



Triangle BioSystems, Int'l.

50 mil input



25mil input



4 Channel Gain 2 Tethered Headstages

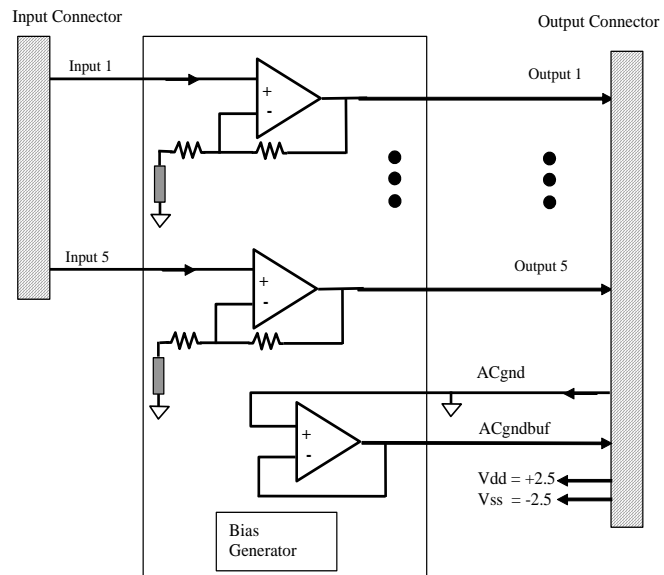
Headstage Features

- Custom VLSI circuit provides small size & reduced weight
- Weight < 0.6 grams
- 5 channels (5ch plus 1 reference)
- Available with gain of 2
- Unity gain ground buffer output
- Selectable bandpass filtering per channel
- 3v/5v operation
- Size for Gain 2:
5x18x17mm for 50mil Input Omnetics
5x12x12mm for 25mil Input Omnetics

Triangle BioSystems, Int'l. offers a family of 4-channel analog headstage subassemblies that are used to provide a wired connection between implanted electrodes and neural recording and analysis equipment. The main function of the headstage is to precondition the neuron pulse signals and provide a buffered connection over a low impedance cable. Each headstage design is based on a custom, low power VLSI developed by TBSI. The result is a solution with superior performance in a very small form-factor with less weight.

The 8-channel headstages are available with gain of 2.

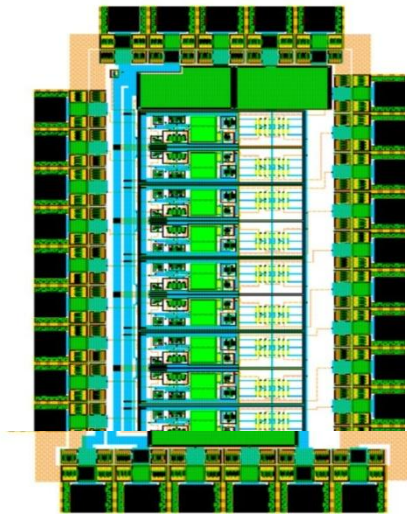
Block Diagram



*does not apply to gain 1000 version

Electrical

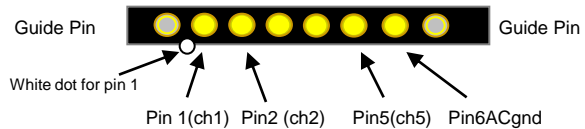
| Parameter | Min | Typ | Max | Units | Notes |
|----------------------------|------|-----|-----|--------|---|
| Power Supply | | | | | |
| 3 volt supply | 3.0 | 3.3 | 3.6 | Volts | 3.3v Bipolar power supply (+/- 1.65v) |
| Average Icc 3v | 5.6 | 6.1 | 6.7 | ma | |
| 5 volt supply | 4.5 | 5 | 5.5 | Volts | 5v Bipolar power supply (+/- 2.5v) |
| Average Icc 5v | 6.8 | 7.5 | 8.5 | ma | |
| Analog Channel | | | | | |
| Input voltage range (5v) | -1.2 | 0 | 1.8 | Volts | For 5v Bipolar power supply |
| Input voltage range (3.3v) | -.6 | | .8 | Volts | For 3.3v Bipolar power supply |
| Common mode center | | 0 | | Volts | For bipolar power supplies only |
| dc Offset | -10 | 0 | 10 | mVolts | For bipolar power supplies only |
| Gain 2 | 1.9 | 2 | 2.1 | | Factory selectable gain |
| G2 BW @ 5v | .8 | | 120 | kHz | -3dB input signal level BW |
| Input impedance | | 22 | | Mohms | At 1kHz |
| Output impedance | | 158 | | ohms | At 1kHz |
| Input referred noise | | 6.2 | | µVrms | for DC - 10kHz frequency with all inputs grounded |
| THD | | | -63 | dB | @ 5kHz and 1 volt p-p input |
| Phase Delay | | 30 | | uSecs | @ 5 kHz input |
| Settling Time | | 5.5 | | uSecs | With 1v step input |
| Mechanical Specs | | | | | |
| Length | | 15 | | mm | Edge to Edge of connector pins |
| Width | | 14 | | mm | |
| Height | | 3.0 | | mm | |
| Weight | | | .6 | grams | |
| Miscellaneous | | | | | |
| Reference Bias Current | | 78 | | uA | Included inside headstage |
| Junction Temperature | -40 | 25 | 100 | C | |



Gain 2 die

Electrode Side Omnetics Connector

Looking At Input Electrode Connector



Electrode mating 25 mil connector is Omnetics
Electrode mating 50 mil connector is Omnetics

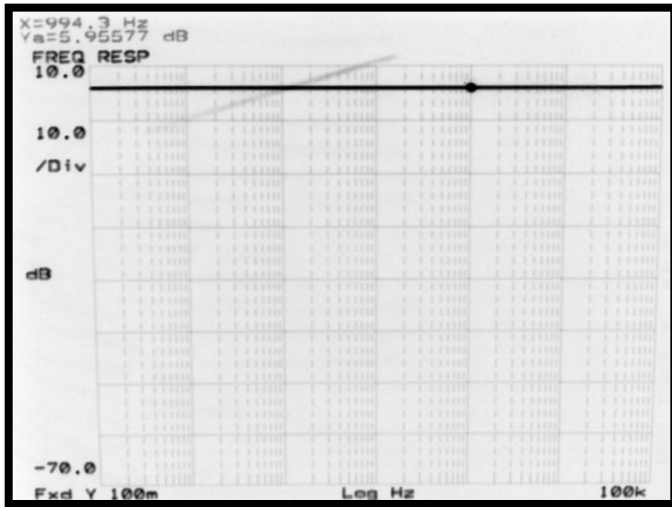
Recorder side headstage cables come pre-wired and attached and can be ordered with different lengths up to 3 feet.

Ordering Information

| Part No. | Gain | BP Filter |
|----------|--------|-----------|
| Neuro4G2 | Gain 2 | No |



Gain, Phase & Noise Response



Gain: 1.99
BW: <0.1Hz to >100kHz
Noise Ref. Input: 5.7 μ Vrms

