

# M7 Premium

## Hand-Carried Ultrasound System

### Datasheet



# 1 System Overview

## 1.1 Application

- Abdomen
- Obstetrics
- Gynecology
- Cardiology
- Small parts
- Urology
- Vascular
- Pediatrics
- Nerve
- Emergency Medicine
- Others

## 1.2 Transducer types

- Curved array
- Linear array
- Phased array
- 4D Volume

## 1.3 Imaging modes

- B-Mode
- Tissue Harmonic and PSH (Phase Shift Harmonic Imaging)
- M-Mode/Color M-mode
- Free Xros M (Anatomical M-mode)
- Free Xros CM (Curved Anatomical M-mode)
- Color Doppler Imaging
- Power Doppler Imaging/Directional PDI
- Pulsed Wave Doppler
- Continuous Wave Doppler
- TDI (Tissue Doppler Imaging)
- Smart 3D™ (Freehand 3D)
- 4D
- iScape™ View (Panoramic Imaging)
- Stress Echo
- UWN (Ultra Wideband Non-linear Contrast Imaging™)
- Natural Touch Elastography

## 1.4 Standard features

- B-Mode
- THI and PSH
- M-Mode
- Color Doppler Imaging
- Power Doppler Imaging and Directional PDI
- Pulsed Wave Doppler
- HPRF (High Pulse Repeat Frequency)

- iBeam™ (Spatial Compounding Imaging)
- iTouch™ (Auto Optimization)
- iClear™ (Speckle Suppression Imaging)
- HR Flow
- Zoom/iZoom™ (Full Screen Zoom)
- B steer
- Trapezoid Imaging
- ExFOV Imaging
- iStation™
- Hard drive: 128G SSD or 1TB SATA
- Network Storage Function (Transfer PC format data to shared folder on PC)
- V access function
- User-defined keys
- 1 active probe port
- 1 pencil probe port
- 2-USB ports
- 1 S-Video output port
- 1 Ethernet port
- Built-in Battery: LI231001A
- Power adapter
- Control panel film with language

## 1.5 Optional features

- Continuous Wave Doppler
- Free Xros M
- iScape™ View
- Smart 3D™
- 4D (Including: Static 3D, Real time 4D, Volume Transducer is necessary)
- IMT (Auto Intima-Media Thickness Evaluation)
- Contrast Imaging
- Strain Elastography
- TDI (Include TVI, TEI, TVD, TVM)
- TDI Quantitative Analysis
- Free Xros CM
- Stress Echo
- iNeedle™ (Needle Visualization Enhancement)
- Abdominal Package (Including exam mode, comments, measurements, body marks and report template)
- Obstetrical Package (Including exam mode, comments, measurements, body marks and report template)
- Gynecological Package (Including exam mode, comments, measurements, body



marks and report template)

- Cardiac Package (Including exam mode, comments, measurements, body marks and report template)
  - Small Parts Package (Including exam mode, comments, measurements, body marks and report template)
  - Urological Package (Including exam mode, comments, measurements, body marks and report template)
  - Vascular Package (Including exam mode, comments, measurements, body marks and report template)
  - Pediatric Package (Including exam mode, comments, measurements, body marks and report template)
  - Nerve Package (Including exam mode, comments, measurements, body marks and report template)
  - Emergency & Critical Package (Including exam mode, comments, measurements, body marks and report template)
  - DICOM Basic (including Verify, Storage, Print, Storage Commitment, Media Storage)
  - DICOM Worklist
  - DICOM MPPS (Modality Performed Procedure Step)
  - DICOM OB/GYN structured report
  - DICOM Vascular structured report
  - DICOM Cardiac structured report
  - DICOM Query/Retrieve
- 1.6 Language support
- Software: English, Chinese, French, German, Italian, Portuguese, Spanish, Russian, Polish, Czech, Turkish, Finnish, Danish, Icelandic, Norwegian, Swedish
  - Keyboard input: English, Chinese, German, Spanish, French, Italian, Portuguese, Russian
  - Control panel overlay: English, Chinese, German, Spanish, French, Italian, Portuguese, Russian, Czech, Polish
  - User manual: English, Chinese, German, Spanish, French, Italian, Portuguese, Russian

## 2 Physical Specification

### 2.1 Dimension and weight

- Width: 361mm
- Depth: 357mm
- Height: 75mm
- Weight: approx. 5.05kg (without batteries, 4D board and adapter)

### 2.2 Monitor

- 15-inch high resolution color LCD monitor
- Resolution: 1024x768
- Brightness adjustable
- Screen Saver
- Open angle adjustable: 0°-150° (The angle between the monitor and control panel)
- View angle (right/left): 85°

### 2.3 Handle

### 2.4 Probe port

- 1 port connect to a transducer or the probe extend module
- 1 pencil probe port

### 2.5 Electrical power

- AC adapter Input:
  - Voltage:100-240V~ (AC adapter)
  - Voltage: 220-240V~ (Configured with UMT-300 Mobile Trolley)
  - Frequency: 50/60 Hz
  - Current: 1.5-0.6A (AC adapter)
  - Power: 600VA (Configured with UMT-300 Mobile Trolley)
- AC adapter Output: 12V  $\equiv$  ,9A
- Battery: Lithium-Ion Battery Pack 11.1V  $\equiv$  , 4500mAh

### 2.6 Operating Environment

- Ambient temperature: 0-40 °C
- Relative humidity: 30%-85% (no condensation)
- Atmospheric pressure: 700hPa-1060hPa

### 2.7 Storage & Transportation Environment

- Ambient temperature: -20~55 °C
- Relative humidity: 30%-95% (no condensation)
- Atmospheric pressure: 700hPa-1060hPa

### 2.8 Alloy Enclosure

- All-alloy enclosure design

## 3 User Interface

### 3.1 Control panel

- Power/Battery Indicator
- Alphanumeric Keys
- Function Keys
- Knobs
- Ergonomic Soft Key Operation
- Backlit keys, ensuring accurate work in the dark room
- 8-segment TGC control
- 8 programmable keys, available for user-defined functions
- Trackball, color and sensitivity adjustment
- Key Brightness adjustment
- Integrated Speakers, Audio Volume Adjustment

### 3.2 System boot-up

- Boot-up from complete shut-down in about 30 sec
- Boot-up from standby mode in about 7 sec
- Shut down in about 16 sec

### 3.3 Comments

- Supports text input and arrow
- Adjustable text size and arrow size and direction
- Supports home position
- Covers various application
- More than 800 comments items for versatile application
- User customizable

### 3.4 Bodymark

- More than 135 bodymarks for versatile application
- User customizable

### 3.5 Screen information\*

- Common info:
  - Mindray logo
  - Hospital name
  - Exam date
  - Exam time
  - Acoustic power
  - Mechanical index
  - Tissue thermal index
  - ID, 2<sup>nd</sup> ID, Last name, First Name, Middle initial, Gender, Age
  - Probe model

- ECG icon (when ECG connected)
- Operator
- TGC Curve
- Focus position
- Thumbnail
- Imaging parameters
- Help guidance

\*Not all items are listed in this part, detail info please refer to user manual

## 4 Imaging Parameters

### 4.1 Overview

- Digital beamformer
- Up to 1024 channels
- 8-beam forming

### 4.2 B-mode

- Display formats: Single(B), Dual(B+B), Quad(4B)
- iClear™: Off; On, 1-4 steps
- iBeam™: Off/On
- iTouch™: Auto optimization (TGC, Gain)
- Frequency (depend on probe)
- B steer: available on linear transducers
- ExFOV: extended FOV available on convex, and volume transducers
- Trapezoid: available on linear transducers
- Depth: 1.8-38.8cm (depend on transducer)
- Frame rate (max):347f/s
- Acoustic output power
- TGC: 8 pods on control panel
- LGC: 8 segments on soft menu
- Dynamic range: 30-160, 5/step
- Gain: 0-100, 1-2/step
- Focus number: 1-4, adjustable
- Focus position: Max. 16, adjustable
- FOV (Field of View): N/M2/M1/W, 4 steps
- Line density: L/M/H/UH
- Persistence: 0-7, 8 steps
- Horizontal Scale: on/off
- L/R flip and U/D flip: on/off
- Rotation: 0°, 90°, 180°, 270°
- TSI (Tissue Specific Imaging): general/muscle/fluid/fat
- Gray Map: 8 types
- Colorize map: off; 10 types
- Mid Line: on/off

#### 4.3 THI and PSH

- Available on all types of transducer (except CW2s and CW5s)
- Patent PSH technology, obtains purer harmonic, better contrast resolution
- iClear™ available

#### 4.4 M-mode

- Display formats: V1:1, V1:2, L/R, Full (V: vertical, H: horizontal, L: left, R: right)
- Color M-mode available
- Acoustic output power
- Dynamic range: 30-160, 5/step
- Gain: 0-100, 1-2/step
- Speed: 1-6, 6 steps
- Colorize map: off; 10 types
- Gray Map: 8 types
- Edge Enhance: 0-3
- Timer Mark: on, off

#### 4.5 Free Xros M (option)

- Display formats: V1:1, V1:2, L/R, Full (V: vertical, H: horizontal, L: left, R: right)
- Color Free Xros M available
- Up to 3 lines
- Speed: 1-6, 6 steps
- Colorize map: off, 10 types
- Gray Map: 8 types

#### 4.6 Free Xros CM (option)

- Display formats: V1:1, V1:2, L/R, Full (V: vertical, H: horizontal, L: left, R: right)
- Acoustic output power
- Gain: 0-100, 1/step
- Speed: 1-6, 6 steps
- Colorize map: off; 10 types
- Gray Map: 8 types

#### 4.7 Color Doppler Imaging

- Dual live
- Frequency (depend on probe)
- Max velocity: 100cm/s
- Steer: max. 30° (linear transducer)
- Max frame rate: 420f/s
- Acoustic output power
- Gain: 0-100, 2-3/step
- ROI size/position: adjustable
- Scale: 30 steps
- Wall filter: 0-7, 8 steps
- PRF: max. 14.8kHz, min. 0.5kHz
- Packet size: 0-3, 4 steps

- Flow state: L/M/H, 3 steps
- B/C Align: on/off
- Priority: 0%-100%, 10%/step
- Map: 21 types (include Variance)
- Invert: on/off
- Persistence: 0-4, 5 steps
- Line density: L/M/H/UH, 4 steps
- HR Flow (depend on transducer and exam mode)
- Smart Track (depend on transducer and exam mode)

#### 4.8 Power Doppler Imaging

- Dual live
- Support directional PDI
- Frequency (depend on probe)
- Acoustic output power
- Dynamic range: 10-70, 5/step
- Gain: 0-100, 2-3/step
- ROI size/position: adjustable
- Steer: max. 30° (linear transducers)
- Scale: 30 steps
- Wall filter: 0-7, 8 steps
- PRF: max. 14.8kHz, min. 0.4kHz
- Packet size: 0-3, 4 steps
- Flow state: L/M/H, 3 steps
- B/C Align: on/off
- Priority: 0%-100%, 10%/step
- Map: 8 types
- Directional color map: 4 types
- Persistence: 0-4, 5 steps
- Line density: L/M/H/UH, 4 steps
- Smart Track

#### 4.9 PW/CW-Mode

- Display formats: V1:1, V1:2, L/R, Full (V: vertical, H: horizontal, L: Left)
- iTouch™: Auto optimization (Baseline, PRF)
- Frequency (depend on probe)
- PW velocity: max. 924cm/s
- CW velocity: max. 6160cm/s
- Sample volume size: 0.5-40mm (PW only), 0.5-5mm/step
- Sample gate depth: adjustable
- Scale: max. 6160cm/s
- Baseline: -4~4, 9 steps
- PW Steer: max. 20° (linear transducer)
- Audio: 0%-100%, 2%/step
- PW PRF: max. 24kHz, min. 0.7kHz



- CW PRF: max. 160kHz, min. 0.4kHz
  - Gain: 0-100, 3-4/step
  - Dynamic range: 24-72, 2/step
  - Sweep speed: 1-6, 6 steps
  - Wall filter: 0-6, 7 steps
  - Invert: on/off
  - Angle: -89°~89°, 1/step
  - Quick angle: 0°, -60°, 60°
  - Gray map: 8 types
  - Colorize map: Off; 10 types
  - Time/frequency resolution: 0-3, 4 steps
  - Auto calc: on/off
  - Trace area: above, below, all
- 4.10 Tissue Velocity/Energy Imaging (included in TDI option)
- Available on phased array transducer
  - Dual live: display B and B+TVI side by side
  - Max frame rate: 420f/s
  - PRF: max. 7.8kHz, min. 0.3kHz
  - Acoustic output power
  - Gain: 0-100, 2/step
  - Dynamic range: 10-70, 5/step (TEI only)
  - ROI size/position: adjustable
  - Scale: max. 30 steps, 5.0-100cm/s
  - Baseline: -8~8, 17 steps (TVI only)
  - Wall filter: 0-7, 8 steps
  - Packet size: 0-3, 4 steps
  - Tissue state: L/M/H, 3 steps
  - B/C Align: on/off
  - Priority: 0%-100%, 10%/step
  - Map: 11 types
  - Invert: on/off (TVI only)
  - TVI/TEI IP: 1-8, 8 steps
  - Line density: L/M/H/UH, 4 steps
- 4.11 Tissue Velocity Doppler (included in TDI option)
- Available on phased array transducer
  - Display formats: V1:1, V1:2, L/R, Full (V: vertical, H: horizontal, L: left, R: right)
  - Sample volume size: 0.5-40mm, 12 steps
  - Sample gate depth: adjustable
  - Scale: max. 739.2 cm/s
  - Baseline
  - Audio: 0%-100%, 2%/step
  - PRF: max. 24.0kHz, min. 0.7kHz
  - Gain: 0-100, 3-4/step
  - Dynamic range: 24-72, 2/step
  - Speed: 1-6, 6 steps
  - Wall filter: 0-6, 7 steps
  - Invert: on/off
  - Angle: -89°~89°, 1/step
  - Quick angle: 0°, -60°, 60°
  - Gray map: 8 types
  - Colorize Map: Off; 1-10 steps
  - Time/frequency resolution: 0-3, 4 steps
- 4.12 Tissue Velocity Motion (included in TDI option)
- Display formats: V1:1, V1:2, L/R, Full (V: vertical, H: horizontal, L: left, R: right)
  - Acoustic output power
  - Dynamic range: 30-160, 5/step
  - Gain: 0-100, 1-2/step
  - Speed: 1-6, 6 steps
  - M soften: 0-4, 5 steps
  - Gray Map: 8 types
  - Edge enhance: 0-3, 4 steps
- 4.13 Smart 3D™ (option)
- Smart 3D™
    - Display formats: Single, Dual, Quad
    - Reset: reset ROI, reset curve, reset orientation
    - Quick Rotation: 0°, 90°, 180°, 270°
    - Inversion: on/off
    - Accept VOI: on/off
    - Render modes: Surface, Max, Min, X-ray
    - Direction: D/U, U/D, L/R, R/L, F/B, B/F (D: down, U: up, L: left, R: right, F: front, B: back)
    - Threshold: 0%-100%, 1%/step
    - Transparency: 0%-100%, 5%/step
    - Smooth: 0-20, 21 steps
    - Brightness: 0%-100%, 2%/step
    - Contrast: 0%-100%, 2%/step
    - Colorize map: off; 5 types
  - Edit
    - Rotation control: X, Y, Z axis
    - Area selection: inside polygon, outside polygon; inside contour, outside contour; inside rect, outside rect
    - Other operations: undo, redo, undo all, done
- 4.14 4D (option)
- Available on volume transducer (4CD4s)
  - Static 3D and 4D

- 4D frame rate: max. 31.5 vps
  - Display formats: Single, Dual, Quad
  - Reset: reset ROI, reset curve, reset orientation
  - Quick Rotation: 0°, 90°, 180°, 270°
  - Inversion: on/off
  - Accept VOI: on/off
  - Render modes: Surface, Max, Min, X-ray
  - Direction: D/U, U/D, L/R, R/L, F/B, B/F (D: down, U: up, L: left, R: right, F: front, B: back)
  - Threshold: 0%-100%, 1%/step
  - Transparency: 0%-100%, 5 %/step
  - Smooth: 0-20, 21 steps
  - Brightness: 0%-100%, 2%/step
  - Contrast: 0%-100%, 2%/step
  - Colorize map: off; 5 types
  - Edit
    - Rotation control: X, Y, Z axis
    - Area selection: inside polygon, outside polygon; inside contour, outside contour; inside rect, outside rect
    - Other operations: undo, redo, undo all, done
- 4.15 iScape™ View (option)
- Panoramic imaging
  - Available on all transducers (except CW2s and CW5s)
  - Acquisition method: B
  - Imaging length: 100cm
  - Colorize map: off; 8 types
  - Rotation: 0°~355°
- 4.16 Zoom
- iZoom™
    - Full screen zoom
    - Normal image, Zoom standard area, Zoom image area, 3 steps
  - Spot zoom (write zoom) 1-10x
  - Pan zoom (read zoom) 1-10x
- 4.17 TDI QA (option)
- Dedicated quantification tool for TDI velocity analysis
  - Freehand ROI: manually deploy ROI on the cine
  - Up to 8 ROIs
  - Std.Height: 1.5-50 mm
  - Std.Width: 1.5-50 mm
- Std.Angle: -89°~90°
  - Export: export current data as a CSV format file
- 4.18 Stress Echo (option)
- Stress echo provides tools for ECG triggered acquisition, display, selection, comparison, evaluation and archiving of multiple cardiac loops during various stages of a stress echo examination
  - Standard acquisition protocols: treadmill, ergometer and pharmacological stress echo
  - User definable scoring conventions: ASE 16 (with score 4-7), ASE 17 (with score 4-7)
  - Customized stages: up to 6 views per stage, and up to 12 stages per study
  - View: standard views (PSLA, PSAX, A4C, A2C), and customized views
  - Image acquisition
    - R-wave trigger
    - Acquire mode: Manual ROI or full screen
    - Ability to acquire frames or clips in B-mode, M-mode, Color, PW and TDI
  - Image selection
    - Attach the images with view annotation label (PSLA, PSAX, A4C, A2C, and customized views)
  - Review
    - Automatically adjust to the number of images user defined
  - Wall Motion Scoring
    - ASE 16 (with score 4-7), or ASE 17 (with score 4-7)
    - Graphical display of scoring (Normal, Hyperkinetic, Severely Hyperkinetic, Akinetic, Dyskinetic)
  - LV volume measurement
    - Measurement of LV Volume in all phases of cardiac cycle
  - Report
    - Reporting for both Wall Motion Scoring and LV volume measurement
- 4.19 UWN Contrast Imaging™\* (option)
- Ultra Wideband Non-linear (UWN) contrast imaging technology, which provides exceptional contrast agent detecting capability, not only extracts second

harmonic, but also non-linear fundamental signals

- Supports Low MI contrast imaging
- Available for C5-2s
- Available for Adult ABD exam
- Timer1: on/off
- Timer2: on/off
- Pro capture: captures prospective image less than 480s
- Retro capture: captures retrospective image less than 120s
- Dual live: display tissue image and contrast image side by side
- iClear: off; 4 steps
- Persistence: 8 steps
- Dynamic range: 30-160, 5/step
- Gray map: 8 types
- Colorize map: off; 10 types
- Supports U/D Flip and L/R Flip
- Rotation: 90 degrees/step
- CEUSPos: transpose position of contrast and tissue image
- DestructAP: 32 steps
- Destruct time: 100-2000ms
- Max FR: 4 steps

\*The M6 is designed for compatibility with commercially available ultrasound contrast agents. Because the availability of these agents is subject to government regulation and approval, product features intended for use with these agents may not be commercially marketed nor made available before the contrast agent is cleared for use. Contrast related product features are enabled only on systems for delivery to an authorized country or region of use. Mindray medical systems makes no claims concerning the safety or effectiveness of contrast agents.

#### 4.20 Elastography (option)

- Available on L12-4s and L14-6Ns
- Support strain hist measurement
- Unique shell analysis function
- Single E: On/Off
- Elasto Map: 6 types
- Smooth: 6 steps
- Invert: on/off

- Opacity: 6 steps
- #### 4.21 iNeedle™ (option)
- Needle visualization enhancement
  - Available on all linear probes
  - Available on B mode
  - Steer angle: +/-50°~+/-20°, 2°/step
  - B/iNeedle: On/Off ( provide a comparison between normal and enhanced images)

#### 4.22 iScanHelper

- Tutorial function as a guidance to show basic scanning skill with graphic of probe position, schematic of anatomy and example clinical image
- Support ABD, GYN, SMP, URO and OB applications

## 5 Cine Review and Post Processing

### 5.1 Cine review

- Available in all modes
- Frame by frame manual cineloop review or auto playback with variable speed
- Independent cine review in 2D Dual and Quad mode one by one
- Maximum cine memory is up to 8448 frames or 131s (depend on the mode)
- Maximum 4D cine memory is around 100M
- Retrospective storage (1-120s, or 1-120 cycles, pre-settable) and prospective storage (1-480s, or 1-120cycles, pre-settable)
- Frame compare: compare different frames for one cine in dual format
- Cine compare: compare two or more than two cines in dual or quad format
- Jump to first and jump to last: one keystroke review the first or last frame
- Start point and end point: selectable
- Review Play: speed, layout

### 5.2 Post Processing

- B-mode:  
Zoom  
gray map  
colorize map  
flip  
rotation
- M-mode:  
Time Mark



- gray map
- colorize map
- display format
- Color/Power:
  - Invert
  - Dual Live
  - Baseline
  - color map
  - B display
- PW/CW:
  - angle correction
  - quick angle
  - Baseline
  - Auto Calc
  - Audio
  - Display Format
  - invert
  - dynamic range
  - gray map
  - colorize map

- Doppler mode
  - Time
  - Heart Rate
  - D Velocity (Doppler velocity)
  - Acceleration
  - D Trace (Doppler spectrum trace)
  - PS/ED (PS: Peak Systolic Velocity; ED: End Diastolic Velocity)
  - Volume Flow
- Automatic Doppler Spectrum Analysis
  - Automatic real-time tracing
  - 1, 2, 3, 4, 5 auto calculation cycles
  - User configurable display of measurement items
  - Support PI, RI, TAMAX, TAMEAN, Volume Flow calculations
  - Appropriate factory setting according to applications

## 6.2 Clinical option measurement package

- Abdominal
  - B-mode measure:
    - Liver
    - Renal L (Renal Length)
    - Renal H (Renal Height)
    - Renal W (Renal Width)
    - Cortex (Renal Cortical Thickness)
    - Adrenal L (Adrenal Length)
    - Adrenal H (Adrenal Height)
    - Adrenal W (Adrenal Width)
    - CBD (Common bile duct)
    - Portal V Diam (Portal Vein Diameter)
    - CHD (Common hepatic duct)
    - GB L (Gallbladder Length)
    - GB H (Gallbladder Height)
    - GB wall th (Gallbladder wall thickness)
    - Panc duct (Pancreatic duct)
    - Panc head (Pancreatic head)
    - Panc body (Pancreatic body)
    - Panc tail (Pancreatic tail)
    - Spleen
    - Aorta Diam (Aorta Diameter)
    - Aorta Bif (aorta bifurcation)
    - Iliac Diam (iliac diameter)
    - Pre-BL L (Previous-Bladder Length)
    - Pre-BL H (Previous-Bladder Height)
    - Pre-BL W (Previous-Bladder Width)
    - Post-BL L (Posterior-Bladder Length)

## 6 Measurement/Analysis and Report\*

### 6.1 Generic measurements

- B-mode
  - Depth
  - Distance
  - Angle
  - Area: Ellipse, Trace, Spline, Cross
  - Volume: 3-Distance, Ellipse, Ellipse+Distance
  - Cross
  - Parallel
  - Trace Length
  - Ratio (D) (Distance ratio)
  - Ratio (A) (Area ratio)
  - B Histogram
  - B Profile (not available for M7T)
  - Color Velocity
  - Volume Flow
  - Color Vel Profile
  - Strain Hist
- M-mode
  - Distance
  - Time
  - Slope
  - Velocity
  - Heart Rate



- Post-BL H (Posterior-Bladder Height)
- Post-BL W (Posterior-Bladder Width)
- B-mode Calculation:
  - Renal Vol (Renal Volume)
  - Pre-BL Vol (Previous-Bladder Volume)
  - Post-BL Vol (Posterior-Bladder Volume)
  - Mictur.Vol (Micturated Volume)
- B-mode study:
  - Kidney (Length, Width, Height, Volume)
  - Adrenal(Length, Width, Height, Volume)
  - Bladder(Length, Width, Height, Volume)
- Doppler-mode measure:
  - Ren A Org (Renal Artery Origin)
  - Arcuate A (Arcuate Artery)
  - Segment A (Segmental Artery)
  - Interlobar A (Interlobar Artery)
  - Renal A (Renal Artery)
  - M Renal A (Main Renal Artery)
  - Renal V (Renal Vein)
  - Aorta
  - Celiac Axis
  - SMA (Superior Mesenteric Artery)
  - C Hepatic A (Common Hepatic Artery)
  - Hepatic A (Hepatic Artery)
  - Splenic A (Splenic Artery)
  - IVC (Inferior Vena Cava)
  - Portal V (Portal Vein)
  - M Portal V (M Portal Vein)
  - Lt Hepatic V (Left Hepatic Vein)
  - Rt Hepatic V (Right Hepatic Vein)
  - Hepatic V (Hepatic Vein)
  - M Hepatic V (Middle Hepatic Vein)
  - Splenic V (Splenic Vein)
  - SMV (Superior Mesenteric Vein)
- Obstetrics
  - B-mode measure:
    - GS (Gestational Sac Diameter)
    - YS (Yolk Sac)
    - CRL (Crown Rump Length)
    - NT (Nuchal Translucency)
    - BPD (Biparietal Diameter)
    - OFD (Occipital Frontal Diameter)
    - HC (Head Circumference)
    - AC (Abdominal Circumference)
    - FL (Femur Length)
    - TAD (Abdominal Transversal Diameter)
  - APAD (Anteroposterior Abdominal Diameter)
  - TCD (Cerebellum Diameter)
  - Cist Magna (Cist Magna)
  - LVW (Lateral Ventricle Width)
  - HW (Hemisphere Width)
  - OOD (Outer Orbital Diameter)
  - IOD (Inter Orbital Diameter)
  - HUM (Humerus Length)
  - Ulna (Ulna Length)
  - RAD (Radius Length)
  - Tibia (Tibia Length)
  - FIB (Fibula Length)
  - CLAV (Clavicle Length)
  - Vertebrae (Length of Vertebrae)
  - MP (Middle Phalanx Length)
  - Foot (Foot Length)
  - Ear (Ear Length)
  - APTD (Anteroposterior trunk diameter)
  - TTD (Transverse trunk diameter)
  - FTA (Fetal Trunk Cross-sectional Area)
  - THD (Thoracic Diameter)
  - HrtC (Heart Circumference)
  - TC (Thoracic circumference)
  - Umb VD (Umbilical Vein Diameter)
  - F-kidney (Fetal kidney Length)
  - Mat Kidney (Matrix Kidney Length)
  - Cervix L (Cervical Length)
  - AF (Amniotic Fluid)
  - NF (Nuchal Fold)
  - Orbit (Orbit)
  - PL Thickness (Placental Thickness)
  - Sac Diam1 (Gestational Sac Diameter 1)
  - Sac Diam2 (Gestational Sac Diameter 2)
  - Sac Diam3 (Gestational Sac Diameter 3)
  - AF1 (Amniotic Fluid 1)
  - AF2 (Amniotic Fluid 2)
  - AF3 (Amniotic Fluid 3)
  - AF4 (Amniotic Fluid 4)
  - LVIDd (Left Ventricular Internal Diameter at End-diastole)
  - LVIDs (Left Ventricular Internal Diameter at End-systole)
  - LV Diam (Left Ventricular Diameter)
  - LA Diam (Left Atrium Diameter)
  - RVIDd (Right Ventricular Internal Diameter at End-diastole)



- RVIDs (Right Ventricular Internal Diameter at End-systole)
- RV Diam (Right Ventricular Diameter)
- RA Diam (Right Atrium Diameter)
- IVSd (Interventricular Septal Thickness at End-diastole)
- IVSs (Interventricular Septal Thickness at End-systole)
- IVS (Interventricular Septal Thickness)
- LV Area (Left Ventricular Area)
- LA Area (Left Atrium Area)
- RV Area (Right Ventricular Area)
- RA Area (Right Atrium Area)
- Ao Diam (Aorta Diameter)
- MPA Diam (Main Pulmonary Artery Diameter)
- LVOT Diam (Left Ventricular Outflow Tract Diameter)
- RVOT Diam (Right Ventricular Outflow Tract Diameter)

B-mode calculation:

- Mean Sac Diam (Mean Gestational Sac Diameter)
- AFI
- EFW1 (Estimated Fetal Weight 1)
- EFW2 (Estimated Fetal Weight 2)
- HC/AC
- FL/AC
- FL/BPD
- AXT
- CI
- FL/HC
- HC(c)
- HrtC/TC
- TCD/AC
- LVW/HW
- LVD/RVD
- LAD/RAD
- AoD/MPAD
- LAD/AoD

B-mode study:

- AFI (Auto)

M-mode measure:

- FHR (Fetal Heart Rate)
- LVIDd (Left ventricular diameter at end diastole)
- LVIDs (Left ventricular diameter at end

systole)

- RVIDd (Right ventricular diameter at end diastole)
- RVIDs (Right ventricular diameter at end systole)
- IVSd (interventricular septal thickness at end diastole)
- IVSs (interventricular septal thickness at end systole)

Doppler-mode measure:

- Umb A (Umbilical Artery)
- Duct Venos (Ductus Venos)
- Placenta A (Placenta Artery)
- MCA (Middle Cerebral Artery)
- Fetal Ao (Fetal Aorta)
- Desc Aorta (Descending Aorta)
- Ut A (Uterine Artery)
- Ovarian A (Ovarian Artery)
- FHR (Fetal Heart Rate)
- Z-score

- Cardiology

B-mode measure:

- LA Diam (Left Atrium Diameter)
- LA Major (Left Atrium major Diameter)
- LA Minor (Left Atrium minor Diameter)
- RA Major (Right Atrium major Diameter)
- RA Minor (Right Atrium minor Diameter)
- LV Major (Left Ventricular major Diameter)
- LV Minor (Left Ventricular minor Diameter)
- RV Major (Right Ventricular major Diameter)
- RV Minor (Right Ventricular minor Diameter)
- LA Area (Left Atrium area)
- RA Area (Right Atrium area)
- LV Area (d) (Left Ventricular area at end-diastole)
- LV Area (s) (Left Ventricular area at end-systole)
- RV Area (d) (Right Ventricular area at end-diastole)
- RV Area (s) (Right Ventricular area at end-systole)
- LVIDd (Left Ventricular Internal Diameter at end-diastole)
- LVIDs (Left Ventricular Internal Diameter



- at end-systole)
  - RVDd (Right Ventricular Diameter at end-diastole)
  - RVDs (Right Ventricular Diameter at end-systole)
  - LVPWd (Left Ventricular Posterior wall thickness at end-diastole)
  - LVPWs (Left Ventricular Posterior wall thickness at end-systole)
  - RVAWd (Right Ventricular Anterior wall thickness at end-diastole)
  - RVAWs (Right Ventricular Anterior wall thickness at end-systole)
  - IVSd (Interventricular Septal thickness at end-diastole)
  - IVSs (Interventricular Septal thickness at end-systole)
  - Ao Diam (Aorta Diameter)
  - Ao Arch Diam (Aorta arch Diameter)
  - Ao Asc Diam (Ascending Aorta Diameter)
  - Ao Desc Diam (Descending Aorta Diameter)
  - Ao Isthmus (Aorta Isthmus Diameter)
  - Ao st junct (Aorta ST junct Diameter)
  - Ao Sinus Diam (Aorta Sinus Diameter)
  - Duct Art Diam (Ductus Arteriosus Diameter)
  - Pre Ductal (Previous ductal Diameter)
  - Post Ductal (Posterior ductal Diameter)
  - ACS (Aortic Valve Cusp Separation)
  - LVOT Diam (Left Ventricular Outflow Tract Diameter)
  - AV Diam (Aorta Valve Diameter)
  - AVA (Aortic Valve Area)
  - PV Diam (Pulmonary valve Diameter)
  - LPA Diam (Left pulmonary Artery Diameter)
  - RPA Diam (Right pulmonary Artery Diameter)
  - MPA Diam (Main pulmonary Artery Diameter)
  - RVOT Diam (Right Ventricular Outflow Tract Diameter)
  - MV Diam (Mitral Valve Diameter)
  - MVA (Mitral Valve area)
  - MCS (Mitral Valve Cusp Separation)
  - EPSS (Distance between point E and Interventricular Septum when mitral valve is fully open)
  - TV Diam (Tricuspid valve Diameter)
  - TVA (Tricuspid Valve Area)
  - IVC Diam (Insp) (Inferior vena cava inspiration Diameter)
  - IVC Diam (Expir) (Inferior vena cava expiration Diameter)
  - SVC Diam (Insp) (Superior vena cava inspiration Diameter)
  - SVC Diam (Expir) (Superior vena cava expiration Diameter)
  - LCA (Left Coronary Artery)
  - RCA (Right Coronary Artery)
  - VSD Diam (Ventricular Septal defect Diameter)
  - ASD Diam (Atrial Septal defect Diameter)
  - PDA Diam (Patent ductus Arteriosus Diameter)
  - PFO Diam (Patent Oval Foramen Diameter)
  - PEd (Pericardial Effusion at diastole)
  - PEs (Pericardial Effusion at systole)
- B-mode calculation:
- LA/Ao (Left Atrium Diameter/ Aorta Diameter)
  - Ao/LA (Aorta Diameter/Left Atrium Diameter)
- B-mode study:
- S-P Ellipse
  - B-P Ellipse
  - Bullet
  - Mod. Simpson
  - Simp SP(A2C)
  - Simp SP(A4C)
  - Simpson BP
  - Cube (2D)
  - Teichholz (2D)
  - Gibson (2D)
  - LA Vol (A-L)
  - LA Vol (Simp)
  - LV Mass (Cube-2D)
  - LV Mass (T-E)
  - LV Mass (A-L)
  - MVA (VTI)
  - AVA (VTI)
  - Qp/Qs



- PISA MR
  - PISA AR
  - PISA TR
  - PISA PR
- M-mode measure:
- LA Diam (Left Atrium Diameter)
  - LVIDd (Left Ventricular Internal Diameter at end-diastole)
  - LVIDs (Left Ventricular Internal Diameter at end-systole)
  - RVDd (Right Ventricular Diameter at end-diastole)
  - RVDs (Right Ventricular Diameter at end-systole)
  - LVPWd (Left Ventricular Posterior wall thickness at end-diastole)
  - LVPWs (Left Ventricular Posterior wall thickness at end-systole)
  - RVAWd (Right Ventricular Anterior wall thickness at end-diastole)
  - RVAWs (Right Ventricular Anterior wall thickness at end-systole)
  - IVSd (Interventricular Septal thickness at end-diastole)
  - IVSs (Interventricular Septal thickness at end-systole)
  - Ao Diam (Aorta Diameter)
  - Ao Arch Diam (Aorta arch Diameter)
  - Ao Asc Diam (Ascending Aorta Diameter)
  - Ao Desc Diam (Descending Aorta Diameter)
  - Ao Isthmus (Aorta Isthmus Diameter)
  - Ao st junct (Aorta ST junct Diameter)
  - Ao Sinus Diam (Aorta Sinus Diameter)
  - LVOT Diam (Left Ventricular outflow tract Diameter)
  - ACS (Aortic valve Cusp Separation)
  - LPA Diam (Left pulmonary Artery Diameter)
  - RPA Diam (Right pulmonary Artery Diameter)
  - MPA Diam (Main pulmonary Artery Diameter)
  - RVOT Diam (Right Ventricular outflow tract Diameter)
  - MV E Amp (Amplitude of the Mitral Valve E wave)

- MV A Amp (Amplitude of the Mitral Valve A wave)
- MV E-F Slope (Mitral Valve E-F slope)
- MV D-E Slope (Mitral Valve D-E slope)
- MV DE (Amplitude of the Mitral Valve DE wave)
- MCS (Mitral Valve Cusp Separation)
- EPSS (Distance between point E and the interventricular septum)
- PEd (Pericardial effusion at diastole)
- PEs (Pericardial effusion at systole)
- LVPEP (Left Ventricular pre-ejection period)
- LVET (Left Ventricular ejection time)
- RVPEP (Right Ventricular pre-ejection period)
- RVET (Right Ventricular ejection time)
- HR (Heart Rate)

M-mode calculation:

- LA/Ao (Left Atrium Diameter/Aorta Diameter)
- Ao/LA (Aorta Diameter/Left Atrium Diameter)

M-mode study:

- LVIMP (M)
- Cube (M)
- Teichhloz (M)
- Gibson (M)
- LV Mass (Cube-M)

Doppler-mode measure:

- MV Vmax (Mitral Valve Maximum Velocity)
- MV E Vel (Mitral Valve E-wave Velocity)
- MV A Vel (Mitral Valve A-wave Velocity)
- MV E VTI (Mitral Valve E-wave Velocity)-Time Integral
- MV A VTI (Mitral Valve A-wave Velocity)-Time Integral
- MV VTI (Mitral Valve Velocity)-Time Integral
- MV AccT (Mitral Valve Acceleration Time)
- MV DecT (Mitral Valve Deceleration Time)
- IVRT (isoVelocity Relaxation Time)
- IVCT (isoVelocity Compression Time)
- MV E Dur (Mitral Valve E-wave Duration)
- MV A Dur (Mitral Valve A-wave Duration)
- LVOT Vmax (Left Ventricular Outflow Tract Velocity)



- LVOT VTI (Left Ventricular Outflow Tract Velocity)-Time Integral)
- LVOT AccT (Left Ventricular Outflow Tract Acceleration Time)
- AAo Vmax (Ascending Aorta Maximum Velocity)
- DAo Vmax (Descending Aorta Maximum Velocity)
- AV Vmax (Aorta Valve Maximum Velocity)
- AV VTI (Aorta Valve Velocity)-Time Integral)
- LVPEP (Left Ventricular Pre-ejection Period)
- LVET (Left Ventricular Ejection Time)
- AV AccT (Aorta Valve Acceleration Time)
- AV DecT (Aorta Valve Deceleration Time)
- RVET (Right Ventricular Ejection Time)
- RVPEP (Right Ventricular Pre-ejection Period)
- TV Vmax (Tricuspid Valve Maximum Velocity)
- TV E Vel (Tricuspid Valve E-wave Flow Velocity)
- TV A Vel (Tricuspid Valve A-wave Flow Velocity)
- TV VTI (Tricuspid Valve Velocity)-Time Integral)
- TV AccT (Tricuspid Valve Acceleration Time)
- TV DecT (Tricuspid Valve Deceleration Time)
- TV A Dur (Tricuspid Valve A-wave Duration)
- RVOT Vmax (Right Ventricular Outflow Tract Maximum Velocity)
- RVOT VTI (Right Ventricular Outflow Tract Velocity)-Time Integral)
- PV Vmax (Pulmonary Valve Maximum Velocity)
- PV VTI (Pulmonary Valve Velocity)-Time Integral)
- PV AccT (Pulmonary Valve Acceleration Time)
- MPA Vmax (Main Pulmonary Artery Maximum Velocity)
- RPA Vmax (Right Pulmonary Artery Maximum Velocity)
- LPA Vmax (Left Pulmonary Artery Maximum Velocity)
- PVein S Vel (Pulmonary Vein S-wave Flow Velocity)
- PVein D Vel (Pulmonary Vein D-wave Flow Velocity)
- PVein A Vel (Pulmonary Vein A-wave Flow Velocity)
- PVein A Dur (Pulmonary Vein A-wave Duration)
- PVein S VTI (Pulmonary Vein S-wave Velocity)-time Integral)
- PVein D VTI (Pulmonary Vein D-wave Velocity)-time Integral)
- PVein DecT (Pulmonary Vein Deceleration Time)
- IVC Vel (Insp) (Inferior Vena Cava Inspiration Maximum Velocity)
- IVC Vel (Expir) (Inferior Vena Cava Expiration Maximum Velocity)
- SVC Vel (Insp) (Superior Vena Cava Inspiration Maximum Velocity)
- SVC Vel (Expir) (Superior Vena Cava Expiration Maximum Velocity)
- MR Vmax (Mitral Valve Regurgitation Maximum Velocity)
- MR VTI (Mitral Valve Regurgitation Velocity)-Time Integral)
- MS Vmax (Mitral Valve Stenosis Maximum Velocity)
- dP/dt (Rate of Pressure Change)
- AR Vmax (Aortic Valve Regurgitation Maximum Velocity)
- AR VTI (Aortic Valve Regurgitation Velocity)-Time Integral)
- AR DecT (Aortic Valve Regurgitation Deceleration Time)
- AR PHT (Aortic Valve Regurgitation Pressure Half Time)
- AR Ved (Aortic Valve Regurgitation Velocity) at end-Diastole)
- TR Vmax (Tricuspid Valve Regurgitation Maximum Velocity)
- TR VTI (Tricuspid Valve Regurgitation Velocity)-Time Integral)
- PR Vmax (Pulmonary Valve Regurgitation Maximum Velocity)



- PR VTI (Pulmonary Valve Regurgitation Velocity)-Time Integral)
- PR PHT (Pulmonary Valve Regurgitation Pressure Half Time)
- PR Ved (Pulmonary Valve Regurgitation Velocity) at end-Diastole)
- VSD Vmax (Ventricular Septal Defect Maximum Velocity)
- ASD Vmax (Atrial Septal Defect Maximum Velocity)
- PDA Vel (d) (Patent Ductus Arteriosus Velocity at End-diastole)
- PDA Vel (s) (Patent Ductus Arteriosus Velocity at End-systole)
- Coarc Pre-Duct (Coarctation of Pre-Ductus)
- Coarc Post-Duct (Coarctation of Post-Ductus)
- HR (Heart Rate)
- RAP (Right Atrium Pressure)

Doppler-mode calculation:

- MV E/A (MV E Vel (cm/s) / MV A Vel (cm/s))
- MVA(PHT) (MVA(PHT) (cm<sup>2</sup>) = 220 / MV PHT (ms)Mitral Valve Orifice Area (PHT))
- TV E/A (Tricuspid Valve E-Vel/A-Vel)
- TVA(PHT) (Tricuspid Valve Orifice Area (PHT))

TDI measure:

- Ea(medial) (Mitral Valve medial Early diastolic motion)
- Aa(medial) (Mitral Valve medial Late diastolic motion)
- Sa(medial) (Mitral Valve medial Systolic motion)
- ARa(medial) (Mitral Valve medial Acceleration Rate)
- DRa(medial) (Mitral Valve medial Deceleration Rate)
- Ea(lateral) (Mitral Valve lateral Early diastolic motion)
- Aa(lateral) (Mitral Valve lateral Late diastolic motion)
- Sa(lateral) (Mitral Valve lateral Systolic motion)
- ARa(lateral) (Mitral Valve lateral Acceleration Rate)

- DRa(lateral) (Mitral Valve lateral Deceleration Rate)

Cardiac study items (B mode):

- S-P Ellipse
- B-P Ellipse
- Bullet
- Mod.Simpson
- Simpson SP (A2C)
- Simpson SP (A4C)
- Simpson BP
- Cube
- Teichholz
- Gibson
- LA Vol(A-L)
- LA Vol (Simp)
- RA Vol (Simp)
- LV Mass (Cube)
- LV Mass (A-L)
- LV Mass (T-E)
- Qp/Qs
- PISA MR
- PISA AR
- PISA TR
- PISA PR

Cardiac study items (M mode):

- LVIMP (Left Ventricular Index of Myocardial Performance)
- Cube
- Teichholz
- Gibson
- LV Mass (Cube)

Cardiac study items (Doppler mode):

- MVA(VTI)
- AVA(VTI)
- LV TEI
- RVSP
- PAEDP
- RV TEI
- Qp/Qs
- PISA MR
- PISA AR
- PISA TR
- PISA PR

Cardiac study items (TDI mode):

- Ea (medial)
- Aa (medial)
- ARa (medial)



- DRa (medial)
- Sa (medial)
- Ea (lateral)
- Aa (lateral)
- ARa (lateral)
- DRa (lateral)
- Sa (lateral)
- Vascular
  - B-mode measure:
    - Normal (D) (Vessel Diameter)
    - Resid (D) (Residual Diameter)
    - Normal (A) (Vessel Area)
    - Resid (A) (Residual Area)
    - CCA IMT (Common Carotid Artery IMT)
    - Bulb IMT (Bulbillate IMT)
    - ICA IMT (Internal Carotid Artery IMT)
    - ECA IMT (External Carotid Artery IMT)
  - B-mode calculation:
    - Stenosis D (Stenosis Diameter)
    - Stenosis A (Stenosis Area)
  - B-mode study:
    - Stenosis
    - IMT
  - Doppler-mode measure:
    - CCA (Common Carotid Artery)
    - Bulb (Bulbillate)
    - ICA (Internal Carotid Artery)
    - ECA (External Carotid Artery)
    - Vert A (Vertebral Artery)
    - Innom A (Innominate Artery)
    - Subclav V (Subclavian Vein)
    - Axill A (Axillary Artery)
    - Brachial A (Brachial Artery)
    - Ulnar A (Ulnar Artery)
    - Radial A (Radial Artery)
    - Subclav A (Subclavian Artery)
    - Axill V (Axillary Vein)
    - Cephalic V (Cephalic Vein)
    - Basilic V (Basilic Vein)
    - Ulnar V (Ulnar Vein)
    - Radial V (Radial Vein)
    - C.Iliac A (Common Iliac Artery)
    - Ex.Iliac A (External Iliac Artery)
    - CFA (Common Femoral Artery)
    - SFA (Superficial Femoral Artery)
    - Pop A (Popliteal Artery)
    - TP Trunk A (Tibial Peroneal Trunk Artery)
  - Peroneal A (Peroneal Artery)
  - P.Tib A (Posterior Tibial Artery)
  - A.Tib A (Anterior Tibial Artery)
  - Dors.Ped A (Dorsalis Pedis Artery)
  - C.Iliac V (Common Iliac Vein)
  - Ex.Iliac V (External Iliac Vein)
  - Femoral V (Femoral Vein)
  - Saph V (Great Saphenous Vein)
  - Pop V (Popliteal Vein)
  - TP Trunk V (Tibial Peroneal Trunk Vein)
  - Sural V (Sural Vein)
  - Soleal V (Soleal Vein)
  - Peroneal V (Peroneal Vein)
  - P.Tib V (Posterior Tibial Vein)
  - A.Tib V (Anterior Tibial Vein)
  - ACA (Anterior Cerebral Artery)
  - MCA (Middle Cerebral Artery)
  - PCA (Posterior Cerebral Artery)
  - AComA (Ant.communicating br.)
  - PComA (Post.communicating br.)
  - BA (Basilar Artery)
  - IIA (Internal Iliac Artery)
  - PFA (Deep Femoral Artery)
  - Ba V (Basilar Vein)
  - Brachial V (Brachial Vein)
  - IIV (Internal Iliac Vein)
  - CFV (Common Femoral Vein)
  - SFV (Superficial Femoral Vein)
  - PFV (Deep Femoral Vein)
  - SSV (Small Saphenous Vein)
  - Doppler-mode calculation:
    - ICA/CCA (internal carotid artery PS/  
common carotid artery PS)
  - Doppler-mode study:
    - ABI (Ankle Brachial Index)
- Gynecology
  - B-mode measure:
    - UT L (Uterine Length)
    - UT H (Uterine Height)
    - UT W (Uterine Width)
    - Cervix L (Uterine Cervix Length)
    - Cervix H (Uterine Cervix Height)
    - Cervix W (Uterine Cervix Width)
    - Endo (Endometrium Thickness)
    - Ovary L (Ovary Length)
    - Ovary H (Ovary Height)
    - Ovary W (Ovary Width)



- Follicle1-16 L (Follicle 1-16 Length)
- Follicle1-16 W (Follicle 1-16 Width)
- Follicle1-16 H (Follicle 1-16 Height)
- B-mode calculation:
  - Ovary Vol (Ovary Volume)
  - UT Vol (Uterine Volume)
  - Uterus Body
  - UT-L/ CX-L (Uterine Length / Cervix Length)
  - Follicle 1-16
- B-mode study:
  - Uterus (Length, height and width of uterus, endometrium thickness)
  - Uterine Cervix (Length, height and width of uterine cervix)
  - Ovary (Length, height and width of ovary)
  - Follicle 1-16 (Length and width of follicle 1-16)
- Urology
  - B-mode measure:
    - Renal L (Renal Length)
    - Renal H (Renal Height)
    - Renal W (Renal Width)
    - Cortex (Renal Cortical Thickness)
    - Adrenal L (Adrenal Length)
    - Adrenal H (Adrenal Height)
    - Adrenal W (Adrenal Width)
    - Prostate L (Prostate Length)
    - Prostate H (Prostate Height)
    - Prostate W (Prostate Width)
    - Seminal L (Seminal Vesicle Length)
    - Seminal H (Seminal Vesicle Height)
    - Seminal W (Seminal Vesicle Width)
    - Testis L (Testicular Length)
    - Testis H (Testicular Height)
    - Testis W (Testicular Width)
    - Pre-BL L (Previous-Bladder Length)
    - Pre-BL H (Previous-Bladder Height)
    - Pre-BL W (Previous-Bladder Width)
    - Post-BL L (Posterior-Bladder Length)
    - Post-BL H (Posterior-Bladder Height)
    - Post-BL W (Posterior-Bladder Width)
  - B-mode calculation:
    - Renal Vol (Renal Volume)
    - Prostate Vol (Prostate Volume)
    - Testis Vol (Testicular Volume)
  - Pre-BL Vol (Previous-Bladder Volume)
  - Post-BL Vol (Posterior-Bladder Volume)
  - Mictur.Vol (Micturated Volume)
  - B-mode study:
    - Kidney
    - Adrenal
    - Prostate
    - Seminal Vesicle
    - Testis
    - Bladder
  - Small Parts
    - B-mode measure
      - Thyroid L (Thyroid Length)
      - Thyroid H (Thyroid Height)
      - Thyroid W (Thyroid Width)
      - Isthmus H (Isthmus Height)
      - Testis L (Testicular Length)
      - Testis H (Testicular Height)
      - Testis W (Testicular Width)
      - Mass1 D1-3
      - Mass2 D1-3
      - Mass3 D1-3
    - B-mode calculation:
      - Thyroid Vol (Thyroid Volume)
    - B-mode study:
      - Thyroid
      - Testis
      - Mass1-3
    - Doppler-mode measure:
      - STA (Superior Thyroid Artery)
      - ITA (Inferior Thyroid Artery)
  - Orthopedics
    - B-mode measure:
      - Hip
      - Hip-Graf
      - d/D
      - Hip( $\alpha$ ), Hip( $\beta$ )
  - Emergency
    - B-mode Measure:
      - Renal L (Renal Length)
      - Renal H (Renal Height)
      - Renal W (Renal Width)
      - CBD (Common bile duct)
      - Portal V Diam (Portal Vein Diameter)
      - CHD (Common hepatic duct)
      - GB wall th (Gallbladder wall thickness)
      - Aorta Diam (Aorta Diameter)



- Aorta Bif
- Ureter
- Pre-BL L (Pre-Animal Bladder Length)
- Pre-BL H (Pre-Animal Bladder Height)
- Pre-BL W (Pre-void Bladder Width)
- Post-BL L (Post-void Bladder Length)
- Post-BL H (Post-void Bladder Height)
- Post-BL W (Post-void Bladder Width)
- GS (Gestational Sac Diameter)
- YS (Yolk Sac)
- BPD (Biparietal Diameter)
- CRL (Crown Rump Length)
- UT L (Uterine Length)
- UT H (Uterine Height)
- UT W (Uterine Width)
- Endo (Endometrium Thickness)
- Ovary L (Ovary Length)
- Ovary H (Ovary Height)
- Ovary W (Ovary Width)

#### B-mode Calculation:

- Renal Vol (Renal Volume)
- Pre-BL Vol (Pre-void Bladder Volume)
- Post-BL Vol (Post-void Bladder Volume)
- Mictur.Vol (Micturated Volume)
- Ovary Vol (Ovary Volume)
- UT Vol (UT Volume)
- Uterus Body

#### B-mode Study:

- Uterus
- Ovary
- Kidney
- Bladder

#### M/Doppler-mode Measure:

- FHR (Fetal Heart Rate)

### 6.3 Smart OB™

- Auto measurement for OB, a special tool for easy OB scan, and greatly reduce time and increase productivity
- Support BPD, HC, OFD, FL, AC
- Better get GA before start auto AC
- Measurement result can be modified by user

### 6.4 Report

- Specific report template to the application
- Editable value in report
- Images are selectable
- Support anatomical graphics in vascular

#### reports

- Titles are pre-settable in setup
- Export as PDF/RTF format

\* Not all measurements are listed in this part; for more detailed information please refer to User Manual

## 7 Exam Storage and Management

### 7.1 Exam storage

- Maximum 1TB hard drive. More than 875GB internal hard drive reserved for patient data storage
- Capable of storage up to approximately 431,395 single frames (FRM format)
- Storage area
  - Pre-settable: image area, standard area, full-screen
  - Image area: 640\*480
  - Standard area: 800\*600
  - Full-screen: 1024\*768

### 7.2 Exam management

- iStation™ workstation dedicated for patient exam management
- Patient exam query/retrieve
- Support review of current and past exam
- New exam, Active exam, Continue exam functions, End exam are available
- Support measurements and calculations on archived exam and images
- Export image as BMP/JPG/TIFF/DCM/FRM format (FRM: system format)
- Export cine as DCM/AVI/CIN format (CIN: system format)
- Support backup/send to USB devices, DVD-RW media

## 8 Connectivity

### 8.1 Ethernet Network Connection

- Wired connection
- Wireless connection: Wireless Ethernet adapter(option)

### 8.2 Network Storage

### 8.3 DICOM 3.0

- DICOM Basic (option)
  - Verify (SCU, SCP)
  - Print
  - Store

- Storage Commitment
- Media Exchange
- DICOM Worklist (option)
- DICOM Query/Retrieve (option)
- DICOM Modality Performed Procedure Step
  - MPPS (option)
- DICOM OB/GYN structure report (option)
- DICOM Cardiac structure report (option)
- DICOM Vascular structure report (option)

#### 8.4 MedSight

- An interactive app that lets you transfer clinical images straight from Mindray Ultrasound system to a smart device, such as mobile phone or tablet PC
- Needs to be installed on mobile terminal
- Transfer images or clips from system to mobile terminal through WiFi
- Support Android (4.0 and above) and IOS (7.0 and above) system

## 9 Transducers

### 10 Transducers

#### 10.1 Curved array

- C5-2s
  - Application: Adult Abdomen, Gynecology, Obstetrics
  - Bandwidth: 2.1-5.1 MHz(-6dB); 1.5-5.6MHz (-20dB)
  - Number of Elements: 128
  - FOV (max): 75°
  - Extended FOV: 95°
  - Convex Radius: 51mm
  - Physical Footprint: 76.3mm× 25.6mm
  - Footprint: 64mm × 16.2mm
  - B-mode Frequencies: 2.5, 3.5, 5.0 MHz
  - Harmonic Frequencies: 5.0, 6.0 MHz
  - Doppler Frequencies: 2.5, 3.0 MHz
  - Biopsy Guide: NGB-015, multi angle, reusable
- C11-3s
  - Application: Abdomen, Pediatrics, Transcranial, Vascular, Small parts
  - Bandwidth: 4-10MHz(-6dB); 3-11.2MHz (-20dB)
  - Number of Elements: 128
  - FOV (max): 100°

- Extended FOV: 120°
- Convex Radius: 16mm
- Physical Footprint: 32.8mm×25mm
- Footprint: 27.4mm×8.4mm
- B-mode Frequencies: 5.0, 6.5, 8.0MHz
- Harmonic Frequencies: 8.0, 9.0MHz
- Doppler Frequencies: 4.4, 5.0MHz
- Biopsy Guide: NGB-018, multi angle, reusable

- 6C2s

- Application: Abdomen, Pediatrics, Transcranial, Vascular, Small parts
- Bandwidth: 4.2-9.2MHz(-6dB); 3.3-11.3MHz (-20dB)
- Number of Elements: 128
- FOV (max): 100°
- Extended FOV: 120°
- Convex Radius: 16mm
- Physical Footprint: 33.5mm×24.8mm
- Footprint: 29mm×10mm
- B-mode Frequencies: 5.0, 6.5, 8.0MHz
- Harmonic Frequencies: 8.0 MHz
- Doppler Frequencies: 4.4, 5.0MHz
- Biopsy Guide: NGB-005, multi angle, reusable

- V10-4s

- Application: Gynecology, Obstetrics, Urology
- Bandwidth: 4.5-9.5 MHz(-6dB); 3.6-10.0 MHz(-20dB)
- Number of Elements: 128
- FOV (max): 160°
- Extended FOV: 180°
- Convex Radius: 11 mm
- Physical Footprint: 22.1mm ×21.5mm
- Footprint: 22.1mm×9.1mm
- B-mode Frequencies: 5.0, 6.5, 8.0MHz
- Harmonic Frequencies: 8.0, 9.0MHz
- Doppler Frequencies: 4.0, 5.0MHz
- Biopsy Guide: NGB-004, single angle, reusable

- V10-4Bs

- Application: Gynecology, Obstetrics, Urology
- Bandwidth: 4.5-9.5 MHz(-6dB); 3.6-10.0 MHz(-20dB)
- Number of Elements: 128



- FOV (max): 160°
- Extended FOV: 180°
- Convex Radius: 11 mm
- Physical Footprint: 22.1mm ×21.5mm
- Footprint: 22.1mm×9.1mm
- B-mode Frequencies: 5.0, 6.5, 8.0MHz
- Harmonic Frequencies: 8.0, 9.0MHz
- Doppler Frequencies: 4.0, 5.0MHz
- Biopsy Guide: NGB-004, single angle, reusable

- C6-2Gs

- Application: Abdomen
- Bandwidth: 2.0-5.0MHz(-6 dB); 1.7-6.0MHz(-20dB)
- Number of Elements: 128
- FOV (max): 90°
- Extended FOV: 110°
- Convex Radius: 20mm
- Footprint: 31.5mm×11.2mm
- B-mode Frequencies: 3.0, 4.0, 5.0 MHz
- Harmonic Frequencies: 5.0, 6.0 MHz
- Doppler Frequencies: 2.5, 3.0 MHz
- Biopsy Guide: NGB-024, multi angle, reusable

## 10.2 Volume curved array

- 4CD4s

- Application: Gynecology, Obstetrics, Abdomen
- Bandwidth: 2.5-5.4MHz(-6dB); 1.4-6.4 MHz(-20dB)
- Number of Elements: 128
- FOV (max): 80°(B) × 70°(sweep)
- Convex Radius: 51.5mm
- Physical Footprint: 73mm ×51.6mm
- Footprint: 51mm ×15.5mm
- B-mode Frequencies: 2.5, 4.0, 6.0MHz
- Harmonic Frequencies: 5.0, 6.0MHz
- Doppler Frequencies: 2.5, 3.0MHz
- Biopsy Guide: not available

## 10.3 Linear array

- L12-4s

- Application: Small parts, Vascular, Musculoskeletal, Pediatrics, Abdomen
- Bandwidth: 4.0-11.0MHz (-6dB); 3.0-13.0MHz (-20dB)
- Number of Elements: 192
- Field of View (max): 38mm

- Steered Angle: +/-6°, +/-20°
- Physical Footprint: 61mm×24.5mm
- Footprint: 44.2mm×8.5mm
- B-mode Frequencies: 6.0, 7.5, 10.0MHz
- Harmonic Frequencies: 10.0, 11.0MHz
- Doppler Frequencies: 5.0, 5.7MHz
- Biopsy Guide: NGB-007, multi angle, reusable

- L14-6Ns

- Application: Small parts, Vascular, Pediatrics, Superficial, Musculoskeletal, Neurology
- Bandwidth: 5.1-12.5 MHz (-6dB); 3.5-16.0MHz(-20dB)
- Number of Elements: 192
- Field of View (max): 38mm
- Steered Angle: +/-6°, +/-20°
- Physical Footprint: 61.0mm×24.5mm
- Footprint: 44.2mm×8.5mm
- B-mode Frequencies: 8.0, 10.0, 12.0MHz
- Harmonic Frequencies: 10.0, 11.0MHz
- Doppler Frequencies: 5.7, 6.6MHz
- Biopsy Guide: NGB-007, multi angle, reusable

- L14-6s

- Application: Small parts, Vascular, Pediatrics, Superficial, Musculoskeletal, Neurology
- Bandwidth: 5.1-12.5MHz(-6dB); 3.5-16.0MHz(-20dB)
- Number of Elements: 128
- Field of View (max): 25mm
- Steered Angle: +/-6°, +/-20°
- Physical Footprint: 47mm×22.8mm
- Footprint: 30mm×8mm
- B-mode Frequencies: 8.0, 10.0, 12.0MHz
- Harmonic Frequencies: 10.0, 11.0MHz
- Doppler Frequencies: 5.7, 6.6MHz
- Biopsy Guide: NGB-016, multi angle, reusable

- L7-3s

- Application: Small parts, Vascular, Pediatrics, Superficial, Musculoskeletal, Neurology
- Bandwidth: 3.0-6.5 MHz (-6dB); 2.0-8.0MHz (-20dB)
- Number of Elements: 128



- Field of View (max): 38mm
- Steered Angle: +/-6°, +/-12°
- Physical Footprint: 61mmx24.4mm
- Footprint: 43mmx10mm
- B-mode Frequencies: 4.0, 5.0, 6.0MHz
- Harmonic Frequencies: 6.0, 7.0MHz
- Doppler Frequencies: 3.8, 5.0MHz
- Biopsy Guide: NGB-007, multi angle, reusable
- 7L5s
  - Application: Small parts, Vascular, Pediatrics, Musculoskeletal
  - Bandwidth: 4.5-10.0 MHz(-6dB); 3.0-12.0MHz (-20dB)
  - Number of Elements: 128
  - Field of View (max): 53mm
  - Steered Angle: +/-5°, +/-10°
  - Physical Footprint: 70mmx24.6mm
  - Footprint: 56mmx10mm
  - B-mode Frequencies: 5.0, 7.5, 10.0MHz
  - Harmonic Frequencies: 8.0, 10.0MHz
  - Doppler Frequencies: 5.0, 5.7MHz
  - Biopsy Guide: NGB-007, multi angle, reusable
- 7LT4s
  - Application: Small parts, Vascular, Pediatrics, Superficial, Musculoskeletal, Neurology
  - Bandwidth: 5.0-10.0MHz(-6dB); 3.5-13.5MHz(-20dB);
  - Number of Elements: 128
  - Field of View (max): 40mm
  - Steered Angle: +/-6°, +/-12°
  - Physical Footprint: 61mmx24.4mm
  - Footprint: 43mmx10.0mm
  - B-mode Frequencies: 5.0, 7.5, 10.0MHz
  - Harmonic Frequencies: 8.0, 10.0MHz
  - Doppler Frequencies: 5.0, 5.7MHz
  - Biopsy Guide: NGB-010, multi angle, reusable
- L16-4Hs
  - Application: Intra-operative, Musculoskeletal, Superficial, Peripheral vascular
  - Bandwidth: 6.0-12.5MHz(-6dB), 3.5-16.0MHz (-20dB)
  - Number of Elements: 128
- Field of View (max): 25mm
- Steered Angle: +/-12°, +/-20°
- Physical Footprint: 11.5mmx 38.0mm
- Footprint: 28.7mmx5.5mm
- B-mode Frequencies: 8.0, 10.0, 12.0 MHz
- Harmonic Frequencies: 10.0, 12.0MHz
- Doppler Frequencies: 5.0, 5.7MHz
- Biopsy Guide: not available
- 10.4 Bi-planar array
  - 6LB7s
    - Application: Prostate, Urology
    - Bandwidth: 3.0-11.0 MHz (-20dB,6LB7s\_C); 3.0-12.0MHz (-20dB,6LB7s\_L)
    - Number of Elements: 128 (6LB7s\_C); 128 (6LB7s\_L)
    - Field of View (max): 150° (6LB7s\_C); 66mm (6LB7s\_L)
    - Extended FOV: 170°(6LB7s\_C)
    - Steered Angle: +/-6°, +/-12° (6LB7s\_L)
    - Physical Footprint: 21.9mmx21.9mm (6LB7s\_C)
    - Footprint: 21.9mmx11.2mm (6LB7s\_C), 72.0mmx11.0mm (6LB7s\_L)
    - B-mode Frequencies: 5.0, 6.5, 8.0MHz (6LB7s\_C); 5.0, 6.5, 8.0MHz (6LB7s\_L)
    - Doppler Frequencies: 4.0, 5.0MHz (6LB7s\_C); 4.0, 5.0MHz (6LB7s\_L)
    - Biopsy Guide: NGB-009, single angle, reusable
- 10.5 Phased array
  - SP5-1s
    - Application: Cardiac, abdomen, vascular, pediatric
    - Bandwidth: 1.9-3.7MHz (-6dB) ; 1.1-4.4MHz(-20dB)
    - Number of Elements: 80
    - Field of View (max): 90°
    - Physical Footprint: 38.2mmx30.5mm
    - Footprint: 23.4mmx15.2mm
    - B-mode Frequencies: 2.0, 3.0, 4.0MHz
    - Harmonic Frequencies: 3.2, 3.6MHz
    - Doppler Frequencies: 2.0, 2.3MHz; TDI 2.5, 3.0MHz
    - CW Frequency: 2MHz
    - Biopsy Guide: NGB-011, multi angle, reusable
  - P4-2s

- Application: Adult Cardiac, Transcranial, Pediatric Abdomen
  - Bandwidth: 1.9-4.0MHz (-6dB) ; 1.3-4.7 MHz(-20dB)
  - Number of Elements: 64
  - Field of View (max): 90°
  - Physical Footprint: 38.2mm×30.5mm
  - Footprint: 23.4mm×15.2mm
  - B-mode Frequencies: 2.0, 2.5, 3.0MHz
  - Harmonic Frequencies: 3.2, 3.6MHz
  - Doppler Frequencies: 2.0, 2.3MHz; TDI 2.5, 3.0MHz
  - CW Frequency: 2MHz
  - Biopsy Guide: NGB-011, multi angle, reusable
  - P7-3s
    - Application: Pediatric Cardiac
    - Bandwidth: 2.6-6.7MHz (-6dB); 2.0-8.0MHz (-20dB)
    - Number of Elements: 96
    - Field of View (max): 90°
    - Physical Footprint: 34mm×24.5mm
    - Footprint: 17.4mm×12.5mm
    - B-mode Frequencies: 3.6, 5.0, 6.6MHz
    - Harmonic Frequencies: 6.0, 7.0MHz
    - Doppler Frequencies: 3.3, 4.0MHz; TDI 3.3, 4.0MHz
    - CW Frequency: 3.3MHz
    - Biopsy Guide: not available
  - P12-4s
    - Application: Neonatal Cardiac, Transcranial
    - Bandwidth: 4.2-11.0MHz (-6dB); 3.5-13.5MHz (-20dB)
    - Number of Elements: 96
    - Field of View (max): 90°
    - Physical Footprint: 22mm×20mm
    - Footprint: 14.0mm×10.5mm
    - B-mode Frequencies: 6.0, 8.0, 10.0MHz
    - Harmonic Frequencies: 8.0, 10.0MHz
    - Doppler Frequencies: 4.7, 5.7MHz; TDI 4.0, 4.7MHz
    - CW Frequency: 5MHz
    - Biopsy Guide: not available
  - P7-3Ts
    - Application: Transesophageal Echo
    - Bandwidth: 3.1-7.2MHz (-6dB); 1.9-8.2MHz (-20dB)
    - Number of Elements: 64
    - Field of View (max): 90°
    - Physical Footprint: 14mm×12mm
    - Footprint: 14mm×12mm
    - B-mode Frequencies: 3.6, 5.0, 6.6MHz
    - Harmonic Frequencies: 6.0, 7.0MHz
    - Doppler Frequencies: 2.7, 3.3MHz; TDI 3.3, 4.0
    - CW Frequency: 3.3MHz
    - Biopsy Guide: not available
- 10.6 CW probe
- CW2s
    - Application: Transcranial, Cardiac, Pediatrics
    - Number of Elements: 2
    - CW Frequency: 2.0MHz
    - Biopsy Guide: not available
  - CW5s
    - Application: Vascular
    - Number of Elements: 2
    - CW Frequency: 5.0MHz
    - Biopsy Guide: not available

## 11 Peripheral Devices and Accessories

### (Option)

- 11.1 Probe extend module: PEM-21  
One extend three probe ports
- 11.2 Black/white analog video printer
- MITSUBISHI P93W-Z
  - SONY UP-X898MD
- 11.3 Black/white digital video printer
- SONY UP-D898MD
  - MITSUBISHI P95DW-N
- 11.4 Color digital video printer
- SONY UP-D25MD
- 11.5 Footswitch
- USB port: 971-SWNOM (2-pedal)
  - USB port: 971-SWNOM (3-pedal)
  - USB port: FS-81-SP-2 (1-pedal)
  - Support User-definable functions (Freeze, Save, Print)
- 11.6 ECG module ECG-21
- ECG lead port: 6 pin, IEC&AHA
  - Connection port: connect to I/O extend module

### 11.7 Built-in Battery

- Model: LI23I001A
- Replaceable and rechargeable lithium battery
- Full battery lasts more than 64h in standby mode
- Empty battery recharged to full in 2-3h
- Continuous work time: about 1.5 hour in B mode

### 11.8 DVD R/W

- External USB DVD R/W drive

### 11.9 Mobile Trolley

- UMT-200
  - Without Extra LCD Display
  - Platform Height: not adjustable after installed
- UMT-300
  - 15-inch Extra LCD Display (optional)
  - Power supply module (optional)
  - External DVD R/W Storage (optional)
  - Platform Height: 855-1010mm adjustable

### 11.10 Barcode reader

- 1-D barcode reader: SYMBOL LS2208
- 2-D barcode reader: SYMBOL DS6707

## 12 System Inputs and Outputs

### 12.1 I/O Extend port

- I/O Extend module IOM-21 (option)
  - USB: 2 port
  - ECG: 1 port
  - Serial port: 1 port
  - Remote: 1 port
  - Audio out: 1 port
  - Video out: 1 port
  - DVI-I: 1 port
  - Microphone: 1 port
- V/A extend module VAM-11 (option)
  - Audio in: 1 port
  - Video in: 1 port (Reserved)
  - S-Video in: 1 port (Reserved)

### 12.2 Video/Audio output

- S-Video out: 1 port, PAL/NTSC

### 12.3 Other input/output

- USB: 2 ports
- Ethernet: 1 port

### 13.1 Quality standards

- ISO 9001
- ISO 13485

### 13.2 Design standards

- UL 60601-1
- CSA C22.2 No. 601-1
- EN 60601-1 and IEC 60601-1
- EN 60601-1-1 and IEC 60601-1-1
- EN 60601-1-2 and IEC 60601-1-2
- EN 60601-2-37 and IEC60601-2-37
- EN60601-1-4 and IEC60601-1-4
- EN60601-1-6 and IEC60601-1-6

### 13.3 CE declaration

M6 Series system is fully in conformance with the Council Directive 93/42/EEC Concerning Medical Devices, as amended by 2007/47/EC. The number adjacent to the CE marking (0123) is the number of the EU-notified body that certified meeting the requirements of Annex II of the Directive.

### NOTICE:

**Not all features or specifications described in this document may be available in all probes and/or modes. Mindray reserves the right to make changes in specifications and features shown herein, or discontinue the product at any time without notice or obligation. Contact Mindray Representative for the most current information**

## 13 Safety and Conformance

