

Functional NIRS equipment

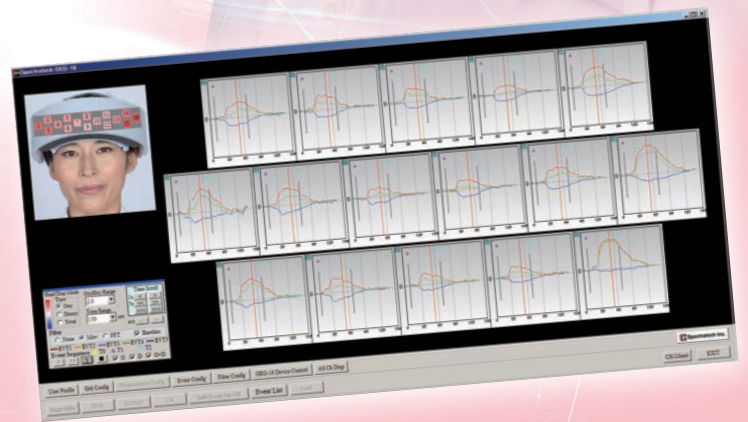
# Spectratech OEG-16H

For researchers  
in functional neuroimaging

Small Size

High  
performance

Low price



The equipment is designed to simultaneously measure a change of the amount of blood in each in vivo part not so deep in by the multi-channel (up to 16 channels) method. It utilizes the light absorption characteristics in the neighborhood of near infrared to red light that changes with the bonding state of the in vivo Haemoglobin(Hb) with oxygen. The spread spectrum modulation method that is the latest digital technique and originally developed by our company is adopted for the optical modem technology that underlies the equipment. It has achieved great reduction in costs, downsizing, and high performance compared with the conventional technologies. It is assumed that the equipment is used mainly on the frontal lobe part that has few hairs. So, a simple and non-invasive measurement is possible. This equipment was developed only for the research purpose, therefore please refrain from any use for other purposes.

The equipment can be used by connecting with PC with a USB port and Microsoft Windows 7, 8 or 10 installed.

# Features

Measurement of the regional cerebral Hb changes at the multiple points at the same time

Designed for the dedicated use for the frontal lobe

Very small-sized, low cost, high performance

Use of the spread spectrum modulation that comes from the latest light modulation technology

Ultra-high SNR and fast sampling time for the accurate measurements

Simultaneous measurements by up to 5 units units (Hyper-scanning) using the optional distributor

Real-time measurement and display on PC via USB port

## Specification



Head module

### Head module

- 6 light-emitting modules with LED with two built-in wavelengths (840nm and 770nm)
- 6 light-receiving modules with Si PIN photo diode
- 16 simultaneous measurement channels
- 3cm in distance between light-emitting module and light-receiving module
- Stress-free, as light as about 400g

Note: The head module is assumed to use on the frontal lobe part that has few hairs. It is not recommended to use it on other part. In addition, even if it is measured on the frontal lobe with few hairs, the device's sensor may not sense because some of the examinees might have extremely weak signals. Please be forewarned.

### Main unit

- Measurement method of biological signals:  
Modified Lambert-Beer Law  
Hemoglobin change( $\Delta C_{\text{Coxy}} \cdot L$ ,  $\Delta C_{\text{Cdeoxy}} \cdot L$ ,  $\Delta C_{\text{Ctoal}} \cdot L$ ) Unit: mM·mm  
Apparent SpO2 (Apparent arterial oxygen saturation) Unit: %
- Multiple-light modulation system:  
Modulation method - Spread spectrum modulation DS (Direct Sequence) system  
Effective biological signal bandwidth - 0.76Hz for Fine Mode, 6.10Hz for Fast Mode
- Event input function: Manually input at an optional time using the attached event-trigger input box.
- External trigger input function:
  - Two systems of the photo-isolated "External trigger input terminal" to operate with external device
  - Input from another PC via the network using UDP protocol
- Measurement time: 10 hours (Fine Mode)
- Power consumption: AC90~240V, 15W ■ External dimensions: 170 (W) x 40 (H) x 180 (D) mm
- Weight: 1Kg ■ Operating temperature/humidity range: 5~30°C/20~70% (Not condensed)
- 2 x AA battery for the photo isolation part
- PC requirements: Windows 7,8 or 10 with USB port, CD drive, and CPU Intel i5 or above with memory 4GB or above.

**Certificates:** 47 CFR Part 15 Subpart B

**Test Report :** JIS T 0601-I-2012(IEC 60601-I-2005 + CORR.1(2006) + CORR.2(2007)).JIS T 0601-I-2-2012(IEC 60601-I-2:2001,Amd.1:2004)



Front side of Main unit



Rear side of Main unit

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