

EMS-9PB

Innovative Transcranial Doppler (TCD) Technology



Outstanding TCD software DTCD8100

Professional Embolus Detection Program

With an improved algorithm, the accuracy and reliability of HITS detection are superior to other TCD instruments.

Powerful Statistics Function

The DTCD8100 program includes different interfaces for statistical analysis, which provides convenient data reduction for clinical research.

Flexible Report Formats

The report system of EMS-9PB can generate reports in BMP, XML, PDF, DOC, XLS and etc.

Multi-language Supported

With independent code, the software interface can be translated and switched into other languages including German, Chinese, and Italian.

Database Backup and Multi Database Supported

The program supports patient's data backup using CD, DVD, and any other storage media. User can build different databases for file backup.

DICOM Software

DICOM store and DICOM modality work list.



EMS-9PB

Most Portable and Integrated TCD System in the World

The EMS-9PB is a new generation of multi-function Transcranial Doppler. It integrates Delica's full digital imaging technology, wide-band technology, and other innovations in a reliable state of the art instrument. Compact construction, streamline appearance and portability make it an attractive choice for any hospital or private office. With a series of outstanding features including high sensitivity, reliability and portability, it brings a powerful tool for neurological diagnostics, ICU/NICU monitoring, multiple office use and other clinical applications.



Portable & Flexible



Easy Maintenance



High Resolution M-mode



Touch Screen

Portable System with Excellent Performance

"All-in-One" Device

Portable and flexible for different clinical uses, especially for mobile applications.

Touch Screen Operation

High resolution TFT touch screen with user-friendly software provides for ease of operation.

More Reliable and Ease of Maintenance

Conservatively designed with special anti-interference capability, the device can work continuously and reliably without maintenance. Modular construction makes service easier.

Full Digital Ultrasound Technology

Most Sensitive Doppler

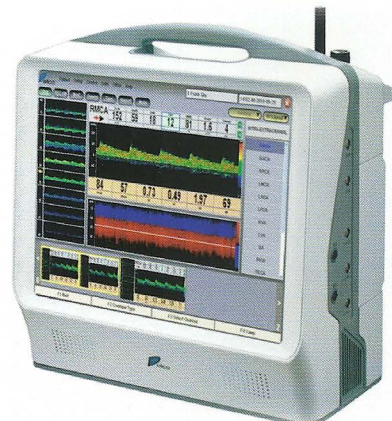
With advanced digital technology, the system can detect vessel signals easily and obtain high quality spectra even working at very low power with improved safety.

Higher Velocity Limit

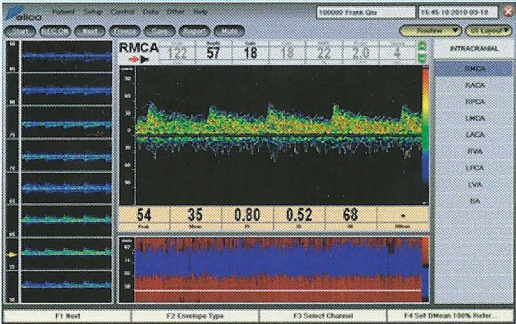
The maximum detectable velocity is up to 750cm/s for the MCA at depth 50mm ; it eliminates the anti aliasing problem for patients with a very high blood flow velocity.

High Resolution

Up to 8 spectral windows displayed simultaneously, 128 depths per probe combined into 750 gates.



software specification

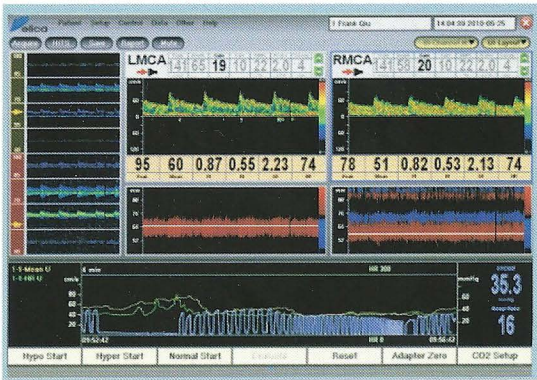


Higher Velocity Limit

The maximum detectable velocity is up to 750cm/s for the MCA at depth of 50mm. This eliminates the anti aliasing problem present in most TCD units and improves the accuracy for measuring high velocity for vasospasm patients.

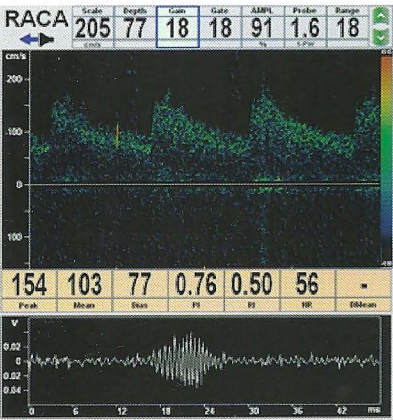
Sensitive Doppler

Advanced digital technology with improved detection sensitivity. The system can detect and obtain vessel signals quickly with high quality spectra even working at very low power and small sample volume ($\leq 2\text{mm}$), which also improves the accuracy for vessel localization, reliability for vessel identification especially working in the Multi-depth mode.



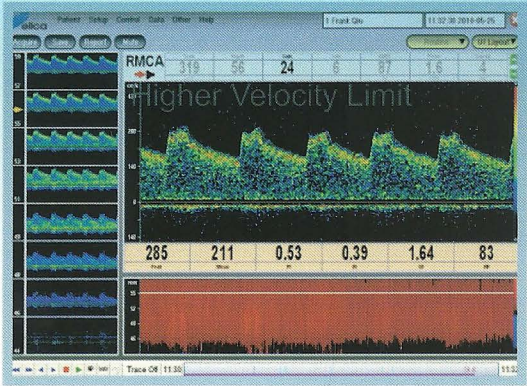
powerful statistics function, provides convenient data reduction for clinical research User-friendly System

The EMS-9PB has a configurable GUI (General User Interface), for all examination protocols and procedures. Settings can be predefined according to user's needs. This insures easy operation, printing of custom patient reports and storage and retrieval of data. Based on the cooperaton with many neurologists working on emboli research, the new emboli detection software has an improved algorithm with high accuracy, and it's features include a soundtrack and a HITS history



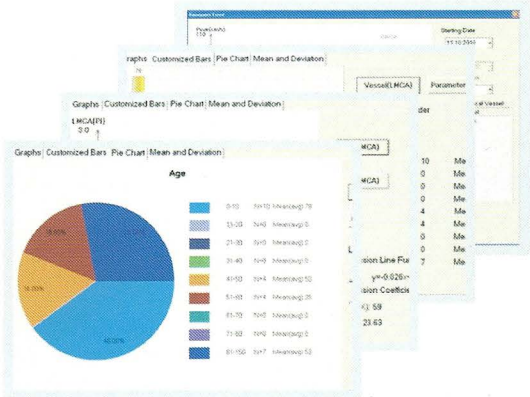
Exclusive Dynamic M-Mode (128 Depths, 750 gates)

As a full digital TCD, the EMS-9PB system produces a powerful, high resolution (128 depths combined into 750 small gates) M-Mode display, with Doppler signals simultaneously displayed along the ultrasound beam at varying depths. Up to 8 spectra at various depths can be simultaneously displayed with the M-Mode display.



"Real" two channels with Professional Monitoring Program

The EMS-9PB is a real 2- channel device; all the control parameters including Depth, Gain, Gate, AMPL and Scale can be adjusted independently. Up to 8 analog input signals can be added and analyzed synchronously with the TCD indices in monitoring for TCD diagnostics, intra-operative (e.g. carotid surgery and cardio surgery) and intensive care use. It has CO2 reactivity and VMR testing for the determination of vasomotor reactivity and reserve of cerebral blood circulation to changes in arterial pCO2.



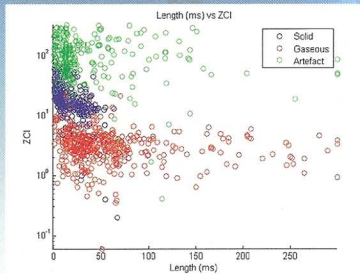
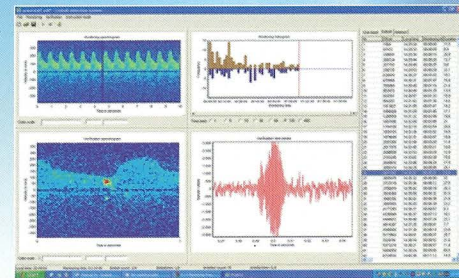
Advanced Emboli Detection software

Based on the cooperaton with many neurologists working on emboli research, the new emboli detection software has an improved algorithm with high accuracy, and it's features include a soundtrack and a HITS history.

Features & Functionality

The Embolus Detection System (EDS software Program)

The Embolus Detection System or EDS is a developed for the detection of cerebral embolisation. It analyses the audio-output of TCD equipment and searches for transients in the signal that have the characteristics of an embolus. The software is developed to detect embolisation in TIA and Stroke patients. In these patients the emboli frequency and intensity can be extremely low so the software must be very sensitive to detect these embolic events. The current software has been tested and validated clinically and the accuracy has been published in a peer reviewed magazine. It is intended to use as a tool which may reduce the recurrent stroke rate in patients who recently experienced a TIA or Stroke. Advances of the EDS are: easy to use, reliable, adjustable on any TCD machine, validated and high accuracy. The current manual highlights embolus detection by TCD in general with emphasis of the use of the EDS system. We urge the reader to study carefull this manual and especially the disclaimers mentioned in the last slides of this manual.



TEACHING THE NETWORK

Characteristics of the teaching file

	emboli (142)	artefacts (259)
■ Transients (n)		
■ duration (ms)	22.6 ± 20.3	36.4 ± 32.5
■ m. intensity (dB)	5.0 ± 1.6	4.8 ± 2.0
■ max. intensity (dB)	6.1 ± 2.4	5.8 ± 2.8
■ mean ZCI	42.7 ± 31.0	338.0 ± 391.0
■ minimum ZCI	9.3 ± 13.0	118.7 ± 109.3
■ n zero-crossings	50.1 ± 26.0	22.2 ± 22.1
■ zero-cr/ms	2680 ± 994	745 ± 675

Vasomotor Reactivity Testing (VMR software program)

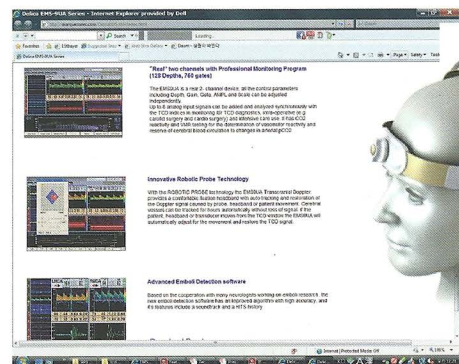
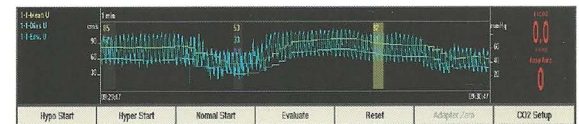
A variety of other tests were introduced to evaluate intracranial hemodynamics using the phenomenon of vasomotor reactivity (VMR) including CO₂-reactivity with TCD, acetazolamide testing with TCD and cerebral blood flow scanning techniques, and the breath-holding index (BHI). BHI values of less than 0.69 are predictive of risk of stroke in patients with asymptomatic severe ICA stenoses and symptomatic occlusions.

CO₂

Hypo Start	Hyper Start	Normal Start	Evaluate	Reset	Adapted Zero	CO ₂ Setup
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VMR

Hypo Start	Hyper Start	Normal Start	Evaluate	Reset
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Innovative Robotic Probe Technology

With the ROBOTIC PROBE technology the EMS-9PB Transcranial Doppler, provides a comfortable fixation headband with auto tracking and restoration of the Doppler signal caused by probe, headband or patient movement. Cerebral vessels can be tracked for hours automatically without loss of signal. If the patient, headband or transducer moves from the TCD window the EMS-9PB will automatically adjust for the movement and restore the TCD signal.

intraoperative probe-16MHz Probe

Quality control is vitally important in performing surgery, if secondary intervention and re-operation are to be avoided. The Doplex intraoperative probe can assist in the performance of safe surgery. Using Doppler ultrasound the probes provide immediate evidence of success in vascular reconstructive procedures.



TCD proes



- 1.6 PW probe :
improve Sensitivity and Safety.
- 4/8MHz PW&CW Probe :
Extend Application for Extracranial Vessels.
- 16 PW Probe for Neurosurgery :
Directly touch the vascular during brain surgery without any harm.
- 1.6/2MHz PW Robotic Probe :
Automatically Scan, Search, and Track Signals.

specification

PC

Display: 15" color LCD
Operating System: MS Windows 7, or higher
Graphics card: support 1024x768 or better, 32bit
Audio card: Sound Blaster compatible
Hard disk: $\geq 500\text{GB}$ or Higher
USB ports: 4
Dimension: 361x242x360mm(LxWxH)
Weight: 8.2 \pm 0.3 kg
Housing: Plastic + Aluminium-alloy Portable & Integration
Probe Connections: 1.6MHz PW
4, 8MHz CW&PW
16MHz PW

Doppler

M-mode resolution : 128 depths combined into 750 gates
FFT Dots : 64, 128, 256, 512 FFT dots, 256 as default
Depth Range (1.6MHz): 0 -149mm
Gain Control: 0-40, 40 steps
Power Control: Up to 100% (more at power-boost mode)
PRF (1.6MHz): Up to 24kHz (depth dependent)
Sample Volume (Gate): 1-20mm
Volume Control: Stepless, slide bar plus mute
Sweep Time: 4~32 seconds
Velocity Units: cm/sec or kHz
Spectrum Colors: Selection from 32 color scales
Doppler Color Resolution: 32 colors
Insonation Angle: User defined
Uni-lateral/Bi-lateral Monitoring
CO2 Reactivity, MES, VMR, PFO test : Yes
Report Formats: BMP/XML/PDF/DOC/EXCEL/DICOM/RAW DATA/AVI/WAV
Network Transfer and Storage: LAN with integrated protocol , DICOM



NEUROPLUS
www.neuroplus.co.kr

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