Triangle BioSystems, Int'l.

16 Channel Tethered Headstages Gain 2, 20 and 100

Gain 2

Gain 20, 100

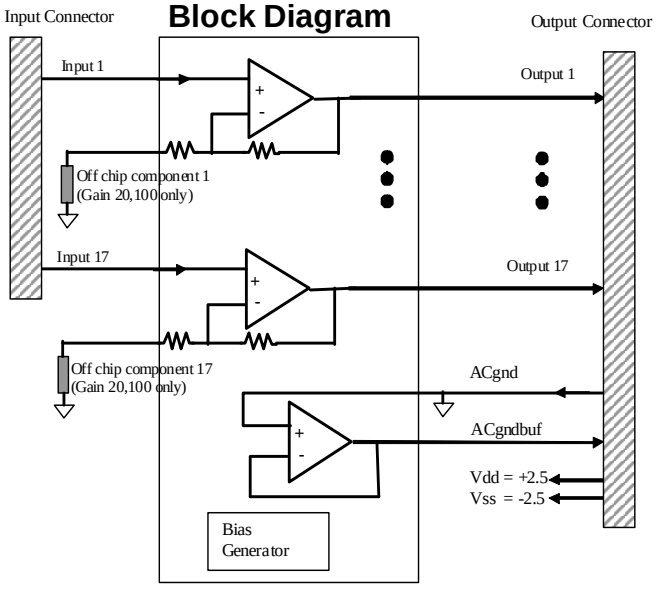
Headstage Features

- Custom VLSI circuit provides small size & reduced weight
- Weight < 0.75 grams
- 17 channels total (16 data channels and 1 reference channel)
- Available with gain of 2, 20, 100
- Unity gain ground buffer output
- Selectable bandpass filtering per channel
- 3v/5v operation
- Gain 2 size: 3 x 8 x 15 mm
  Gain 20 & 100 size: 3 x 9 x 20 mm

Triangle BioSystems, Int'l. offers a family of 16-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 16-channel headstages are available with gains of 2, 20, 100. With the exception of the gain 2 device, all headstages include a selectable bandpass filter.

Block Diagram

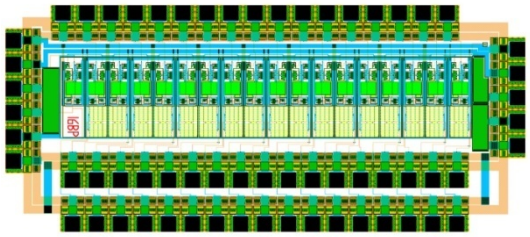


*does not apply to gain 1000 version

Headstage Specifications

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
Voltage Gain 2	1.9	2	2.1		Factory selectable gain
Voltage Gain 20	19.8	20	20.2		Factory selectable gain
Voltage Gain 100	95	100	105		Factory selectable gain
G2 BW @ 5v			150	kHz	DC coupled
G20 BW @ 5v	.8		54	kHz	-3dB input signal level BW
G100 BW @ 5v	.8		22	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					
Gain 2 (H x L x W)	3	8	15	mm	Edge to Edge of connector pins H x W x L
Gain 20 & Gain 100	3	9	20	mm	Edge to Edge of connector pins H x W x L
Weight Gain 2			.4	grams	
Weight Gain 20			.7	grams	
Miscellaneous					
Reference Bias Current		78		uA	Included inside headstage
Junction Temperature	-40	25	100	C	

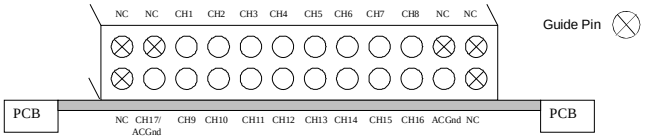


Custom VLSI ASIC

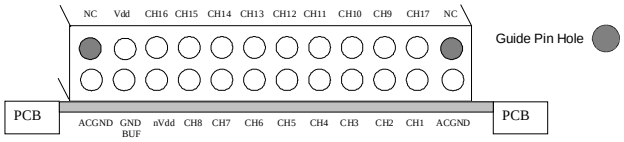
Compact Size

Connectors

Looking At Input Electrode Connector (Omnetics A8783-001):



Looking At Output Connector (Omnetics A8811):



Ordering Information

Part No.	Gain	BP Filter
Neuro16G2	Gain 2	No
Neuro16BPG20	Gain 20	Yes
Neuro16BPG100	Gain 100	Yes

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