



# SONOMED-300M

Digital multigate transcranial Doppler

## Clinical capabilities:

- Detection and quantification of intra- extracranial stenoses/occlusions
- Monitoring of cerebral perfusion in stroke prevention in high-risk patients
- Thrombolysis monitoring, evaluation of the stroke treatment efficiency
- Evaluation of cerebral embolism risk in patients with different vascular pathology
- Bilateral evaluation of cerebrovascular reactivity during functional activity and tests



ULTRASOUND DIAGNOSTIC MEDICAL SYSTEMS



# SONOMED-300M

Spectromed manufactures two lines of the transcranial (TC) Doppler systems «Sonomed-300M»: analog (blind) Doppler systems and expert level multigate Doppler systems with M-mode.

## I. Digital technology



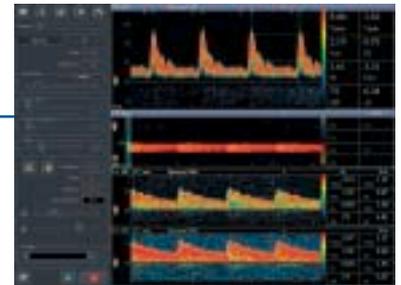
There is a big difference between multigate digital and analog Doppler systems — availability of information about the vessel location.

All vessels which are crossed by ultrasound (US) beam, are displayed on the monitor screen in M-window. This information allows operator to drastically reduce time of vessel searching.

A few vessels located at different depths can be examined simultaneously due to information from all depths along the US beam.

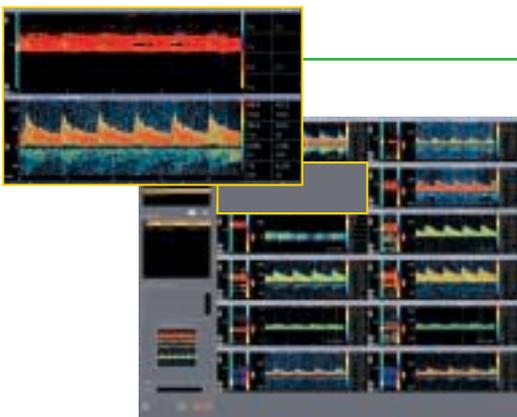
Stored raw digital data can be used OFF Line to get spectrum from each depth. This feature expands diagnostic capabilities.

Digital multigate Doppler system — Sonomed-300M has a good depth resolution for accurate detection and visualization of closely located vessels.



## II. Automatic calculation of indices

New adaptive algorithm automatically calculates all parameters and indices of blood flow even in the condition of a very noisy spectrum.



## III. Multiwindow screen layout

Digital Doppler systems can be used in all kinds of routine examinations with evaluation of the blood flow asymmetry, tracing of blood flow change in time, calculating regional pressure indices etc.

Zoom mode provides examination with maximum resolution for multiwindow screen layout (up to 12 windows simultaneously) which simplifies examinations, especially in complex cases.



## IV. Data base

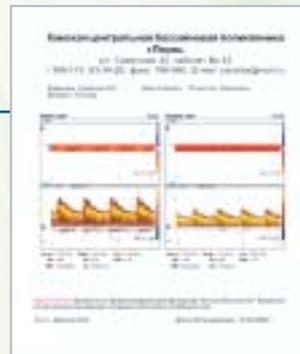
Spectral data and reports can be stored in a build-in data base on the hard disk. All examination results and reports are systematized in the data base and displayed in a convenient form.

Storage of a raw digital data in digital technology provides a possibility to display a blood flow spectrum from any depth even without a patient (OFF-Line).

## V. Report generating

Report editor allows to prepare a quick report on the base of the report templates, which include: information about a patient, table of indices, diagnosis etc.

For long term monitoring examinations some additional data are added to the report: a list of events, an emboli histogram, trends and signal windows etc.



## VI. Long term monitoring software

Sonomed-300M digital Doppler systems can be used both for 1 channel and 2 channels transcranial vessel monitoring. Digital Doppler System implements a new multigates algorithm of emboli detection which easily finds HITs and discriminates emboli and artefacts.

Visualization in Power Doppler mode (M window) allows to identify the most difficult embolic signals — «cerebral embolic showers».

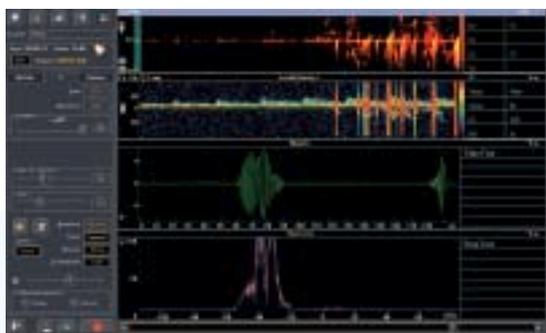


## VII. Events List for monitoring record

During monitoring the software automatically marks the main important events (time moments) of the record:

- embolic signals,
- start/stop for each fragment,
- moments, when trends move beyond the set boundaries.

and saves them in to a list which is called Events list. Operator can also mark(add to the Events list) some moments during monitoring. The Events List is a very useful and important tool as it facilitates work with long monitoring records during analysis.



## VIII. Monitoring record analysis

There is a full set of methods for further analysis of the monitoring records, which includes

- going to the events in the Events List,
- going to the required moments in the Trends Window,
- playback/zooming parts of the record fragment,
- evaluation of the signal power for different depths,
- examination parts of the record fragment in time or spectral domains.

## IX. A manual on Doppler examination of cerebral vessels



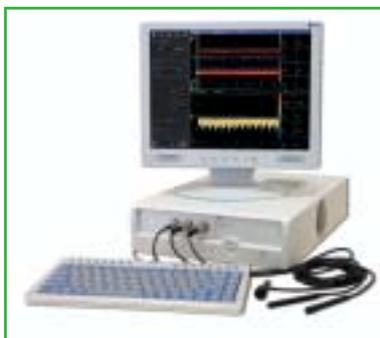
This embedded software package contains a series of normal and pathologic Doppler patterns which correspond to various states of the cerebral arterial bed. Each Doppler pattern is followed by description, diagnostic and therapeutic steps. Apart from TC pattern descriptions, you can also find: information about anatomy of the artery, method of its location, protocol of the Doppler examination.

## X. Design variants

Spectromed manufactures two lines of the transcranial (TC) Doppler systems:

- 1X — digital multigate Doppler systems,
- 2X — analog (“blind”) pencil Doppler systems.

Here X means a design variant, which depending on the working conditions can be a stationary or a movable system or an outbox design. Common specification of a delivery is shown below:



### Computer variant (1C, 2C)

- computer with TC Doppler module
- monitor, keyboard and mouse
- Doppler probes 2,4,8 MHz
- accessories (footswitch, power unit)
- software package and electronic key



### Movable variant (1P)

- movable computer with Doppler module monitor, keyboard and touchpad
- Doppler probes 2,4,8 MHz
- accessories (footswitch, power unit, trolley)
- software package and electronic key



### Outbox variant (2B)

- outbox Doppler module (USB device) with cable
- Doppler probes 2,4,8 MHz
- accessories (footswitch)
- software package and electronic key

## Technical specifications

### General

<b>Modes:</b>	D, M+D, M+D+D, M+D+T, 2(M+D), 2(M+D+D), 2(M+D+T)
<b>Screen layout:</b>	up to 12 windows
<b>Doppler probes:</b>	2 (PW), 4 and 8 (CW) MHz
<b>Ultrasound power:</b>	2 MHz < 1.0 mW/mm <sup>2</sup> (PW), 4 and 8 MHz < 0.4 mW/mm <sup>2</sup> (CW)

### M-mode

<b>Multi Depth</b>	more than 150 gates
<b>Depth range:</b>	16—150 mm (1mm step)
<b>Sample volume:</b>	1—15 mm (1mm step)
<b>Visualization:</b>	Color Flow(CF)/Power Doppler (PD)

### D-mode

<b>Frequency range:</b>	10Hz—20 kHz
<b>Wall filters:</b>	0,100, 200, 400, Hz
<b>Spectrum analyzer:</b>	64 / 128 / 256 point FFT
<b>Visualization:</b>	512 spectral lines /64 color or grey levels
<b>Processing</b>	Adjustable smoothing and compression of data

### Measurements

#### Real-time parameters and indices calculating:

(V<sub>s</sub>, V<sub>d</sub>, V<sub>a</sub>, AI, RI, PI, ISD, STI, HR)

#### Real-time curve drawing:

curve V<sub>sys</sub>, curve V<sub>ave</sub>

#### Measuring in M window:

distances, time intervals

#### Measuring in D window:

velocities, indices, time intervals

### Computer specifications

#### Operation systems:

Windows XP/Win7

### Accessories



Functional keyboard



Probe holder for 1 probe



Head helmet for 2 probes



Trolley

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