

The NeuroPort™ System

Intended for temporary (<30 days) recording and monitoring of brain electrical activity



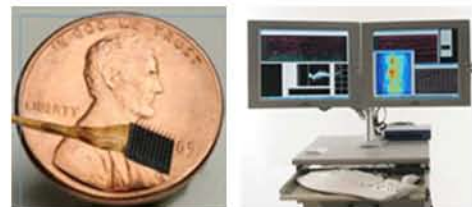
About the NeuroPort™ System

The NeuroPort™ System is a medical device intended for temporary (< 30 days) recording and monitoring of brain electrical activity.

The NeuroPort System consists of two parts, the NeuroPort Cortical Microelectrode Array (NeuroPort Electrode) and the NeuroPort Neural Signal Processor (NeuroPort NSP). The NeuroPort Electrodes are implanted on the surface of the brain and sense electrical activity from individual neurons. The NeuroPort NSP records these high resolution signals and provides a physician with the tools to analyze them.

The NeuroPort System has a 510(k) approval for acute inpatient applications. Potential clinical applications for invasive brain monitoring currently include patients undergoing elective surgery for diagnosis and treatment of severe epilepsy as well as patients undergoing craniotomies for traumatic brain injuries and stroke.

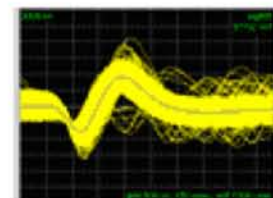
The NeuroPort System offers a monitoring technique to study brain function in a selective and specific manner.



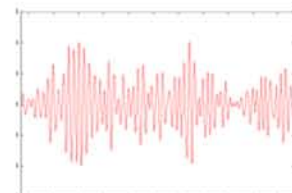
Recording and Monitoring of Brain Electrical Activity

The NeuroPort™ System is capable of recording action potentials of neurons as well as local field potentials.

Measure of Neural Activity	# of Neurons Required to Obtain Signal	Signal Frequency	Signal Quality
Spikes Cell Action Potential	One	Fast	High
LFP Local Field Potential	Hundreds	Medium	Medium
fMRI functional MRI	Thousands	Slow	Low
EEG Electroencephalograph	Millions	Medium	Medium



Each Spike = Action Potential of a Single Neuron

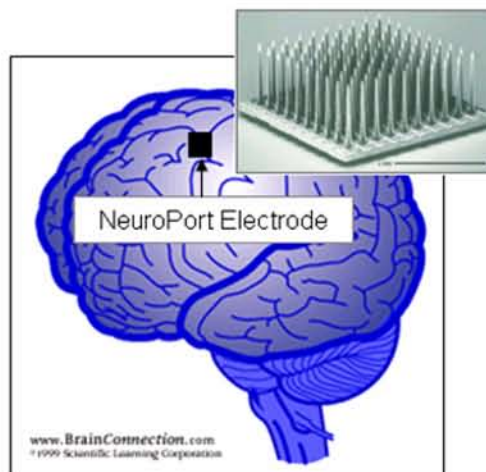


LFP: Fast rhythms show integrated, local volume activity

The NeuroPort™ System Electrodes

NeuroPort Electrodes allow cortical recordings of multi and single-unit cell responses. Key features include: sterile, single use electrodes that provide access to an incremental population of individual cells.

The NeuroPort System utilizes an array comprised of 100 micro-electrodes all uniformly organized on a 4mm x 4mm silicon base that is 0.25 mm thick. Each microelectrode is insulated with Parylene-C polymer and is electrically isolated from neighboring electrodes by non-conducting glass. Each microelectrode has a platinum coated active recording tip that is 20-100 microns in length and offers impedance values from 100 - 800 kilo-ohms. Of the 100 electrodes, 96 are actively bonded to a 1 mm gold plated copper wire. The bundle of 96 wires, 13 cm in length, is potted to a printed circuit board with epoxy covered with silicone elastomer located in the base of a percutaneous pedestal connector.



The NeuroPort™ Neural Signal Processor

The NeuroPort NSP provides for brain activity recording and monitoring as well as data retrieval and replay.

The NeuroPort System is intended for the recording and monitoring of brain activity using an array of penetrating microelectrodes. The NeuroPort System supports the recording of up to 96 electrode channels, 16 optional analog input channels, and digital and serial input channels. For recording, the pedestal connector mates with a patient cable that transfers data from the brain to the NeuroPort NSP which includes an amplifier, a central processing unit, a Windows PC and display monitors. Each electrode can simultaneously record extra-cellular spikes and local field potentials. Software features provide for data viewing and acquisition as well as real-time diagnostic tools. The software can also be used as an offline viewer. Key features include: digitization at 30,000 samples/sec per channel; Fiber optic connections between the amplifier and the processing unit for optical isolation and flexible configurations and an offline interface with Persyst Insight™, Neuroexplorer™, Matlab™, Spike 2™, and others for analysis.

Contact [Blackrock sales](#) for additional information.