

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
TTQA-RV
VA Grid
RIMT
AutoEF
Auto DFR
iWorks™ (Auto Workflow Protocol)
iVocal
McAfee
DVR Module
DICOM
Clinical Measurement Package
Mobile 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

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: 25 mm/s, 35 mm/s, 50 mm/s, 65 mm/s, 100 mm/s, 200 mm/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 Flow™: 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; HR Flow/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: On/off
Auto Invert: On/off

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:	25 mm/s, 35 mm/s, 50 mm/s, 65 mm/s, 100 mm/s, 200 mm/s
SV:	0.5 – 30 mm (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:	25 mm/s, 35 mm/s, 50 mm/s, 65 mm/s, 100 mm/s, 200 mm/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:	25 mm/s, 35 mm/s, 50 mm/s, 65 mm/s, 100 mm/s, 200 mm/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	
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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	

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

TTQA-RV

A semi-automated quantification tool to assess the right ventricular function by advanced speckle tracking echocardiography

AutoEF

Adjust Frame

Diastole FR

Systole FR

Volume curve: On/off

Adjustment for the border of endocardium

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

VA Grid

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

SC5-1Ns

Application:	Abdomen, Gynecology, Obstetrics, Vascular, Nerve, Musculoskeletal, Urology, Thoracic/Pleural, Small Parts
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Bandwidth:	1.2 – 6.0 MHz
Depth:	4.0 – 40.0 cm
Number of Elements:	128
FOV (max):	61°
Extended FOV:	73°
Convex Radius:	60 mm
Physical Footprint:	76.7×28 mm
Footprint:	68×18 mm
B-mode Frequencies:	1.2 – 3.8, 1.7 – 5.2, 2.0 – 6.0 MHz

Harmonic Frequencies:	4.0, 5.0, 6.0 MHz
Color Frequencies:	2.0, 2.5, 3.0, 3.5 (HR Flow) MHz
PW Frequencies:	2.0, 2.5, 3.0 MHz
Biopsy Guide:	NGB-022, available, multi angle, reusable; LPUBKG60, disposable

Linear array

L15-3RCs

Application:	Abdomen, Pediatric, Small Organ (Small organ-breast, thyroid, testes), Musculo-skeletal (Conventional), Musculo-skeletal (Superficial), Thoracic/Pleural (For detection of fluid and pleural motion/sliding.), Peripheral vessel
Bandwidth:	3.0 – 15.0 MHz
Depth:	1.5 – 35.0 cm
Number of Elements:	192
Field of View (max):	3.82 cm
Steered Angle:	±12°, ±6°, 0 (B steer); -30° – 30° (Color/PW steer)
Physical Footprint:	61×24.4 mm
Footprint:	43.35×8.05 mm
B-mode Frequencies:	3.0~9.0, 5.0~12.0, 8.0~15.0 MHz
Harmonic Frequencies:	10.0, 11.0, 12.0 MHz
Color Frequencies:	5, 6.2, 7.3, 7.3 (HR Flow) MHz
Pw Frequencies:	5, 6.2, 7.3 MHz
Biopsy Guide:	NGB-043, NGB-044 available, multi-angle, reusable

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, multi-angle, reusable; NGB-044 available, multi-depth, 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, multi-angle, reusable

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Performance Specifications

Transducers (continued)

L24-6RCs

Application:	Ophthalmic, Pediatric, Small organ (breast, thyroid, testes), Musculo-skeletal (Conventional), Musculo-skeletal (Superficial), Peripheral vessel
Bandwidth:	6.0 – 24.0 MHz
Depth:	0.5 – 7.0 cm
Number of Elements:	192
Field of View (max):	2.87 cm
Steered Angle:	±12°, ±6°, 0 (B steer); -20° – 20° (Color steer); -30° – 30° (PW steer)
Physical Footprint:	50×24 mm
Footprint:	32.4×6.4 mm
B-mode Frequencies:	6.0~13.0, 9.0~16.6, 12.5~24.0 MHz
Harmonic Frequencies:	14.0, 16.0, 18.0 MHz
Color Frequencies:	9.0, 11.0, 13.0 MHz
PW Frequencies:	8.3, 10.0, 12.5 MHz
Biopsy Guide:	not available

L24-6Hs

Application:	Abdomen Intraoperative (includes abdominal, thoracic, and vascular etc), Pediatric, Small organ (breast, thyroid, testes), Musculo-skeletal (Conventional), Musculo-skeletal (Superficial), Peripheral vessel
Bandwidth:	6.0 – 24.0 MHz
Depth:	0.5 – 7.0 cm
Number of Elements:	192
Field of View (max):	2.87 cm
Steered Angle:	±12°, ±6°, 0 (B steer); -20° – 20° (Color steer); -30° – 30° (PW steer)
Physical Footprint:	37.7×12.5 mm
Footprint:	32.4×6.4 mm
B-mode Frequencies:	6.0~13.0, 9.0~16.6, 12.5~24.0 MHz
Harmonic Frequencies:	14.0, 16.0, 18.0 MHz
Color Frequencies:	9.0, 11.0, 13.0 MHz
PW Frequencies:	8.3, 10.0, 12.5 MHz
Biopsy Guide:	not available

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;

PW Frequencies:	TDI: 3.0, 3.8 MHz 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

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
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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

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 (WxD):	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 (WxD):	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	

MX8 Cardiovascular Ultrasound System

Performance Specifications

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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