1.0 Sensors

2.0 Transamplification Amplifier

3.0 Signal Processing

3.1 Digital Processing

3.2 Analog Processing

4.0 Output

5.0 Power Management

x6 One for each string

Analog/Digital Switch

See 3.1 Digital Processing below

See 3.2 Analog Processing below

Output through 1/4" Jack

See 5.0 Power Management below
3.1 Digital Processing

Low Pass Filter
- x6
  - One for each string

ADC
- x6
  - One for each string

Gain Stage
- x6
  - One for each string

Bandpass Filtering
- x6
  - One for each string

Summing

DAC

1832UC3C0256C
- 32 Bit AVR
  - Microcontroller
### 3.2 Analog Processing

<table>
<thead>
<tr>
<th>String</th>
<th>Low cut-off (Hz)</th>
<th>High cut-off (Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>66</td>
<td>285</td>
</tr>
<tr>
<td>2</td>
<td>100</td>
<td>400</td>
</tr>
<tr>
<td>3</td>
<td>125</td>
<td>500</td>
</tr>
<tr>
<td>4</td>
<td>185</td>
<td>700</td>
</tr>
<tr>
<td>5</td>
<td>240</td>
<td>885</td>
</tr>
<tr>
<td>6</td>
<td>305</td>
<td>1160</td>
</tr>
</tbody>
</table>

**2nd order Sallen-Key topology bandpass filter**

We use inverter gain amplifier due to the voltage 180 degree phase of the trans-impedance amplifier.

The variable resistance allows us to adjust the offset voltage.

**3.2.1 Gain Stage**

<table>
<thead>
<tr>
<th>x6</th>
<th>One for each string</th>
</tr>
</thead>
</table>

**3.2.2 Filtering Amplifiers**

<table>
<thead>
<tr>
<th>x6</th>
<th>One for each string</th>
</tr>
</thead>
</table>

**3.2.3 Summing Amplifier**
5.0 Power Management

5.1 Battery

5.1 Boost Converter (Voltage Regulator)