



Brite Ultra

Group
hyperscanning
made easy.

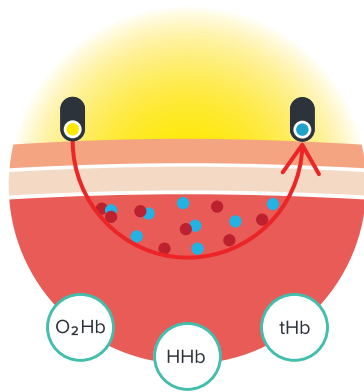
- Measure up to 30 participants simultaneously in the same environment
- Perfectly synchronized data collection from all devices on one display
- Data collection using Wifi connection
- Connect up to 10 PortaSync to the system (for synchronization of Brite Ultra with other modalities)

Ask for info

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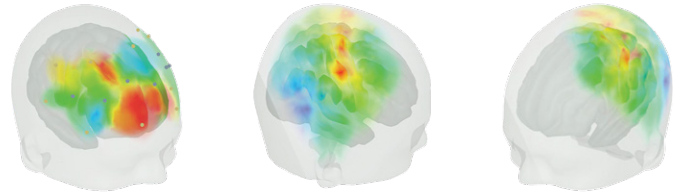
Near Infrared Spectroscopy

Near Infrared Spectroscopy (NIRS), the technique which our devices are based on, relies mainly on two characteristics of the human tissue. The first is the relative transparency of human tissue for light in the NIR range. The second one is the oxygen-dependent absorbance of hemoglobin. Based on these principles, the Brite Ultra devices used within the Brite Ultra system can monitor brain activity of your participants. This can be done:

- Non-invasively;
- Continuously, including recording and feedback;
- Affordably and without disposables needed;
- Wireless with almost no setup time;
- In easy setup and in a vast range of environments.

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.



Group sessions with the Brite Ultra

The Brite Ultra system uses the most advanced wearable & user-friendly fNIRS device to measure brain oxygenation from any cortical brain region with up to 27 channels. It offers maximum flexibility for researchers and participants due to the multipower gain control feature.

Weighing only 300 grams in total, this makes the device truly lightweight and comfortable to wear even for a long measurement.

You will have the freedom to choose from three available optode outlays to measure any cortical area of interest. This system is highly adjustable for group research purposes in a range of different environments, and with different group sizes. It is available with 12, 24 or 30 devices, and you can expand the system later by adding additional devices.

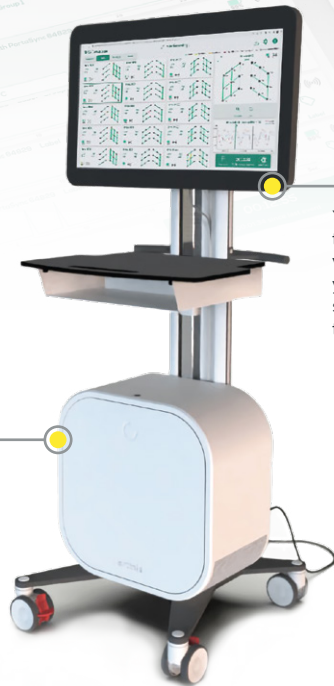
The PortaSync, Artinis' synchronization instrument, can be used to easily integrate the system with other modalities.



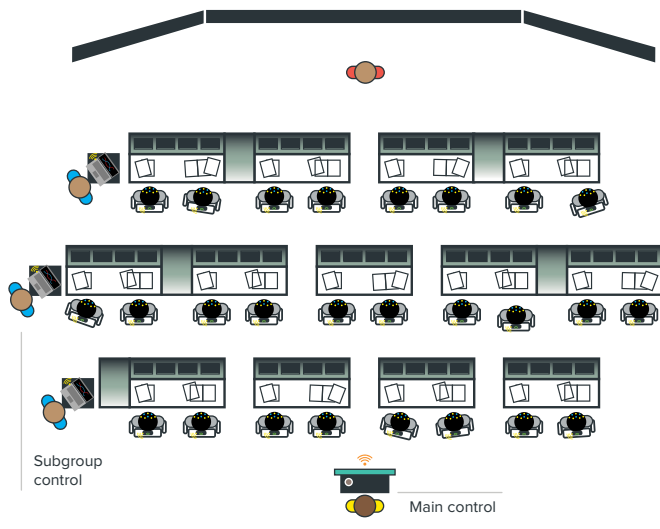
Brite Connect Ultra

With our Brite Connect Ultra software you can measure a group of participants simultaneously. You can connect up to 30 Brite Ultra devices and 10 PortaSync devices. The data is perfectly synchronized, displayed, and stored within one measurement file. This custom-developed software enables you to: start and record measurements, view the fNIRS signal quality of all connected devices simultaneously, insert events during data collection, and export the measurement data.

The Brite Ultra system comes with a cart containing a large touch screen, which functions as an overview screen. From this screen, the main software control will take place (start/stop measurement, export data).



You can connect up to five extra laptops/tablets to the Brite Ultra system to get a more detailed view on a subset of devices. This feature allows you to have an overview of and to control subgroups in your big group, thereby facilitating the study set up and monitoring of the data.



Application example: NASA control room

fNIRS hyperscanning

Social interactions are a crucial part of human life and understanding the neural underpinnings of it is a challenging task. Thus, measuring brain activity and interconnectivity in multiple participants at the same time becomes increasingly significant, albeit challenging. Our Brite Ultra, integrating advanced fNIRS technology, provides a straightforward and efficient solution for conducting large group hyperscanning measurements. It is well-suited for various environments, including classrooms, control rooms, sports fields, cockpits, and any setting where investigations involving multiple individuals as a group are conducted.

Area of applications

- Brain oxygenation monitoring
- Sports science
- Cognitive studies
- Psychological research
- Team work
- Social interaction
- Group hyperscanning
- Neural synchrony

What's in the package? Brite Ultra system

- Brite Connect Ultra, fNIRS hyperscanning monitoring software
- Connection hub with pre-installed software and touchscreen display
- Brite Ultra devices per 12, 24, or 30
- PortaSync synchronizer instrument
- Neoprene headbands/headcaps
- System accessories
- User manual & quick start guide
- Support in setting up your research

References to wireless fNIRS

Huang, Y. H., Chen, C. M., Wang, Y. M., & Sun, C. W. (2020). Quantitative Evaluation of Age-Related Effects Based on Oxygenation Dynamic Signals During the Wisconsin Card Sorting Test. *IEEE Journal of Selected Topics in Quantum Electronics*, 27(4), 1-5.

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Sappia, M. S., Hakimi, N., Colier, W. N., & Horschig, J. M. (2020). Signal quality index: an algorithm for quantitative assessment of functional near infrared spectroscopy signal quality. *Biomedical Optics Express*, 11(11), 6732-6754.

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Optical imaging made easy.

Artinis Medical Systems is an innovative Dutch company active in the field of medical research equipment and quality assurance equipment. For more than two decades, we have been providing user-friendly, high-tech solutions for fNIRS measurements and radiological quality management. 2021 remarks our company as **ISO 13485:2016 certified** for our quality management system, following review by the notified body Dekra.

Coming from the research field ourselves, we have a lot of experience in optical oximetry, especially near infrared spectroscopy. Our highly portable and multichannel NIRS devices can be used to monitor oxygen supply non-invasively in both brain and muscle tissue. We participate in various scientific projects and work closely together with numerous universities, companies, and institutions around the globe. With extensive knowledge of the field, we develop top-quality products and go above and beyond to support you.

At Artinis, we make optical imaging easy.

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