

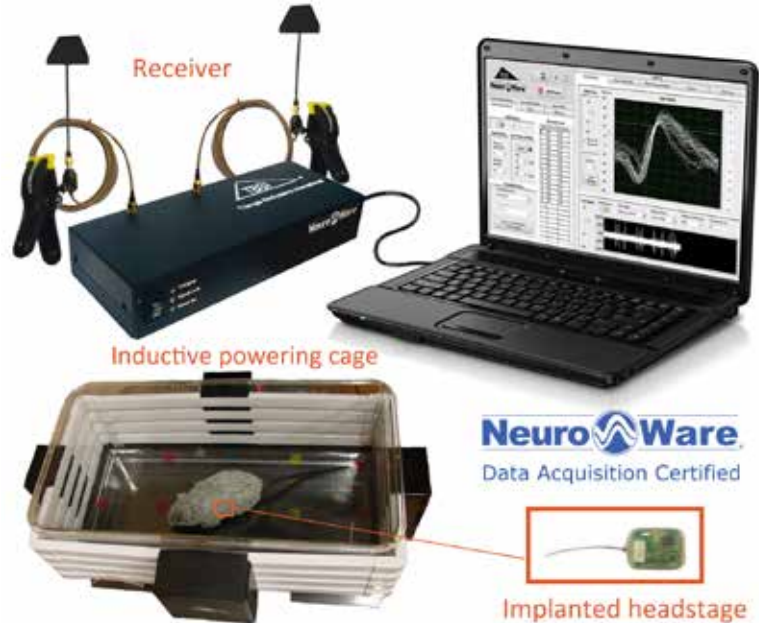


# Implantable 5 Channel Wireless Neural Recording System

For Neuroscience Research Applications

## FEATURES

- Reliable wireless operations across 1 meter
- 90-day package life
- Compatible with 1Mohm or lower electrode impedances
- Factory configurable total system gain (800x standard)
- DAQ integrated solutions available - NeuroWare© software certified
- Inductive powering for 24/7 recording
- Typical bandpass filtering per channel: .8Hz to 7kHz
- 50kHz sampling rate per channel
- Headstage Weight: 5.0 grams
- Dual radio systems available
- Analog signal and TTL event inputs on receiver (requires internal DAQ)



NeuroWare  
Data Acquisition Certified

Implanted headstage

## PRODUCT DETAILS

Triangle BioSystems International has developed a 90-day implantable neural recording headstage system that allows researchers to continuously and simultaneously obtain biopotential data from up to 5 electrodes and transmit to an external receiver in real time. No longer do experiments have to be constrained by head mounted or wired test subjects. The complete system is comprised of an implantable inductively powered wireless headstage transmitter, RF signal receiver/baseband demodulator, power supply and a silicone electrode connection kit. With an effective range of 1 meter, this system provides a wireless connection between the implanted electrodes and the data acquisition recording system.

This implantable headstage unit can be implanted in a rat's peritoneal cavity using a minimally invasive surgical procedure. Additionally, this headstage can be used concurrently with our stimulation, tethered or multiplexed neural recording headstages. This system utilizes TBSI's custom ASIC technology and packaging, wireless powering and proprietary radio design to provide reliable functionality in a implantable package that is both small and light weight. This design includes the neural preamplifier circuitry to create an extremely compact and powerful transmitter with high data rate and bandwidth.



Top View



Side View

Implantable Headstage

## DATA ACQUISITION

- **NeuroWare™** provides user-customizable digital filtering & referencing, spike triggering & multiple data viewing options
- **Internal receiver DAQ** provides up to 24 TTL event inputs & one analog data input, synchronizable to headstage data in NeuroWare™



**NeuroWare**  
Data Acquisition Certified

Receiver output options include analog data to an ADC of your choice, digital data to NeuroWare™ or both modalities together.

Demultiplexer Base Station Back View



## W5 SYSTEM SPECIFICATIONS

PARAMETER	MIN	TYP	MAX	UNITS	NOTES
<b>Power Supply</b>					
Battery Life					
<b>Analog Input Specs</b>					
Input voltage range		5		mVolts	Maximum Input voltage Vp-p
Gain Selection	790	800	810	mm	Factory selectable total system gain
Bandwidth	0.8		7000	Hz	-3dB input signal level BW
Input impedance		12M		ohms	at 1kHz
Input referred noise		8.5		µVrms	for DC 10 kHz frequency, 30µV
Input referred noise		5.5		µVrms	for 500Hz - 5kHz frequency
Sampling Rates/Channel		50		kHz	At headstage (max 30kHz sampling rate/channel at ADC)
<b>Mechanical Specs</b>					
Length		29		mm	Edge to edge (including connectors)
Width		23		mm	Edge to edge
Height		12		mm	Edge to edge
Weight		5.0		grams	With connector and dipped package
Temperature tolerance			1	degree C	Change of package surface temperature
<b>Radio Specs</b>					
Center frequency		3.05		GHz	With +/- 100 Mhz bandwidth
Transmit power			300	µW @ 3m	FCC Sec. 15 109B9(a)
Transmit antenna		3.05		GHz	Tuned chip antenna with circular diversity
Transmit range		1.0		meters	With connector and dipped package