

Gain Signals for High Resolution Sensor Systems

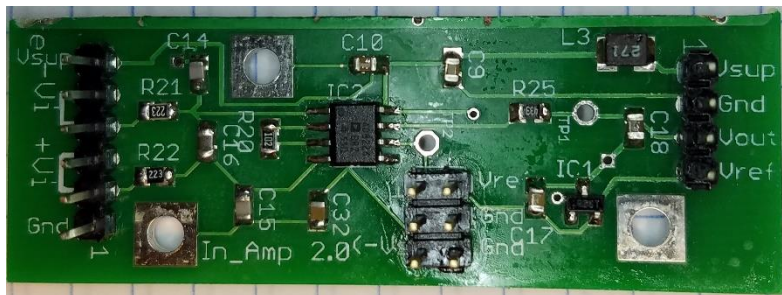
Manufactured by On Measurement 4U LLC, www.onmeasurement.com

General Specifications

The InAmp Shield is based on the AD8226 instrumentation amplifier from Analog Devices, Inc. This shield allows the measurement designer to take full advantage of the AD8226 for amplifying very large number of analog sensors as: bridge strain, thermocouple or RTD temperature, pressure sensors, current flow measurements and more. The InAmp shield allows the designer to create an offset voltage to allow negative sensor signals for the ADC. For example, the InAmp shield can allow your Arduino to measure negative and positive temperatures as any temperature from -20C to +50C (-4F to 122F).

Circuit Options:

- Vsup from +3.3V to +/-10V
- Reference Signal to Gnd or 2.50V
- Input signal 0-5V or True Differential
- 0.1% resistor selectable gain
- Precision Gain 1 to 1000



Applications

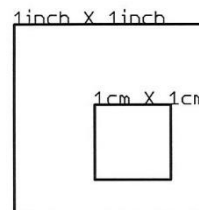
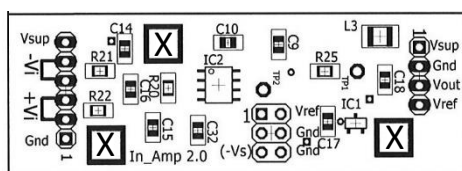
Electronic measurement systems using analog sensors. Use the InAmp to provide needed signal gain while removing DC offset levels from the sensor. Great for strain bridge circuits used to measure stress. Or use as a simple analog signal amplifier with a resistor gain, $Gain = 1 + 49.4K/R$;

Attention Professional Circuit Designers

Unpopulated circuit boards are available for populating your own components. Or ask us to custom build your circuit using our components. The AD8226 foot print is a common design fitting a large number of 3 op-amp type instrumentation amplifier.

Layout

To aid in laying out your test assembly, use the image below. Make sure to print actual size and check the dimensions using the test image.



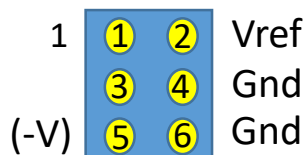


Additional Specifications

- Instrumentation amplifier is the AD8226.
 - Generic 8 pin SOIC package
 - Single (0 to 2.7-10V) or Dual Supply (-/+5 to -/+10)
 - Typical Current
 - Very high input impedance
- On board reference voltage is based on the MAX61XX, SOT23 package
 - The standard value is 2.50V +/-10mV, however a 1.25V +/-5mV can be requested
 - Other possible values are: 1.80V, 2.048V, 3.00V, 4.096V, and 5.00V
 - The typical reference voltage drift is 75ppm/C
- Circuit offers independent 2 RC poles
 - One differential power input to the AD8226
 - One on the output of the AD8226
 - These can be used to create a 2 pole anti-aliasing filter
 - If the input and output RC poles are equal then the resulting circuit pole is 0.644 time the RC pole value
- Other circuit benefits of this shield
 - There is a pi filter (LC) filter on the positive DC supply to reduce coupling digital noise from the power supply
 - The clean filtered positive supply is available for sensor circuits
 - Limited to 10mA
 - Jumper selectable onboard reference voltage or ground output
 - Mounting holes have grounded pads
 - Double input signal pins allows for easily jumping the signal to an additional circuit
 - Solder test points on the signal output and voltage reference is available for testing

| Shield Pins | | | |
|-------------|-------------------|------------|---------------|
| Power Side | | Input Side | |
| Vsup | 3-10V DC | Vsup | Filtered Vsup |
| Gnd | Analog Gnd | -Vi | Neg Amp Input |
| Vout | Amplifier Output | +Vi | Pos Amp Input |
| Vref | Reference Voltage | Gnd | Analog Gnd |

Jumpers



You MUST set jumpers on pins 1-2 OR 3-4 for correct circuit operation but NEVER both. A jumper MUST be set between 5-6 for amplifier single supply operation. For dual supply operation (-Vs and +Vsup), apply a negative voltage 0V to -10V to pin 5 without a jumper to pin 6.

For a 0V to Vsup amplifier output requires a jumper between pins 3-4. For an output offset by Vref jumper between pins 1-2.