

Dolphin Transcranial Doppler

Taking TCD Technology One Step Further

DOLPHIN*MAX*

DOLPHIN4D

DOLPHIN*IQ*



About Viasonix

Our Company

Viasonix is the only international company that offers a wide range of advanced Peripheral Vascular and Transcranial Doppler (TCD) product lines.

The company's state-of-the-art products meet common day-to-day routine clinical practice, as well as set new industry standards. Viasonix is focused on Doppler and blood flow applications, which provide dedicated clinical solutions primarily for vascular and angiology departments, as well as neurology and neurosurgery settings.

The user interface of the Falcon and Dolphin product lines is internationally renowned, and we invite you to discover and experience our extremely user-friendly products.

Our Products

Viasonix main product lines include the Falcon peripheral vascular diagnostic systems and the Dolphin Transcranial Doppler systems. The Falcon and the Dolphin are successfully distributed internationally with a wide distribution network covering 5 continents.



Our Certifications

Viasonix has numerous certifications and regulatory clearances including:



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Wide Range of Clinical Applications

Vasospasm and SAH

HITS Detection and Analysis

Monitoring

PFO – Patent Foramen Ovale

VMR – Vasomotor Reactivity

Autoregulation

Intracranial Stenosis

Collateral Capacity

Arteriovenous Malformation

Extracranial Tests

Brain Death

Sickle Cell Disease

Evaluation of ICP Changes

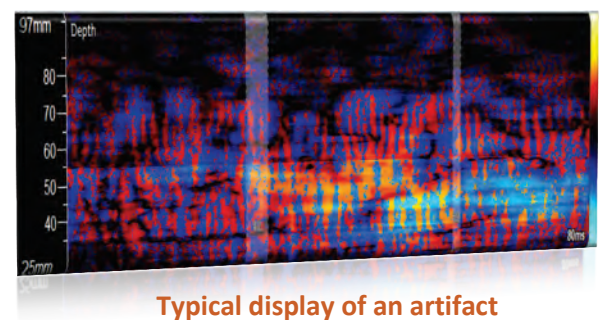
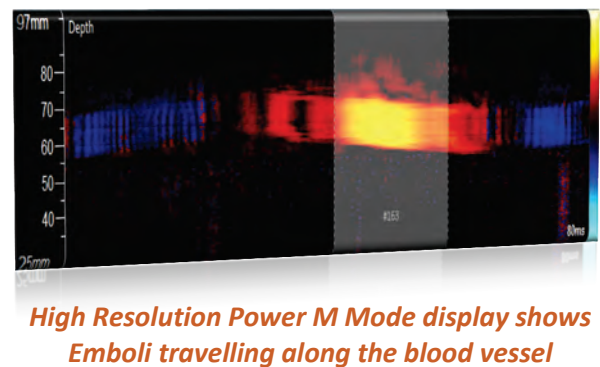
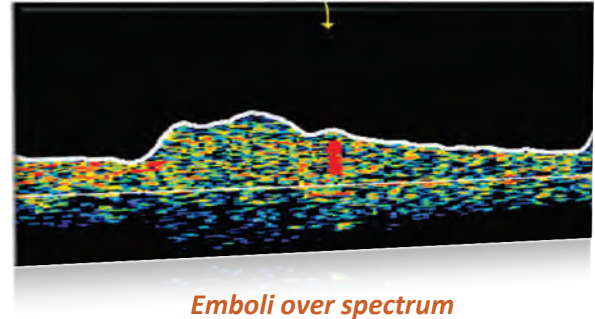
Breath Holding

Evoked Flow

Cognitive Response

Peripheral Doppler

And more...



Probes and Accessories

2 MHz Probe



2 MHz Monitoring Probe



1.6 MHz Probe



4 MHz Probe



8 MHz Probe



16 MHz Single Use Probe



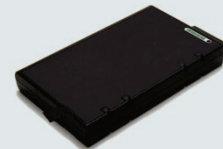
Monitoring Headset



External Channels Connection Box



Battery for Dolphin/MAX



Wired Remote Control



Wireless Remote Control



Foot Switch



Dolphin Product Family Specifications

General

Power: 110-220 V, 50-60 Hz
Dolphin/MAX Battery Operation Time: Up to 6 hours
Doppler Frequencies: 2 MHz, 1.6 MHz, 4 MHz, 8 MHz
Intraoperative: 16 MHz (Not for USA & Canada)
Probe Connectors: 5
Operating System: Windows 7/8.1/10 (32 or 64 bit)
Unilateral/Bilateral: Supported
CW/PW Probes: Supported for 4 Mhz, 8 Mhz
FFT Size Options: 64/128/256/512
Probe Holder: Integrated
Controls: Wired/Wireless remote control, Touch screen, Foot switch, Keyboard, Mouse

Dolphin/MAX and Dolphin/4D Integrated Computer

Screen: 18" Wide Screen LED, capacitive Multi Touch screen
VESA mount: Built in
Operating System: Windows 10 Enterprise, 64 Bit
CPU/RAM: Quad Core 2 GHz, 4 GB
HD: 1 TB Enterprise Grade SSD, power loss protection
USB Connection: x4, USB 3.0
Network: Ethernet
Speakers: Integrated

Dolphin/IQ Recommended Computer

Screen: 21"-24" Wide Screen with Touch Screen
CPU/RAM: i3/i5/i7, 4 GB or higher
Hard Drive: 1 TB or higher

Doppler Processing

Technology: Fully digital, 8000 channels for each side
M Mode: Dynamic up to 500 gates for selected depth range
Auto-Depth: Supported
Multi-Depth: Up to 8 spectrum depths
Replay: Spectrum, M Mode and Doppler audio at any depth
Raw Data Post Processing: Depth, Gain, Scale, Sample, Filter
Specialty Tests: Breath Holding, VMR, PFO, Sickle Cell, Vasospasm, Cognitive Response
Save: Automatic or Manual
HITS Detection: Simultaneous in multiple depths
HITS M-Mode display: 125 μ s resolution
HITS Analysis Screen: with detailed events, distribution charts, complex & energy graphs
Continuous Monitoring: Trends display including zoom in/out
Event Markers: Automatic, Predefined, Alerts, Delta-mean

Software Features

Screen Display: Designed for wide screen and High Definition
Cybersecurity: According to FDA Guidelines
HIPAA: Patient privacy options
Protocols: Unlimited, fully configurable
Main Screen Layout: Fully configurable, interactive
Summary Screens: Interactive
User Profile Settings: Unlimited, user configurable
Designed Reports: Fully configurable
Free Text Report: Templates, tables, camera & pictures, TAGS
Waveform Labels: Manual/automatic with threshold display
Backup/Restore: Integrated. USB/DVD/Network, Manual/Automatic
Patient Details: Flexible layout
Medical History: Configurable, with indication fields
Storage: Configurable options, compressed data files
Camera: USB camera support
Maintenance: Automated protocol with detailed report
Languages: Supported

Connectivity

External Channels: Analog/Digital Input/Output (8/8)
Capnograph: Supported
Review Stations: Unlimited, including over network
Shared Database: Over network via Access or SQL
DICOM Worklist: Offline and Online
DICOM Store: BMP/JPG/PDF, multiple destinations
DICOM Features: Auto-send, auto-retry (queue)
DICOM Structured Report: Default/Programmable
HL7: Orders, Report, Query, Patient Registration
GDT: Patients and Report
PDF: Automatic Report Export
Email: With PDF attachment, using SMTP
Network Queue: Send reports while network is offline

Research Options

Export: PDF, BMP, JPG, PNG, Excel, VDL, Movie, Word, RTF, Raw Data, Anonymous PDF
Statistics: Advanced charts, Comparison graphs, X-Y Analysis
Advanced Display: Velocity Profile, Depth Scan, 4D Analysis
Data Mining: Available with advanced segments
Patient History: Quick review of previous exams, patient trends screen
Database Search: Multiple advanced options

Selected Approvals

ISO 13485, CE 0344, FDA K170859 and additional country-specific approvals

Unique Dolphin Features (Page 1 of 4)

Feature	Description
Integrated Battery	Dolphin/MAX includes an internal battery. Operation time when fully loaded – 3.5 hours of continuous unilateral Doppler examination.
True Review Station	Automatically import and automatically export complete examinations including spectrum, M Mode, audio, and complete raw data for post processing to an external computer such as the Doctor's computer. Review station allows optimizing examinations, replay spectrum with audio, adding free text report and sending final report to PACS/HL7/PDF.
Smart Auto Depth	Smart Auto-Depth quickly responds to signal to find the best spectrum depth.
Cybersecurity ready	According to recent FDA guidelines
VESA Mount	To easily mount Dolphin/4D to a cart
Latest screen display technology	LED
Latest touch screen technology	Multi Touch Capacitive
Unlimited configurable protocols	Complete flexibility, add as many protocols as needed and edit/remove any protocol
Spreadsheet Protocol Editing	Edit any protocol as a spreadsheet.
Wireless Remote control	Easy to use infrared based wireless remote control
Camera	Better patient documentation and reporting
Dedicated protocols for specialty tests	Including protocols for Sickle Cell Disease and Vasospasm with configurable thresholds for automatic interpretations.
Save Another Depth	Save another depth from a measurement after freeze from the stored raw data and without having to take another measurement. This can be available while an examination is being performed, after it was stopped and also after loading the examination for offline review.
Offline Post processing	Ability to modify Depth, Gain, Scale, Sample Volume and High Pass Filter in offline after pressing FREEZE
Multi Depth in Offline	Modify number of spectrum windows in offline and change the depth of each spectrum window in offline
Replay at any depth	Modify Depth in offline, then replay the new depth with spectrum and Doppler audio
One key operation	Saves time by performing the entire protocol with one main key
Automatic save	Ensures no measurement is lost
HITS Detection	Ability to detect HITS on all gates in the entire depth range
HITS Analysis	HITS analysis in a time resolution of 125 micro seconds including high resolution M Mode display, spectrum, complex and energy graphs and HITS distribution charts
HITS Browser	List view of detected HITS with the ability to select from the list and mark HITS as artifact or vice versa. Each row displays various data including: HITS details, Spectrum display around the HITS, high resolution Power M Mode display around the HITS, complex and energy graphs. Events list can be sorted according to different HITS parameters including: Time, Center Depth, Energy, Duration and Grade
Shared network database	Network share of examinations, patients and other data between multiple Dolphin work and review stations using background sync

Unique Dolphin Features (Page 2 of 4)

Feature	Description
SQL Support for shared network database	Optionally, connect to the hospital SQL server
DICOM	Including flexible plug & play configuration, Online and <u>Offline</u> Worklist (Great for mobility, continue using today's worklist even if network is disconnected), DICOM Store advanced features: - BMP/JPEG and Encapsulated PDF - Multiple destinations to send report (each with separate configuration) - Queue - Ensures documents are transmitted - Auto Send - Ensures documents are transmitted - Auto Retry - Ensures documents are transmitted
Programmable DICOM Structured Report	Advanced DICOM reporting, customized using external file
HL7 Patient Registration / Orders / Report / Query Patient Details	Advanced HL7 options for maximum compatibility
Automatic PDF Report Export	With customized file path & name template
Static Text Report	To quickly add static text that will always appear in the report when a specific protocol is performed such as normal values tables, pictures, explanations, etc.
Header and Footer designer tool	Built in tool to fully customize the header and footer sections in the printout including adding new objects: logos, patient details, and many more. The objects in the header/footer can be resized, moved or deleted using drag & drop.
Automatic Print	Automatically send a report to printer once an examination is completed.
Reference Values	Adjustable normal values table in report and support different normal values according to age and gender.
R/L Comparison Table	Right/Left percent difference table in the report with ability to define customized normal values to highlight critical deviations
R/L Comparison Charts	Right/Left difference bar charts in the report with ability to define customized normal values to highlight critical deviations
Send Email	Send an email with a PDF report attachment to the Doctor's office
Advanced PFO Protocol	Support of multiple segments within a single PFO examination, each segment has a separate HITS and Artifact count and a detection of first HITS in the segment. Final report displays a list of all segments in the PFO examination and their results.
Spectrum Display Order	Various options including: Default order, protocol order, measurement order, and a completely customized order.
Automatic Deletion of Raw Data	By an automatic and a periodic manner to free up disk space.
PFO Shortcuts	Mark Valsalva Maneuver, Injection and more directly from the remote control or keyboard.

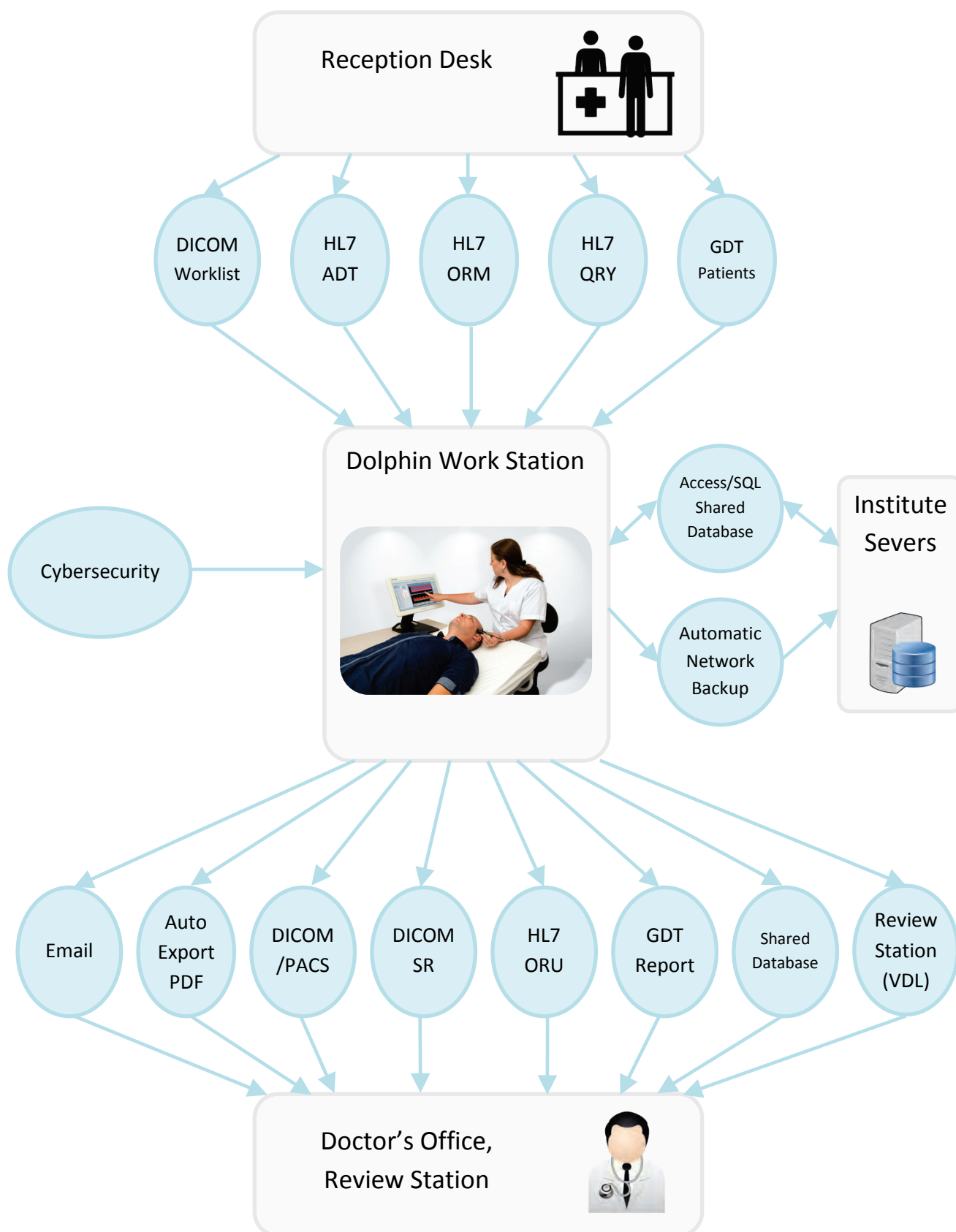
Unique Dolphin Features (Page 3 of 4)

Feature	Description
Excel	Automatic export of all measurements in an examination including Doppler envelope and parameters to Excel once an examination is completed
Results in Main Screen	Velocity results table can always be displayed in main screen without having to open summary screen or report.
Patient Trends in Report	Automatically include patient trends of past examinations in report.
Quick Print	Configurable option to print only part of the report such as results tables or reference values. It can be done from screen, remote control, keyboard or automatically.
Special design layout for each test	Each type of test can have a separate and completely customized configuration for screen layout and print layout
Patient details customizations	Highly flexible. Easily design a customized layout of all fields. Customized free text fields, patient status fields, risk factors, physical examination, additional fields, symptoms and indications fields, diagnosis codes.
Advanced report editor	Configurable report templates. Tables, Camera pictures, quick text (quickly inserting commonly used text), automatic TAGS (use special <TAGS> as placeholders for data to build sophisticated reports), RTF Import/Export(integrate with MS Word for easier template building)
Ophthalmic mode	Automatic protection of insonation power during Ophthalmic and Siphon measurements. Important for safety
BHI calculation	For Breath Holding protocol
Lindegaard Ratio	Displayed and included in report
Quick Parameters	Can batch recalculate using 2 or 3 cursors
Recalculation Screen	
Customized screen layout	Modify screen location of M Mode, parameters, etc. for enhanced ease of use
Database Statistics	Collection of pie charts and advanced X/Y chart to review different patient related statistical data
Advanced statistics with Excel support	Export entire database to Excel. Great for data mining
Password protection	Options to protect from accidental changes
Diagnostics	Self-diagnostics procedure including a report
Velocity Profile	Advanced display of spectrum along the entire selected depth range for better real time and post analysis
Depth scan	Quick analysis of the entire depth range for better post analysis
4D Analysis	Advanced display of velocities along the entire selected depth range for better post analysis (with replay option)
Automatic Interpretation Labels	Easier interpretations and threshold displays
Parameter Trends Zoom	Zoom in/out option for trends using drag & drop
Configurable alerts	For monitoring
Delta mean marker	For monitoring
Quick review of previous exams	Quickly browse through all summary screens of past examinations with few clicks. Saves time.

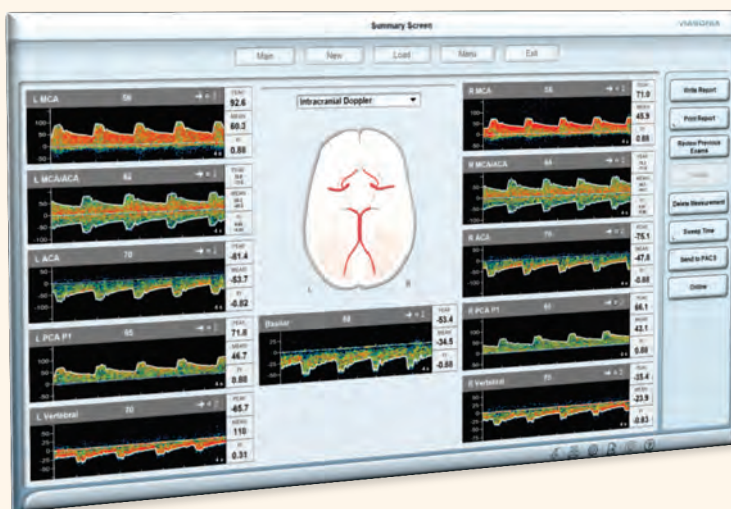
Unique Dolphin Features (Page 4 of 4)

Feature	Description
Customized physician and examiner list	For ease of operation
Customized exam name and exam ID list	For ease of operation
Patient picture display	Display patient picture using a camera
Database search	Advanced search based on various criteria (dates, protocol, risk factors, etc.)
Anonymous Output	Export PDF files anonymously for research purposes
Configurable storage settings	Flexible configuration, user can decide exactly what is saved and what is not. Optimal disk space use
Data Compression	compression algorithm to optimize use of disk space
Backup options	Allow to backup: all patients, selected search patients, or delta from last backup
Automatic Backup	Automatic backup with customized period and destination
Batch Delete	Batch delete screen to delete multiple unwanted measurements at once including a preview of all measurement spectrums
Resume Examinations	Pausing and resuming examinations

Enterprise Grade Network Solution



Selected Software Screens (Page 1 of 5)

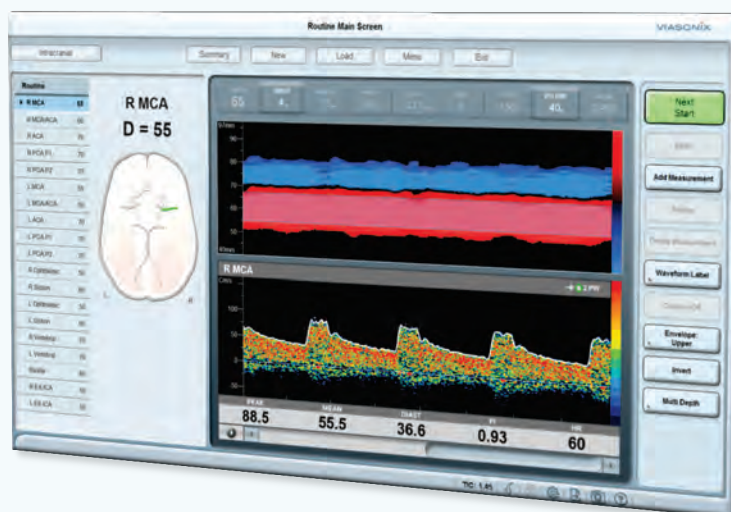


Interactive Summary Screen

With numerous editing options

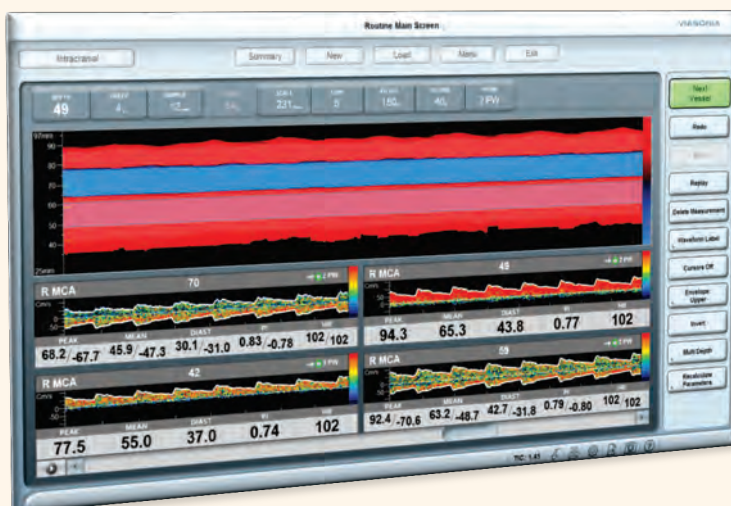
Flexible Main Screen

Organize Main Screen layout according to your needs



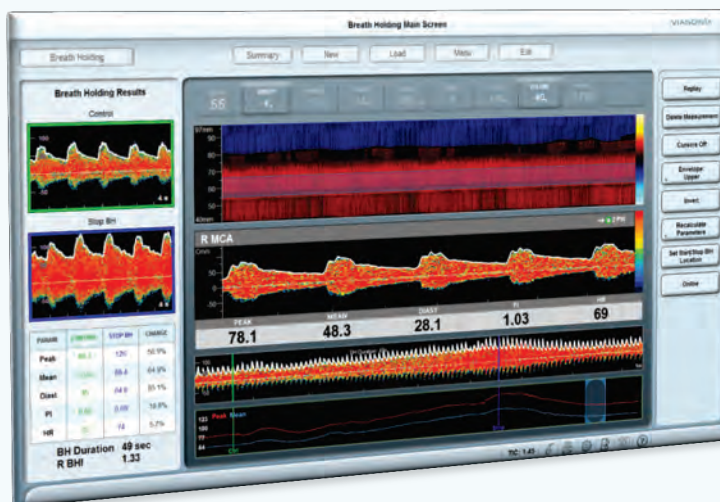
Multi Depth

With Post Processing options



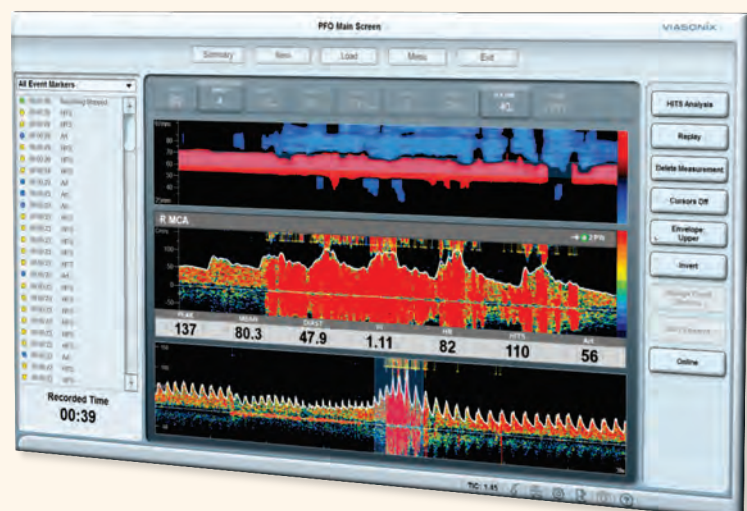
Selected Software Screens (Page 2 of 5)

Vasomotor Reactivity (VMR)



Breath Holding

Patent Foramen Ovale (PFO)

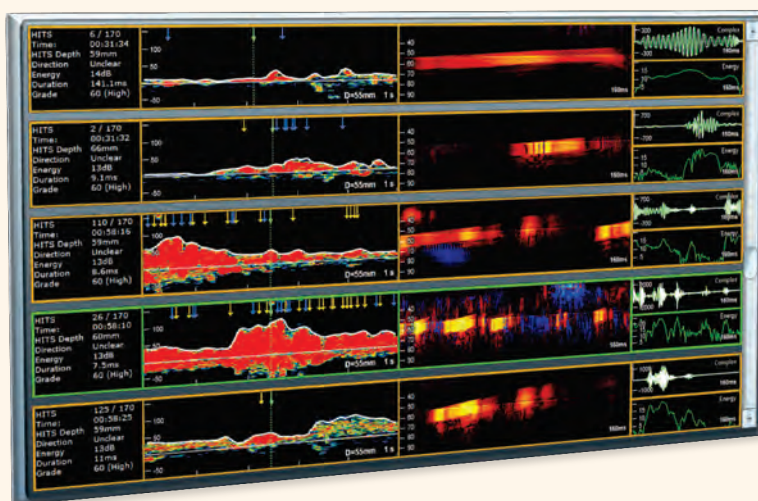
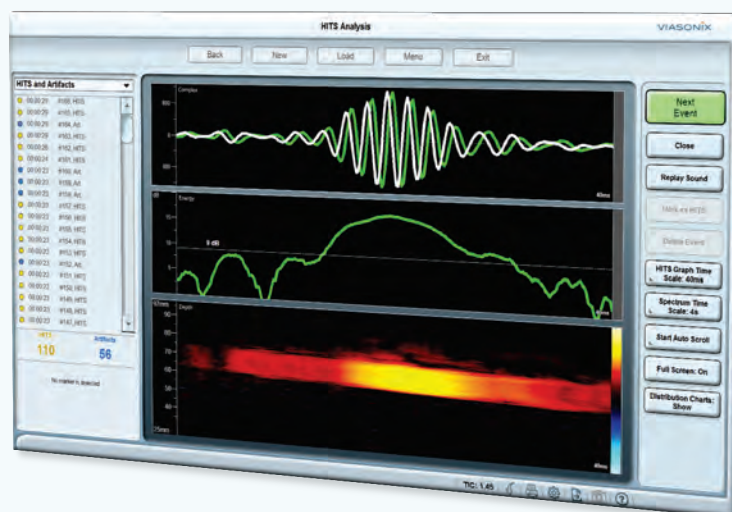


Selected Software Screens (Page 3 of 5)



**Long Term
Monitoring**

**Advanced HITS
Analysis**



**Quick HITS
Browser**

Selected Software Screens (Page 4 of 5)

Patient Details Screen

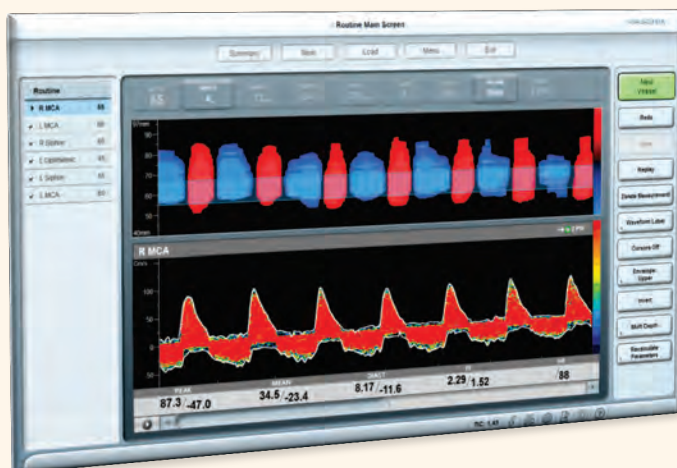
With customized fields

Medical History

With customized fields

Quick Access Menu

Selected Software Screens (Page 5 of 5)



Brain Death

Edit Protocol

Complete flexibility.
Edit each protocol as an
Excel spreadsheet

Site	Vessel	Probe	Depth	Sample	Power	Scale	Gain	Zero	Start Depth	End Depth	Direction	Envelope
2	R	MCA	2 PW	65	12	64%	231	8	30%	40	90	Towards Upper
3	R	MCA/ACA	2 PW	70	-	-	8	50%	40	90	Towards Both	
4	R	ACA	2 PW	70	-	-	8	70%	50	90	Towards Lower	
5	R	ACA/P1	2 PW	70	-	-	8	30%	50	90	Towards Upper	
6	L	MCA	2 PW	65	-	-	8	70%	50	90	Towards Lower	
7	L	MCA/ACA	2 PW	60	-	-	8	30%	40	85	Towards Upper	
8	L	ACA	2 PW	70	-	-	8	50%	40	85	Towards Both	
9	L	ACA/P1	2 PW	70	-	-	8	70%	50	90	Towards Lower	
10	L	ACA/P2	2 PW	70	-	-	8	30%	50	90	Towards Upper	
11	R	Ophthalmic	2 PW	56	6	6.9%	231	2	40%	30	70	Towards Lower
12	R	Sphen	2 PW	56	12	3.6%	231	8	50%	40	90	Towards Upper
13	L	Ophthalmic	2 PW	56	6	6.9%	231	2	40%	20	70	Towards Upper
14	L	Sphen	2 PW	56	12	3.6%	231	8	50%	40	90	Towards Upper
15	R	Vertebral	2 PW	70	12	64%	231	7	40%	40	90	Towards Upper
16	L	Vertebral	2 PW	70	12	64%	231	7	40%	40	90	Towards Upper
17	R	Basilar	2 PW	80	-	-	7	40%	40	85	Towards Lower	
18	R	EXICA	2 PW	80	-	-	16	60%	54	110	Towards Lower	
19	R	EXICA	2 PW	80	-	-	16	70%	40	85	Towards Lower	

Mr. Jackson, Stanley M. 4722419756

Diagnosis: The transcranial approach of the bilateral ACA/MCA/TICA/PCA velocities are normal or non-specifically increased mean velocity <=80 cm/sec.

Basilar: The transcranial approach of the Basilar artery velocity is 155 cm/sec.

Impression: Technically adequate 2D Doppler and color flow examination. No compression seen in any vessels. Transcranial entry Doppler exam shows no evidence of extracranial arterial occlusive disease.

Diagnostic Criteria: MCA Flow Velocity: normal, no stenosis. Should be observed further.

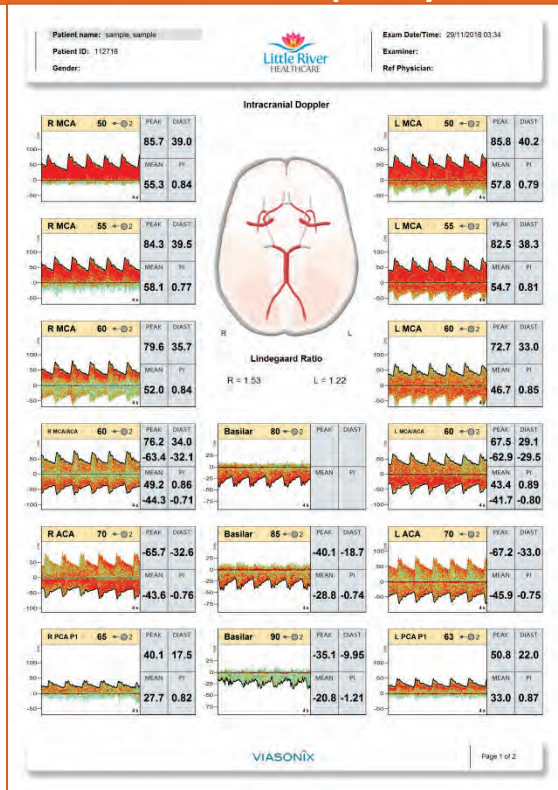
Depth	Peak	Mean	Diast	PI	Vessel	Depth	Peak	Mean	Diast	PI
55	71.0	45.9	30.6	0.88	MCA	56	52.6	60.3	39.8	0.88
64	79.3	49.5	31.5	0.97	MCA/ACA	62	76.8	50.2	32.7	0.88
70	75.1	47.8	33.2	0.88	ACA	70	41.4	53.7	37.6	0.82
65	66.1	43.1	28.4	0.88	ACA/P1	65	71.8	46.7	30.8	0.88
70	35.4	23.9	15.6	0.83	Vertebral	70	45.7	110	11.2	0.31
88	53.4	34.5	22.9	0.88	Basilar					

Advanced Report Editor

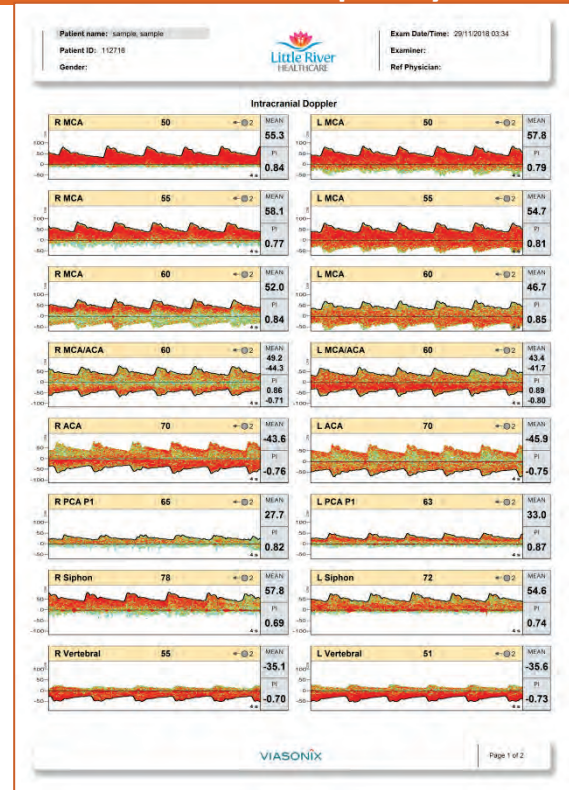
Configurable templates,
tables, pictures, camera,
quick text, automatic,
on screen results preview

Selected Report Samples (Page 1 of 2)

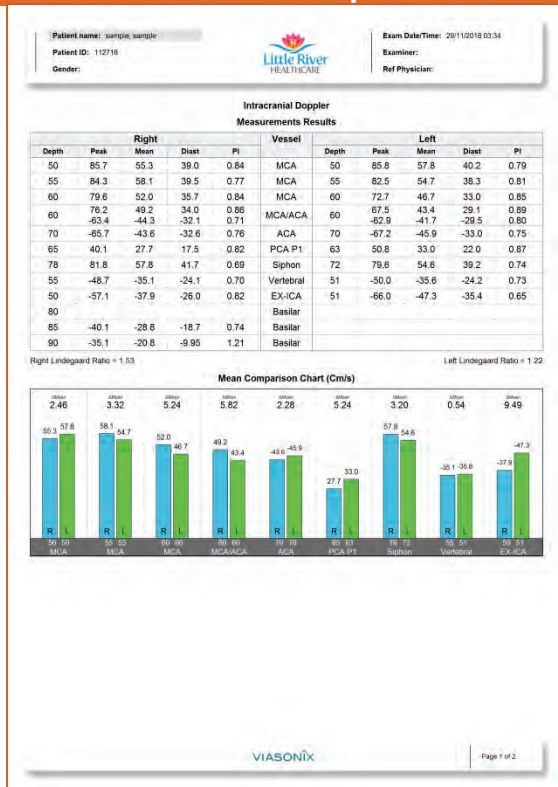
Intracranial – Example Layout #1



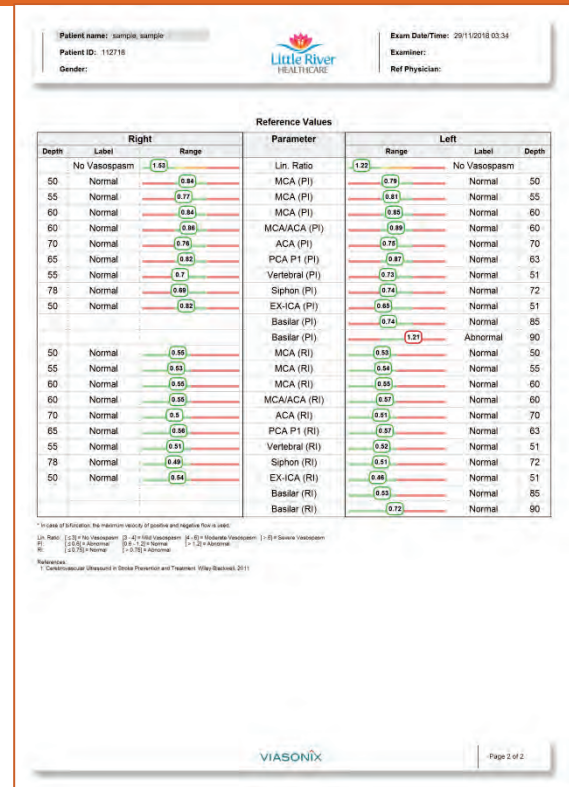
Intracranial – Example Layout #2



Results and Comparisons

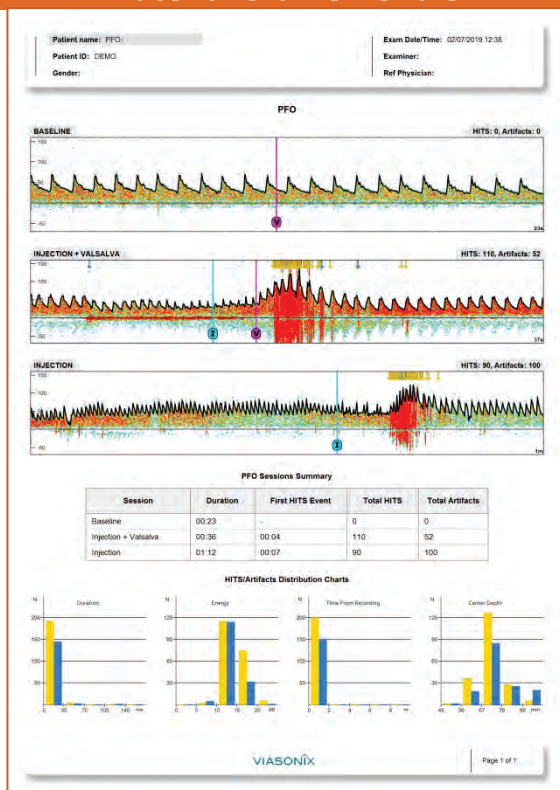


Reference Values

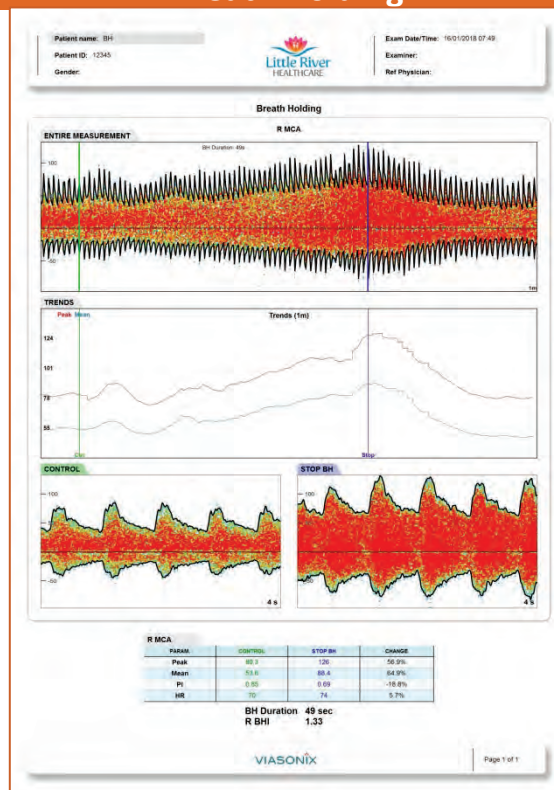


Selected Report Samples (Page 2 of 2)

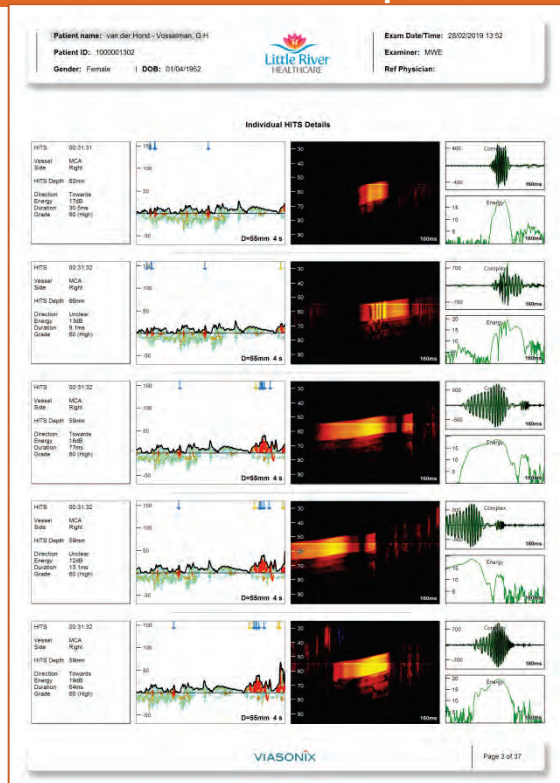
Patent Foramen Ovale



Breath Holding



Detailed HITS Report



Patient Details Cover Page

Patient name: Smith, John Patient ID: 22334455 Gender: Male DOB: 18/08/1948	Exam Date/Time: 18/02/2014 19:25 Examiner: Ref Physician:
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Patient Details ID: 22334455 Last Name: Smith First Name: John Middle Name: Title: Gender: Male DOB: 18/08/1948 Age: 65 Patient Status Weight: 262 Height: 5.8 BMI: 38.01 Physician Primary: Referring: Examiner:	Contact Information Home: Mobile: Fax: Email: Address: Contact Person Name: Relation: Tel.: Examination Exam Name: Exam ID: Accession Number:
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Risk Factors ☒ Overweight ☒ Hypertension ☒ Diabetes ☒ Insulin ☒ Smoking ☐ Alcohol ☐ DVT ☐ Asthma ☐ Varicose veins ☒ Claudication ☐ Edema ☒ Numbness ☐ Heart disease ☐ Anthythmia ☐ Angina ☐ Hyperlipidemia ☐ Cholesterol ☐ Hyperglyceridemia ☐ Impotence ☒ Stroke ☐ TIA ☐ Cancer: ☐ HIV ☐ Headache ☐ Narcotics ☐ Speech problems
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Current Symptoms <table style="width: 100%;"> <tr> <th>Symptom</th> <th>Right</th> <th>Left</th> <th>Location</th> </tr> <tr> <td>Claudication</td> <td>☒</td> <td>☐</td> <td>calf</td> </tr> <tr> <td>Rest Pain</td> <td>☐</td> <td>☐</td> <td></td> </tr> <tr> <td>Carpalgia</td> <td>☐</td> <td>☐</td> <td></td> </tr> <tr> <td>Limbs Hear Little</td> <td>☐</td> <td>☐</td> <td>low</td> </tr> <tr> <td>Trophic Nails</td> <td>☒</td> <td>☐</td> <td></td> </tr> <tr> <td>Dependent Rubor</td> <td>☐</td> <td>☐</td> <td></td> </tr> <tr> <td>Burning Sensation</td> <td>☐</td> <td>☐</td> <td></td> </tr> <tr> <td>Numbness/Tingling</td> <td>☒</td> <td>☐</td> <td>great low</td> </tr> <tr> <td>Edema</td> <td>☐</td> <td>☐</td> <td></td> </tr> <tr> <td>Cyanosis</td> <td>☐</td> <td>☐</td> <td></td> </tr> </table>	Symptom	Right	Left	Location	Claudication	☒	☐	calf	Rest Pain	☐	☐		Carpalgia	☐	☐		Limbs Hear Little	☐	☐	low	Trophic Nails	☒	☐		Dependent Rubor	☐	☐		Burning Sensation	☐	☐		Numbness/Tingling	☒	☐	great low	Edema	☐	☐		Cyanosis	☐	☐		Additional Fields Field Claudication occurs after: 300 yards Pain relieved by: rest 5 minutes	Physical Examination - Pulses <table style="width: 100%;"> <tr> <th>Site</th> <th>Right</th> <th>Left</th> <th>Bruit</th> </tr> <tr> <td>DP</td> <td>☐</td> <td>☐</td> <td>☐</td> </tr> <tr> <td>PT</td> <td>☐</td> <td>☐</td> <td>☐</td> </tr> <tr> <td>POP</td> <td>☐</td> <td>☐</td> <td>☐</td> </tr> <tr> <td>CFA</td> <td>☐</td> <td>☐</td> <td>☐</td> </tr> <tr> <td>Ulnar</td> <td>☐</td> <td>☐</td> <td>☐</td> </tr> <tr> <td>Radial</td> <td>☐</td> <td>☐</td> <td>☐</td> </tr> <tr> <td>Brachial</td> <td>☐</td> <td>☐</td> <td>☐</td> </tr> <tr> <td>Cervical</td> <td>☐</td> <td>☐</td> <td>☐</td> </tr> </table>	Site	Right	Left	Bruit	DP	☐	☐	☐	PT	☐	☐	☐	POP	☐	☐	☐	CFA	☐	☐	☐	Ulnar	☐	☐	☐	Radial	☐	☐	☐	Brachial	☐	☐	☐	Cervical	☐	☐	☐
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CFA	☐	☐	☐																																																																															
Ulnar	☐	☐	☐																																																																															
Radial	☐	☐	☐																																																																															
Brachial	☐	☐	☐																																																																															
Cervical	☐	☐	☐																																																																															

Diagnosis Codes Name

VIASONIX

Page 1 of 4

Dolphin Product Family

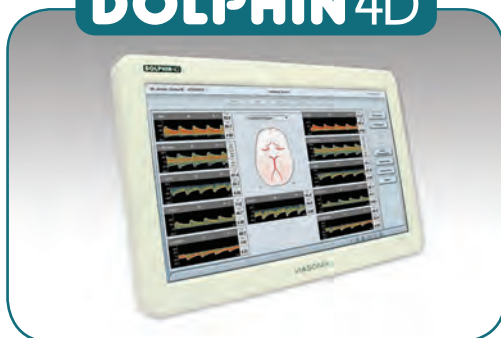
DOLPHIN MAX



The Next Generation Portable TCD System

- » Complete stand-alone system
- » Integrated computer and display
- » Internal rechargeable battery
- » Dimensions: 47x30x7 cm
- » Weight: 6 kg

DOLPHIN 4D



The Ultimate TCD Standalone System

- » Complete stand-alone system
- » Integrated computer and display
- » Dimensions: 47x30x7 cm
- » Weight: 6 kg

DOLPHIN IQ



The Ideal Cost-Effective TCD Module

- » Transcranial Doppler (TCD) Module
- » External computer and display
- » Dimensions: 27x21x5.5 cm
- » Weight: 2 Kg