Resona I8 Series

Color Innovation, in every face

Diagnostic Ultrasound System

Datasheet

Release 01.02.00

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1   System Overview

Thanks to its innovative design and advanced features, Resona I8 offers a completely new experience that empowers you to confidently manage your ever-increasing patient throughput with high efficiency, regardless of the types of patients or clinical challenges you may encounter.

It is intended for use in obstetrics, gynecology, abdominal, pediatric, small organ, musculo-skeletal, cardiac, vascular, urology, nerve, cephalic, thoracic /pleural, Laparoscopic, and Intra-operative exams.

1.1   Imaging modes

- B-Mode
- B-Mode/ PW Doppler
- B-Mode/ Color Doppler
- B-Mode/ PW Doppler / Color Doppler
- B-Mode/ M-Mode or Color M-mode
- Dual B-Mode/ Dual B-Mode + Color Doppler
- THI and PSHTM (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
- PW (Pulsed Wave) Doppler
- CW (Continuous Wave) Doppler
- TDI (Tissue Doppler Imaging)
- Contrast Imaging
- Smart 3D (Freehand 3D)
- Real-time 4D
- iScape View (Panoramic Imaging)
- STE Imaging (Sound Touch Elastography)
- STQ Imaging (Sound Touch Quantification)
- Strain Elastography

1.2   Features

- B-Mode
- THI and PSH (Phase Shift Harmonic Imaging)
- M-Mode/Color M-mode
- Color Doppler Imaging
- Power Doppler Imaging and Directional PDI
- PW (Pulsed Wave) Doppler
- CW (Continuous Wave) Doppler
- Free Xros M
- Free Xros CM

- Glazing Flow
- iBeam (Spatial Compound Imaging)
- iClear (Speackle Suppression Imaging)
- iClear +
- iTouch (Auto Image Optimization)
- Echo Boost
- Zoom/iZoom (ull Screen Zoom)
- FCI (Frequency Compound Imaging)
- B steer
- ExFOV (Extended Field of View)
- HD Scope
- SSC (Sound Speed Compensation)
- Channel data processing
- Smart 3D
- Color 3D
- Real-time 4D
- STIC (Spatial- Temporal Image   Correlation)
- iPage+ (Multi-Slice Imaging)
- SCV+ (Slice Contrast View)
- iLive
- Niche
- 3D-Print Format
- Smart Planes CNS
- Smart FLC
- Smart Planes FH
- Smart ICV
- Smart Face
- Smart -V (Smart Volume)
- Smart V Trace
- Smart Scene 3D
- IOTA
- Clinical Measurement Package
- Smart OB (Auto OB measurement)
- Smart NT (Auto NT measurement)
- Smart Fetal HR (Fetal Heart Rate)
- Smart HRI
- Smart Bladder
- Smart Hip
- Smart Trace
- Smart Calc
- CPP (Color Pixel Percentage)
- Smart Track
- Smart VTI
- Smart IVC
- Smart B-line
- HR Flow (High Resolution Flow)
- IMT

- RIMT (RF-Data based IMT)
- R-VQS (RF-Data based Quantitative Analysis on Vessel Stiffness)
- Smart Pelvic
- Smart Breast
- Smart Thyroid
- IVF
- iScape View
- iNeedle (Needle Visualization Enhancement)
- Contrast Imaging
- Contrast Imaging QA (Quantitative Analysis)
- Volume CEUS
- LVO (Left Ventricular Opacification)
- Low MI Contrast
- STE Imaging (Sound Touch
- Elastography)
- STQ Imaging (Sound Touch Quantification)
- Strain Elastography
- High frame rate STE
- Ultrasound Fusion Imaging
- Endocavity Fusion Imaging
- Fusion RESP
- ECG function
- AutoEF
- TDI (Include TVI, TVD, TVM, TEI)
- TDI QA (TDI Quantitative Analysis)
- TT QA (Tissue Tracking Quantitative Analysis)
- FH Tissue Tracking QA
- Stress Echo
- V-Mapping
- iScanHelper
- iWorks (Auto Workflow Protocol)
- DICOM
- MedSight
- MedTouch
- UltraAssist (Off-line software)
- UltraView (Off-line analysis software)
- Q-Path
- iStorage
- Touch gestures

2   Physical Specification

2.1   Dimension and Weight
The control panel and the monitor are in the lowest

- Configured with dual-wing floating arm and 21.5-inch monitor
  - Depth: 1026±20 mm
  - Width: 550±10 mm
  - Height: 1098±20 mm
- Weight: approx. less than 94kg±5kg (net weight, standard configuration but not including the transducer)

2.2   Electrical power
- Voltage: 100-240V~
- Frequency: 50/60 Hz
- Power consumption: Max. 650 VA

2.3   Operating Environment
- Ambient temperature: 0-40°C
- Relative humidity: 20%-85% (no condensation)
- Atmospheric pressure: 700hPa-1060hPa

2.4   Storage & Transportation Environment
- Ambient temperature: -20-55 °C
- Relative humidity: 20%-95% (no condensation)
- Atmospheric pressure: 700hPa-1060hPa

2.5   System Noise
26dbB @25°C

3   User Interface

3.1   Monitor

- 23.8-inch high resolution color LED monitor
- Resolution: 1920x1080
- Viewing angle: 176 degrees
- Digital on screen display of brightness and contrast controls
- Automatic LED brightness
- Tilt/Rotate independent adjustment
- Tilt angle range: 20±5° degrees (backward), 85±5° degrees (forward)

- Rotate angle range: 90±5° degrees (to left), 150±5° degrees (to right)

3.2 Multi-directional articulating monitor arm with locking mechanism for transportation
- From left to right: 300±20mm
- From front to back: arm: 300±20mm
- From front to back: arm: 300±20mm

3.3 Touch screen
- 13.3-inch high sensitivity anti-glare color touch screen
- Resolution: 1920*1080
- Digital brightness and contrast adjustment through preset
- Viewing angle: 170 degrees
- Angle adjustable range: 40 degrees
- Support touch screen gestures
- Support either hand writing or with gloves on
- Movable 3D/4D tabs
- Editable touch-screen buttons: long press to add, delete or move the buttons.
- Digital TGC
- Short-cut switch of latest used transducer & exams

3.4 Touch gestures
- Swipe down/up: display/remove projected image on touch screen
- Swipe horizontally: page up/down or review images/cine loops one by one
- Swipe from left edge to right: display hidden menu on projected image.
- Image parameter adjustment.
- Measurement on projected image on touch screen
- Zoom in/out the projected image on touch screen
- Rotate or erase on projected 3D/4D image on touch screen
- 8 user defined gestures using two fingers for more functions, such as freeze, save, print, activate specific imaging modes, measurements, and some other special functions.

3.5 Floating control panel
- Brightness adjustable for the backlight of the whole control panel

- Full-sized, backlit QWERTY keyboard
- Console: intelligent control panel for clinical-exam specific layout and adaptive adjustment, 6 programmable keys
- Independent rotation and up/down adjustment
  - Independent rotation and up/down adjustment
  - Down/up adjustment: 215±20mm

3.6 Transducer port and holder
- Transducer ports with dust prevention: 5 active ports and 1 pencil transducer port
- Support active transducer with indicator on
- Transducer holder: 5, plus 1 dedicated endocavity transducer holder and1 dedicated pencil transducer holder

3.7 Wheels
- Diameter: 125mm
- 3 castors for total lock and break, and 1 castor for direction lock and break.

3.8 System boot-up
- Boot-up from shut-down: ≤ 30 sec
- Boot-up from stand-by: < 5 sec
- Shut-down: < 30 sec

3.9 Language support
- Support multi-language user interface, keyboard input, and user manuals.
- User interface: English, Chinese, German, Spanish, French, Italian, Portuguese, Russian, Czech, Polish, Turkish, Finnish, Danish, Icelandic, Norwegian, Swedish, Hungarian, Serbian, Dutch, Lithuanian, Greek, Thai
- Keyboard input: English, Chinese, German, Spanish, French, Italian, Portuguese, Russian, Czech, Polish, Icelandic, Norwegian, Swedish, Finnish, Turkish, Danish, Hungarian, Serbian
- User manual: English, Chinese, German, Spanish, French, Italian, Portuguese, Russian, Polish, Turkish, Serbian, Norwegian, Danish, Swedish, Finnish, Dutch

* Not all items are listed in this part; For more detailed information, please refer to User Manual

3.10 Other Features

- DVD R/W driver
- Anti-virus software ClamAV
- Audio speakers: Stereo audio speakers
- Built-in Battery
  - Replaceable and rechargeable lithium battery.
  - Full battery lasts for no less than 24H in standby mode
  - Battery capacity indicators   without powering on the system
  - Battery fully-recharged time: less than 6h
  - Continuous scanning time: more than 120 mins for 2H battery
- Built-in DVR
  - Built-in digital video recorder.
  - Screen display and voice   information are recorded and   stored in the built-in hard disk
  - Save space and is a useful tool for education and memory
  - Max storage length each time: 60 min

4   Technical Specifications

4.1   Innovative ZST+ platform

- Premium and innovative ultrasound platform, evolving with powerful processing architecture and enhanced channel data processing based on ZONE Sonography®
- Linux Operating System
- Powerful Processing Architecture
- Advanced Acoustic Acquisition
- Total Recall Imaging (TRI)
- Enhanced Channel Data Processing
- Dynamic Pixel Focusing (DPF), digital variable aperture and dynamic apodization, A/D≥12 bit
- Up to 9,257,536 channels
- System Frequency Range: 1 - 24 MHz
- Gray Scale: 256
- Parallel processing of multiple signals

- Line density per frame ≥ 512 ultrasound lines
- Sound Speed Compensation (SSC)
- ZONE Sonography® Technology

4.2   Transducer specification

- Single crystal and ComboWave (compound crystal with 3T on all transducers) etc.
- Multi-frequency ≥7 (probe dependent)
- Supported transducer type
  - Curved array
  - Linear array
  - Phased array
  - Endocavity
  - 4D Volume
  - Bi-Plane
  - Pencil transducer

5   Imaging Parameters

5.1   Advanced imaging technologies

- iBeam
  Spatial Compound Imaging, permits use of multi-angle scanning to form a single image, so as to improve image contrast and resolution. Supports Spatial Compound Imaging with 7-level adjustment and up to 9-beam steer
- iClear
  Speckle Suppression Imaging, Available in 2D, Contrast, and 3D/4D mode. 10-level adjustment.
- iTouch (Auto Image Optimization)
  Automatic image parameters optimization of B, Color, PW (Scale, Baseline), Contrast modes, to improve the adjustment   efficiency. 9-level adjustment.
  - B-mode: gain, TGC, dehaze
  - Color: gain, color box position
  - Power: gain
  - PW: gain,scale,PRF, WF, SV size, SV position, steering angle
- TSI
  Multiple imaging conditions are available according to different tissue (general/muscle/fluid/   fat)
- Smart Track
  - Available on linear transducers

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- Enable the function under Color/ Power mode, the angle and the position of the ROI are adjusted automatically.
- Enable the function under Color/ Power mode. The angle and position of the ROI are automatically adjusted in real time, so as to save time from manual adjustment and improve the scanning efficiency.

- HD scope
  By processing channel data multiply and retrospectively, HD Scope can improve the detail information and image contrast on specific area maximally.

- Echo Boost
  - Available in cardiac exam mode when using a phased array transducer
  - Improve the homogeneity through the whole field of view
  - Better improve the contrast display of the tissue
  - Better noise control in cardiac chambers and muscles

- iNeedle
  It is used in needle-guided biopsy, which dynamically enhance the needle display in ultrasound image. Support dual-screen display of images before and after enhancement in real-time, and adaptive angle correction.
  - Needle direction: left, right
  - B/iNeedle: on/off
  - In-plane biopsy and Out-plane biopsy

- Zoom: Image magnification, supports spot zoom (write zoom) and pan zoom (read zoom). Magnification ≥10x

- iZoom: Full-screen magnification by one click in real time, supports ≥2 magnification modes.

- Glazing Flow
  - An advanced image processing technology to demonstrate the 2D blood flow with 4D visualization for easy definition and clarity.
  - Available in Color/Power mode.

- To stereoscopically display the blood flow

- QSave
  - Quick save image parameter settings after image adjustment done
  - Support Save, Create, Restore
  - IP (Image Process): Quickly switch all the image parameters of the same image application by oneclick
  - 3D/4D Preset Manager
    The scenarios and subpresets can be renamed, restored, deleted, added, set to active, or moved
    Show scenario and subpreset parameters
    Provide multiple groups of preset 3D/4D parameters based on different application scenarios to quickly obtain expected image effect

- Auto Merge
  Dual B image merge for linear array transducer

- Adjustable Acoustic output power
  - Display TIB, TIC, TIS in real time
  - Can be adjusted in B, Color/Power, M, PW, CW, TDI modes etc.

5.2   B-mode
- Image quality
  - Supports fundamental frequency conversion ≥ 3 segments
  - Supports THI (Tissue Harmonic Imaging) and PSH (Phase Shift Harmonic Imaging), harmonic frequency conversion ≥ 3 segments

- ExFOV
  - Available on transducers: convex, linear, endocavity, volume, phased, bi-planar, Laparoscopic.
  - For liner transducer: after ExFOV is enabled, the image is displayed as a trapezoid. The maximum steer angle is 12°
  - For convex transducer: after ExFOV is enabled, the scanning angle will be extended.

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- Maximum display Depth: ≥40cm
- Maximum detection Depth of the convex transducer: ≥30cm
- Transmitting beam focusing: transmitting ≥ 8 segments
- Supports FCI (Frequency Compound Imaging)
- Frame rate (max): 1488 f/s
- TGC: 8 segments on touch screen
- LGC: 8 segments on touch screen
- Dynamic range (visible and adjustable): 30-300 (dependent on transducer)
- The Gain of B/M/D mode is visible and independently adjustable, ≥100dB, 1dB/step
- FOV Size: continuously adjustable
- FOV Position: continuously adjustable
- Line density: L, M, H, UH

5.3 M-mode
- Supports B/M mode dual display and M mode full screen display
- Color M-mode available

5.4 Color Doppler Imaging
- Dual live
- HR Flow: High Resolution Flow provides better image quality and flow sensitivity
- Image quality: Pen/Gen/Res (color), 1 level (HR Flow)
- Max velocity: 148.5 cm/s
- Steer: available on linear transducers
- Max frame rate: 279 f/s
- Acoustic output power: same as B mode
- Gain: 0-100, 2/step
- ROI size/position: adjustable
- Scale: max. 30 steps
- Baseline: -8 – 8, 1/step
- Wall filter: 8 steps, 5-433 Hz
- PRF: 0.1-15.4 kHz
- Packet size: 0-3, 1/ step
- Flow state: L/M/H
- Smooth: 0-6, 1/ step
- B/C align: on/off
- Priority: 0%-100%, 1%/step
- Color map: V0-V10; VV0-VV9
- Invert: on/off

- Auto Invert: on/off
- Persistence: 0-6, 1/ step
- Velocity tag: on/off
- Line density: L/M/H/UH
- iTouch: on/off
- Smart track: on/off
- ART Flow: Enhance the blood sensitivity and penetrability in time period
- Glazing flow: on/off, L/M/H

5.5 Power Doppler Imaging
- Dual live
- HR Flow: High Resolution Flow provides better image quality and sensitivity
- Support directional power Doppler
- Image quality: Pen/Gen/Res (Power), 1 level (HR Flow)
- Acoustic output power: same as B
- Dynamic range: 10-70, 5/step
- Gain: 0-100, 2/step
- ROI size/position: adjustable
- Steer: available on linear transducers)
- Scale: max. 30 steps
- Wall filter: 8 steps
- PRF: 0.1-15.4 kHz
- Packet size: 0-3, 1/ step
- Flow state: L/M/H
- Smooth: 0-6, 1/ step
- B/C align: on/off
- Priority: 0%-100%, 1%/step
- Color map: P0-P3, dP0-dP3
- Persistence: 0-6, 1/step
- Line density: L/M/H/UH
- Invert: on/off
- iTouch: on/off
- Smart track: on/off
- ART Flow: Enhance the blood sensitivity and penetration in certain time period
- Glazing flow: on/off, L/M/H

5.6 PW/CW Mode
- Display formats: V2:3, V3:2, V3:1, H2:3, FULL, Duplex/Triplex (PW only) (V: vertical, H: horizontal)
- Image quality: Pen/Gen/Res
- PW velocity:
  - max. 868.1 cm/s

- min. 0.01 cm/s
- CW velocity:
  - max. 3900 cm/s
  - min. 0.01 cm/s
- Sample volume size: 0.5-30mm (PW only)
- Sample gate depth: continuously adjustable
- Baseline: 9 steps
- PW Steer: available on linear transducers
- Volume: 0%-100%, 2%/step
- PW PRF: 1.0-23.1 kHz
- CW PRF: 0.1-104.0 kHz
- Gain: 0-100, 2/step
- Dynamic range: 24-72, 2/step
- Sweep speed: 6 steps
- Wall filter
  - PW: 14-1000 Hz
  - CW: 7-1200 Hz
- Invert: on/off
- Auto invert: on/off
- Angle correction: -89~89 degrees, 1/step
- Quick angle: 0, -60, 60 degrees
- Gray map: 10 types
- Tint map: Off; 8 types
- Time/frequency resolution: 0-6, 1/ step
- HPRF: On/Off
- Auto calc: on/off
- Auto calc cycle: 1, 2, 3, 4, 5
- Auto Calc Loop: on/off
- Trace Sensitivity: -3~3, 1/step
- Trace Smooth: -2, -1, off, 1, 2
- Trace area: above, below, all

5.7   Free Xros M
- Display formats: V2:3, V3:2, V 3:1, H2:3 (V: vertical, H: horizontal)
- Color Free Xros M available
- Up to 3 lines
- Display all lines
- Sweep speed: 6 steps
- M Tint map: off, 8 types
- Gray Map: 8 types

5.8   Free Xros CM
- Only available in TDI mod
- Display formats: V2:3, V3:2, V 3:1, H2:3

(V: vertical, H: horizontal)
- Sweep speed: 6 steps
- Tint map: off; 8 types
- Gray Map: 8 types
- Edit, undo, delete function for curved line

5.9   TDI Imaging
- Imaging modes: TVI, TEI, TVD, TVM
- Spectral Doppler frequency: ≥5
- Max frame rate: 1587 f/s

5.10   3D/4D
- Supports Freehand 3D (linear, convex, phased transducers)
- Supports real-time 4D and Color 3D (abdominal volume and endocavity volume transducers)
- General Imaging modes: Surface, Min, Max, X-ray
- Supports multi virtual light sources: Point, Parallel, Torch etc. and free combination of light sources is supported.
- Supports off-line processing of 3D/4D data, and adjusts imaging before storage of stored data.
- 3D Print
  - Quality: Low, Mid, High
  - Generate Mesh
  - File Format: .stl, .obj, .ply, .3mf, .off
  - Save mesh to USB
  - Threshold: 0%-100%
  - 3D iClear: Off, 1-7
  - Smooth: 0-10

5.11   Color 3D

Provides more stereoscopic blood flow signals. It is mainly used in blood perfusion tissues in some complex space to make blood flow observation visually. 3D imaging in color and power modes is supported.

5.12   Niche
Compiles the 3 MPRs together according to their relative positions, to provide a much clearer interior anatomical structure for diagnosis

5.13 Smart Scene 3D
An innovative technique of automatic scenario-oriented volume scan for extremely easy, efficient and accurate exams. It is capable of automatically identifying tissue characteristics, such as fetal brain, fetal face, fetal bone, fetal spine

5.14 STIC
Spatio-Temporal Imaging Correlation, based on the movements of the fetus, rebuilt and show the anatomical structure within a physical movement by using the interconnection between the time and the space, for better diagnosis in 4D function.

5.15 iPage+
- Multiple tomographic parallel slices imaging, to display volume image with slices, for better display the spatial relationship of tissue and lesion.
- Displays ≥25 images at different depths on the screen at the same time, and the slice spacing is adjustable (0.5 mm-10 mm).

5.16 SCV+
Slice Contrast View Plus, includes SCV imaging and CMPR functions. SCV imaging can reduce speckle noise and improve contrast resolution as well as enhance signal-noise ratio, which helps in discovering diffuse pathology in organs. CMPR is to obtain a curved sectional image by dissecting the 4D image, so as to observe the curved tissue structure. In clinical application, it is often used to observe the curved anatomy in stretching such as fetal spine.

5.17 iLive
- An advanced rendering mode for realistic volume imaging display
- Brings a better imaging experience by adding lighting rendering effect to the traditional way, allowing human tissue texture to be revealed more clearly.
- Supports Hyaline function.

5.18 Smart Planes CNS
- A professional screening software of the fetal central nervous system. Automatically detect the standard CNS scanning planes, and calculate the anatomical parameters for each planes. It is used to assist doctors in diagnosis of fetal craniocerebral diseases in a more efficient and standardized way.
- Automatically acquire multiple standard cranial sections and acquire ≥4 commonly used measurement indicators
- Automatically display the standard planes: TCP, TTP, MSP and TVP
- Auto comment supported: A(anterior), P(posterior), L(Left), R(Right), U(Up), D(down), CSP, T, CH, CV, CM, LV on TCP, TTP, MSP and TVP
- Auto measurement supported:
  - TCD and Cist Maga (CM) on section TCP;
  - BPD, OFD and HC on section TTP;
  - LVW on section TVP
- Support editing measurement results
- Hide/show measurement results
- Support comment and bodymark on sectional plane

5.19 Smart ICV
- Smart intracranial volume, an advanced tool to detect fetal cranial tissue, provides automatic calculation of fetal intra-cranial volume for advanced fetal CNS study.
- Supports modifying the contour by trace, adaptive trace, control point editing, and recalculate the volume.

5.20 Smart Planes FH
- Detect automatically left ventricular outflow tract view, right ventricular outflow tract view, LAV-DA view, 3VV-T view and stomach bubble view
- Automatically acquire ≥6 standard fetal heart sections.

5.21 Smart Face
Allows to recognize fetal face and remove the shading obstacle data automatically, then display the face in an optimal viewing angle. At the same time, you can adjust the display direction of the fetal face by one click, and support forward/reverse rubber erasing.

5.22 Smart FLC (Smart Follicle)
- Automatically measures and calculate the number and size of follicles in the image area, and evaluate follicles according to the follicle size.
- Automatically segments the anechoic structure is by one click, and displays the anechoic structures at different positions and sizes in different colors.
- Automatically measures the follicle diameter, length at the X-axis, Y-axis,Z-axis, as well as the average value and volume of the three axes.

5.23 Smart-V (Smart Volume)
Fast volume calculation tools to calculate the volume of tissue structure or lesions
- Smart-V ROI: Manual ROI on A, B, C plane separately
- Smart-V Trace: Manual trace on A, B, C plane separately
- Smart-V Vocal/Smart-V Parallel: Trace contours on each slice separately

5.24 RIMT (RF-Data based IMT)
- Available in single/dual B carotid exam mode
- Side: left/right
- Calculation of 6 RIMT values, RIMT average value, SD and ROI W
- Report operation:
- Data deleting
- RIMT trend graphic viewing
- Preview

5.25 iScape View
- Acquisition method: B and Power
- Supports speed indicator
- Actual size: on/off
- Fit size: on/off
- Ruler: on/off
- Tint map: off; 8 types
- Rotation: 0~355 degrees, 5/step

5.26 Contrast Imaging*
- Contrast imaging technology, which provides exceptional contrast agent detecting capability, not only extracts second harmonic, but also non-linear fundamental signals

- Available on C6-2Gs/SC5-1Ns/C11-3s/ SC8-2s/V11-3Hs/V11-3HBs/L9-3s/L20-5s/L13-3Ns/SP5-1Ns/DE11-3Ws/SD8-1s/ELC13-4s
- Micro Flow Enhancement (MFE) available
- Timer1: on/off
- Timer2: on/off
- Pro capture: captures prospective image less than 480s preset table
- Retro capture: captures retrospective image less than 120s preset table
- Dual live: side by side displays tissue image and contrast image

5.27 Contrast Imaging QA
- Support Time-Intensity Curve analysis
- Table display: display data in table
- Up to 8 ROIs
- Delete all
- Delete current
- Fit curve
- Raw curve
- Motion tracking: Reduce the effect of
- tissue movement
- X scale: 1-5, 1/step
- Export: export current data as CSV
- format file

5.28 LVO
- Only available in cardiac exam mode
- Dedicated left ventricle contrast imaging tool

5.29 Low MI Contrast
- Only available in cardiac exam mode
- Enhances echo reflection by using contrast agent to perform myocardial analysis based on echocardiography technique

5.30 Volume CEUS
- Available on DE11-3Ws/SD8-1s
- Timer1: on/off
- Timer2: on/off
- Capture 3D image

5.31 STE Imaging (Sound Touch Elastography Imaging)
- Available on C6-2Gs/SC5-1Ns/SC8-2s/ L9-3s/L20-5s/L13-3Ns

- Display Format: V1:1, H1:1, FULL
- Invert: on/off
- HQ Elasto: on/off
- E Quality: Pen, Gen, Res
- Elas.Metric: E, Cs, G
- Scale: 30 levels
- Opacity: 0-5, 1/step
- Map: 3 types
- ROI Width/Height: continuously random adjustable
- ROI Center Depth: continuously adjustable
- Depth: same as B mode
- iLayering: on/off
- Filter: 0, 1
- RLB View: on/off
- M-STB Index: on/off
- M-STB Sensibility: 0~4, 1/step
- Smooth: 0~2, 1/step
- Persistence: 0~2, 1/step
- RLB Map: on/off, RLB, RLB&E, RLB&B&E
- Map Position: 0%~100%, 5%/step
- E bar: Mean, Max, Min, SD
- E Avg: off, 8 levels
- Select/Bad: on/off
- Lesion: off,1~10
- FS Mode: on/off

5.32   High frame rate STE
To increase the frame rate of STE function.

5.33   Strain Elastography
- Available on V11-3Hs/V11-3HBs/L9-3s/ L20-5s/L13-3Ns/DE11-3Ws/ELC13-4s
- Support strain, strain ratio and strain histogram measurement
- Unique shell analysis function
- Stress compensation technology reduces deeper tissue artifacts, obtain more uniform stress throughout whole field
- Stress indicator: supports frame by frame stress indication.
- Map: 6 types
- Smooth: 0-5, 1/ step
- Opacity: 0-5, 1/step
- ROI Width/height: continuously adjustable
- Invert: on/off

- Display Format: V1:1, H1:1, FULL
- Strain mode: 0~1, 1/step
- Dynamic Range: 0~5, 1/step
- Map Position: 0%~100%, 5%/step

5.34   STQ Imaging (Sound Touch Quantification Imaging)
- Available on C6-2Gs/SC5-1Ns/SC8-2s/ V11-3Hs/L9-3s/L20-5s/L13-3Ns/DE11-3Ws/ELC13-4s
- ROI Adjustment: adjust the ROI fixed size
- Elas.Metric: E, Cs, G
- The square height of the elasto curve represents the average value of the elasto metric for current frame.
- E bar: Mean, Max, Min, SD
- M-STB Index: On/Off
- M-STB Sensibility: 0-4, 1/step
- Filter: 0, 1
- Smooth: 0-2, 1/step
- Persistence: 0-2, 1/step
- Map Position: 0~100%, 5%/step
- Lesion: off, 1~10
- Scale: 0-9, 1/step
- E Avg: off, 8 levels
- HQElasto: on/off
- FS Mode: on/off

5.35   Ultrasound Fusion Imaging
- Available on C6-2Gs/SC5-1Ns/SC8-2s/ L13-3Ns/SP5-1Ns in B/ Color/ Power/ contrast imaging mode (non-cardiac)
- Single window display
- Fusing CT/MR/PET/freehand volume data with the ultrasonic image
- CT/MR/PET data reconstruction for 3D displaying
- Tracking system: on/off
- Fusion ratio: -1~1, 0.1/step
- Axis rotation: 0° ~ 360° based on X-axis, Y-axis or z-axis in increment of 2°.
- ROI Offset X: -630~630
- ROI Offset Y: -566~566
- Window W/L: 1/step. Adjust the CT/MR/ PET/freehand brightness and the contrast by changing the width and the level.
- Reset Window W/L
- Reset CT/MR

- Display marks
- Respiration curve: on/off
- Respiration Range: 0/1/2
- View Type: Axial, Coronal, Sagittal
- Quick Translation
- Registration
- Mark on Volume Data/Mark on Fusion Image
- Support general measurement
- Support adding comment and bodymark

5.36   Endocavity Fusion Imaging
Mainly used for endocavity transducer, fusing real-time ultrasound and CT/MR images.

5.37   Fusion RESP
By automatically detecting the patient's respiratory motion signal, provide the respiratory motion compensation technology, reduce the fusion distortion caused by the patient's respiration, and provide more accurate fusion imaging.

5.38   AutoEF
- Automatic Ejection Fraction Measurement, it provides an efficient way to detect the left ventricle and calculate the EF.
- Output EDV/ESV/EF/SV/CO by Simpson method
- Activated with or without ECG
- Adjustment for the border of endocardium by single point or multi points

5.39   TDI QA
- Dedicated quantification tool for TDI velocity, strain, strain rate analysis
- Ellipse ROI, Standard ROI
- Up to 8 of ROI
- ROI tracking: tracking ROI along with cardiac movement

5.40   TT QA
- Available on SP5-1Ns in adult cardiac, cardiac-difficult (car-penetration), and pediatric cardiac exam modes.
- Tissue tracking quantitative analysis
- Mandatory ECG connection before TT QA cine acquisition

- Six views for analysis: ALAX, A4C, A2C, PSAXB, PSAXM, PSAXAP

5.41   Fetal Heart TT QA
- Fetal Heart Tissue Tracking with Quantitative Analysis, Real-time track the continuous motion of fetal myocardium, display the mechanical changes of each segment in the longitudinal, circumferential and radial directions, offering accurate and effective evaluation of myocardial movement of fetal heart
- Available Under Fetal Echo related exam modes

5.42   Stress Echo
- Available on SP5-1Ns in cardiac mode
- 14 factory protocols
- User-defined protocols
- ECG triggered acquisition, display, selection, comparison, evaluation and archiving of multiple cardiac loops during various stages of a stress echo examination
- 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

5.43   Smart IVC
Automatic Inferior Vena Cava trace and calculation, automatically trace the IVC diameter change, and calculate the CI, DI and IVC Variation, helping for volume status assessment and guide the fluid therapy.

5.44   Smart VTI
Automatic Velocity Time Integral measurement, automatically trace the PW spectrum of LVOT, and obtain VTI, SV, CO and SVV, for rapid assessment of volume responsiveness.

5.45 Smart B-line
- Used to detect B lines of the lung in B mode
- Acquisition method: single B in real-time or freeze mode
- Scanning areas: 6 Zones, 8 Zones, 12 Zones
- Auto Calc
- OverView
- Image and diagnosis comments

5.46 R-VQS
- RF-data Based Quantitative Analysis on Vessel Stiffness
- Track movements of the upper and lower vessel walls automatically
- Displacement and Vessel diameter display in the result window.
- Motion curve of vessel walls display under the image in real time.

5.47 Smart Pelvic
- Enter smart pelvic in 2D or 3D/4D scanning mode.
- Set Rest and Valsalva frame
- Measure automatically

5.48 Smart Fetal HR (Fetal Heart Rate)
Measure the fetal heart rate automatically on B/M mode

5.49 Smart Breast
- Automated breast mass BI-RADs classification and reporting tool, which provides automated breast ultrasound lesion classification and reporting, and it can be used as breast ultrasound quality control solution with high-efficiency.
- Standardized scanning procedure based on the lesions, and Standardized scanning procedure guide
- Automatic lesion identification, detection, measurement, comment, report generation, etc.
- Multi-lesion& multi-plane management and analysis

5.50 Smart Thyroid
- Automated thyroid ultrasound analysis and reporting tool, for efficiency and standardization of thyroid nodule diagnosis.
- Standardized scanning procedure based on the lesions, and Standardized scanning procedure guide
- Automatic lesion identification, detection, measurement, comment, report generation, etc.
- Multi-lesion& multi-plane management and analysis

5.51 IVF
- In Vitro Fertilization, includes dedicated IVF image parameter/ measurement/comment/bodymark / report
- The uterus and follicle growth curve can be displayed in the IVF report.
- Data of IVF history exams can be checked in the IVF report.
- The user-defined analysis model is supported for reproductive function evaluation.

5.52 iScanHelper
- An ultrasonic tutorial and assistant package integrated in ultrasound devices.
- Tutorial function as a guidance to show basic scanning skill with graphic of transducer position, schematic of anatomy and example clinical image
- Supports Abdomen, gynecological, urological, obstetrical, Small Parts and nerve block area.

5.53 iCompare
Allow to compare real-time ultrasound imaging to images from iStation; Helpful to easily evaluate and follow up the progression of disease, treatment effect monitoring

5.54 V-Mapping
- Manually edit the vascular body mark.
- Manually edit the body mark through the touch screen to Intuitively display the lesion position.

6 Cine Review and Raw Data Processing

6.1 Cine review

- Available in 2B, Color, Contrast, 4D modes.
- Supports editing and clipping during cine review. Frame by frame manual cine loop review or auto playback with variable speed
- Save and edit the clipped and edited cine images for many times
- Maximum cine memory up to 65107 frames (B storage server) or 150s (M storage server) (depends on the mode)
- Maximum 4D cine memory: 10721 volumes (DE11-3Ws)
- Retrospective storage (1-120s presettable) and prospective storage (1- 480s pre-settable)
- Frame compare: displays one cine in dual format and allows frame by frame compare side by side
- Cine compare: compare cines which are saved in same imaging mode
- Jump to first and jump to last: one keystroke go to first or last frame in the cine

6.2 Raw data processing

- B-mode
  - TGC
  - Gain
  - Dynamic range
  - Gray map
  - Tint map
  - iClear
  - L/R Flip
  - U/D Flip
  - Rotation
  - iTouch
  - LGC
  - Dual live
  - Auto Merge
  - H Scale
  - Echo Boost
  - B/iNeedle
  - Smooth
  - Zoom
  - Ref Lines
  - Dehaze
  - V1:1
  - XL View
  - Edge Enhance
- M-mode
  - Gain
  - Speed
  - Dynamic Range
  - Gray Map
  - Tint Map
  - Display format
- Color
  - Gain
  - Baseline
  - Smooth
  - Color map
  - Priority
  - Dual Live
  - Invert
  - Velocity tag
  - Glazing flow
- PW
  - Gain
  - Baseline
  - Volume
  - Angle
  - Speed
  - Dynamic range
  - Gray map
  - Tint Map
  - Display format
  - Invert
  - WF
  - T/F Res

7 Measurement/Analysis and Report*

NOTICE:

Support manual, semi-automat, automat (available on Freeze, saved images and CINE loops) and real-time measurements.
For general measurement, automatic measurement, and clinical measurement packages, see the Appendix.

7.1 Automatic Measurement and Analysis

- AutoCalc
  - PS
  - ED
  - MD

- PPG
- TAMAX
- Vol Flow(TAMAX)
- TAMEAN
- Vol Flow(TAMEAN)
- Vas Diam
- Vas Area
- DT
- MPG
- MMPG
- VTI
- AT
- S/D
- D/S
- PI
- RI
- PV
- HR

- IMT (Intima-Media Thickness Measurement)
  Automatic detection, measurement and analysis of IMT when ROI is set
- Smart OB
  - Auto measurement for OB, a special tool for easy OB scan, and greatly reduce time and increase productivity
  - More than 6 automatic measurement items are supported.
- Smart NT
  Automatic detection and measurement of fetal nuchal translucency, which makes NT evaluation more efficient and accurate.
- Smart HIP
  Automatic hip measurements and Graf classification of neonatal and pediatric hip for easy screening of DDH (Developmental Dysplasia of the Hip).
- Smart HRI
  Hepato-Renal Index, which is provided automated liver steatosis assessment by automatically calculating brightness scale ratio between the liver with renal cortex in B mode.
- Smart Trace
  A smart tool for easy and precise boundary trac

Automatically identify and trace lesions, as well as measure the length, area and circumstance of the long axis and short axis within the defined ROI.

- CPP
  Measure the blood flow signal distribution in the defined ROI under the Color/Power mode, and calculate the color pixel percentage within the defined ROI.
- Smart Bladder
  Auto measure three diameters and calculate the bladder volume
- Smart Calc
  Automatic trace, measurement and calculation tool

7.2 User-defined Measurement
Supports user-defined measurement calculations and studies

7.3 Report
- Auto-generated with all measurements
- Specific report template by application
- Editable value in report
- Images selectable
- Able to Export as PDF file
- Presettable hospital information
- Anatomy information for vascular and OB report
- Editing though iReport
- User-defined report template
- Selecting report modules
- Adding/removing measurement items from the report
- Changing report layout
- Load/save comment
- Viewing history reports
- Preview and printing reports

7.4 Comments/Bodymark
- Supports text input and arrow
- Voice annotation: record voice as annotation for images and cine
- Support freehand marking on touch screen
- Adjustable text size and arrow size
- Supports home position
- Covers various application
- More than 250 bodymarks for versatile application

- User customizable Comments/ Bodymark

7.5 iWorks
- Auto workflow protocol, can be combined with a standardized exam protocol to facilitate a more efficient and standard ultrasound exam in the clinic with guidance.
- Automatically add comments, body marks and switch the image mode according to the protocol.
- Templates are user configurable
- Template import and export are available

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

8 Exam Storage and Management

8.1 Exam Management
- iStation workstation dedicated for patient information management
- Workstation dedicated for image management
- Workstation dedicated for report and report template management
- Workstation dedicated for exam management
  - Patient exam query/retrieve
  - Support review of current and past exam
  - New exam, Activate exam, Continue exam functions, End exam are available
  - Support measurements and calculations on archived exam and images

8.2 Exam Storage
- Supports local hard disk storage: 1TB HDD (Hard Disk Drive) and 128G SSD (Solid State Drive)
- Direct digital storage of single frame and cine files.
- Export images in BMP/JPG/TIFF/DCM/ AVI/MP4/WMV format

- Supports back-end storage, export and backup of image data, real-time exam, without affecting exam operation.
- Supports backup/send to USB devices
- Supports backup/send to DVD-RW media
- Supports DICOM 3.0
- Supports network storage (iStorage).
- Based on the TCP/IP protocol, the
- ultrasound image and report can be
- directly transmitted to the PC device.
- Supports print service.

9 Connectivity

9.1 Ethernet Network Connection
- Cable connection
- Wireless connection

9.2 DICOM 3.0
- DICOM Basic
  - Verify (SCU, SCP)
  - Print
  - Store
  - Storage Commitment
  - Media Exchange
- DICOM Worklist
- DICOM Query/Retrieve
- DICOM Modality Performed Procedure Step - MPPS
- DICOM OB/GYN structure report
- DICOM Cardiac structure report
- DICOM Vascular structure report
- DICOM Breast structure report
- DICOM Abdomen structure report
- DICOM Small Parts structure report
- DICOM Pediatric structure report
- DICOM Urology structure report

9.3 UltraView
Off-line analysis workstation, PC-based ultrasound image analysis software. Supports post-processing and more measurement analysis of ultrasound image off-line.

9.4 UltraAssist
Direct network storage tool between ultrasound system and personal computer

- The ultrasound system supports sending reports or patient information to the PC via iStorage.
- The PC supports import custom report templates and test items to the ultrasound system via iReport and iMeasurement.

9.5 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
- Transfer images or clips from system to mobile terminal through Wi-Fi
- Support both iOS and Android system

9.6 MedTouch

- Connect Ultrasound machine to smart devices based on Android and iOS system, such as tablet PC or mobile phone. Remote control of Ultrasound machine, review of patient information, and tutorial software iScanHelper study on smart devices
- Supports remote control of the Ultrasound machine, to adjust parameter (Gain, Depth, Freeze/ Unfreeze, Image Storage, Zoom, iTouch, mode switching among B, Color, Dual Live).
- Support Android and iOS powered smart devices

10 Transducers

10.1 Curved Array

- C6-2Gs
  - Application: Obstetrics, Gynecology, Abdominal, Urology
  - Advanced Function: iScape View, Free Xros M, Color M, Smart 3D, Contrast Imaging (Gynecology, Abdominal), STE (Abdominal), STQ (Abdominal), Ultrasound Fusion Imaging
  - Bandwidth: 1.2-6.0 MHz
  - Number of Elements: 128
  - FOV (max): 94°
  - Extended FOV: 106°
  - Convex Radius: 20 mm
  - Depth: 4.0-40 cm
  - Biopsy Guide: NGB-024, multi
  - angle, reusable; LPUBKG81
  - (disposable)
- SC5-1Ns (Single Crystal)
  - Application: Obstetrics, Gynecology, Abdominal, Small Organ, Musculo-skeletal, Vascular, Urology, Nerve, Thoracic/pleural
  - Advanced Function: iScape View, Free Xros M, Color M, Smart 3D, TDI (Obstetrics), Contrast Imaging (Gynecology, Abdominal, Vascular, Urology), STE (Abdominal), STQ (Abdominal), Ultrasound Fusion Imaging
  - Bandwidth:1.2-6.0 MHz
  - Number of Elements:192
  - FOV (max): 60°
  - Extended FOV: 73°
  - Convex Radius: 60 mm
  - Depth: 4.0-40.0 cm
  - Biopsy Guide: NGB-022, multi angle, reusable; LPUBKG60 (disposable); CIVCO 658-004-1/2/ 3/4/5 (disposable)
- C11-3s
  - Application: Abdominal, Vascular, Cardiac, Small Organ, Pediatric, Cephalic
  - Advanced Function: iScape View, Free Xros M, Color M, Smart 3D, Contrast Imaging (Abdominal, Vascular)
  - Bandwidth: 2.6-12.8 MHz
  - Number of Elements: 128
  - FOV (max): 101°
  - Extended FOV: 113°
  - Convex Radius: 15 mm
  - Depth: 1.5-35 cm
  - Biopsy Guide: NGB-018, multi angle, reusable
- SC8-2s (Single Crystal)
  - Application: Obstetrics,
  - Gynecology, Abdominal, Urology, Vascular

- – Advanced Function: iScape View, Free Xros M, Color M, Smart 3D, TDI (Obstetrics), Contrast Imaging (Gynecology, Abdominal, Urology, Vascular), Ultrasound Fusion Imaging, STE (Abdominal), STQ (Abdominal)
  - – Bandwidth: 1.5-8.2 MHz
  - – Number of Element: 192
  - – FOV (max): 76°
  - – Extended FOV: 88°
  - – Convex Radius: 40 mm
  - – Depth: 4.0-40.0 cm
  - – Biopsy Guide: NGB-029, multi angle, reusable
- • V11-3HS
  - – Application: Obstetrics, Gynecology, Urology
  - – Advanced Function: iScape View, Free Xros M, Color M, Smart 3D, Contrast Imaging (Gynecology, Urology), Strain Elastography (Gynecology, Urology), STQ (Gynecology, Urology), Endocavity Fusion Imaging (Urology)
  - – Bandwidth: 3.0-11.0 MHz
  - – Number of Elements: 192
  - – FOV (max): 170°
  - – Extended FOV: 210°
  - – Convex Radius: 11 mm
  - – Depth: 1.5-28.0 cm
  - – Biopsy Guide: NGB-025, single angle, reusable; CIVCO 610-543 (disposable); CIVCO 610-1274 (disposable)
- • V11-3HBs
  - – Application: Obstetrics, Gynecology, Urology
  - – Advanced Function: iScape View, Free Xros M, Color M, Smart 3D, Contrast Imaging (Gynecology, Urology), Strain Elastography (Gynecology, Urology)
  - – Bandwidth: 3.0-11.0 MHz
  - – Number of Elements: 192
  - – FOV (max): 180°
  - – Extended FOV: 240°
  - – Convex Radius: 11 mm
  - – Depth: 1.5-28.0 cm
  - – Biopsy Guide: NGB-048, single angle, reusable

10.2   Volume
- • DE11-3Ws
  - – Application: Obstetrics, Gynecology, Urology
  - – Advanced Function: iScape View, Free Xros M, Color M, 3D/4D, Contrast Imaging (Gynecology, Urology), Volume CEUS (Gynecology, Urology), Strain Elastography (Gynecology, Urology), STQ (Gynecology, Urology)
  - – Bandwidth: 2.0-9.0 MHz
  - – Number of Elements: 192
  - – FOV (max): 162°
  - – Extended FOV: 187°
  - – Volume Sweep Angle (max): 120°
  - – Convex Radius: 10 mm
  - – Depth: 4.0-40.0 cm
  - – Biopsy Guide: NGB-047, single angle, reusable
- • SD8-1s (Single Crystal)
  - – Application: Obstetrics, Gynecology, ABD
  - – Advanced Function: iScape View, Free Xros M, Color M, 3D/4D, Contrast Imaging (Gynecology, Abdominal), Volume CEUS (Gynecology, Abdominal)
  - – Bandwidth: 1.8-8.2 MHz
  - – Number of Elements: 192
  - – FOV (max): 66°
  - – Extended FOV: 91°
  - – Volume Sweep Angle (max): 85°
  - – Convex Radius: 45 mm
  - – Depth: 4.0-40.0 cm
  - – Biopsy Guide: NGB-039, multi angle, reusable

10.3 Linear Array
- • L9-3s
  - – Application: Abdominal, Pediatric, Small Organ, MSK, Vascular, Nerve, Obstetrics
  - – Advanced Function: CW, iScape View, Free Xros M, Smart 3D, Contrast Imaging (Abdominal Pediatric, Small Organ, MSK, Vascular), Strain Elastography (Small Organ, MSK, Vascular), STE (Small Organ, MSK, Abdominal, Vascular), STQ (Small Organ, MSK, Abdominal, Vascular)
  - – Bandwidth: 2.5-9.0 MHz

- – Number of Elements: 192
- – FOV (max): 4.37 cm
- – Extended FOV
  Ohter: 20°
  OB1, NT: 30°
- – Steered Angle
  B: -12°, -6°, 0°, 6°, 12°
  C/PW: -30°-30°
- – Depth: 1.5-35.0 cm
- – Biopsy Guide: NGB-034, multi angle,
  reusable

- **L20-5s**
  - – Application: Abdominal, Small Organ, MSK,
    Vascular, Nerve
  - – Advanced Function: CW, iScape View, Free
    Xros M, Smart 3D, Strain Elastography
    (Small Organ, MSK), STE (Small Organ,
    MSK, Vascular), STQ (Small Organ, MSK,
    Vascular), Contrast Imaging (Small Organ)
  - – Bandwidth: 6.0-23.0 MHz
  - – Number of Elements: 192
  - – FOV (max): 2.85cm
  - – Extended FOV: 20°
  - – Steered Angle
    B: -12°, -6°, 0°, 6°, 12°
    C/PW: -20°-20°
  - – Depth: 1.5-29.0 cm
  - – Biopsy Guide: not available

- **L13-3Ns**
  - – Application: Small Organ, MSK, Vascular,
    Abdominal, Pediatric, Thoracic/ Pleural,
    Nerve
  - – Advanced Function: iScape View, Free Xros M,
    Smart 3D, Strain Elastography (Small Organ,
    MSK, Vascular), STE (Small Organ, MSK,
    Vascular), STQ (Small Organ, MSK, Vascular),
    Contrast Imaging (Small Organ, MSK, Vascular,
    Abdominal, Pediatric), Ultrasound Fusion
    Imaging
  - – Bandwidth: 3.0-13.0 MHz
  - – Number of Elements:192
  - – FOV (max): 3.80 cm
  - – Extended FOV: 20°
  - – Steered Angle
    B: -12°, -6°, 0°, 6°, 12°
    C/PW: -30°-30°
  - – Depth: 1.5-35.0 cm
  - – Biopsy Guide: NGB-053, multi angle,
    reusable

- **L14-3Ws**
  - – Application: Small Organ, MSK, Vascular,
    Abdominal, Pediatric, Thoracic/Pleural,
    Nerve
  - – Bandwidth: 3.0-18.0 MHz
  - – Number of Elements: 256
  - – FOV (max): 5.08 cm
  - – Extended FOV:20°
  - – Steered Angle
    B: -12°, -6°, 0°, 6°, 12°
    C/PW: -30°-30°
  - – Depth: 1.5-35.0 cm
  - – Physical Footprint: 66.8 mm x 25.5 mm
  - – Footprint: 55.5 mm x 8.2 mm
  - – B-mode Frequencies: 3.0-9.0, 5.0-12.0,
    9.0-18.0MHz
  - – Harmonic Frequencies: 10.0, 11.0, 12.0
    MHz
  - – Color Frequencies: 5.0, 6.2, 7.2, 8.3 (HR
    Flow) MHz
    PW Frequencies: 5.0, 6.2, 7.2 MHz
  - – Biopsy Guide: NGB-054, multi angle, reusable

10.4   Phased Array

- **SP5-1Ns (Single Crystal)**
  - – Application: Abdominal, Cardiac, Vascular,
    Cephalic, Thoracic/ Pleural
  - – Advanced Function: CW, iScape View,
    Free Xros M, Free Xros CM, Color M,
    Smart 3D, TDI, LVO, Low MI Contrast,
    Stress Echo, Tissue Tracking QA,
    Ultrasound Fusion Imaging
  - – Bandwidth:1.5-5.0 MHz
  - – Number of Elements: 92
  - – FOV (max): 90°
  - – Extended FOV: 90°
  - – Depth: 2.0-38.0 cm
  - – Biopsy Guide: NGB-011, multi angle, reusable

- **P7-3Ts**
  - – Application: Cardiac
  - – Advanced Function: CW, Free Xros M, Free
    Xros CM, Color M, TDI (Cardiac)
  - – Bandwidth: 2.3-7.2 MHz
  - – Number of Elements: 64
  - – FOV (max): 90°
  - – Extended FOV: 90°
  - – Depth: 2.0-38.0 cm
  - – Biopsy Guide: not available

10.5   Bi-Plane
- ELC13-4s (Convex & Linear)
  - Application: Urology, Gynecology
  - Advanced Function: iScape View, Free Xros M, Color M, Smart 3D, Strain Elastography, STQ, Contrast Imaging, Endocavity Fusion Imaging
  - Bandwidth
    - Convex: 3.5-9.5 MHz
    - Linear: 4.8-11.0 MHz
  - Number of Elements: 192
  - FOV (max)
    - Convex: 177°
    - Linear: 6.48 cm
  - Extended FOV
    - Convex: 217°
    - Linear: 40°
  - Convex Radius: 10 mm (Convex)
  - Steered Angle
    - B: -12°, -6°, 0°, 6°, 12°
    - C/PW: -15°-15°
  - Depth
    - Convex: 1.5-28.0 cm
    - Linear: 1.5-35.0 cm
  - Biopsy Guide: NGB-051, multi angle, reusable; CIVCO 658-007 EX3, Biopsy Grid

10.6   Pencil transducer
- CW2s
  - Application: Cardiac, Cephalic, Pediatric
  - Advanced Function: CW
  - Number of Elements: 2
  - Biopsy Guide: not available
- CW5s
  - Application: Vascular, Cephalic, Pediatric
  - Advanced Function: CW
  - Number of Elements: 2
  - Biopsy Guide: not available

11 Peripheral Devices and Accessories

- Black/White Video Printer
  – Digital: MITSUBISHI P95DW-N
  – Digital& Analog: SONY UP-X898MD
- Color Digital Printer
  SONY UP-D25MD
- Graph/Text Printer
  HP OFFICEJET PRO 8100

CANON TS708

Epson L130

HP 8100 (CM752A)

Epson L805

Epson L3256

Epson L8058

Epson L3218

HP 7000(C9299A)

HP DeskJet 2029

HP DeskJet 1112

Canon G580

Canon G1830

Canon G2830

- Gel Warmer
– Support gel warming with 3 angle position: 15, 45, 90 degrees
– Easily be disassembled off system for cleaning
– Temperature with 4 levels: off/34°C /37°C/40°C, with deviation of ±2°C
– Light indicator for temperature protecting
– Dimension: 78mm (Width)*82mm (Depth)*119mm (Height)
– Weight: approx. 240g (net)
– Continuous operation time: >12H
- Footswitch
  – USB port: FS-81-SP-2(single pedal), 971-SWNOM (2/3 pedal)
  – Support user-definable functions (Freeze, Save, Print)
- ECG
 – 6-pin, AHA/IEC, for 3-lead wires
 – ECG wave display:on/off
 – ECG source: Lead/External
 – Position: 0 - 100%, 5%/step
- PCG (not for sale in EU countries)
- Barcode Reader
  – SYMBOL LS2208 (1D)
  – SYMBOL DS4308 (2D)
  – Honeywell HH1800
- Built-in Wireless Adapter
  – Encryption: WPA, WPA2
  – Protocols: IEEE 802.11 ac/a/b/g/n
  – Frequency:2.4G

12   System Inputs and Outputs
- Audio input/output

Microphone: 1 port
- Video Output
  – S-Video out: 1 port
  – HDMI: 1 Port
  – VGA out: 1 port
- Physio Input
  – Support ECG/PCG signal
  – ECG: 1 port
  – PCG: 1 port
- Other Input/Output
  – USB: 6 ports (5 USB 3.0 and 1 Type-C)
  – Ethernet: 1 port

13 Safety and Conformance

- Quality Standards
  – ISO 9001
  – ISO 13485
- Design Standards
  – CSA C22.2 No. 601-1
  – EN 60601-1 and IEC 60601-1
  – EN 60601-1-2 and IEC 60601-1-2
  – EN 60601-1-6 and IEC 60601-1-6
  – EN 60601-2-37 and IEC60601-2-37
  – EN 62304 and IEC 62304
  – EN 62366 and IEC 62366
  – EN ISO 17664 and ISO 17664

14 CE Declaration

The ultrasound system is fully in conformance with the Council Directive 93/42/EEC Concerning Medical Devices. The number adjacent to the CE marking (0123) is the code of the EU-notified body that certified meeting the requirements of Annex II excluding (4). of the Directive.

15 NOTICE

Not all features or specifications described in this document may be available in all transducers 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.

16 Appendix

16.1 Generic measurements

- Summarized items:
  – B-Mode: Distance, Angle, Circumference, Area, Volume, etc.
  – M-Mode: Slope, Heart Rate, Distance, Time, Velocity etc.
  – D-Mode: PS/ED, Velocity, Heart Rate, Time, Acceleration, Velocity Ratio etc.

16.2 Clinical option measurement package

- Abdomen
  Summarized items:
  Provide measurements of abdominal artery, abdominal vein, hepatic vein, liver, gallbladder, pancreas, appendix, pylorus, kidney, ureter, bladder, spleen, inferior vena cava, etc.

- Cardiology
  Summarized items:
  – Left ventricular function measurement:
  – Left ventricular function measurement method: Simpson, Mod.Simpson, S-P Ellipse, B-P Ellipse, Bullet, Teichholz, Cube, Gibson
  – LV Mass (Cube-2D), (A-L), (T-E)
  – LA Vol (Simp), (A-L)
  – MVA VTI, AVA (VTI)
  – Cardiac output: LVOT, RVOT, MV, TV
  – Quantitative Analysis of PISA MR, PISA AR, PISA TR, and PISA PR
  – Qp/Qs
  – LV TEI Index
  – RV TEI Index
  – Z score (3 years and younger)
  – Z score (Under 18)

- Emergency
  Summarized items: Provides application measurement related to emergency

- Gynecology
  Summarized items:
  Provides measurements of uterus, cervix, ovary, follicle, urethra, rectum, levator ani muscle and sphincter.

- Obstetric
  Summarized items:
  - Multiple fetuses, maximum number of fetuses: 4
  - Fetal physiology score
  - Z score
  - Fetal GA
  - Fetal growth curve
  - EFW

- Pediatrics
  Summarized items: provides application measurement related to pediatrics

- SmallPart
  Summarized items:
  Provides measurements of thyroid, parotid gland, lymph nodes, testis, epididymis, thyroid nodules, breast, MSK, etc.

- Urology
  Summarized items:
  Provides measurement of kidney, kidney cortex, adrenal gland, prostate gland, seminal vesicle, bladder, testis, epididymis, scrotal wall, and urine output.

- Vascular
  Summarized items:
  Provides measurement of carotid artery, jugular vein, upper limb artery, lower limb artery, upper limb vein and lower limb vein