

# Analog Power Extender On Measurement



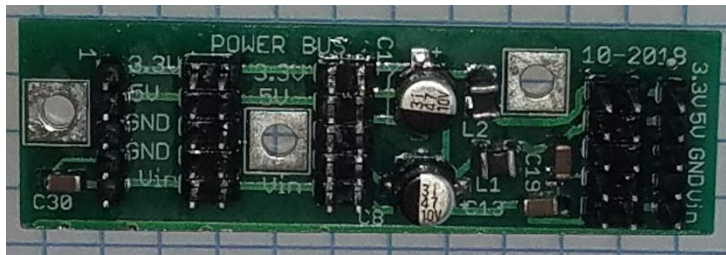
## Add Power and Ground Pins with DC Filtering

### General Specifications

The Analog Power Extender shield provides additional power and ground pins for your Arduino circuit. Additional analog 5V and 3V power pins are DC filtered for use with sensitive analog and sensor circuits. This shield allows the designer to create a “star” grounding system to reduce noise in analog circuits.

#### Additional Power Supporting Your Design:

- 5V Dig IO – 2 pins (No filter)
- 3.3V Dig IO – 2 pins (No filter)
- Vin DC power – 7 pins
- 5V Analog – 7 pins
- 3.3V Analog – 7 pins
- Ground – 14 pins, Plus Grounded Mounting Pads



### Applications

For using digital supplies to power sensitive analog electronics.

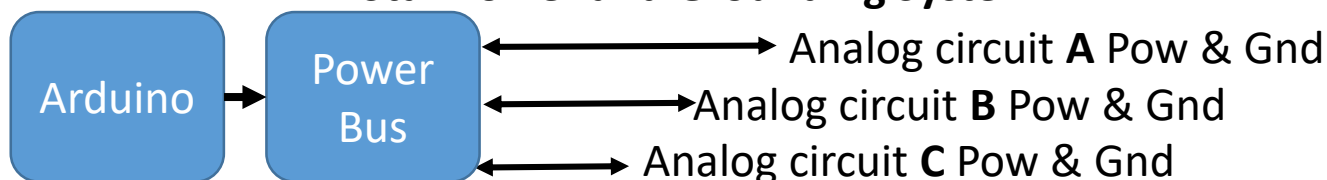
### Professional Circuit Designers

By using the Power Extender shield, the designer is isolating their sensitive analog and sensors from the noisy digital supply of the Arduino board. Between the digital 5V and 3.3V and the analog 5V and 3.3V is a pi filter. This is a great filter for removing fast spike noise created by fast switching digital logic circuits.



The inductor is great at stopping noise but it has limited current capability. The analog supply voltages should be limited to <50mA. Still, 40mA is a lot of current for analog and sensor circuits. The analog filter capacitors are large value 22uF! Also, by using this shield, most measurement circuits can be created using the “Star Power & Ground” concept. This reduces coupling noise between sensors!

#### Star Power and Grounding System



# Analog Power Extender



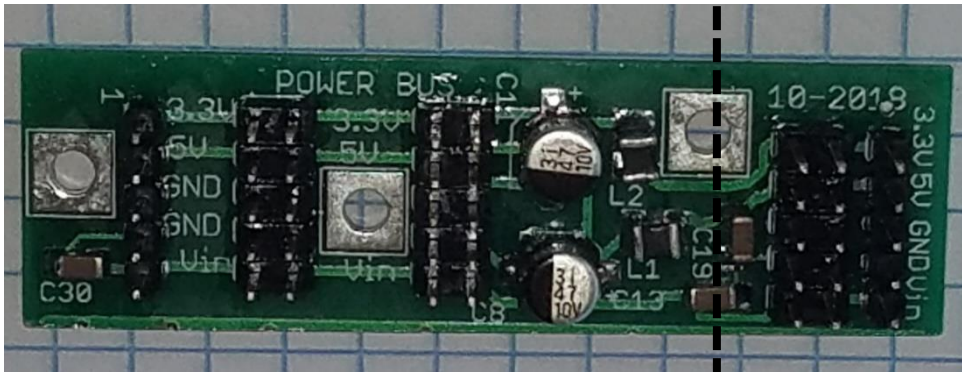
www.onmeasurement.com

## Additional Specifications

- The pi filters use a 100uH inductor with an internal resistance of 1.4ohms. This resistance will drop the supply voltage by  $1.4 \times \text{current}$  going to the analog and sensor circuits. (There isn't any voltage drop for the digital IO voltages.)
- The pi filter has a min 22-47uF output capacitor.
- The Vin voltage doesn't have a pi filter. However, there are two parallel 1uF ceramic capacitors to ground to reduce voltage ripple on the input voltage.

Analog Side

Arduino Side



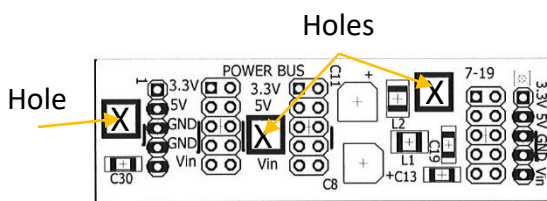
Filtered supply voltage pins

Unfiltered Voltage pins

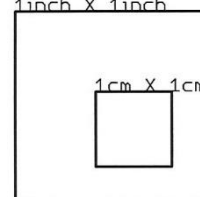
The pins are in the same order as the Arduino UNO: 3.3V, 5V, Gnd, Gnd, Vin. **This board provides 14 additional ground pins.**

The mounting hole pads are grounded to circuit ground. This allows for grounding circuits to a metal ground plane.

The images below can be printed and cut out and used for physically laying out your circuits and drilling mounting holes. Check your printing for size with the test square. You may need to set your printer to “actual size” and NOT “Fit to Page”.



1inch X 1inch



Test Square