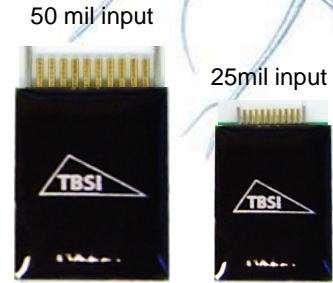




8 Channel Tethered Gain 20 and 140 Headstages



Headstage Features

- Custom VLSI circuit provides small size & reduced weight
- Weight < 0.9 grams
- 9 channels (8ch plus 1 reference)
- Available with gain of 20 and 140
- Unity gain ground buffer output
- Selectable bandpass filtering per channel
- $\pm 1.65V/\pm 2.5V$ operation
- Size for Gain 20 & 140:
5x25x17mm for 50mil Input Omnetics
5x19x11mm for 25mil Input Omnetics

Triangle BioSystems, Int'l. offers a family of 8-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.

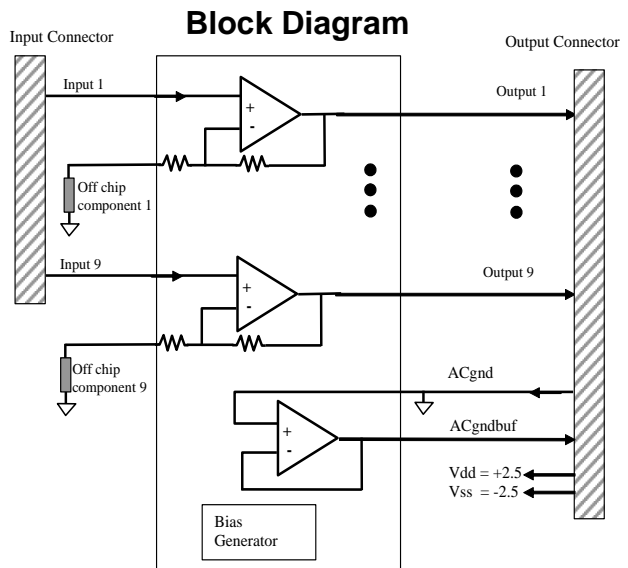
The 8-channel headstages are available with gains of 20 and 140. An all headstages include a selectable bandpass filter. A gain 1000 is also available that is the size and weight of the 16 channel headstage

System Overview



NeuroWare™ certified

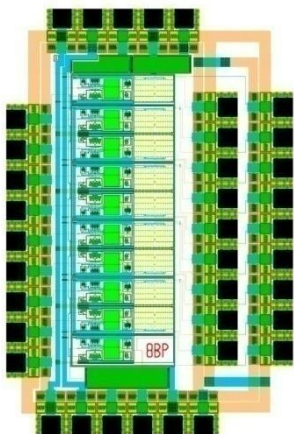
These products are not for human use.



Headstage Specifications

Electrical

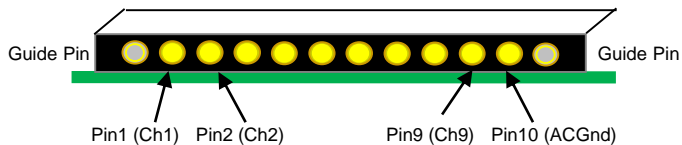
Parameter	Min	Typ	Max	Units	Notes
Power Supply					
±1.65 volt supply	3.0	3.3	3.6	Volts	3.3V Bipolar power supply (± 1.65V)
Average Icc	5.6	6.1	6.7	mA	
±3.0 volt supply	5.6	5.75	6.0	Volts	6V Bipolar power supply (± 3.0V)
Average Icc	6.9	7.1	7.5	mA	
Analog Channel					
Input voltage range (±3.0V)	-.145		.145	Volts	For 6V Bipolar power supply for G20
Input voltage range (±1.65V)	-.081		.081	Volts	For 3.3V Bipolar power supply for G20
Common mode center		0		Volts	For bipolar power supplies only
DC Offset	-5	0	5	mVolts	For bipolar power supplies only
Voltage Gain 20	19.8	20	20.2		Factory selectable gain
Voltage Gain 140	138	140	143		Factory selectable gain
G20 BW @ ±2.5V	.4		300	kHz	-3dB input signal level BW
G140 BW @ ±2.5V	.4		45	kHz	-3dB input signal level BW
Input impedance		50		Mohms	At 1kHz
Output impedance		158		ohms	At 1kHz
Input referred noise		3.6		µVrms	for DC – 10KHz frequency with all inputs grounded
Input referred noise		1.8		µVrms	for .8 Hz to 500 Hz frequency with all inputs grounded
Input referred noise		1.2		µVrms	for 500 Hz to 8KHz frequency with all inputs grounded
THD			-63	dB	@ 5kHz and 1V p-p input
Phase Delay		30		µSecs	@ 5 kHz input
Settling Time		5.5		µSecs	With 1V step input
Mechanical Specs					
Gain 20 & Gain 140		1.2 x 2.1		mm	Edge to Edge of die W x L, 100 um height
Weight Gain 20/140			.1	grams	
Miscellaneous					
Reference Bias Current		78		µA	Included inside headstage
Junction Temperature	-40	25	100	C	



Gain 20 & 140 die

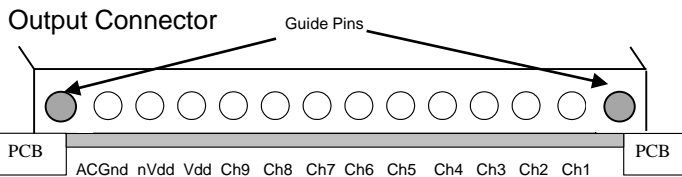
Electrode Side Omnetics Connector

Looking At Input Electrode Connector (50mil is PN A11862 or 25mil is PN is A8376-001)



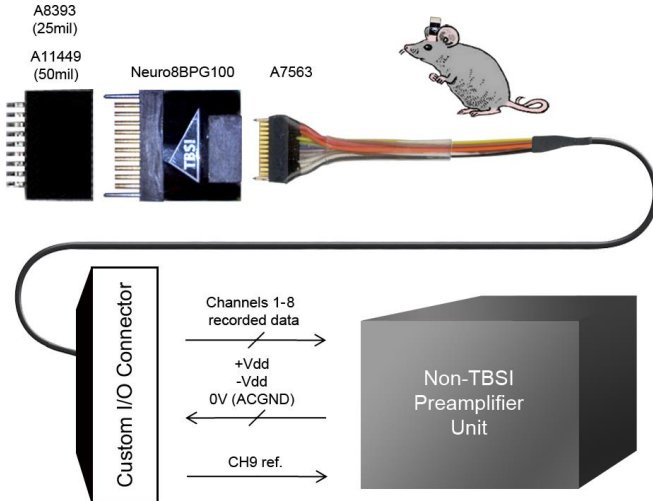
Mate logo to logo for correct connector orientation.

Electrode mating 25 mil connector is Omnetics PN A8393-001
Electrode mating 50 mil connector is Omnetics PN A11449

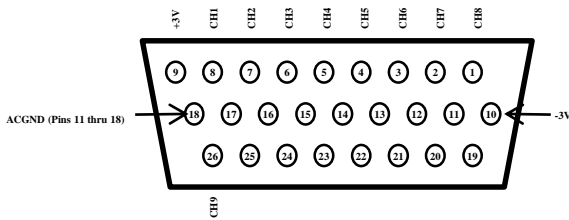


Ordering Information

Part No.	Gain	BP Filter
Neuro8BPG20	Gain 20	Yes
Neuro8BPG140	Gain 140	Yes



Front View



Rear View



* 16ch T-series recording unit is exclusively powered via USB

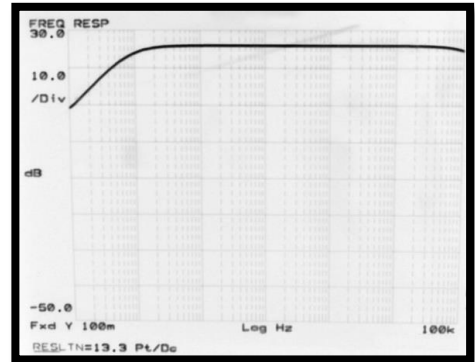
Application Notes

Available Grounding and Referencing Connections for T8G20,140 Headstage:

ACGND: Connect your animal ground to ACGND (see pinout diagram on pg2) of the headstage. This is typically connected to earth or system ground (which is 0V potential) of the recording system.

CH9: This is an extra recording channel that can be used as a common mode reference signal for external preamplifiers. This common mode reference channel is useful for removing animal movement artifacts or any other common mode noise found at the headstage input pins.

Gain 20



Gain 140

