

Specifications

Laser for measurement	780nm, Semi conductor, CLASS 1
Pointer laser	650nm, Semi Conductor, CLASS1
Resolution	800-600 (Hi-Res, EMA mode) 266-200 (Hi-Speed, HS AVG mode)
CMOS camera	GigE (STD), USB (mini)
Frame rate	1/60
Measurement rate	Hi-Res : about 2 images/sec
	Hi-Speed : about 15 images/sec
	EMA : about 30 images/sec (Pro)
Principle	Reduced Speckle Image
OS	Windows 11
CPU	Intel iCore or AMD Ryzen
HDD	over 500GB
Memory	over 8GB
Display	15 - 16 inch (note)
	22 inch (Desktop)

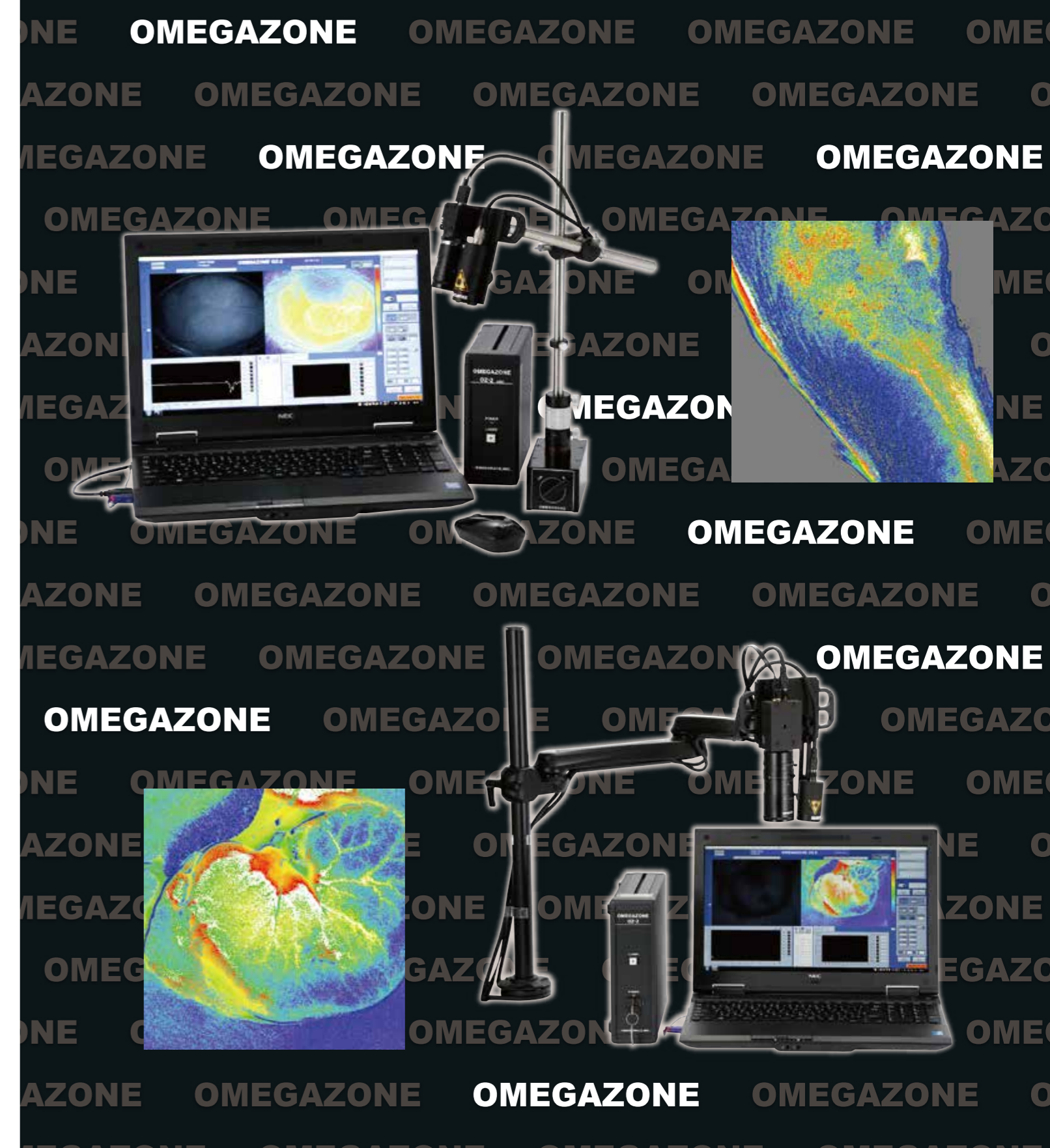
Computer-based Image processor

STD (Standard model)	Note computer-based or Desktop computer-based
mini (small model)	Note computer-based



OMEGAWAVE, INC.
 **OMEGAWAVE**

2-20-3 Katamachi, Fuchu, Tokyo Japan
 T E L : 042-352-1171
 F A X : 042-352-1173
<http://www.omegawave.co.jp/>



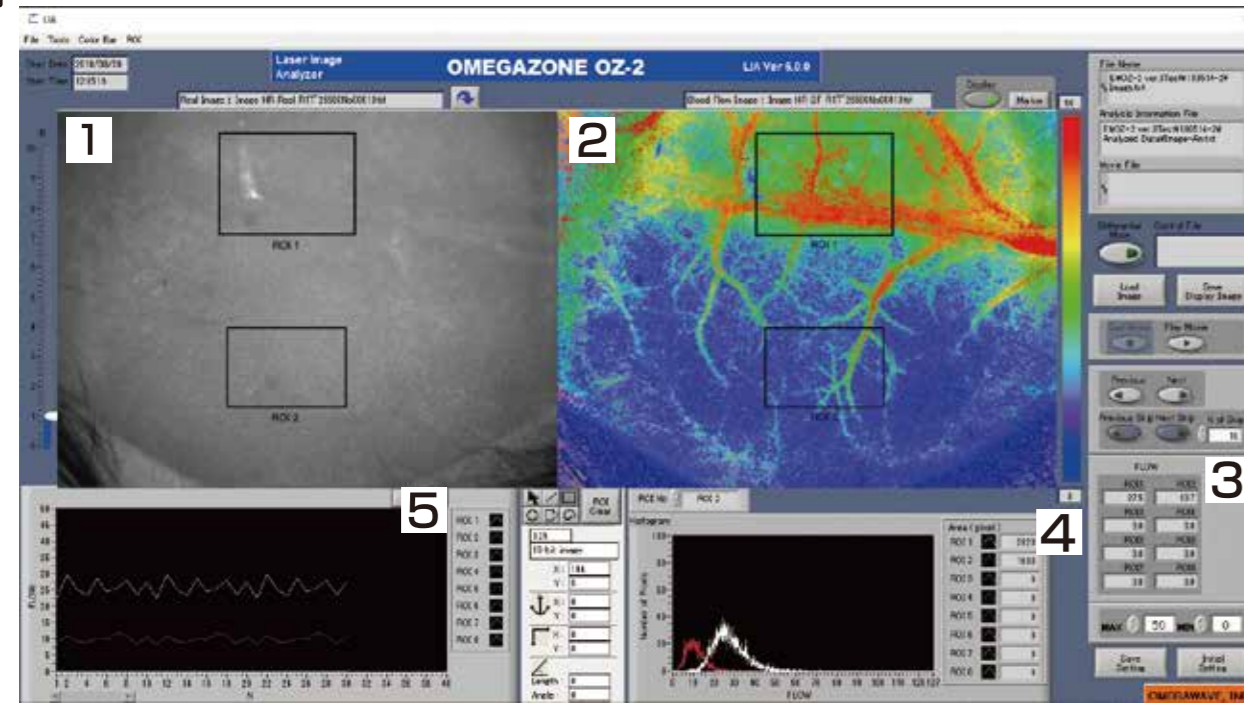
OZ-2

LASER SPECKLE BLOOD FLOW IMAGER

OMEGAZONE OZ-2

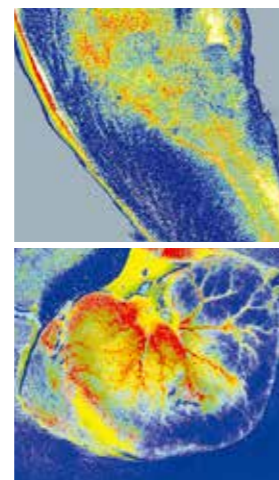
Real time , High resolution
2D Laser Blood Flow Imager

Analysis software display



- 1 Real Image**
The real image captured by the CCD camera is shown for examination of tissue condition and confirmation of the measurement area. The brightness of the real image can be adjusted.
- 2 Blood flow color image**
Blood flow is shown in color distribution. The mode can be selected from the three modes, HR(High Resolution), HS(High Speed) and EMA(Exponential Moving Average, Pro version) to show the suitable image.
- 3 Blood flow values**
The average blood flow values in ROIs are shown. The ROIs are made in the both Real Image and Blood Flow Image.
Measurement : 2 ROIs
Analysis : 8 ROIs

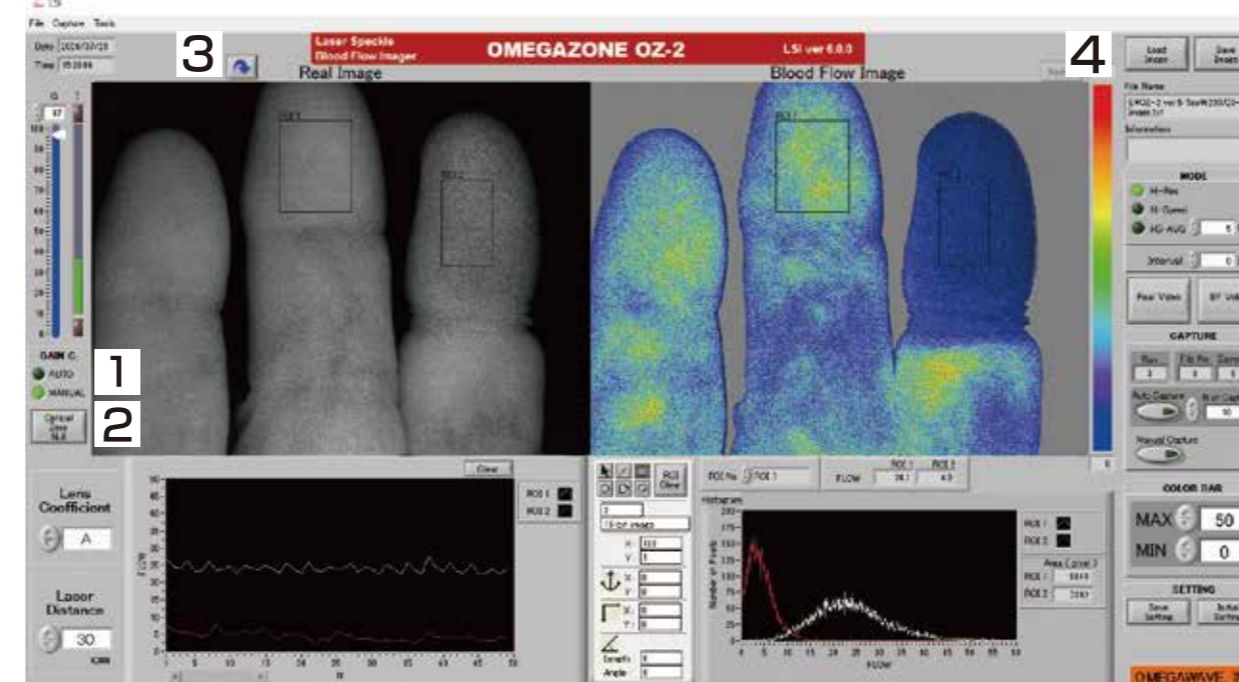
- 4 The color bar range**
The color bar range can be adjusted by entering the number in the MAX and MIN.
- 5 Chart**
The time chart of the average blood flow values in ROIs is shown. The average blood flow values are saved as Excel file.



Features

- **Fast**
30 images / sec for EMA mode and 15 images /sec for HS mode are displayed.
- **High resolution**
Hi-Res (2 images/sec) and EMA mode has 800-600 resolution.
- **Average of images**
HS-AVG mode averages plural Hi-Speed images.
- **Non-contact and simultaneous measurement by all pixels**
Diverging laser light irradiates tissue and the all pixels of the CMOS camera detect the scattered light from the tissue simultaneously. No time lag occurs in all pixels.
- **Multipurpose**
Measurement area can be changed by changing the lens.
About from 5 x 5 mm to 300 x 300 mm can be measured.
- **Hybrid filter (Polarizer + Band-pass filter)**
Inaccurate measurement caused by surface reflection is avoided, and visible light is not detected.

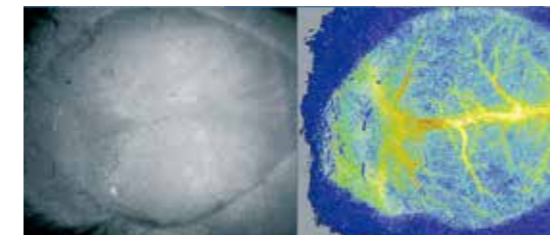
Measurement software display



- 1 Auto gain function**
- 2 Optical zero null**
- 3 Image rotation function**
- 4 2 kinds of color bars**

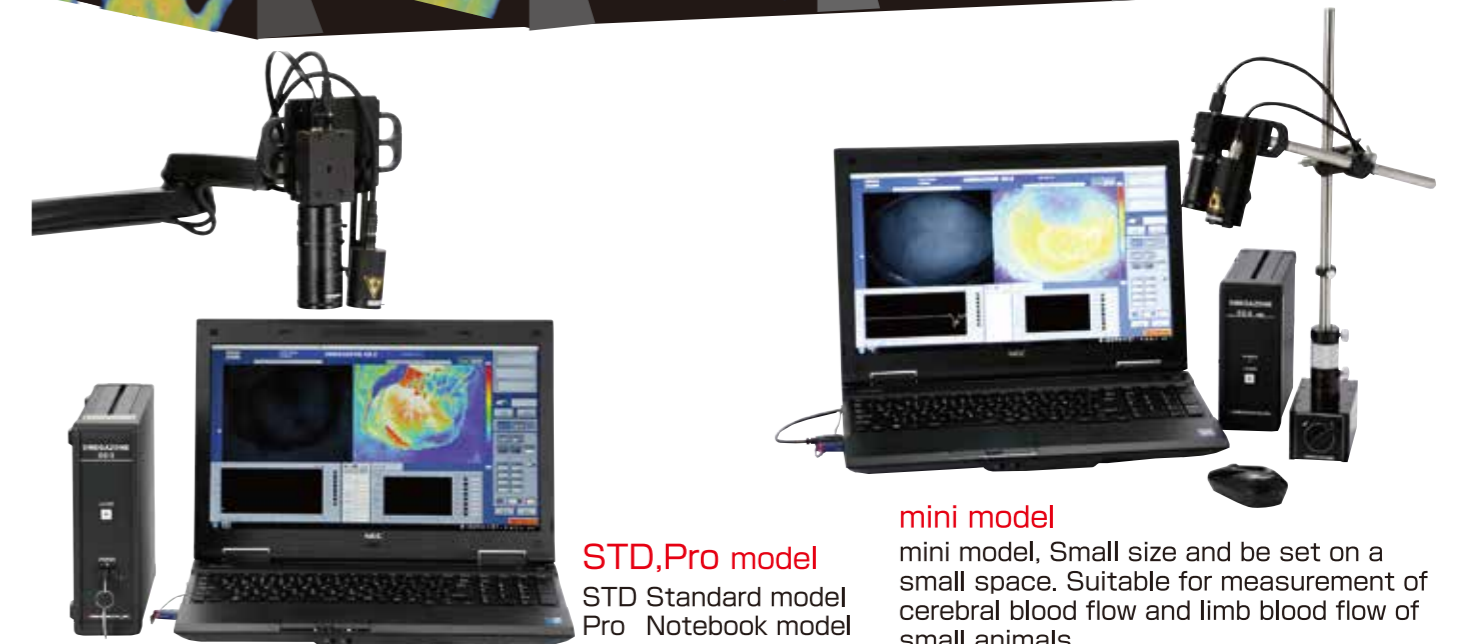
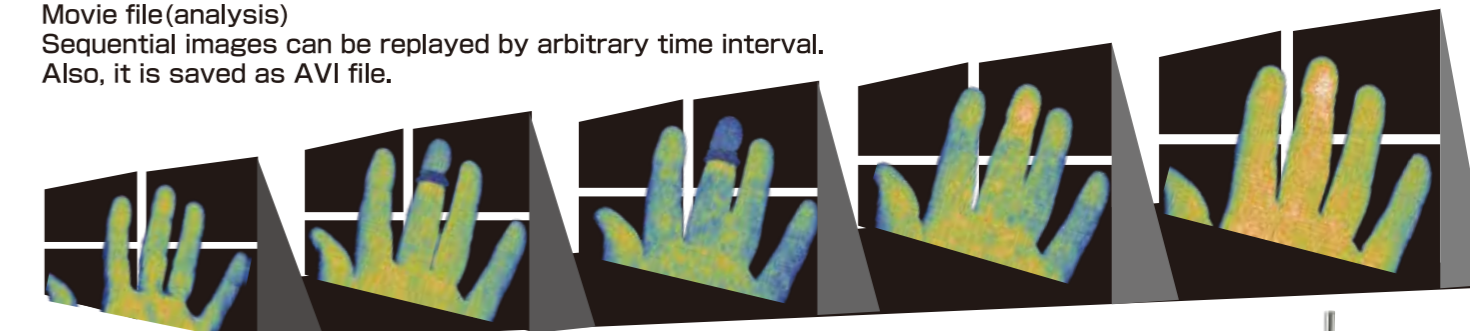
Theory

When living tissue is irradiated by laser light, the speckle pattern is observed. The intensity of the speckle pattern temporally changes by the flow of red blood cells inside the tissue. This intensity change is captured by all pixels of a CMOS camera. The blood flow of each pixel is calculated by a computer-based image processor and displayed on the screen.



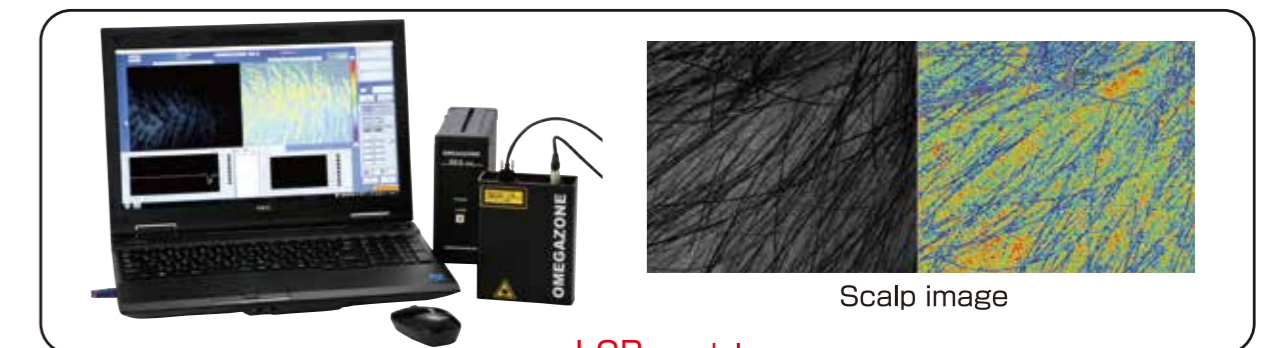
- **Red pointer laser**
The laser light for measurement is infrared and cannot be seen. Therefore, the red pointer laser locates the irradiated position. (not provided in mini)
- **Separation of Measurement & Analysis**
The measurement and analysis software are installed, and the data can be analyzed after the measurement.
- **Auto gain controller (measurement)**
The intensity of the real image is automatically adjusted. The intensity can be manually adjusted, too.
- **Optical zero null (measurement)**
The intensity of the real image can be set to zero when the laser light is not irradiated on tissue. This function eliminates the effect of the light from outside.
- **Saved blood flow image (measurement)**
Each saved image is an individual image file and has the time stamp. Therefore, any one image can be selected and displayed.
- **Marking on image**
Mark can be made on the image and the chart.

Movie file (analysis)
Sequential images can be replayed by arbitrary time interval.
Also, it is saved as AVI file.



STD, Pro model
STD Standard model
Pro Notebook model

mini model
mini model, Small size and be set on a small space. Suitable for measurement of cerebral blood flow and limb blood flow of small animals.



Scalp image

LCB model

- **Data saving (analysis)**
Blood flow values inside ROIs and the histogram is saved as EXCEL file.
- **Differential mode (analysis)**
Increase and decrease from a control image can be obtained by Differential mode.
- **Plural color bars**
Suitable color image of Blood flow color image can be chosen by plural color bars. Standard, Enhanced, Blue-Red(for differential) and Gray scale.
- **Calculation without zero value (analysis)**
Averaged blood flow value inside ROIs can be calculated without zero value by ZE function. Tracing the complicated tissue outline is not needed.
- **ROI save function**
ROIs set on the images can be saved. The saved ROIs can be loaded on different images.