NIRX
ENLIGHTENING INNOVATION

Dedicated
Near-Infrared Spectroscopy

NIRScout

High Density, Scalable Neuroimaging Platform

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NIRScout System Description

The NIRScout is a user-friendly, modular, and robust functional near-infrared spectroscopy (fNIRS) platform which measures hemodynamic neuroactivation via oxy-, deoxy-, and total hemoglobin changes in the cerebral cortex. The NIRScout platform includes a host of ready-to-implement upgrades and modules to meet the needs of a broad range of cognitive neuroscience applications.

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: fNIRS + EEG, fMRI, TMS, tDCS

Integrated System Solution

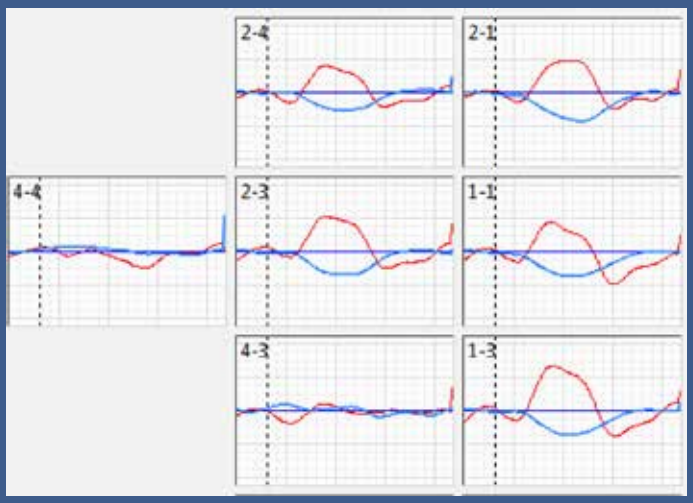
Freely-configurable probe arrays easily integrate with EEG and tDCS within a single NIRx NIRScap. Concurrent fNIRS + fMRI and fNIRS + TMS may be done with the NIRScout's low-profile fiber-optic probes.

NIRscout comes in two models: 'Standard' and 'Extended.' Either model may be upgraded by 8-source and 4-detector increments. Systems range from 8-source/4-detector configurations (32 data channels), to 128-source/64-detector tandem configurations (4096 data channels).

NIRScout can measure both topographic and tomographic NIRS data from the entire cortex, yielding 3-D depth-discriminating neuroactivation. Optical sources are available in standard LED (2 wavelengths) configuration or Laser (4 wavelengths) with the NIRScout hybrid LED/Laser source module.

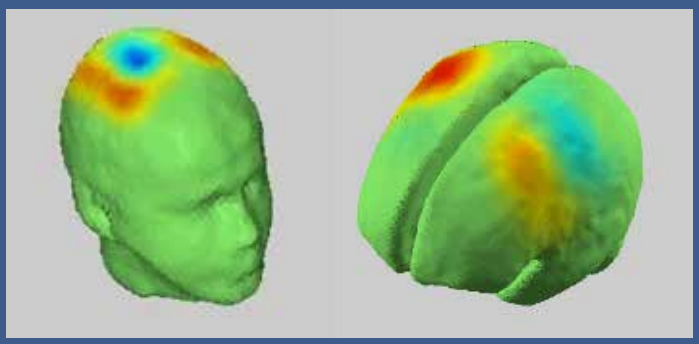
NIRx instrument systems and software are not FDA approved and not intended to support clinical diagnostic-treatment decisions. Instead, our products are designed to support scientific investigative studies that have been IRB approved.

Realtime Block Averages



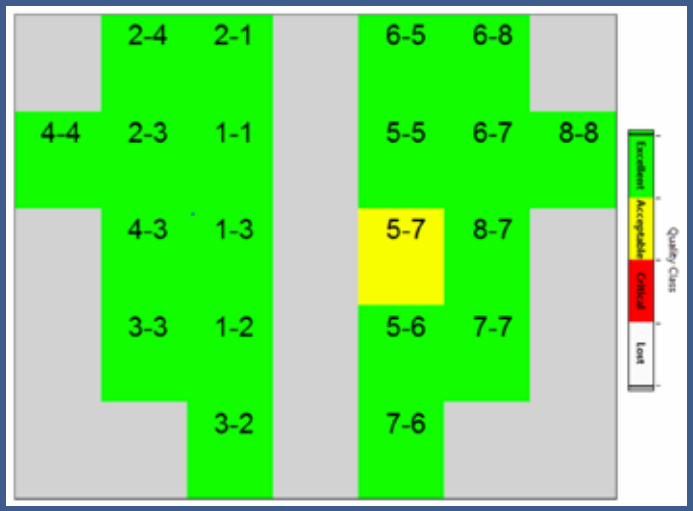
Compare events while recording

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

NIRX
ENLIGHTENING INNOVATION

Enhancing
New Dimensions in Neuroimaging

NIRScout Technical Specifications

Maximum Sources	64 (up to 128 in tandem configuration)
Maximum Detectors	32 (up to 64 in tandem configuration)
Maximum Data Channel Streams	2048 (up to 4096 in tandem configuration)
Sampling Rate	2.5Hz - 62.5Hz
Source Illumination Type	Hybrid Choice: LED + Laser Sources
Source Wavelengths	LED: 760nm & 850nm; Laser: 685nm, 780nm, 808nm, 830nm
Key Measurement Features	Time multiplexing and 10^9 dynamic gain state switching
Detector Dynamic Range & Sensitivity	90 dBopt; <1 pW
Detection Sensor	Si Photodiode
Trigger/Event Connection	Extended: 8-bit TTL Input and Output; Standard: 4-bit TTL Input
Maximum Functional Resolution	5mm (with 7.5mm source-detector spacing)
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, Carrying case, Strain-relief hardware, Trigger Cable, Instrument PC
Optional Accessories	Computer Cart, Active Trigger Splitter, fMRI/TMS modules, Flat and Blunt-Tipped Probes, Animal NIRS Module, BCI/Neurofeedback Module
Hyperscanning Configuration	Up to 4 separate bi-lateral 16-source/8-detector arrays for four 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	90 - 250 VAC (50 - 60Hz); 175W Max Consumption
Dimensions (WxHxL) and Weight	Standard: 260mm x 170mm x 330mm, 10kg Extended: 340mm x 170mm x 370mm, 16kg

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