

Brite Lite Frontal

Truly accessible, wearable
and easy-to-use prefrontal
fNIRS system



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Near Infrared Spectroscopy

NIRS, the technique which the Brite Lite Frontal is based on, relies mainly on two characteristics of human tissue. The first is the relative transparency of human tissue for light in the NIR range and secondly, to the oxygenation dependent absorbance of the hemoglobin. Based on these principles, the Brite Lite Frontal makes it possible to monitor brain activity of your subject:

- Non-invasively.
- Continuously recording and feedback.
- Affordably and no disposables needed.
- Wirelessly.
- In easy setup for any environment, both indoors or outdoors.

WHAT CAN NIRS DO FOR ME?

- NIRS is used in many fields of research. NIRS measures the relative changes in the concentration of oxyhemoglobin (O₂Hb), deoxyhemoglobin (HHb) and total hemoglobin (tHb) in biological tissue.
- Assuming the concentration of hemoglobin in blood is constant (during your measurement), the tHb can be used as a marker for blood volume.



The Brite Lite Frontal opens the way to fNIRS

O ptimized

The Brite Lite Frontal is optimized for prefrontal measurements. It comes with a dedicated headband that is designed to perfectly cover the forehead, comfortable to wear and guarantees a short set-up time.

A suitable optode template was designed that ensures reliable and accurate measurements of frontal brain areas using 8 channels.

P erfectly in sync

The Brite Lite Frontal is the perfect fit for hyperscanning studies (monitoring multiple subjects at the same time). Our proprietary software, OxySoft, provides the ability to connect multiple devices simultaneously to ensure accurate data synchronization.


E veryone, anywhere


The Brite Lite Frontal comes with improved ambient light correction and multi-power gain control. This enables measuring fNIRS from the prefrontal cortex in subjects with different skin colors and hair types.


The dedicated headband can be adjusted in size unlocking the possibility to measure in subjects with different headsizes, from adolescents to elderly.


N oteworthy mobility

The Brite Lite Frontal is a lightweight (less than 250 g) and truly portable fNIRS device that can measure from 8 channels. The control unit can easily be attached to the headband, enhancing freedom and mobility. Therefore, the device can be used in any desired setting - in the field, during exercise, in- and outside the lab - without the need for a backpack or other carrying solutions.

 Measures oxy-, deoxy-, and total hemoglobin concentration changes.

 Easy analysis of your data with our superior analysis software; OxySoft.

 The ideal starter device, and easily upgradeable down the line.

 Truly wearable & flexible for a wide range of participants.

Brite Lite

Are you interested in measuring on other brain areas than the frontal cortex? Then the Brite Lite might be a better fit for you! The Brite Lite is a 8 to 10 channel cortical alternative to its prefrontal counterpart, and makes measuring brain activation all over the head easy and accessible.

The Brite Lite comes with a headcap that covers the complete brain, making it possible to place optodes wherever desired. Different optode templates are provided, which ensures the freedom to choose a template that covers the desired brain regions - for instance, larger areas, or multiple smaller brain regions simultaneously. It is also possible to add short separation channels to measure superficial tissue that can be used to improve signal quality.



3D digitization & synchronization

Polhemus devices are well-known in the neuroscience world for precise digitization of sensor positions. Using the Polhemus Viper in combination with the Brite Lite Frontal, you can measure the exact locations of the optodes on your participant's head within OxySoft. With our OxySoft 3D extension you will benefit from a purely integrated solution, which guides you through the digitization process. No intermediate software is needed for this. Alternatively, we will support the import of other digitizer formats, e.g. coming from ANT's sensor or Localite's EEG PinPoint device.

Hyperscanning

Hyperscanning, measuring multiple subjects simultaneously to study brain activity and connectivity, is recently being increasingly used in many application fields, such as psychology and neuroscience. As it is easy to use, measures from frontal brain areas, and is wearable and wireless, the Brite Lite Frontal is the perfect device for hyperscanning purposes.

Our proprietary software, OxySoft, provides the ability to connect multiple devices simultaneously to ensure accurate data synchronization.

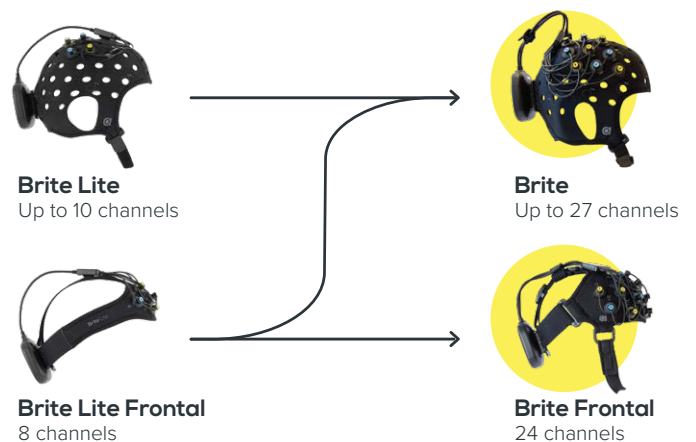


Upgrade possibilities

The Brite Lite Frontal can be upgraded down the line to fit your research needs. We offer different upgrade possibilities within the Brite family devices to increase the number of channels, as well as to add features and to enhance options to measure from further brain regions.

The Brite Lite Frontal can either be updated to a Brite, increasing the number of channels to up to 27, or to a Brite Frontal, which measures with 24 channels, to enlarge the prefrontal measurement possibilities. This enables you to choose a device that best suits your current situation, and upgrade to a better fit when your needs evolve.

Note: Upgrade possibilities are dependent on availability and compatibility. Please contact us to discuss a solution tailored to your needs.



What's in the box?

Brite Lite Frontal research package

- Brite Lite Frontal
- Analyzing unit (with pre-installed software)
- License key & bluetooth dongle
- Battery charger
- Universal micro-USB cable

- OxySoft, data analysis software
- Neoprene headband
- User Manual
- Quick Start Guide
- Support in setting up your research

Technical specifications

TECHNOLOGY	Continuous wave Near-InfraRed Spectroscopy (NIRS) using the modified Beer-Lambert law
RELATIVE MEASURES	Oxy-, deoxy-, and total hemoglobin concentration changes
TRANSMITTERS	4 LEDs, each with 2 wavelengths
RECEIVERS	4 photodiodes
WAVELENGTHS	Standard 760 and 850 nm, custom wavelength possible
AMBIENT LIGHT CORRECTION	Proprietary algorithm to filter out ambient light
OPTODE HOLDERS	3 available heights to improve skin contact
DIMENSION	Battery housing: 85x85x30 mm
ENVIRONMENT	Operating temperature: 10 - 35 °C
INDICATORS	Power, measuring, battery status, bluetooth
POWER	Up to 3 h, charging with powerbank possible
SAMPLE RATE	Up to 150 Hz
ORIENTATION SENSOR	6-axis motion sensor: 3x Accelerometer (x, y, z); 3x Gyroscope (x, y, z)
DATA COLLECTION & STORAGE	Online, offline 100+ hours, automatic back-up of data
DATA ANALYSIS SOFTWARE	OxySoft, 3D extension (optional with Polhemus Digitizer)
OPERATING SYSTEM	Windows 10 and Windows 11 (beta)
EVENTS	Online, offline or PortaSync
ELECTROMAGNETIC COMPATIBILITY	No interference with TMS, EEG, EMG, ECG
HARDWARE SYNC OPTIONS	PortaSync, parallel cable, serial cable
SOFTWARE SYNC OPTIONS	LSL, DCOM (e.g. Matlab, E-prime, Presentation)
CHANNELS	8 channels
INTER-OPTODE DISTANCE	30 mm
SHORT SEPARATION CHANNELS	Not applicable
HEADBANDS	One size
TOTAL WEIGHT	245 g including battery and headband

References to wireless NIRS devices

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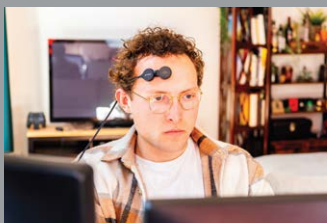
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Wireless NIRS devices



PortaLite MKII

Truly *lite* & advanced oxygenation monitoring device that measures local tissue saturation index (TSI), as well as oxy-, deoxy- and total hemoglobin concentration changes.



Brite Lite

A wireless & flexible 10-channel fNIRS device for brain oxygenation measurements.



Brite Frontal

A wearable and easy-to-use fNIRS device. The Brite Frontal is optimized to measure brain activity in the prefrontal cortex with 24 channels.



Brite

Our most advanced wearable & user-friendly device to measure brain oxygenation from any cortical brain region with up to 27 channels.