moorLAB™

A flexible system
expanding with your needs:
1, 2, 3 or 4 channels.

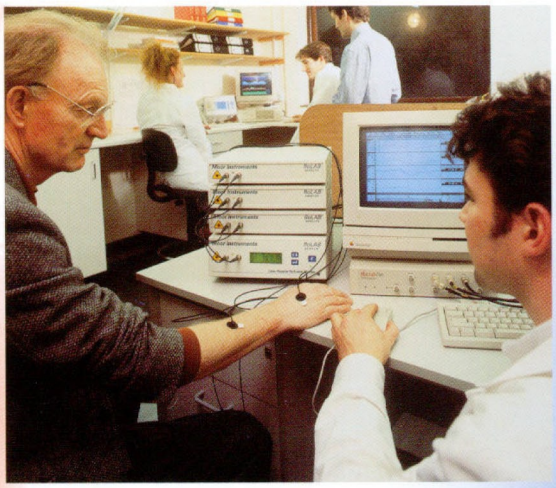
laser Doppler

The preferred blood flow monitor
for the microcirculation.

Moor Instruments

MEDICAL & OPTO-ELECTRONIC INSTRUMENTATION

moorLAB™ and moor



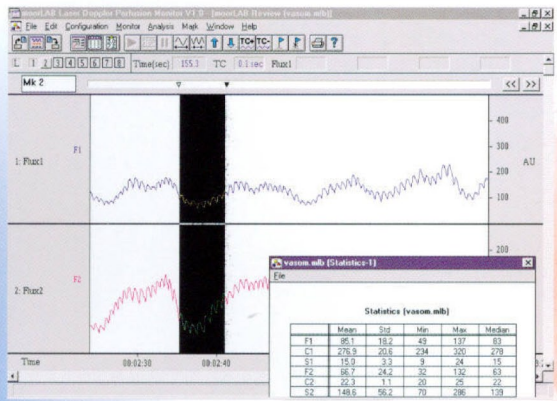
moorLAB™ - Flexible and convenient - moorLAB™ offers a flexible and convenient approach to laser Doppler monitoring. Start with the single channel 'Server' unit and expand with additional 'Satellite' units to match your requirements. Data collection and analysis is similarly flexible. The moorLAB™ offers both digital outputs - connecting directly to the serial port of your PC (COM1 or 2) - and analogue outputs to allow data transfer to your A/D data acquisition system or chart recorder.

The Laser Doppler Technique - Low power laser light is transmitted via an optic fibre to the tissue. The light is scattered by moving blood cells and is frequency shifted according to the Doppler effect, the average Doppler frequency shift being directly proportional to the average speed of the blood cells. The scattered light is photodetected and the photocurrent signal electronically processed to produce the laser Doppler flux signal.

Continuous, non-invasive measurements - Laser light scattering is the only significant tissue interaction, so measurements can be over short or long time periods - with a display frequency of 40 measurements per second, fine detail of pulsatile flow can be observed, or more general changes over longer periods. No electrical contact is needed to the optical probe so leakage currents are zero. Low laser power meets FDA Class 1 laser standards.

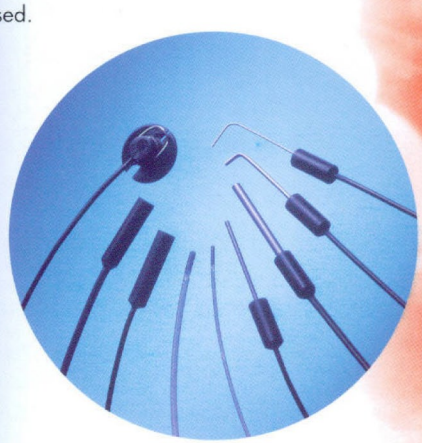
SOFT™ for Windows™

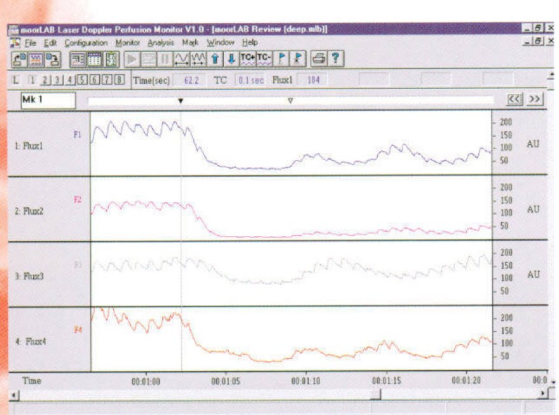
moorSOFT™ for Windows™ - This data acquisition package has been written to interface seamlessly with the moorLAB™ providing a powerful yet cost effective monitoring and analysis solution. Further details of this package can be found in the moorSOFT™ for Windows™ brochure. *A free demonstration disc is available upon request.*

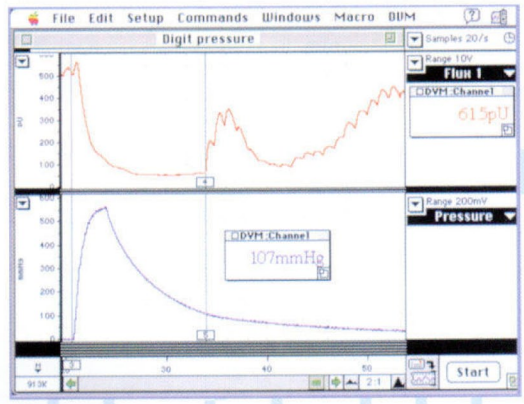


Multi-channel/Multi-workstation operation - moorLAB™ provides a flexible and cost effective solution to multi-channel or multi-workstation laser Doppler measurement. For example, a 4 channel system can be used by one worker to record simultaneously blood flow at 4 tissue sites or can be used, particularly in a teaching situation, at 4 separate workstations.

Probes - All tissues can be accessed by the laser Doppler technique using surface, needle or implantable fibre optic probes: skin, muscle, tooth, bone, joints, endoneural tissue, mucosal tissue, brain and other organs can all be assessed.







Applications:

Microvascular Responses to:

heating, cooling
postural change
pressure
vasoactive drugs (topical, iontophoresis, microdialysis)
valsalva manoeuvre, deep breath

Assessment of:

digital pressure
post occlusive reactive hyperaemia
tissue viability and wound healing
angiogenesis
skin sensitivity
inflammation
ischaemia
reperfusion
tooth vitality
endothelial function
smooth muscle function
axon reflex flare

Specifications:

No. of channels:

1, 2, 3 or 4 channels (1 Server plus 1, 2 or 3 Satellites)

Optics:

The moorLAB™ blood flow monitor has an advanced optical design and is equipped with Peltier temperature stabilised laser diodes for the short term and long term stability essential for the reliable comparison of results.
Laser diode 780nm (others available), output 1.0mW per channel.
Laser safety classification: Class 3A (per BS 60825:1994). Class 1 (per 21 CFR 1040.10 and 1040.11).

Signal Processing:

Bandwidth - high pass 20Hz, low pass 3.1,15, or 22.5KHz (selectable).
Output time constants unfiltered, 0.1s, 0.5s, 1.0s, 3.0s.
Automatic gain control and zeroing.
Probe calibration scaling constants stored - 4 per channel.

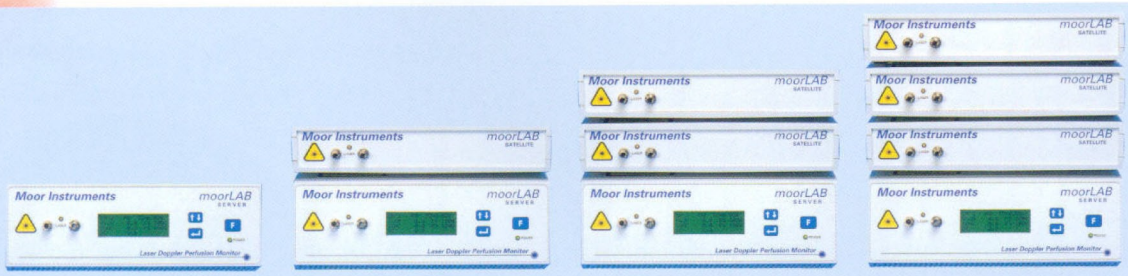
Outputs:

Analogue outputs of Flux and Concentration of moving blood cells (Conc) or Flux and Backscattered light (DC).
Full scale (0-10Volts) settings for 10, 20, 50, 100, 200, 500 or 1000 perfusion units.
20 x 4 character LCD display.
Serial outputs of Flux and Conc or Flux and DC.
RS232 19200 baud.

Electrical Safety:

IEC 601.1 Class 1 type BF.

Specifications subject to change



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Moor Instruments Ltd. Millwey, Axminster, Devon EX13 5HU, England
Telephone: +44 (0) 1297 35715 Fax: +44 (0) 1297 35716
E-mail: mail@moor.co.uk Internet: http://www.moor.co.uk

Moor Instruments Inc. 501 Silverside Road, Suite # 66, Wilmington, DE 19809, USA
Telephone: (302) 798-7470 Fax: (302) 798-7299
E-mail: moorinc@interserv.com

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