

PortaMon™

Near Infrared Spectroscopy on the go

Wireless, small, portable

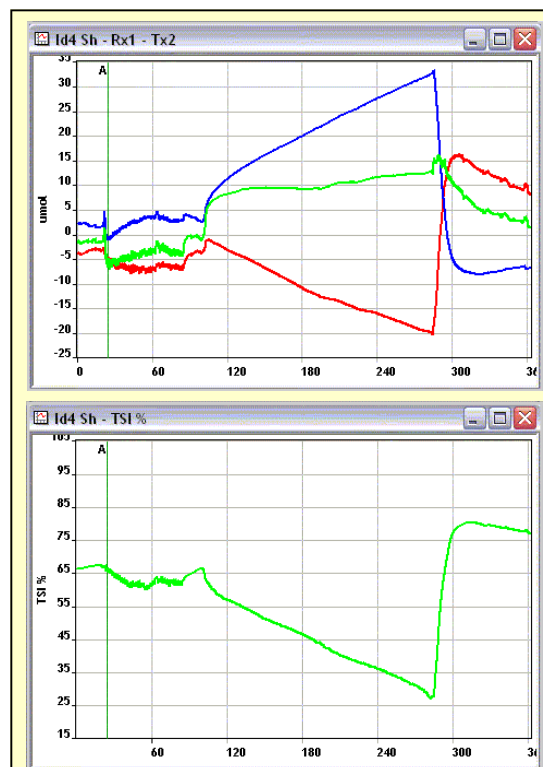
General

The PortaMon is our wireless and portable NIRS system for measurements on muscle. The system measures changes in oxygenation in terms of oxy-hemoglobin, deoxyhemoglobin and total hemoglobin, which is an indication of the blood volume in the muscle.

Furthermore it calculates the tissue saturation index (TSI) in percentage, which reflects the average saturation of the underlying muscle tissue.



Portable NIRS device: The PortaMon



The upper panel shows tracings of oxy (red) and deoxyhemoglobin (blue) as well as the total blood volume (green) during a total occlusion of the arm. The lower panel shows the TSI during this procedure. The occlusion is preceded by some mild intermittent exercise. All traces are measured on the right forearm.

Highlights

- > Measures local tissue saturation index as well as oxy, de-oxy and total hemoglobin
- > Bluetooth connection with laptop or on board data collection
- > Up to 8 hours on one battery
- > Interchangeable and rechargeable battery
- > Lightweight with the size of a cell phone
- > Oxysoft, superior analysis software
- > Option for simultaneous external data collection

Company Information

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PortaMon™

Near infrared spectroscopy on the go!

Technical specifications

Technology	Continuous wave near infrared spectroscopy using modified Lambert-Beer Law and spatially resolved spectroscopy
Measures	Changes in oxy-, deoxy and total hemoglobin and regional tissue saturation index (TSI)
Indications	Battery status, Bluetooth connection, signal strength
Operating system	Windows XP, Windows Vista and Windows 7
Communication	Bluetooth up to 100m
Recording	On-line or off-line recording
Storage	Real time data storage. Multiple subsequent measurements are possible without clearing the memory. Up to 2 hours data storage at 10 Hz.
Events	Insert off-line events on the PortaMon and on-line events in the software
Channels	3 channels to measure relative concentrations and 1 channel to measure absolute oxygenated Hemoglobin percentage (TSI)
Light source	Light emitting diodes (3x2 wavelengths)
Wavelengths	Standard nominal 760 and 850 nm, others possible
Detector(s)	Photo diode with ambient light protection
Sampling time	From 0.1 Hz up to 10 Hz
Noise	~0.004 standard deviation in optical density at a total of ~6 optical densities at a measurement frequency of 10 Hz
Calibration	recommended to do once a year
Optode Distance	Three distances are used between receiver and the three transmitters: 30, 35, 40 mm
Power	Up to 8 hours with with one interchangeable and rechargeable battery
Weight	88 grams, including battery
Size	WxDxH: 84x54x20 mm with 1.3 meter wire to flexible and non-consumable probe WxDxH: 58x28x6 mm
Environment	Operating temperature -10-35 °C
Interference	No interference with EEG, ECG or EMG

References to wireless NIRS technology

- Buchheit *et al.* Physiological responses to shuttle repeated-sprint running. *Int J Sports Med.* 2010 Jun;31(6):402-9.
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- Dascombe *et al.* No effect of upper body compression garments in elite flat-water kayakers. *European Journal of Sport Science* 2011, 1-9
- Hesford *et al.* Asymmetry of Quadriceps Muscle Oxygenation during Elite Short-Track Speed Skating. *Med Sci Sports Exerc.* 2012 Mar;44(3):501-8.
- Kenjale *et al.* Dietary nitrate supplementation enhances exercise performance in peripheral arterial disease. *J Appl Physiol.* 2011 Jun;110(6):1582-91.
- Rittweger *et al.* Muscle tissue oxygenation and VEGF in VO2-matched vibration and squatting exercise. *Clin Physiol Funct Imaging.* 2010 Jul; 30(4): 269-279.
- Shadgan *et al.* Wireless near-infrared spectroscopy of muscle oxygenation and hemodynamics during exercise and ischemia. *Spectroscopy* 2009; 23 (5-6): 233 -241.

Being a small flexible company with more than 16 years of experience in near infrared spectroscopy we are aware of the special needs of scientists. Support with setting up your research can all be arranged.

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