fNIR IMAGER SYSTEMS

Real-time information about changes in oxy-Hb and deoxy-Hb concentration

Easy setup! Comfortable to wear for prolonged periods!

NEUROSPEC
Research Neurosciences

fNIR DEVICES

fNIR System	Type	Max CH[1]	Included Sensor	Software (*pre-loaded)	Computer	Stand	Isolation	Ext Cbl.
fNIR100B	tethered IMAGER 1200	16	RXFNIR	fNIRSoft Standard and COBI	--	--	yes	2
fNIR200B	tethered IMAGER 1200	16	RXFNIR	fNIRSoft Standard* and COBI*	All-in-one	Caddy	yes	2
fNIR300B	tethered IMAGER 1200	16	RXFNIR	fNIRSoft Standard* and COBI*	2 x All-in-one	Pole cart	yes	2
fNIR400A	tethered IMAGER 1200	16	RXFNIR & Phantom	fNIRSoft Pro* and COBI*	2 x All-in-one	Cart w/shelf	yes	2
fNIR100A-W	wireless IMAGER 1200W	4	RXFNIR-PED or RXFNIR-4	fNIRSoft Standard and COBI	--	--	n/a	1
fNIR200-W	wireless IMAGER 1200W	4	RXFNIR-PED or RXFNIR-4	fNIRSoft Standard and COBI	All-in-one	Caddy	n/a	1

Forehead Sensor *(prefrontal cortex)*:	Fit	Channels[1]	Detectors	Emitters	Inter-optode distance	Compatible System
RXFNIR:	Adult	16	10	4	25 mm	tethered only
RXFNIR-4:	Split	4	4	2	25 mm	all
RXFNIR-PED:	Pediatric	2	2	1	20 mm	all
FNIR-PHANTOM:	Phantom	--	--	--	--	all
Photo-detectors:	Silicone photodiode with integrated trans-impedance preamp					
Photo-emitters:	730 nm/850 nm dual wave-length LED					
Material:	Siliocne rubber over-molder					
Signals[1]:	Real-time oxy-Hb, deoxy-HB, and raw data values from each channel measurement area					

Time resolution of measurements:	500 ms	
Trigger output:	TTL level positive-going pulse at start of the device, baseline and data collection IMAGER 1200W : TTL level positive-going pulse at start data collection and markers	
PC connection:	USB 2.0 cable	IMAGER 1200W: wireless (IEEE 802.15.4 radio link)
Extension Cable(s):	2 x 1.5 m 14-conductor	IMAGER 1200W: 1 x 1.5 m 14-conductor
Operating environment:	0 to 50°C, 10% to 90% R.H. non-condensing	
Imager dimensions (W x H x D):	250 mm x 100 mm x 320 mm	IMAGER 1200W: 83 mm x 20 mm x 105 mm
Imager weight:	3 kg	IMAGER 1200W: 200 g
Power requirements:	90-264 VAC, 50/60 Hz, 20 W	IMAGER 1200W: 90-264 VAC, 50/60 Hz, 10 W
Manuals (digital):	*fNIRSoft User Manual - step-by-step guide for using fS Standard and Pro* *fNIRSoft Scripting Manual - automation programming and command line options*	
Warranties:	Imager: 12-month	Sensor: 3-month limited

fNIR Computer Requirements		
	CPU (processor):	2 GHz or better, quad-core recommended
	Memory (system RAM):	1 GB minimum, 2 GB or more recommended
	Operating Systems:	Windows 8 / 7 / Vista / XP
	fNIR Imager interface:	USB 2.0 ports; National Instrument NIDAQmx driver
	Network interface:	Wireless or LAN Network adapter

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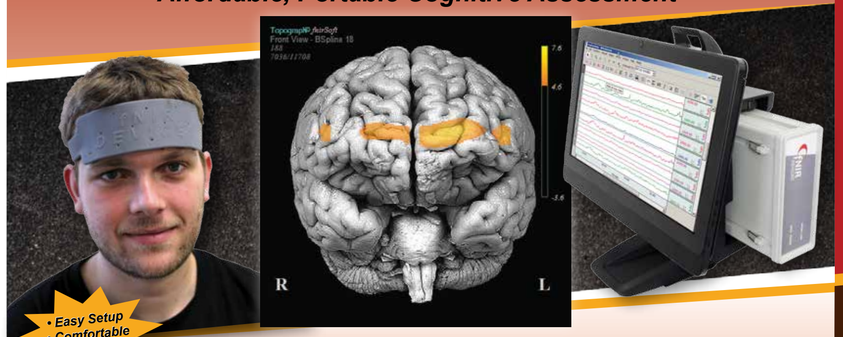
fNIR IMAGING

CONTINUOUS WAVE FNIR SPECTROSCOPY

Affordable, Portable Cognitive Assessment



• Easy Setup
• Comfortable
• Portable

Complete Optical Brain Imaging Solutions

- Hemodynamic response & neural activity in the prefrontal cortex
- Wired or new Wireless Systems
- Real-time oxy-Hb, deoxy-HB, and raw data values
- Adult, Pediatric, or Split-Placement Sensors
- Record simultaneous EEG
- Synchronize with physiological variables — add a BIOPAC Research System for ECG, RESP, dZ/dt, BP, EDA, etc.
- Record EEG data and fNIR data at the same time — works with wireless BioNomadix EEG, wireless B-Alert X10, and more!
- fNIRSoft standalone software — record, process, analyze and visualize fNIR signals
- Trigger Acquisition & Record Digital Triggers

NEUROSPEC
Research Neurosciences

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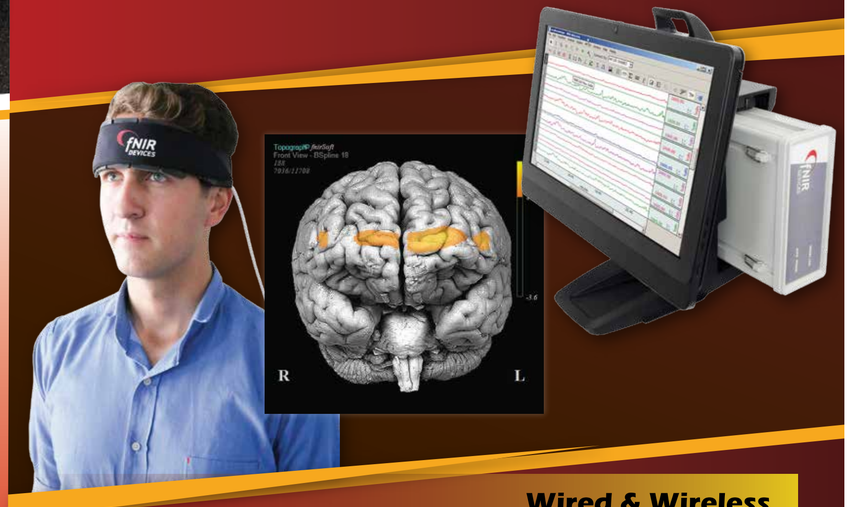
fNIR IMAGING

Affordable, Portable Cognitive Assessment

Continuous Wave fNIR Spectroscopy



Wired & Wireless Solutions

Easy Setup ... Comfortable ... Noninvasive

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ASSESS COGNITIVE ACTIVITY IN REAL-LIFE SITUATIONS

Complete fNIR Systems for functional brain imaging

fNIR optical imaging eliminates many of the drawbacks of fMRI

Cognitive Function Assessment

- Safe & Noninvasive
- Comfortable sensors—adult, pediatric, or split placement
- Record simultaneous EEG
- Affordable
- Fast & Efficient Setup
- Real-time display
- Portable—use in lab or field studies
- Avoids claustrophobia issues
- No special MR considerations
- Synchronize with other data or video

fNIR technology measures hemodynamic response and neural activity of human subjects and empowers researchers by providing greater flexibility for study design, including working within complex lab environments and operating in non-traditional lab locations for field studies.

Subjects wear an fNIR sensor on the forehead that detects oxygen levels and provides real-time values for oxy-hemoglobin and deoxygenated hemoglobin. It provides a continuous and real-time display of the oxygen changes as the subject performs different tasks. Subjects can sit in front of a computer and take a test or perform mobile tasks.

fNIR imaging systems measure oxygen level changes in the prefrontal cortex of human subjects.

Each fNIR system provides real-time monitoring of tissue oxygenation in the brain as subjects take tests, perform tasks, or receive stimulation and allows researchers to quantitatively assess brain functions—such as attention, memory, planning, and problem solving—while individuals perform cognitive tasks.

Interface the fNIR hardware with a BIOPAC MP System to simultaneously record physiological data and synchronize to a variety of stimulus presentation systems including virtual reality, eye trackers, video, and observational data.

The fNIR device provides relative change in hemoglobin levels, calculated using a modified Beer-Lambert law. The powerful fNIR spectroscopy imaging tool measures NIR light absorbance in blood of hemoglobin with and without oxygen and provides information about ongoing brain activity similar to functional MRI studies—without the expense or hassle!

For a detailed subject assessment, combine fNIR data with other physiological signals such as ECG, EEG, respiration, cardiac output, blood pressure, electrodermal activity and stimulus response markers.

fNIR studies have been published for a wide range of applications, including Brain Computer Interface, Human Performance Assessment, Neuro-rehabilitation, and Pediatric Pain Assessment.

Synchronize with a BIOPAC Research System and AcqKnowledge. The fNIR imager has a BNC trigger output that sends TTL pulses at the beginning and end of baseline, and at the beginning and end of a recording session.

Use the MP160 System with a wide array of amplifiers and transducers, including wireless BioNomadix. AcqKnowledge provides automated analysis tools for ERP, ensemble averaging, and more!

Synchronize with other systems for a complete assessment!

- BIOPAC Research Systems for physiology monitoring
- B-Alert X10 Wireless EEG
- Subject Monitoring — frame-by-frame video
- Stimulus Presentation — E-Prime, SuperLab, etc
- Eye Tracking
- Observational Behavioral Data

New Sensor Design!

Comfortable, replaceable adult sensor pad connects to Imager via durable transmission cable.

Wired Systems include 3 sensors and 1 cable.

fNIR IMAGING SYSTEMS

real-time monitoring of tissue oxygenation

Request a demo today!

SOFTWARE
Included in all Systems

fNIRSoft Standard
Analysis Software

COBI Studio
Imager Software

ISOLATION TRANSFORMER
Included in all wired Systems

fNIR100B
Starter System

FNIR IMAGER + ADULT SENSORS (3)

fNIR200B
Data Collection System

Adds to fNIR100B

DATA COMPUTER + PORTABLE CADDY

fNIR300B
Data & Stimulation System

Adds to fNIR100B

DATA COMPUTER + STIMULI COMPUTER + ROLLING STAND

fNIR400A
Complete Imaging Station

Adds to fNIR300B

fNIRSoft Pro + PHANTOM SENSOR

fNIR100A-W
Wireless Systems

WIRELESS FNIR IMAGER + PEDIATRIC SENSOR OR SPLIT SENSOR

fNIR200-W
Portable Wireless System

Adds to fNIR100A-W

DATA COMPUTER + PORTABLE CADDY
(Similar to fNIR200B)

OR

fNIRSoft STAND-ALONE SOFTWARE

fNIRSoft Pro included in fNIR400A or as upgrade fNIRSOFT-PRO-U
fNIRSoft Standard included in all systems

Use fNIRSoft (fS) to record, process, analyze and visualize functional near infrared (fNIR) spectroscopy signals. Easy to use GUI and wizard style tools for…

Temporal Visualization
Time Series Analysis
Topography
Data Management
Scripting Engine
Signal Analysis

fNIRSoft Pro

fS Viewer: Temporal Visualization and Time Series Analysis Tools

- *Temporal visualization of fNIR Data*
- *Customizable display graphs by data type (voxel/channel/wavelength), sensor geometry, time period and multiple color palettes*
- *User interface for time series data analysis*
- *Inspect and manage optodes/channels/time periods visually*
- *Automated and user-selectable co-registration of all event marker information*
- *Event related and epoch analysis with customizable block definitions*
- *Customizable hemodynamic response calculation applying Modified Beer Lambert Law (MBLL) for oxy-Hb, deoxy-Hb, oxy and total Hb*
- *Basic Noise reduction, pre-processing (FIR Filter Design and application)*
- *Pro Automated signal quality inspection—eliminate saturated and problematic channels*
- *Pro Advanced signal processing algorithms for feature extraction*
- *Pro Motion artifact removal algorithms*

fS Viewer: Topograph Tool

- *Spatial visualization of fNIR Data*
- *Pro Brain mapping and visualization over brain surface image*
- *Pro Left/right/dorsal view with thresholding, animation (temporal changes) or group/subject/condition average*
- *Pro Export visualization: time-based for animation, threshold-based for evaluation*

fS Data Management: Export and Import Data Tools

- *Select and export time-series data in various formats through a wizard style tool*
- *Easily customizable template, import various types of text data through a wizard*
- *Save/Send or Load/share data in native binary format*

fS Scripting Engine: Built-in Command Line Interface

- *fS Scripting Language (functional and data-oriented)*
- *Editor with syntax highlighting and quick access tools for command list and run toolbar*
- *History of commands and log operations in command pane (save for future reference)*
- *Store procedures in script files and re-apply procedures to previously saved data blocks*

fS Signal Analysis: Data Processing Tools

- *Pro Apply Temporal Processing actions (Averaging/Feature Extraction/Signal Conditioning)*
- *Pro Apply Spatial Processing actions (Averaging/Feature Extraction/Signal Conditioning)*
- *Pro Apply Cell-by-cell Processing actions (Averaging/Signal Conditioning)*
- *Pro Apply common statistical comparison and correlation*
- *Pro Apply advanced Modified Beer Lambert Law*

WATCH VIDEOS ONLINE

EXTENSIVE CITATIONS — REVIEW ONLINE NOW

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