

# BRAIN-NIRS Hb13

Blood volume visualization device in the brain



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Technologies for Wellness and Happiness.

# BRAIN-NIRS(Hb13)

Measuring blood volume in the brain noninvasively, brain NIRS acts as a sensor and visualizes changes of blood volume in the frontal lobe.

As it measures the blood volume in surface and deep layers separately, it is possible to distinguish changes in blood volume in mimetic muscle from brain.

In Astem, we adopted the algorithm developed by Shizuoka University for practical measurements and evaluated it in Psychiatric Department of the university hospital.

## Features:

1. Simultaneous measurement of up to 8 channels (brain NIRS model Hb13-N, where N is the number of channels)
2. Wireless connection (Bluetooth class II, class I) between the sensor and computer display allows distant (about 10m), read-time measurement.
3. For examinee's convenience and comfort, small and light (10g) sensor head, made of flexible materials, is used, allowing non-static and long-term measurements.
4. The influence of the mimic muscles on the measured value in the deep layers (brain) can be estimated by measuring blood volume in the surface layers at the same time.
5. Two main units are available for measurement of brain (model Hb13) and muscle tissues (model Hb14).
6. Use of near-infrared spectroscopy is completely harmless to people.
7. Two AAA batteries as power supply.

Do not use for medical purposes. Requires an approval from university or medical ethics committee when used.

## Specifications

Model	Hb13-N (N is the number of probes)
Measurement method	NIRS (near-infrared spectroscopy), SRS (spatially resolved spectroscopy)
Light source and photo detectors	Two-color LED, photodiode
Sensor probe	W20×L45×H5 (mm) + transmission part, made of silicone rubber
Number of measurement channels	1-8, adjustable
Data file	CSV-file
Sampling rate	>0.2 s, depending on the number of probes
Measurement quantities	Oxygen saturation (So <sub>2</sub> ), oxygenated hemoglobin (Oxy-Hb), deoxygenated hemoglobin (Deoxy-Hb)
Display modes	Absolute value (So <sub>2</sub> ), variation (surface or brain, optionally), zoom
Power supply	Two AAA batteries
Length of Probe cable	65cm
Wireless	Bluetooth class II (10m range, weak signal)

\*Basic model of Hb13-N contains main unit and two probes; expandable to 8 probes max.

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