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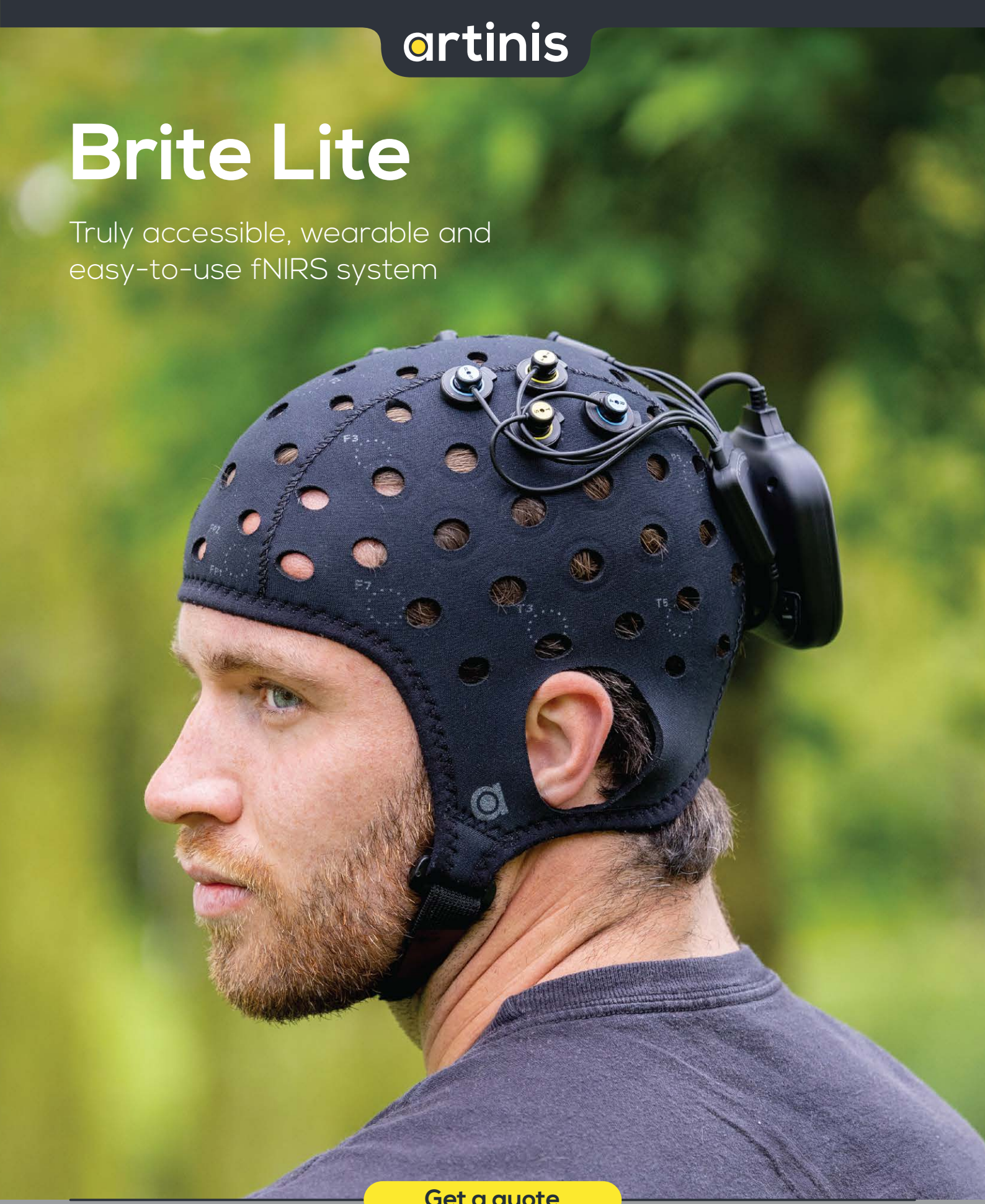
# Brite Lite

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



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# Near Infrared Spectroscopy

NIRS, the technique which the Brite Lite 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 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 always hits the mark

### Multiple subjects and modalities

The Brite Lite 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.

The device is also ideal for combining transcranial electrical stimulation (tES: tDCS, tACS, tRNS) and/or electroencephalography (EEG) with NIRS in one single headcap. This allows clinicians and researchers to measure both cortical electrophysiological (EEG) and hemodynamic activity (fNIRS) in real-world settings.

### Anyone and anywhere

The Brite Lite comes with improved ambient light correction and multi-power gain control. This enables measuring fNIRS from any brain location, as well as in subjects with different hair types and skin colors.

The headcaps come in different sizes, unlocking the possibility to measure both adults and children.

### Right where you need it

The Brite Lite can be used to measure from any cortical brain region and is optimized for measuring through hair. Furthermore, the Brite Lite package includes 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.

### Keeping it easy

The Brite Lite is a lightweight (less than 210 g) and truly wireless fNIRS device that can measure from up to 10 channels. The control unit can easily be attached to the headcap, 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.**

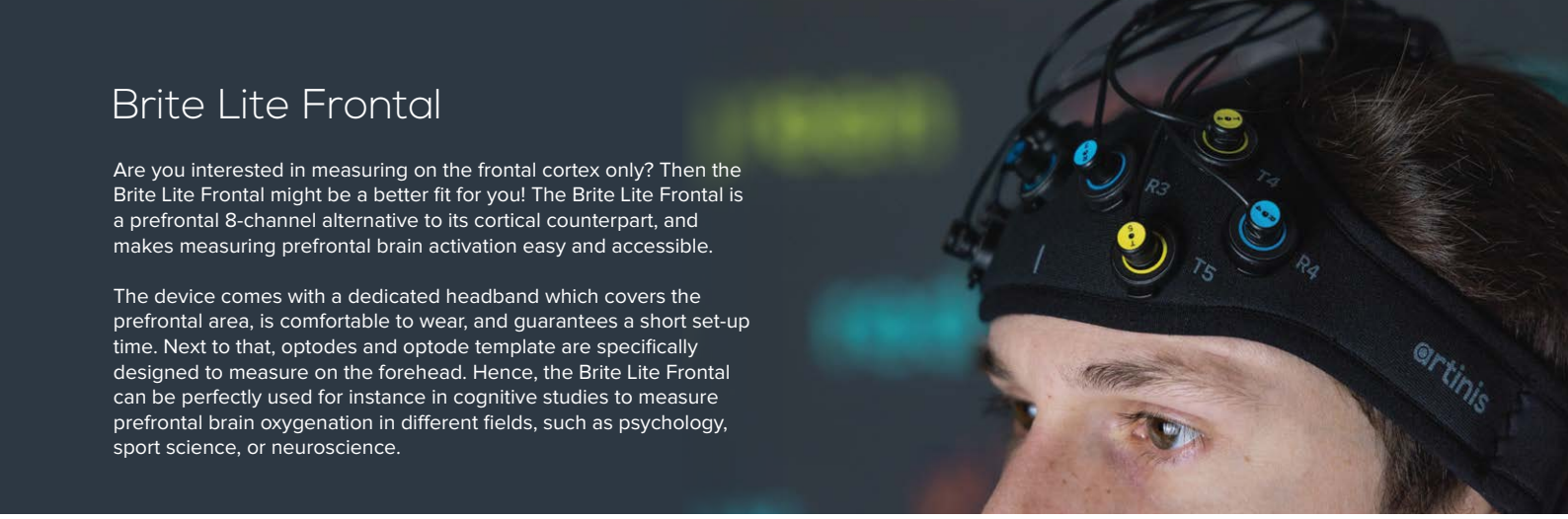
The ideal starter device, and easily upgradeable down the line.

Compatible with other techniques, such as EEG and tES.

# Brite Lite Frontal

Are you interested in measuring on the frontal cortex only? Then the Brite Lite Frontal might be a better fit for you! The Brite Lite Frontal is a prefrontal 8-channel alternative to its cortical counterpart, and makes measuring prefrontal brain activation easy and accessible.

The device comes with a dedicated headband which covers the prefrontal area, is comfortable to wear, and guarantees a short set-up time. Next to that, optodes and optode template are specifically designed to measure on the forehead. Hence, the Brite Lite Frontal can be perfectly used for instance in cognitive studies to measure prefrontal brain oxygenation in different fields, such as psychology, sport science, or neuroscience.





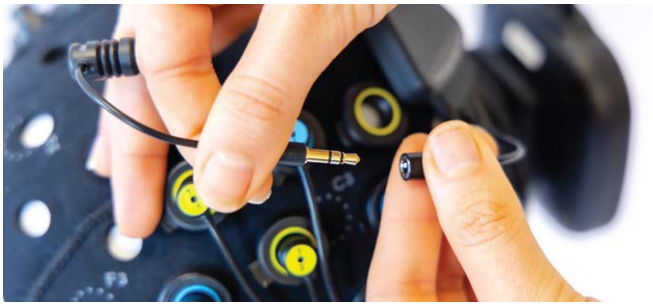
## 3D digitization & synchronization

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, 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 xensor or Localite's EEG PinPoint device.

## Flexibility package

When purchasing the Brite Lite, it is possible to choose for the flexibility package. This options allows for increasing the amount of channels from 8 to 10 by attaching an extra transmitter, increasing flexibility in measurement location and template choice.

The flexibility packages also comes with a short separation channel (SSC) upgrade, providing you with a separate SSC-transmitter and four SSC holders. This gives you the possibility to form up to 4 short separation channels to measure from superficial tissue.

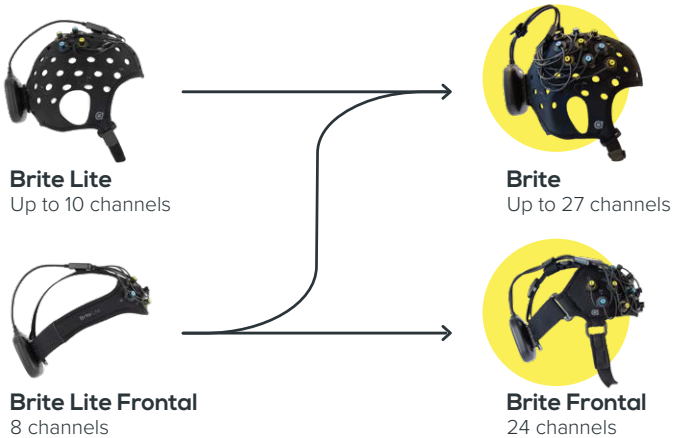


## Upgrade possibilities

The Brite Lite 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 add features and enhance options to measure from further brain regions.

The Brite Lite can be updated to a Brite, increasing the number of channels to up to 27, enabling for coverage of larger or additional brain areas and further enhances freedom. This allows 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 research package

- Brite Lite
- Analyzing unit (with pre-installed software)
- License key & bluetooth dongle
- Battery charger
- Universal micro-USB cable
- OxySoft, data analysis software
- Neoprene headcap
- 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 to 5* 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 | Up to 10* channels |
| INTER-OPTODE DISTANCE | 20 to 55 mm |
| SHORT SEPARATION CHANNELS | Short channels at 10 mm with multipower switch* |
| HEADBANDS | Adults (XS - XL) |
| TOTAL WEIGHT | 210 g including battery and headcap |
| NIRS + OTHER MODALITIES | We deliver the following packages:<br>Brite Lite + Enobio EEG package (8 channels or more)<br>Brite Lite + TMSi EEG package (32 channels or more)<br>Brite Lite + tDCS (STARSTIM) |

**When purchased with the flexibility package*

# References to wireless NIRS devices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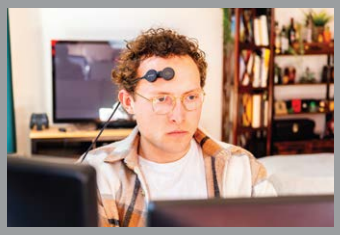
# Wireless NIRS devices



## 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 Frontal

A wireless & flexible 8-channel fNIRS device optimized for measuring prefrontal cortical activation.

## 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.

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