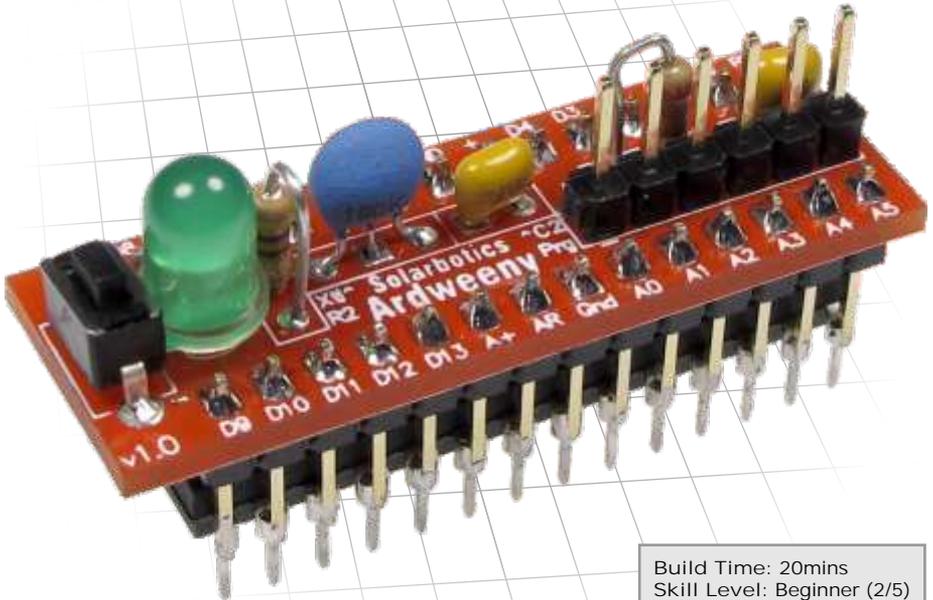


# Ardweeny

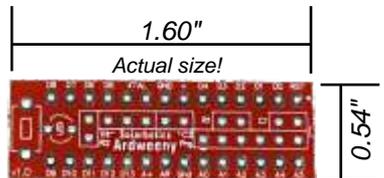
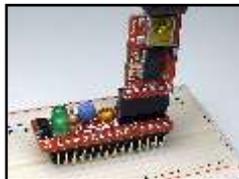
## Arduino™-compatible Microcontroller

Like to build your own breadboard-compatible Arduino?  
Get all the basic features of Arduino in a tidy, cost-effective package!

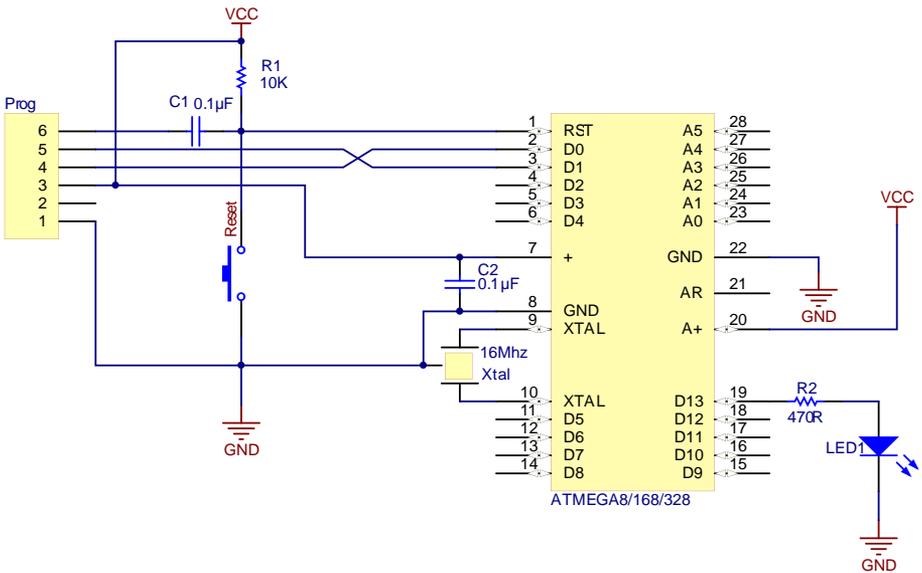


Build Time: 20mins  
Skill Level: Beginner (2/5)

- Fully Arduino-compatible!
- Stacks onto the top of an ATmega328 chip (included)
- Takes same 28-pin footprint as the microcontroller itself!
- Features Pin-13 LED and reset button
- Simple construction - only 7 parts plus pins & PCB!
- *Ideal* for breadboard applications
- Note: Requires external USB-to-TTL FTDI-type cable or adapter



### Ardweeny 1.0 Schematic



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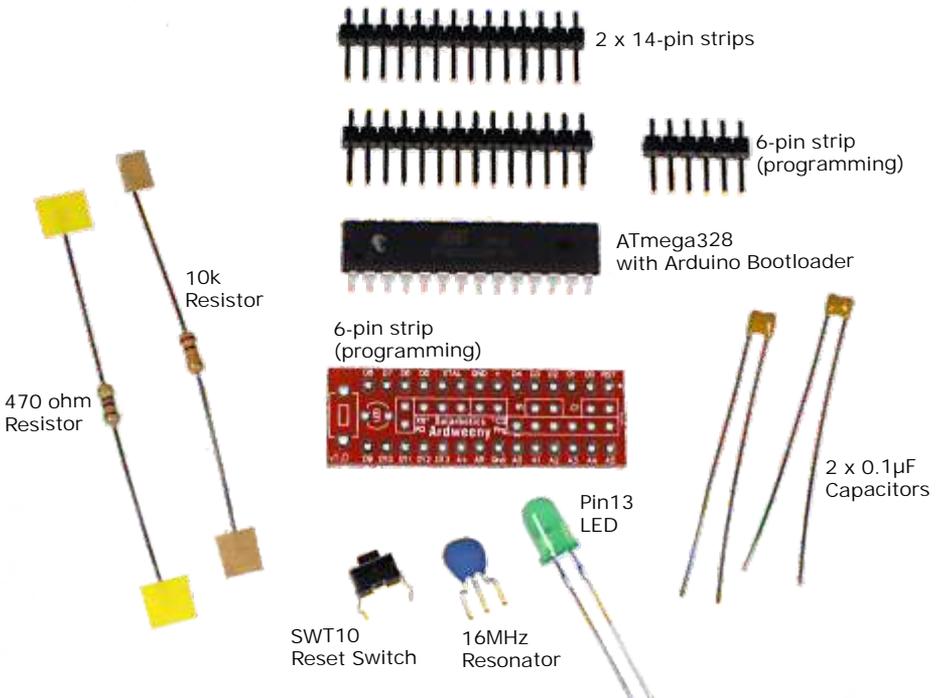
<http://creativecommons.org/licenses/by-sa/2.5/>

### Disclaimer of Liability

Solarbotics Ltd. is not responsible for any special, incidental, or consequential damages resulting from any breach of warranty, or under any legal theory, including lost profits, downtime, good-will, damage to or replacement of equipment or property, and any costs or recovering of any material or goods associated with the assembly or use of this product. Solarbotics Ltd. reserves the right to make substitutions and changes to this product without prior notice. Sorry - we hate legalese too, but “don’t pick on us” doesn’t impress the lawyers.

# Parts List

- 1 x Printed Circuit Board (PCB)
- 1 x ATmega328 with Arduino optiboot bootloader
- 1 x LED (Pin 13 indicator)
- 1 x 470 ohm resistors (Yellow / Purple / Brown)
- 1 x 10k resistor (Brown / Black / Orange)
- 1 x SWT10 Switch (reset)
- 2 x 0.1µF Ceramic Capacitors (power & auto-reset)
- 1 x 16MHz resonator (Brown / Black / Orange) (auto-reset)
- 1 x 16MHz resonator
- 1 x 6-Pin male header (Programming / USB Pwr)
- 2 x 14-Pin male headers (ATmega328 connectors)

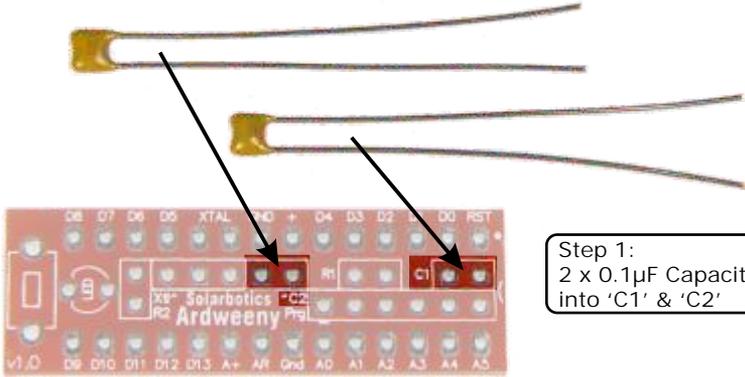


We strongly suggest you count the parts in your kit to make sure you have all the parts listed (c'mon - there's barely a handful of parts, so count them!). If anything is missing, contact Solarbotics Ltd. for replacement parts information.

# Construction!

You have a breadboard that needs an Arduino - Get to work! Never soldered before? Download a copy of our soldering tutorial here: <http://downloads.solarbotics.com/pdf/solderingtutorial.pdf>

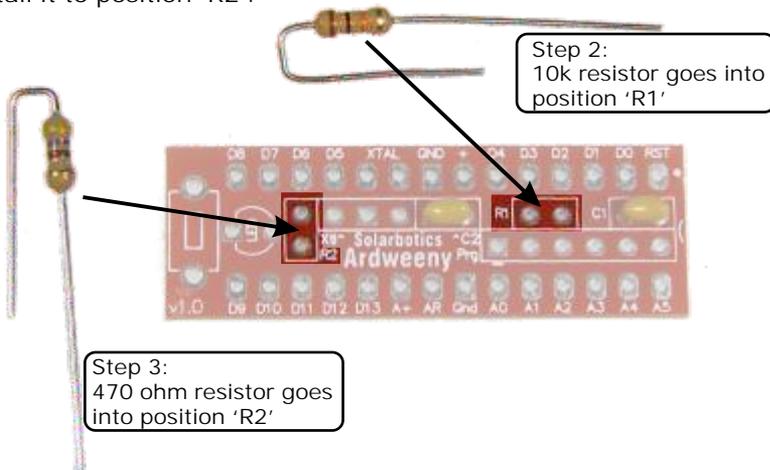
Step 1 - 0.1 $\mu$ F Capacitors: One is for power filtration, the other is part of the auto-reset function when a program is finished uploading. Stick one in position 'C1', and the other in position 'C2'.



Step 1:  
2 x 0.1 $\mu$ F Capacitors  
into 'C1' & 'C2'

Step 2 - 10k Resistor (Brown / Black / Orange): This one is part of the auto-reset function too. Bend it over as shown, and install it to position 'R1'.

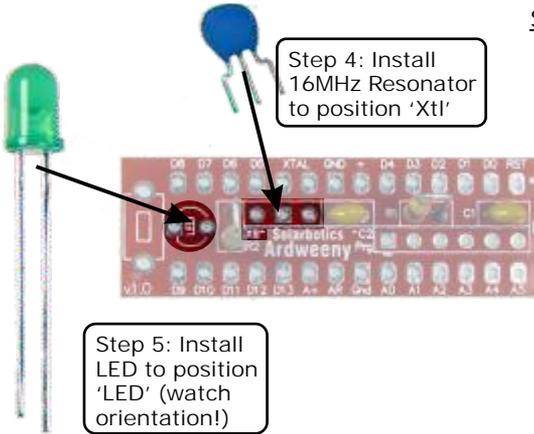
Step 3 - 470 ohm Resistor (Yellow / Purple / Brown): This is the current-limiting resistor for the Pin-13 LED. Bend it like the other resistor, and install it to position 'R2'.



Step 2:  
10k resistor goes into  
position 'R1'

Step 3:  
470 ohm resistor goes  
into position 'R2'

# Construction!



Step 4 - 16MHz Resonator: This gets installed in position 'Xtl'. It doesn't matter which-way-around it goes in.

Step 5 - LED: It's an *Arduino*-clone. It *has* to have a pin-13 LED installed onboard! Unlike the resonator, make sure you have the shorter lead in the square pad (or just make sure the LED matches the outline on the PCB).

Step 6 - Reset Switch: Stick it into the PCB, and solder it in!

Step 7 - 6-Pin Programming Header: Jam the 6-pin header into position "Prg". This is where you will plug in your USB / Serial converter.

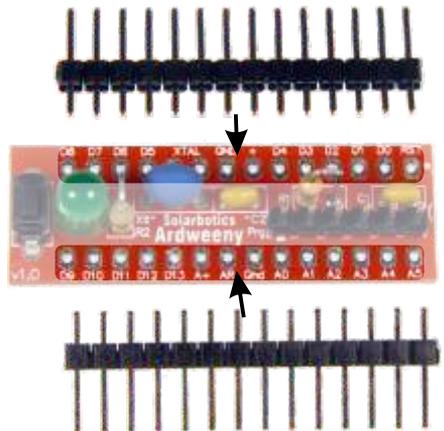


Step 6: Install the Reset Switch

Step 7: Install the 6-pin programming header in position 'Prg'

Step 8 - 14-Pin Mounting Rails: Now we are getting close to completion! Mount the 14-pin headers on the underside of the board.

Step 8: Mount each 14-pin strip from the underside of the PCB

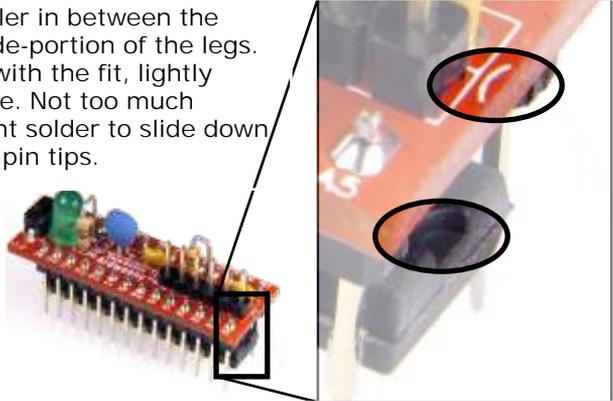


# Construction!

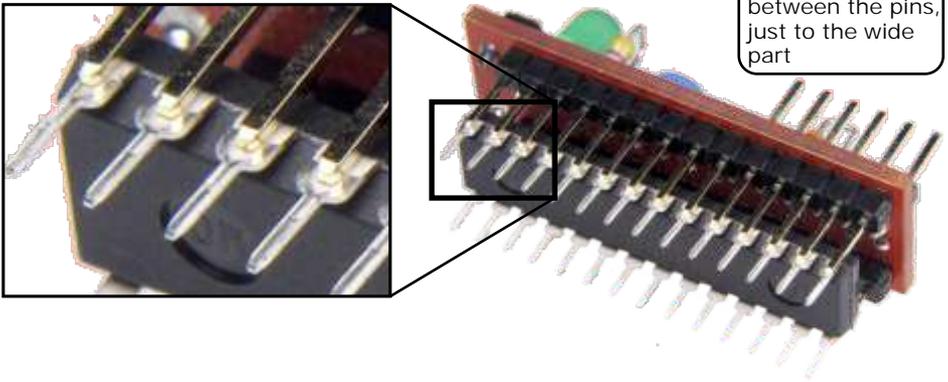
**Step 9 - Installing the microcontroller:** Now we are getting to the best part - installing the microcontroller! The important part is to get it in the right-way around. Note the little curve printed on the PCB, and make sure it matches the notch on the microcontroller.

Slide the microcontroller in between the legs so it grips the wide-portion of the legs. When you are happy with the fit, lightly solder the pins in place. Not too much solder! You do not want solder to slide down to the microcontroller pin tips.

Step 9a: *Important!*  
Note the curve  
on the PCB matches  
the notch on the  
microcontroller



Step 9b: Push the  
microcontroller in  
between the pins,  
just to the wide  
part



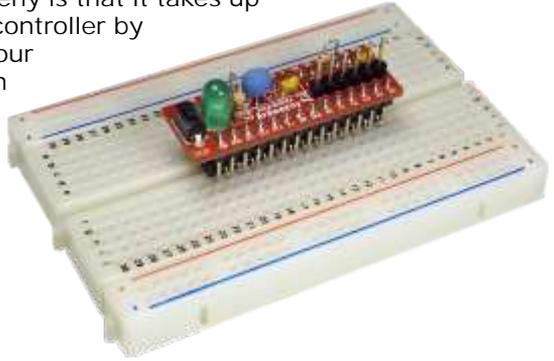
Step 9c: Tack solder  
the PCB pins down,  
*just* to the top of the pin



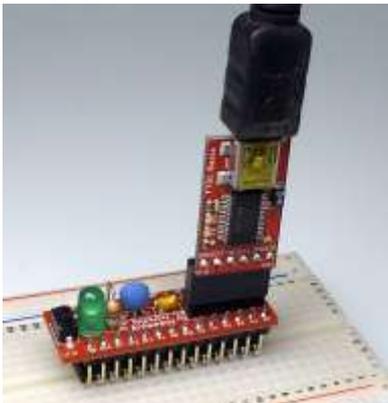
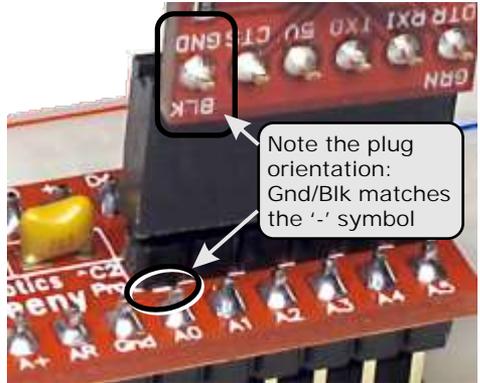
# Using It!

What's great about the Ardweeny is that it takes up the same footprint as a microcontroller by itself. You simply plug it into your breadboard or PCB, and jack in your programming header.

Set the Board in your Arduino IDE as the "Arduino Uno", and treat it like any other Arduino!



The pin-out matches the FTDI breakout cable standard, or the SparkFun *FTDI Basic Breakout* adapter (our part 50510). The plug's GND line (also marked "BLK") matches the Ardweeny pin marked with the "-".

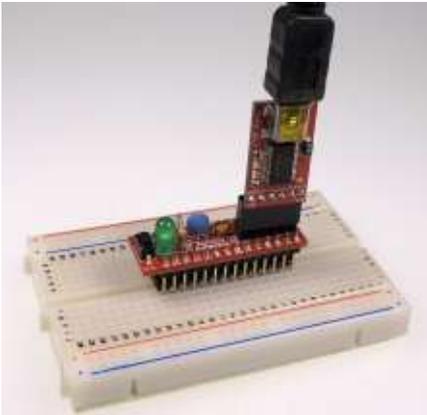


The FTDI adapter *can* power the Ardweeny *and* the other circuitry on the breadboard, if you connect the 'GND' and '+' pins to the rest of the breadboard power rails.

# The Solarbotics Ardweeny: The smallest Arduino-compatible Kit!

We love Arduino. Those Italians know how to design an *excellent* microcontroller platform and share it with the world. And Mr. Kimio Kosaka's "One-Chip-Arduino" project inspired us to develop the *Ardweeny*; the smallest Arduino you can build yourself with through-hole components!

We've designed a *backpack* printed-circuit board the fits on top of an Atmel ATmega328 (it'd fit on a '168 too), straddling it. Solder the pins to the microcontroller's legs, and you're ready to join the open-source hardware revolution!



Installed on breadboard, connected to programming adapter powered up and blinking happily!

Visit us online for more info and cool stuff:

[www.solarbotics.com](http://www.solarbotics.com)

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