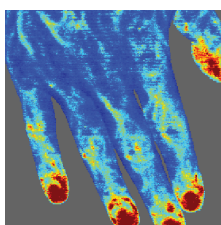
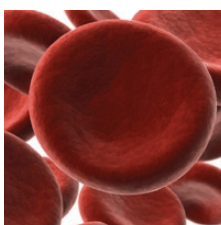
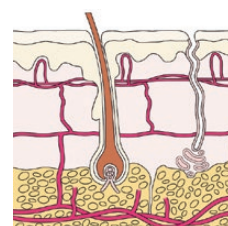
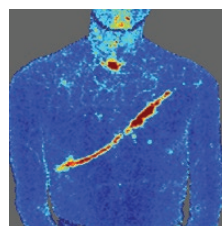
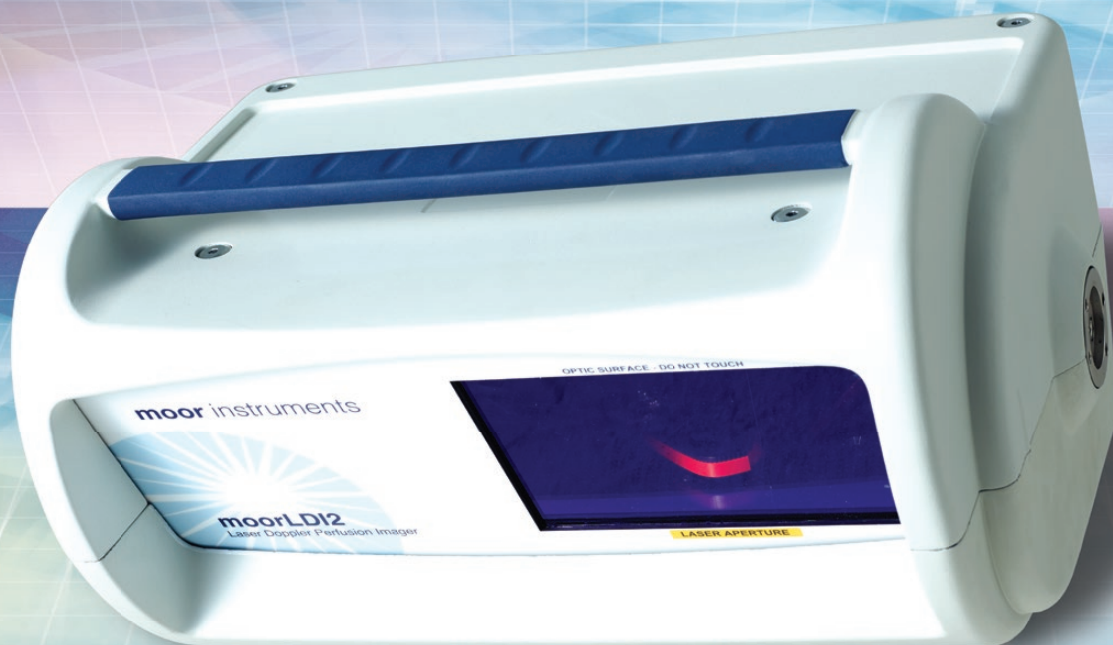


Large area, high resolution blood flow imaging with moorLDI2



moor instruments
innovation in microvascular assessment

moorLDI2 - Laser Doppler Imaging Systems

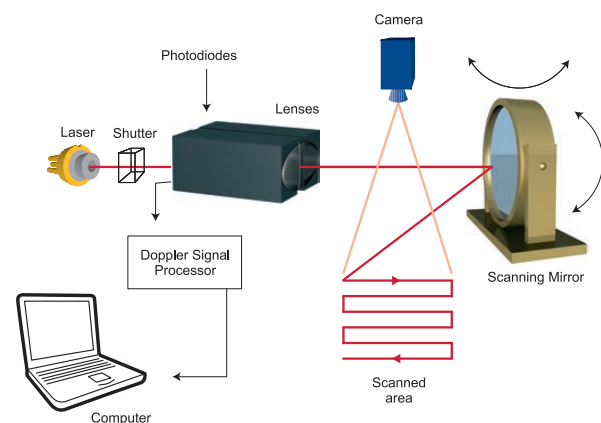
The moorLDI2 laser Doppler blood flow imager offers a well proven, high specification solution to your blood flow application for clinical or research application. The system is in routine use in numerous laboratories and clinics globally and employs unique, optical design and signal processing in order to generate the highest resolution and clearest images of its class.

- **Non contact measurement** – painless for patient, aids infection control, no chemical tracers or dyes needed.
- **Daylight operation** – use in most lab, clinic or theatre settings.
- **Flexible scan sizes** – from a fingertip up to an adult torso.
- **High spatial resolution** – to catch the finest detail to 100 micron (50 micron using moorLDI2-HIR).
- **Single and Repeat imaging modes** – compare flow from region to region within the same scan and scan the same region repeatedly to assess changes over time.
- **Advanced Windows compatible software** – to ease setup and scanning. Post Measurement processing functions to make the most of your data.
- **Protocol control** – set the imager to control flexible tissue heating, pressure cuff control and transdermal drug delivery routines - reproducible, precise and reliable.
- **Digital Trigger In/ Out** – to synchronise with external devices.
- **Digital Signal Processing and High Quality optics** – providing high sensitivity for response assessment and dependable communication and reliability.
- **Choice of lasers** – to assess from the surface to superficial and deeper tissue beds.
- **Choice of stands** - for benchtop and clinical/ theatre use.

The Laser Doppler Technique

Laser Doppler Imaging (LDI) is a technique first established commercially in the early 1990's and as such published studies now cover numerous pre-clinical, clinical research and clinical applications.

The moorLDI was the first system to offer the flexibility of small and large area scanning and a patented rapid scanning technique to enable much faster imaging. This combination furthered research possibilities and ultimately led on to the clinically proven moorLDI2-BI burn assessment system.



A high resolution version (moorLDI2-HIR) is particularly suited to pre clinical research, where the advanced optics have enabled clear visualisation of collateral vessel development in the hind limb ischemia model for example.

LDI is often compared to laser speckle imaging and whilst there are some similarities, LDI generally offers deeper penetration enabling enhanced visualisation of small vessels below the tissue surface. LDI also allows very large area imaging – up to 50cm x 50cm in one scan. For certain applications these features are critical.

The system scans a very low power laser beam (less than half a typical laser pointer) across the tissue. Moving blood in the microvasculature causes a Doppler frequency shift of the laser light, which is photodetected and processed to generate a colour coded blood flow map, line by line. An in built camera records a colour photograph to aid visualisation of the scan site.

Applications and Software

Laser Doppler Imaging has been applied to a broad range of physiological and medical disciplines and references are numerous. Application notes are available free of charge on request for core applications, offering specific and detailed practical advice and hints to make the most of your imager.

The more common applications are;

Angiogenesis – hind limb ischemia and tumour models, enabling accurate assessment of new vessel formation and the interventions that speed or slow the processes.

Neuroscience – stroke modelling and CBF changes, providing reliable “through skull” imaging in pre clinical studies.

Intra-operative measurements – limb and visceral ischaemia and reperfusion assessments.

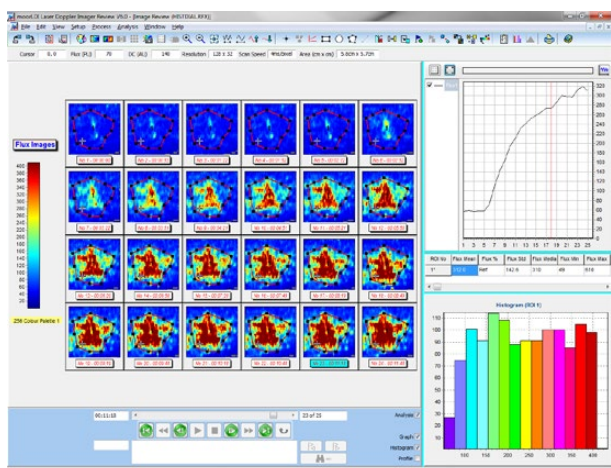
Dermatology – quantification of inflammatory and irritancy reactions (e.g. response to intra-dermal capsaicin and other toxins). Track progress and treatment of conditions such as psoriasis.

Wound healing – assess blood flow pre and post-treatment in ischaemic ulcers.

Please feel free to contact our application specialists for confidential and helpful discussion about your research ideas.

Your research

Please contact Moor or your nearest approved distributor to discuss your specific application. Ask to see the system in action and evaluate it at your own facility. Current publications using moorLDI2 are wide ranging and updated online at www.moor.co.uk.

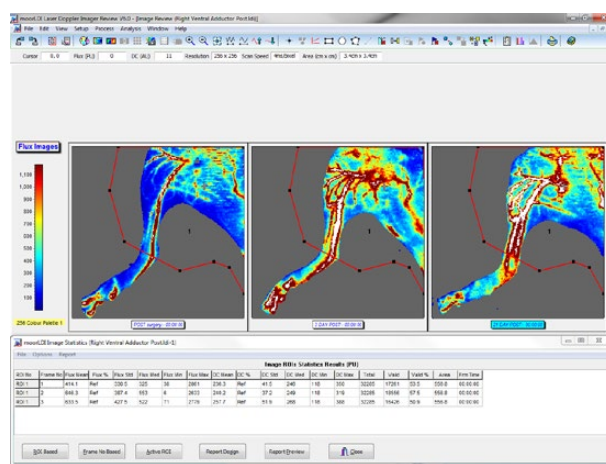


Wheal and flare response, images reproduced with kind permission of Professors Martin Church and Geraldine Clough, Southampton General Hospital

Pharmacology – local and systemic responses to topically applied and transdermal vaso-dilators.

Plastic surgery – research into flap perfusion, tissue expansion and digit replants during surgery and post operatively.

Rheumatology – assess cold challenge vasospasms characteristic of Raynauds phenomenon.



Hind limb angiogenesis model, images reproduced with kind permission of Professor James Faber, University of North Carolina

Software

Our dedicated software, now in its 6th generation has been refined over a number of years in response to our customer feedback.

It is developed in-house by our dedicated team, giving us complete control over the software functionality. It is fully featured for setup, measurement, analysis, reporting and export.

Version 6 now features protocol control and reporting to standardise routine challenges, in conjunction with moorVMS protocol equipment for drug delivery, tissue heating and pressure cuff control. This greatly improves the reproducibility of the challenges and eases use considerably.

About Moor Instruments

Moor Instruments, established in 1987, is a world leader in the design and manufacture of laser Doppler systems, used for the monitoring and imaging of blood flow in the microvasculature.

First hand experience of laser Doppler research and development within Moor dates back to 1978 and with this we have the breadth of knowledge to help with your application and the enthusiasm to help with answers to any of your questions.

By giving priority to performance, quality and service we strive to be our customers' number one choice.

Our dedicated design team are involved with a number of development projects for other partners and manufacturers. Whatever your needs, as a researcher, clinician or manufacturer, Moor will work harder for you.

Specifications:

Quality Control

Moor Instruments is certified to ISO 13485:2016. The moorLDI2 is CE marked as a medical device.

Laser Source

moorLDI2-IR; 785nm, Max 2.5mW, 1.2mm beam (target beam 660nm, Max 0.25mW)
moorLDI2-HIR; 785nm, Max 2.5mW, 0.7mm beam (target beam 660nm, Max 0.25mW)
moorLDI2-VR; 633nm, Max 2.5mW, 1.2mm beam

All above models are Class 3R per IEC 60825-1:2014



Stand Options

There are three stands available for the moorLDI2, MS2-MKII, DS2 and BS1;

MS2-MKII mobile stand, vertical adjustment provided by a manual winding handle. Positioning provided towards and away from the vertical twin support pillars to enable 'reaching' over a bed. Yoke style scan head holder to allow positioning and rotation to any angle. Stand fully mobilised on wheels. Rear Container with built in power supply and isolation transformer.

DS2 desktop stand, easy vertical adjustment provided by ratchet winding handle. Yoke style scan head holder to allow positioning and rotation in two axes.

BS1 desktop stand, manual vertical adjustment. Angular rotation in one axis.



moorLDI2 with optional DS2 desktop stand

Software

Dedicated Windows™ based software for measurement, processing and analysis supplied with each system.

Camera

Colour, 2592 x 1944 pixel resolution, auto focus.

Bandwidth

Low frequency cut-off (3dB) 20Hz, 100Hz or 250Hz, scan speed dependant.
 High frequency cut-off (0.3dB) 3kHz, 15kHz or 22kHz, user selectable.

Spatial Resolution

Up to 512 x 512 pixels.
 Standard system: 0.1mm/pixel at 20cm, 1mm/pixel at 100cm.
 High resolution system: 0.05mm/pixel at 20cm.

Scan Speed

Scan speed is approximately 4ms/pixel, 10ms/pixel or 50ms/pixel (at maximum resolution). Scan duration is typically 40 seconds for a 12.5cm x 12.5cm image at 64 x 64 pixel resolution.

General

Power source: Universal voltage, 84-264V AC, 50VA, 50 to 60Hz.
 Dimensions: *W x H x D* mm, Weight: *kg*.
 Power Supply: 107 x 56 x 171, 0.5kg.
 Scan Head: 426 x 244 x 300, 9kg.
 Operating environment: Clinic or laboratory, excluding domestic.
 Operating temperature: 15-30°C.

Safety Standards

Complies with:
 IEC 60601-1:2005+A1:2012, IEC 60601-1-2:2015, IEC 60825-1:2014.
 Medical devices directive 93/42/EEC and amendment 2007/47/EC.
 Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50; dated June 24, 2007.

Moor Instruments reserves the right to change specifications without notice.



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Please visit www.moor.co.uk for full details of our international distributors and partners