or use this as a...

...BLINK-M / I²C Port: You *do* have to cut and patch the jumper pad on the bottom from D9 to A4 to make this port ready for a BLINK-M RGB LED.

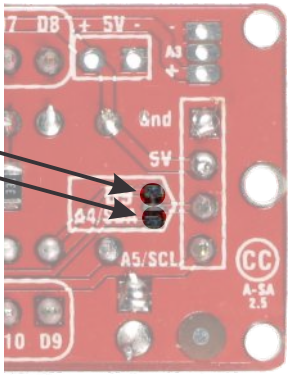
Add the TMP36 here, via cable or soldered directly in. Don’t forget to install a power filter capacitor next to it!

Servos uses only the top 3 pins of this connector (Gnd/+/Signal)



Want to use a Blink-M or other I²C accessory?

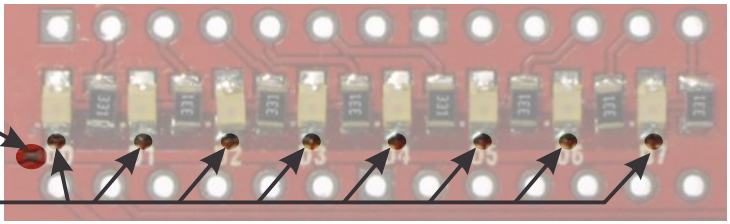
1) Cut the trace between the *top* two pads...
2) ...and solder across the bottom two!



The SMD LEDs on the bottom of the SMD-versions of the BackPack can be each (or globally) disabled by cutting the trace connected to the LED just above each of the “Dx” lables.

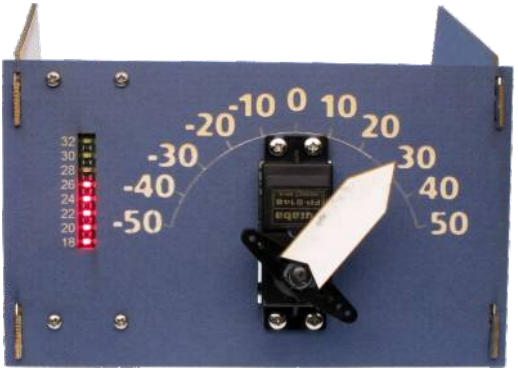
Global LED disable

Individual LED disables

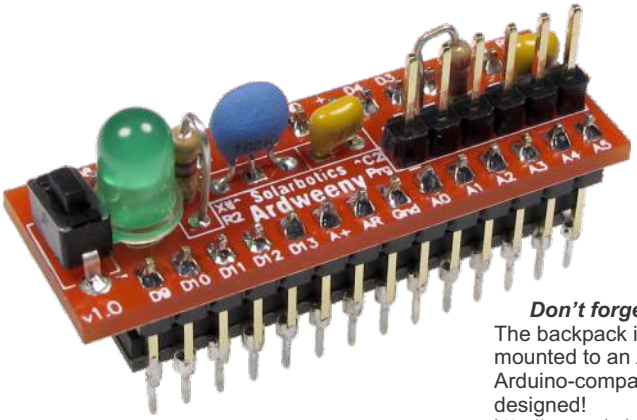


The Ardweeny BackPack:
Get that Ardweeny into Action!

Where the Ardweeny succeeds as a great prototyping tool, it fails as an in-the-field tool. But the Ardweeny BackPack fixes that! Send your Arduino-compatible out into the field. Make it monitor that ear of corn. Or read that iguana-mounted GPS. Or measure the lightning intensity around that box-kite. You decide!



Dual-Temperature display using Ardweeny Backpack's Servo-output, LED bargraph, and TMP36 temperature sensor. Get source-code from our website!



Don't forget your Ardweeny!
The backpack is only useful when mounted to an *Ardweeny* - the Arduino-compatible microcontroller kit designed!
http://www.solarbotics.com/products/kardw/

Visit us online for more info and cool stuff:

www.solarbotics.com

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