



Dedicated  
Near-Infrared Spectroscopy



# NIRSport

*Wearable, Multi-Channel Neuroimaging Platform*

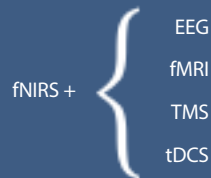
# NIRSport System Description

NIRSport is a portable, multi-channel, modular functional near-infrared spectroscopy (fNIRS) platform which measures hemodynamic neuroactivation via oxy-, deoxy-, and total hemoglobin changes in the cerebral cortex.

NIRSport platform combines lightweight LED sources and active detectors with innovative strain-relief hardware to create a truly wearable brain imaging solution ready for use in any 'portable lab', or movement-related study.

## Applications

- BCI/Neurofeedback
- Cognitive Disorders
- Developmental Disorders
- Hyperscanning (multi-subject measurements)
- Movement/Balance
- Infant Monitoring
- Neuropathology
- Neuropsychiatry
- Social Interaction
- Speech/Language
- Stroke and Rehabilitation
- Traumatic Brain Injury
- Visual Impairment/Stimulation
- Multi-modal Integration:



# A Wearable System Solution

NIRSport comes in 8-source/8-detector (64 data channels) and 16-source/16-detector (128 data channels) configurations, with a diverse array of available headgear and probes to fit any subject and neuroscience application.

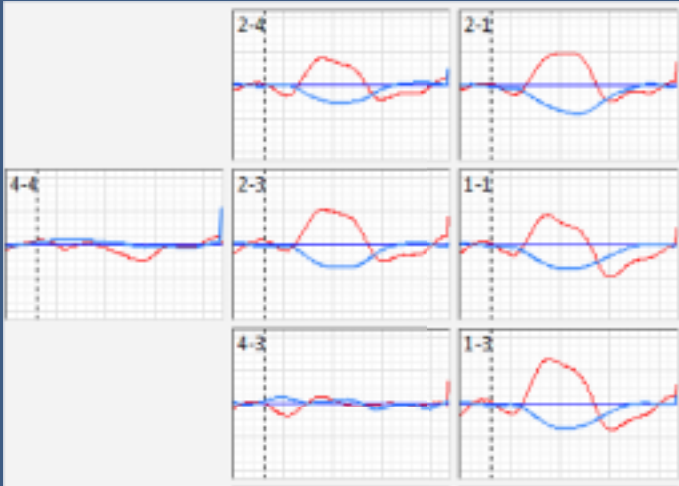
Freely-configurable probe arrays easily integrate with EEG and tDCS within a single NIRx NIRScap. Concurrent fNIRS + fMRI and fNIRS + TMS may be done with NIRSport's low-profile fiber-optic probes. NIRSport can measure both topographic and tomographic NIRS data from the entire cortex, yielding 3-D depth-discriminating neuroactivation.

This system uses precise event marker triggering. A real-time data streaming option is available for BCI/neurofeedback applications.



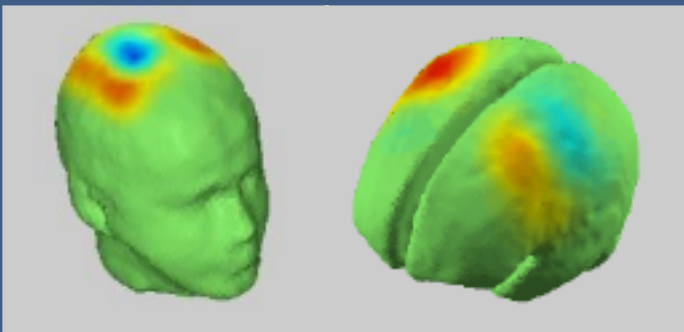
NIRx instrument systems and software are not FDA approved and not intended to support clinical diagnostic-treatment decisions. Instead, our products are designed to support scientific investigative studies that have been IRB approved.

## Realtime Block Averages



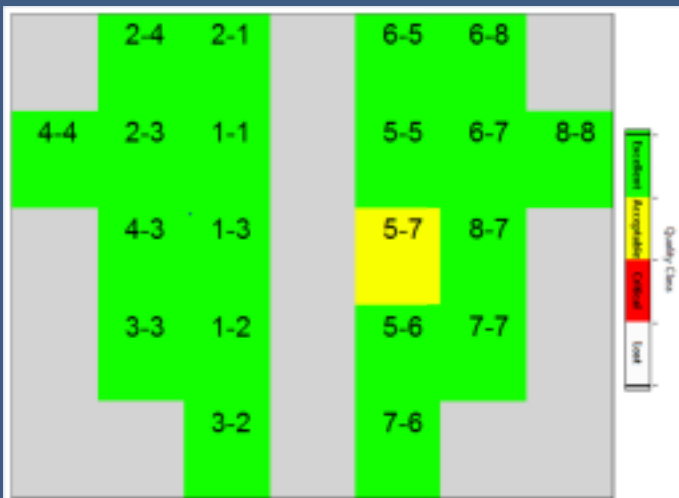
Compare events while recording

## Realtime Activation Views



2D, 3D (shown) and MNI (shown)

## Signal Quality-Indicator



Similar to EEG "impedance check"

## NIRStar

### NIRS Acquisition Software by NIRx

NIRScout includes the NIRStar software package, which provides a user-friendly GUI for system control including: quick automated calibration and diagnostics; signal quality checks (similar to EEG 'impedance check'); clear subject monitoring; and real-time data streams, block averages, and 2D, 3D and MNI activation displays.

## NIRStar

### Software Features

- Real-time multi-event block average views
- Activation shown in 2D, 3D, and MNI displays
- Includes built-in presentation software: NIRStim
- Automated hardware diagnostics
- BCI/Neurofeedback - real-time processing
- Create and load flexible sensor configurations
- Online signal-quality monitoring
- 3D optode position registration
- Programmable source-illumination pattern
- Hyperscanning: Multi-subject experiments
- Easy export to nirsLAB
- Open data format

**NIRStar**  
nirs acquisition software by nirx



Enhancing  
New Dimensions in Neuroimaging

## NIRSport Technical Specifications

Maximum Sources	8 (up to 16 in tandem configuration)
Maximum Detectors	8 (up to 16 in tandem configuration)
Maximum Data Channel Streams	64 (up to 128 in tandem configuration)
Sampling Rate	2.5Hz - 62.5Hz
Source Illumination Type	LED
Source Wavelengths	760nm & 850nm
Key Measurement Features	Time multiplexing and $10^5$ dynamic gain state switching
Detector Dynamic Range & Sensitivity	60 dBopt; <1 pW
Detection Sensor	Si Photodiode
Trigger/Event Connection	4-bit TTL Input
Data Acquisition Software	NIRStar (Included)
Topography Software	nirsLAB (Included)
Tomography Software	NAVI (Included)
Headgear	NIRScaps: Fully-customizable, fits all age ranges. Multi-modal (Included)
BCI/Neurofeedback	Optional Module for NIRStar
Multi-modal Compatibility	EEG, tDCS, Eye-tracking, Motion-tracking w/ module: fMRI, TMS
Included Accessories	NIRScaps, Backpack, Carrying Case, Trigger Cable, Tablet PC, System/Tablet Baseplate
Optional Accessories	Remote-Control Trigger, Active Trigger Splitter, fMRI/TMS Modules, Flat-Tipped Probes, Blunt-Tipped Probes, Animal NIRS Module, BCI/Neurofeedback Module
Hyperscanning Configuration	Up to 2 separate bi-lateral 8-source/8-detector arrays for two subjects
Multi-distance/Short-distance Probe Arrays	Yes
3D Depth Discrimination?	Yes
Phase and Spectroscopic Technique	Single Phase, Continuous Wave
Temperature Range	10C to 40C (Operating), -15C to 70C (Storage)
Humidity	20% - 80% Relative Humidity Non-condensing
Power Voltage and Consumption	15 - 21 VAC (50 - 60Hz); 39VA Max Consumption
Dimensions (WxHxL) and Weight	105mm x 170mm x 40mm; 660g