MX8 Cardiovascular Ultrasound System

Performance Specifications

Application
- Pediatric
- Cardiac
- Vascular

Transducer Types
- Linear array
- Phased array

Imaging Modes
- B-Mode
- THI 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
- Low MI Contrast (Myocardium Contrast Imaging)
- Tissue Tracking QA
- Stress Echo
- Strain Elastography

Standard Features
- B-Mode
- THI and PSH™
- M-Mode
- Color Doppler Imaging
- Power Doppler Imaging and Directional PDI
- Pulsed Wave Doppler
- iBeam™ (Spatial Compound Imaging)
- iClear™ (Speckle Suppression Imaging)
- iTouch™ (Auto Image Optimization)
- Echo Boost™
- Zoom/iZoom (Full Screen Zoom)
- FCI (Frequency Compound Imaging)
- B steer
- ExFOV (Extended Field of View)
- HR Flow™ (High Resolution Flow)
- Raw data processing
- iScanHelper
- 1 active probe port
- Hard drive: 256 GB SSD or 1TB HDD
- 4-USB
- HDMI
- iStorage
- MedTouch
- MedSight
- Net Storage
- Built-in Battery
- Power adapter
- Traveling case
- Multilingual controls overlay

Optional Features
- Free Xros M™
- Free Xros CM™
- Tissue Doppler Imaging
- TDI QA
- Continuous Wave Doppler
- Low MI Contrast (Myocardium Contrast Imaging)
- Contrast Imaging QA (Quantitative Analysis)
- LVO (Left Ventricular Opacification)
- R-VQS (RF-Data based Quantitative Analysis on Vessel Stiffness)
- Strain Elastography
- Stress Echo
- Tissue Tracking QA
- RIMT
- AutoEF
- Auto DFR
- iWorks™ (Auto Workflow Protocol)
- iVocal
- McAfee
- DVR Module
- DICOM
- Clinical Measurement Package
- Moble Trolley
- ECG module
- Internal Wi-Fi
- Dual-Probe extend module
- U-Bank (2 batteries)
- Barcode reader
- Footswitch
- iVocal Material package

Language Support
- Software: English
- Keyboard input: English
- Control panel overlay
- User manual

Physical Specification

Dimensions and Weight
- Width: 364±5 mm
- Depth: 322±5 mm
- Height: 44±3 mm
- Weight:
  - About 3.0 kg (without battery)
  - About 3.5 kg (with battery)

Monitor
- 15.6-inch high resolution color LED monitor
- Resolution: 1920 ×1080
- Automatic brightness adjustment
- Screen Saver
- Open angle adjustable: 0 – 180°
- View angle (right/left): ≥170°

Handle

Probe Port
- 1 port connect to a transducer

Electrical Power
- AC adapter Input:
  - Voltage: 100 – 240 V AC
  - Frequency: 50/60 Hz
  - Power input: 2.0 – 1.0 A
  - Battery: Lithium-Ion Battery Pack 14.4 V, 6600 mAh (single battery)

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

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

User Interface

Control panel
- Power/Battery Indicator
- Function Keys
- Ergonomic Soft Key Operation
- Backlit keys, ensuring accurate work in the dark room
- Programmable keys, available for userdefined functions
- Trackball, speed adjustment
- Key Brightness adjustment
- Integrated speakers, audio volume adjustment

Touchscreen
- 12.3-inch high sensitivity anti-glare color touchscreen
- Resolution: 1920×720
- Digital brightness and contrast adjustment through preset
- Viewing angle: ≥170 degrees
- Support touch screen gestures
- Support either hand writing or with gloves on

System Boot-up
- Boot-up from complete shut-down: less than 26 sec
- Shut down: less than 30 sec

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

Bodymark
- More than 232 bodymarks for versatile application

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MX8 Cardiovascular Ultrasound System

Performance Specifications

User Interface (continued)

Screen Information* (presettable)

Common info:

- Mindray logo
- Hospital name
- Exam date
- Exam time
- Acoustic power
- Mechanical index
- Tissue thermal index
- 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
- Dynamic Trackball indices

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

Imaging Parameters

Overview

- Digital beamformer
- Up to 1032192 channels
- 64-beam forming

B-mode

Frame rate (max):	840 f/s
A.Power:	depend on probe
TGC:	8 sliders
Depth:	30 Levels
Gain:	0 – 100, 1/step
Steer:	5 Levels (available on linear transducers)
FOV:	On/off
FOV Size:	random adjustable
FOV Position:	random adjustable
Image Quality:	Pen/Gen/Res/HPen/HGen/ HRes/HGen-FFR/HRes-FFR (depends on transducer)
Persistence:	0 – 7, 1/step
Dyn Ra.:	30 – 350 (depends on transducer)
Gray Map:	1 – 8, 1/step
Tint Map:	Off, 1 – 8, 1/step
ExFov:	Off, 1 – 2 ((depends on transducer, extended FOV available on convex and linear transducers)
iClear:	Off, 1 – 7, 1/step
iBeam:	Off,1 – 3,1/step
Line Density:	L, M, H, UH
L/R Flip:	On/off
U/D Flip:	On/off
Rotation:	0, 90°, 180°, 270°
iTouch:	On/off
iTouch:	-12 – 12, 3 db/step
LGC:	8 point
Dual Live:	On/off
Auto Merge:	On/off (available on linear transducers)
H Scale:	On/off
Echo Boost:	Off, 1 (available on phased transducers)
Smooth:	0 – 6, 1/step
TSI (Tissue Specific Imaging):	General, Muscle, Fluid, Fat
Zoom Value:	0.8 – 10
HDScope:	Off, 1 – 3, 1/step
V1:1:	On/off (available on linear transducers)
iNeedle:	
B/iNeedle (on/off)	
Needle Dir.:	Auto, Left, Right

THI and PSH

Available on all types of transducer

Patent PSH™ technology, obtains purer harmonic, better contrast resolution, higher SNR, exceptional high frequency harmonic

iClear™ available

Image quality:	depends on transducers

M-mode

A.Power:	depend on probe
Gain:	0 – 100, 1/step
Depth:	same as B
Speed:	25mm/s, 35mm/s, 50mm/s, 65mm/s, 100mm/s, 200mm/s
Dynamic Range:	30 – 350 (depends on transducer)
Gray Map:	1 – 8, 1/step
Tint Map:	Off, 1 – 8, 1/step
Display format:	V2:3, V3:2, H2:3, V3:1, FULL
M Soften:	0 – 4, 1/step
Edge Enhance:	0 – 3, 1/step

Color M-mode available (convex and phased probe only)

Free Xros M

Speed:	25mm/s, 35mm/s, 50mm/s, 65mm/s, 100mm/s, 200mm/s
Tint Map:	Off, 1 – 8, 1/step
Display Format:	V2:3, V3:2, H2:3, V3:1

Color Free Xros M available

Gra Map:	1 – 8, 1/step
Angle:	adjustable
Display:	Cur./All; show A/B/C On/Off

Free Xros CM

Only available on TDI

Speed:	25mm/s, 35mm/s, 50mm/s, 65mm/s, 100mm/s, 200mm/s
Tint Map:	Off, 1 – 8, 1/step
Display Format:	V2:3, V3:2, H2:3, V3:1
Gray Map:	1 – 8, 1/step
Angle:	adjustable

Edit, Undo, Delete function for curved line

Color Doppler Imaging

Frame rate (max):	331 f/s
PRF:	0.1 kHz – 14.3 kHz
Velocity:	1.0 cm/s – 148.9 cm/s
HR Flow™:	High Resolution Flow provides better image quality and flow sensitivity
A.power:	same as B
Gain:	0 – 100, 2/step
Baseline:	-8 – 8, 1/step
Scale:	30 levels

Quick Steer (available on linear transducers)

Steer (available on linear transducers)

ROI size/position:	adjustable
ROI Center Depth:	adjustable
Img Quality:	Color/3 levels; HRFlow/1 level
Persistence:	0 – 6, 1/step
Smooth:	0 – 6, 1/step
Color Map:	V0 – V10; VV0 – VV9
Flow State:	L, M, H
Priority:	0% – 100%, 1%/step
WF:	8 Levels
Line Density:	L, M, H, UH
Dual Live:	On/off
Invert:	On/off
Auto Invert:	On/off (available on linear transducers)
B/C Align:	On/off
Velocity tag:	On/off
Packet Size:	0 – 3, 1/step
iTouch:	On/off
Smart Track:	On/off

Power Doppler Imaging

PRF:	0.1 kHz – 14.3 kHz
HR FlowTM:	High Resolution Flow provides better image quality and sensitivity
A.power:	same as B
Gain:	0 – 100, 2/step

Quick Steer (available on linear transducers)

Steer (available on linear transducers)

Scale:	30 steps
ROI size/position:	adjustable
ROI Center Depth:	adjustable
Img Quality:	Power/3 levels; HRFlow/1 level
Persistence:	0 – 6, 1/step
Smooth:	0 – 6, 1/step
Dynamic Range:	10 – 70, 5/step
Flow State:	L, M, H
Color Map:	P0 – P3; dP0 – dP3
Priority:	0% – 100%, 1/step
WF:	8 levels
Line Density:	L, M, H, UH
Dual Live:	On/off
Invert:	On/off
B/C Align:	same as Color
Packet Size:	0 – 3, 1/step
iTouch:	On/off
Smart Track:	n/off
Auto Invert:	On/off

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Performance Specifications

Imaging Parameters (continued)

PW/CW-Mode

PW velocity:	11 cm/s – 770.0 cm/s
CW velocity:	5 cm/s – 3850.0 cm/s
PW PRF:	0.7 kHz – 20 kHz
CW PRF:	0.3 kHz – 100 kHz
A.Power:	same as B
Gain:	0 – 100, 2/step
Baseline:	9 levels
Quick Steer (available on linear transducers)	
Steer (available on linear transducers)	
Scale:	30 levels
Audio:	0% – 100%, 2%/step
Angle:	-89 – 89, 1/step
SVD:	random adjustable
Image Quality:	3 levels
Speed:	25mm/s, 35mm/s, 50mm/s, 65mm/s, 100mm/s, 200mm/s
SV:	0.5 – 30mm (PW only)
SV position:	random adjustable
Dynamic range:	24 – 72, 2/step
Gray map:	1 – 10, 1/step
Tint Map:	Off, 1 – 8, 1/step
Display format:	V2:3, V3:2, H2:3, V3:1, FULL
Invert:	On/off
Auto Invert:	On/off (available on linear transducers)
WF (depend on probe)	
Quick Angle:	-60°, 0°, 60°
Duplex/Triplex:	On/off
HPRF:	On/off
iTouch:	On/off
T/F Res:	0 – 6, 1/step
Auto Calculate:	On/off
Auto Calc Cycle:	1 – 5, 1/step
Trace Sensitivity:	0 – 5, 1/step
Auto Calc Parameter	
Trace Smooth:	Off, 1 – 4, 1/step
Trace Area:	Above, Below, All
Auto Calc Loop	

Tissue Velocity/Energy Imaging

Available on phased array transducer	
Max frame rate:	937.0 f/s
PRF:	0.4 kHz – 14.3 kHz
Velocity:	5 cm/s – 144.7 cm/s
A.Power:	same as B
Gain:	0 – 100, 2/step
Baseline:	-8 – 8, 1/step (TVI only)
Scale:	30 levels
Image Quality:	2 levels
Persistence:	0 – 6, 1/step
Smooth:	0 – 6, 1/step
Dyn Ra.:	10 – 70, 5/step (TEI only)
Tissue State:	L, M, H
Color Map:	
TVI:	TVV1 – TVV10
TEI:	P0 – P3, dP0 – dP3
Priority:	0 – 100, 1%/step
WF:	8 levels
Line Density:	L, M, H, UH
Dual live:	On/off
Invert:	On/off
B/C Align:	On/off
Velocity tag:	On/off (TVI only)
Packet size:	0 – 3, 1/step

Tissue Velocity Doppler

Available on phased array transducer	
Scale:	30 levels
Velocity:	7.01 cm/s – 616.0 cm/s
PRF:	0.7 kHz – 20 kHz
A.power:	same as B
Gain:	0 – 100,2/step
Baseline:	9 levels
Audio:	0 – 100%, 2%/step
Angle:	-89 – 89, 1/step
SVD:	random adjustable
Img Quality:	2 levels
Speed:	25mm/s, 35mm/s, 50mm/s, 65mm/s, 100mm/s, 200mm/s
SV size:	same as PW
Dyn Ra.:	24 – 72, 2/step
Gray Map:	1 – 10, 1/step
Tint map:	Off, 1 – 8, 1/step
Display Format:	V2:3, V3:2, H2:3, V3:1, FULL
Invert:	On/off
WF:	10 levels
Quick Angle:	-60°, 0, 60°
Duplex/triplex:	same as PW
T/F Res:	0 – 6, 1/step
iTouch:	On/off

Tissue Velocity Motion

A.power:	same as B
Smooth:	0 – 6, 1/step
Velocity tag:	on/off
Persistence:	0 – 6, 1/step
Img Quality:	2 levels
Tissue State:	L, M, H
Speed:	25mm/s, 35mm/s, 50mm/s, 65mm/s, 100mm/s, 200mm/s
Display format:	V2:3, V3:2, H2:3, V3:1, FULL
Color Map:	TVV1 – TVV10
Packet Size:	0 – 3, 1/step
Priority:	0% – 100%, 1%/step
WF:	8 levels

Stress Echo

Available on cardiac sector transducers

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

ASE16 (with score 4-7), ASE 17 (with score 4-7)

Customized stages:	up to 7 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, LVO

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

Position:	0 – 100%
Curve Disp:	0.0 – 15.0

LVO

Available Probe:	SP5-1Ns

Dedicated left ventricle contrast imaging tool

iBeam™

Spatial compound imaging

3 angles maximum

Available on convex and linear transducers

iTouch™

Auto image optimization

B-mode:	gain, TGC
Color:	gain
Power:	gain
PW:	gain, scale, PRF, WF
Contrast imaging:	gain, TGC

Echo Boost™

Only for cardiac exams

Improve the homogeneity of cardiac images through the whole field of view

Better contrast resolution of myocardium tissue layers

Better noise control in cardiac chambers and muscles

B steer

Only for linear transducers

ExFov

Extended field of view

Available for all convex and linear transducers

Zoom

Zoom:	Spot zoom (write zoom) up to 10x, Pan zoom (read zoom) 0.8x – 10x
iZoom:	convertible 3 steps ;normal image, zoom standard area, zoom only image area

QSave

Quick save image parameter setting after image adjustment done

Support Save, Create, Restore

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Performance Specifications

Imaging Parameters (continued)

TDI QA

Dedicated quantification tool for TDI velocity, strain, strain rate analysis

Ellipse ROI, Standard ROI

Up to 8 of ROI

Delete all

Delete current

ROI tracking:	tracking ROI along with cardiac movement
Smooth:	1 – 7, 1/step
X scale:	1 – 5, 1/step
Std.Height:	1.5 – 50 mm
Std.Width:	1.5 – 50 mm
Std.Angle:	-89 – 90 degrees
Export:	export current data as CSV format file

Tissue Tracking QA

Available probes:
- SP5-1Ns
- P8-2s
- P10-4s

Tissue tracking quantitative analysis

Mandatory ECG connection before TT QA cine acquisition

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

Reload:	reload cine again for new study
Edit:	modify trace points
Start tracking	
Accept & compute:	start tracking myocardium movement when user accept trace result
Display effect:	0/1; at 0, tracking in velocity vector arrow; at 1, tracking in dots
Trace method:	3 point or manual for ALAX, A4C, A2C; manual for PSAXB, PSAXM, PSAXAP
Bull's Eye:	trace result in bull's eye model
Torsion:	Torsion rate curve display
LGC:	available
Valve's open and close time index:	MVC, MVC', AVC, AVO, MVO
Data export:	export data in CSV file
Cycle:	ECG triggered cardiac cycle recognition for analysis
Auto play:	stop, X1/10, X1/5, X1/4, X1/3, X1/2, X1, X2, X3
Thickness:	1 – 30 mm, 1 mm/step; adjust trace thickness
Track point:	20 – 40, 1/step
Parameter:	Volume, Speed, Displace., L Strain, L Strain R, T Strain, T Strain R, Area, R Strain, R Strain R, C Strain, C Strain R, Rotation, Rot. R
Smooth:	0 – 4, 1/step

AutoEF

Adjust Frame

Diastole FR

Systole FR

Volume curve: On/off

Adjustment for the border ofendocardium

Smart Track

Continuously track the flow and detect the best color box position and angle in real time scanning.

The Linear probes in carotid, Upper Ext A, Upper Ext V, Lower Ext A, Lower Ext V, EM Vascular exam modes support the Smart Track function.

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

Auto DFR

Automatic diastolic function assessment tool, automatically detect diastolic parameters of PW and TDI PW, to calculate a series diastolic function index E, A, E/A, e', E/e' automatically.

MV E/A

MV E/E' Septal

MV E/E'Lateral

Cine Review and Post Processing

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 25492 frames or 263.3 s (depend on the mode)

Retrospective storage (online setting available, 1 – 120 s, or 1 – 120 cycles, presettable) and prospective storage (1 – 480 s, or 1 – 390 cycles, 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

Raw data processing

B-mode:
- TGC
- Gain
- Dynamic range
- Gray map
- Tint map
- iClear
- L/R Flip
- U/D Flip
- Rotation
- LGC
- Dual Live
- Auto Merge
- H Scale
- Echo Boost
- Smooth
- Zoom Value
- V1:1
- B/iNeedle

M-mode:
- Gain
- Speed
- Dynamic Range
- Gray Map
- Tint Map
- Display format
- Edge Enhance

Color:
- Gain
- Baseline
- Smooth
- Color map
- Dual Live
- Invert
- Priority
- Velocity tag

PW:
- Gain
- Baseline
- Audio
- Angle
- Speed
- Dynamic range
- Gray map
- Tint Map
- Display format
- Invert
- WF
- Quick Angle
- T/F Res

Measurement/Analysis and Report

Report

Specific report template by application

Editable value in report

Images selectable

Anatomy information

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

Able to Export as PDF file

Set the calculation method for the final value in batch

Exam Storage and Management

Exam storage

SSD:

256 GB, more than 157 GB internal hard drive reserved for patient data storage

Capable of storage up to approximately 173242 single frames (FRM format)

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Performance Specifications

Exam Storage and Management (continued)

HDD:

1 TB, more than 866 GB internal hard drive reserved for patient data storage

Capable of storage up to approximately 3290097 single frames (FRM format)

Storage area:

Pre-settable:	image area, standard area, full-screen
Image area:	1430×810
Standard area:	1920×920
Full-screen:	1920×1080

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/MP4 format (CIN: system format)

Support backup/send to USB devices, DVD-RW media

iWorks™

Auto workflow protocol

Templates are user configurable

Functions: pause, stop, replace, repeat, skip, insert single step, return and continue, steps in thumbnail

iWorks setup mode:	B/Dual/B+Color/ B+PW/ B+Color+PW/B+CW/ B+Color+CW/ B+M
iWorks setup annotation:	support up to 2 annotations, location and font size are configurable
iWorks setup bodymark:	select existing library, and probe indicator is pre-settable

iWorks setup measurement: select existing measurement library

Template import and export are available

Connectivity

Ethernet Network Connection

Cable connection

Wireless connection: Internal Wi-Fi (including EAP Network)

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 Cardiac structure report

DICOM Vascular structure report

iStorage

Direct network storage tool between ultrasound system and personal computer

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 both iOS (7.0 and above) and Android (4.0 and above) system

For iOS powered smart device: DICOM is mandatory

For Android powered smart device: DICOM not necessary

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 and tutorial software iScanHelper study on smart devices

Support Android and iOS powered smart devices

Android 4.0 and above

iOS 7.0 and above

DICOM not necessary

Net Storage

Support sending images or exams to the shared directory of your PC server.

iStorage

Data transfer

Security

Anti-Virus: McAfee and Windows Defender

VPN

Transducers

Curved array

Linear array

L12-3RCs

Application:	Abdomen, Pediatric, Small Parts, Musculo-skeletal, Vascular, Thoracic/Pleural
Bandwidth:	3.0 – 12.8 MHz
Depth:	1.5 – 35.0 cm
Number of Elements:	192
Field of View (max):	3.80 cm
Steered Angle:	±12°, ±6°, 0 (B steer); -30° – 30° (Color/PW steer)
Physical Footprint:	55.6×22 mm
Footprint:	43.5×8.2 mm
B-mode Frequencies:	3.0 – 8.3, 4.4 –10.2, 5.6 –12.8 MHz
Harmonic Frequencies:	8.0, 10.0, 12.0 MHz
Color Frequencies:	4.4, 5.0, 7.2, 7.2 (HR Flow) MHz
Doppler Frequencies:	4.2, 5.0, 7.2 MHz
Biopsy Guide:	NGB-043 available, multiangle, reusable; NGB-044 available, multidepth, reusable

L9-3s

Application:	Abdomen, Obstetrics, Pediatric, Small Parts, Musculo-skeletal, Vascular, Nerve
Bandwidth:	2.5-9.0 MHz
Depth:	1.5-35.0 cm
Number of Elements:	192
Field of View (max):	4.38 cm
Steered Angle:	±12°, ±6°, 0 (B steer); -10° – 10° (Color/PW steer)
Physical Footprint:	62×22 mm
Footprint:	48×11 mm
B-mode Frequencies:	2.5-7.0, 3.4-8.2, 3.6-9.0 MHz
Harmonic Frequencies:	5.0, 6.0, 7.0 MHz
Color Frequencies:	3.0, 3.6, 5.0, 7.3 (HR Flow) MHz
PW Frequencies:	3.0, 3.6, 5.0 MHz
Biopsy Guide:	NGB-034, available, multiangle, reusable

Phased array

SP5-1Ns

Application:	Abdomen, Gynecology, Obstetrics, Cardiac, Pediatric, Vascular, Thoracic/Pleural, Cephalic
Bandwidth:	1.5 – 4.5 MHz
Depth:	2.0 – 38.0 cm
Number of Elements:	64
Field of View (max):	90°
Physical Footprint:	38.2×30.4 mm
Footprint:	24×15.4 mm
B-mode Frequencies:	1.5 – 2.5, 2.5 – 3.5, 3.5 – 4.5 MHz
Harmonic Frequencies:	3.4, 3.8, 3.8, 4.2, 4.2 MHz
Color Frequencies:	2.0, 2.3, 2.5, 2.5 (HR Flow) MHz; TDI: 3.0, 3.8 MHz
PW Frequencies:	2.0, 2.3, 2.5 MHz; TDI: 2.5, 4.0 MHz
CW Frequency:	2.0 MHz
Biopsy Guide:	NGB-011, available, multi-angle, reusable

P8-2s

Application:	Abdomen, Pediatric, Cardiac, Cephalic
Bandwidth:	2.3 – 8.0 MHz
Depth:	2.0 – 38.0 cm
Number of Elements:	96
Field of View (max):	90°
Physical Footprint:	30.5×23.2 mm
Footprint:	19.5×11 mm
B-mode Frequencies:	2.3 – 5.4, 2.8 – 7.4, 4.2 – 8.0 MHz
Harmonic Frequencies:	5.0, 6.0, 7.0 MHz
Color Frequencies:	2.7, 3.3, 4.0, 2.5 (HR Flow) MHz; TDI: 3.0, 3.8 MHz
PW Frequencies:	2.7, 3.3, 4.0 MHz; TDI: 5.0, 6.0 MHz
CW Frequency:	2.5 MHz
Biopsy Guide:	not available

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MX8 Cardiovascular Ultrasound System

Performance Specifications

Transducers (continued)

P10-4s

Application:	Abdomen, Pediatric, Cardiac, Nerve, Cephalic
Bandwidth:	3.0-11.4 MHz
Depth:	2.0-38.0 cm
Number of Elements:	128
Field of View (max):	90°
Physical Footprint:	15.1×10.2 mm
Footprint:	15×9.1 mm
B-mode Frequencies:	3.0-6.8, 3.8-10.2, 4.6-11.4 MHz
Harmonic Frequencies:	7.5, 8.0, 9.0 MHz
Color Frequencies:	4.0, 5.0, 5.7, 2.5 (HR Flow) MHz; TDI: 3.0, 3.8 MHz
PW Frequencies:	4.0, 5.0 5.7 MHz; TDI: 5.0, 5.7 MHz
CW Frequency:	5.0 MHz
Biopsy Guide:	not available

P7-3Ts

Application:	Cardiac
Bandwidth:	2.3-7.2 MHz
Depth:	2.0-38.0 cm
Number of Elements:	64
Field of View (max):	90°
Physical Footprint:	14×12 mm
Footprint:	12.2×12.2 mm
B-mode Frequencies:	2.3-5.4, 2.8-6.4, 3.3-7.2 MHz
Harmonic Frequencies:	6.0, 6.5, 7.0 MHz
Color Frequencies:	2.7, 3.3, 4.0, 2.5 (HR Flow) MHz; TDI: 3.0, 3.8 MHz
PW Frequencies:	2.7, 3.3, 4.0, 2.5 (HR Flow) MHz; TDI: 4.0 MHz
CW Frequency:	2.5 MHz
Biopsy Guide:	not available

Pencil

CW2s

Application:	Cardiac, Cephalic, Pediatric
Number of Elements:	2
Physical Footprint:	18.4×17.8 mm
Footprint:	18.4×17.8 mm
CW Frequency:	2.0 MHz
Biopsy Guide:	not available

10 Peripheral Devices and Accessories

Black/white digital video printer

MITSUBISHI P95DW-N

Black/white analog video printer

SONY UP-X898MD

Color digital video printer

SONY UP-D25MD

Footswitch

USB port:	971-SWNOM (2-pedal/3-pedal)
USB port:	FS-81-SP (1-pedal)

Support User-definable functions (Freeze, Save, Print)

Built-in DVR

Built-in digital video recorder, save space and is a useful tool for education and memory

Max storage length each time: 60 min

Built-in Battery for Main Unit

Replaceable and rechargeable lithium battery

Empty battery recharged to full in 4h

Continuous work time: about 1.5 hour in B mode

Mobile Trolley

MT3

Power supply module

Dimensions (W×D):	about 519 mm × 578 mm
Platform height:	887 – 1207 mm; adjustable

Weight:

- Without retractable cable and probe extend module: about 28.8 kg
- With retractable cable and without probe extend module: about 32.5 kg
- Without retractable cable and with probe extend module: about 30.9 kg
- With retractable cable and probe extend module: about 34.6 kg

Probe holders

Auxiliary output cable

Probe extend module

Cover grounding cable

Printer bracket

MT2

Dimensions (W×D):	about 515 mm × 505 mm
Platform height:	885 mm, 973 mm; 2 levels

Weight:

- Without printer bracket and probe extend module: about 15 kg
- With printer bracket and probe extend module: about 18.8 kg

Probe holders

Probe extend module

Printer bracket

Barcode reader

1-D barcode reader: SYMBOL LS2208

2-D barcode reader: SYMBOL DS4308

U-Bank

U-Bank with 2 batteries Weight: 1.95 kg

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
Trig mode:	off/single/dual/timer
Gain:	0 – 30, 1/step
Sweep speed:	6 steps
Invert:	On/off

Built-in Wireless adapter

Encryption:	WPA, WPA2
Max transfer speed:	300 Mbps
Protocols:	IEEE 802.11 ac/a/b/g/n
Frequency:	2.4G/5G

System Inputs and Outputs

I/O Port

USB 3.0:	4 ports
Ethernet:	1 port
HDMI:	1 port
S-Video:	1 port

ECG module

ECG port:	1

Probe Extend module

Probe port:	2

Safety and Conformance

Quality standards

ISO 9001

ISO 13485

Design standards

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

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.

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