

DC-88

with X-Insight

Ultrasound System

Datasheet



mindray

DC-88 Ultrasound System

Performance Specifications

System Overview

Application

Abdomen/General
Obstetrics
Gynecology
Cardiology
Small parts
Urology
Vascular
Pediatrics
Emergency & Critical
Nerve
Pelvic Floor
Others

Transducer Types

Curved array transducer
Linear array transducer
Phased array transducer
Endocavity array transducer
4D Volume transducer

Transducer Technology

3T with single crystal transducers
ComboWave transducers

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
Smart 3D™ (Freehand 3D)
4D
Stress Echo
Tissue Tracking with Quantitative Analysis
STE Imaging (Sound Touch Elastography)
STQ Imaging (Sound Touch Quantification)
Natural Touch Elastography Imaging
UWN Contrast Imaging
iScape™ View (Panoramic Imaging)

Standard Features

B-mode
THI and PSH™
M-mode
Color 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)
X-Engine
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
5 active universal probe ports, 1 more for pencil probe only
1TB hard drive and 128G SSD
DVD R/W drive
Built-in wireless adapter
5 USB 3.0 ports, 1 more dedicated
USB port for printer
Touch gestures
iStorage
MedSight
MedTouch
iScanHelper
Smart Doppler
Smart Track
Z-tracking™

Optional Features

Continuous Wave Doppler
ECG
Free Xros M™
Free Xros CM™
iScape™ View
Smart 3D™
Real-time 4D
iPage+ (Multi-Slice Imaging)
SCV+ (Slice Contrast View)
STIC (Spatio-Temporal Image Correlation)
Color 3D
Niche/3 Slice
iLive
IVF package
Smart Planes CNS
Smart Face
Smart FLC
Smart-V™ (Smart Volume)
Auto IMT
Natural Touch Elastography
STE Imaging (Sound Touch Elastography)
STQ Imaging (Sound Touch Quantification)
UWN Contrast Imaging™
Quantification Analysis Software
Auto EF
TDI (Include TVI, TVD, TVM, TEI)
TDI QA (TDI Quantitative Analysis, including strain/strain rate)
LVO (Left Ventricular Opacification)



Stress Echo
Tissue Tracking with Quantitative Analysis
Smart Pelvic
DICOM
Clinical Measurement Package
Smart OB™ (Auto OB measurement)
Smart NT™ (Auto NT measurement)
iWorks™ (Auto Workflow Protocol)
iNeedle™ (Needle Visualization Enhancement)
Stress Echo
Built-in battery
Built-in wireless adapter
Gel warmer

Language Support

Software: English
Keyboard input: English
User manual: English

Physical Specifications

Dimension and Weight

Depth: 825 ± 5 mm
Width: 575 ± 5 mm
Height: 1090 ± 5 mm ~1620 ± 5 mm
Weight: Approx. 85Kg (no peripherals, with built-in batteries)
(battery weight: 1.03Kg)

Monitor

21.5-inch high resolution color LED monitor
Resolution: 1920 × 1080
Viewing angle: 89° left/right/up/down
Digital on-screen display of brightness and contrast controls.
Independent tilt up of 110 degrees from horizontal and swivel left/right of -90 to 90 degrees.
Frame rate (Hz): 60 Hz

Audio Speakers

Stereo audio speakers
Audio data range: 130 Hz ~ 15 kHz

Multi-Directional Articulating Monitor

Arm for Better User-Friendly Experience
Dual-wing floating arm

Performance Specifications

Rotate angle:	90 degrees to the left and 150 degrees to the right along with the support arm
Up:	150 mm
Front/back:	300 mm

Wheels

Diameter:	125 mm
Castors (4 ea):	total lock and break

Probe Port and Holder

Probe ports:	5 active ports, 1 more for pencil probe only
Detachable probe holder:	7 as standard, including one dedicated holder for endocavity probe

Electrical Power

Voltage:	100 - 240V~
Frequency:	50/60 Hz
Power consumption:	Max. 630 VA
A/D-converter velocity (MHz):	40 (receiving)

Operating Environment

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

Storage & Transportation Environment

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

User Interface

Control Panel

User-centric control panel with home-based layout favors easy access to keys.

Backlit keys ensure accurate work in a dark room.

8 Programmable keys available for user-defined functions (<P>, <Save>, <Print>, <F3 - F6>, and F12).

8-segment TGC control

Full-sized, backlit QWERTY keyboard for text input, function keys and system programming.

Adjustable key volume and trackball speed meet different needs.

Dedicated palm rest design to help reduce user repetitive stress injury.

Independent rotation and up/down of control panel facilitates optimal positioning.

- rotate: 45 degrees (from center)

- down/up: 140 mm (pull 50 mm range)

Touch Screen

13.3-inch ultra-slim multi-touch screen

Resolution: 1920 × 1080

Touch screen panel

angle adjustable for easy visualization: 30 degrees in rotation

Digital brightness and contrast adjustment through preset.

Viewing angle: 85 degrees left/right/up/down

Support touch screen gestures

Support thin latex gloves on touch screen

Supported Touch Gestures

Image mapping on touch screen: swipe down from the top edge to project image from monitor to touch screen. Swipe up from the bottom edge to remove projected image and show regular parameter interface.

Page up and down: swipe horizontally on regular imaging parameter interface to change different pages; or swipe horizontally on projected images/cine loops to review them one by one.

Menu display: swipe from left edge to right to show the 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.

System Boot-Up

Boot-up from complete shut-down in less than 60 sec.

Shut-down in less than 30 sec.

Comments

Supports text input and arrow

Support freehand marking on touch screen

Adjustable text size and arrow size

Supports home position

Covers various application

User customizable

Body Mark

More than 144 body marks for versatile application

User customizable

Numbers of Exam Mode Presets

39 system exam modes (unlimited number for user-defined ones).

Screen information

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, for detail info, please refer to user manual

Imaging Parameters

Overview

Echo-enriched beamforming

Up to 82,944 channels

12 - beamforming

B-Mode

Display formats

iClear™

iBeam™

iTouch™

Dual Live

Image quality

B steer

ExFOV

Depth

Frame rate (max)

Acoustic output power

TGC

LGC

Dynamic range

Gain

Focus number

Focus position

FOV

Line density

Persistence

Horizontal scale

Performance Specifications

<ul style="list-style-type: none"> L/R flip and U/D flip Rotation TSI Gray Map Tint map Middle Line Echo Boost Auto Merge iNeedle Ref Lines Dehaze <p>Available on all types of transducer Patent PSH™ technology obtains purer harmonic, better contrast resolution, higher SNR, exceptional high frequency harmonic.</p> <p>iClear™ available</p> <p>Image quality</p>	
<p>M-mode</p> <ul style="list-style-type: none"> Display formats Color M-mode available Acoustic output power Dynamic range Gain Depth M sweep speeds M soften Tint map Gray Map Edge enhance Focus position Image quality Time Mark 	
<p>Free Xros M™ (option)</p> <ul style="list-style-type: none"> Display formats Color Free Xros M available Up to 3 lines Display all lines Sweep speeds M Tint map Gray Map Angle Display 	
<p>Free Xros CM™ (option)</p> <ul style="list-style-type: none"> Only available in TDI mode Display formats Acoustic output power Gain Sweep speeds Tint map Gray Map Edit, undo, delete function for curved line 	
<p>Color Doppler Imaging</p> <ul style="list-style-type: none"> Dual live HR Flow™: High Resolution Flow provides better image quality and flow sensitivity. 	

<ul style="list-style-type: none"> Image quality Steer Max frame rate Acoustic output power Gain ROI size/position Scale Baseline Wall filter PRF Packet size Flow state Smooth B/C align Priority Color map Invert Persistence Velocity tag Line density Auto Invert iTouch™ B Display Smart Track 	
<p>Power Doppler Imaging</p> <ul style="list-style-type: none"> Dual live HR Flow™: High Resolution Flow provides better image quality and sensitivity. Support directional power Doppler Image quality Acoustic output power Dynamic range Gain ROI size/position Scale Wall filter PRF Packet size Flow state Smooth B/C align Priority Color map Directional color map Persistence Line density Steer Invert iTouch™ B Display 	
<p>PW/CW-Mode</p> <ul style="list-style-type: none"> Display formats Image quality 	

<ul style="list-style-type: none"> Sample volume size Sample gate depth PW Scale CW Scale Baseline PW Steer Volume PW PRF CW PRF Gain Dynamic range Sweep speed Wall filter Invert Auto invert Angle correction Quick angle Gray map Tint map Time/frequency resolution Auto calc Auto calc cycle Trace area Duplex/Triplex HPRF Auto calc Parameter Trace Sensitivity Trace Smooth Time Mark 	
<p>Tissue Velocity/Energy Imaging (included in TDI option)</p> <ul style="list-style-type: none"> Available on phased array transducer Dual live Max frame rate PRF Acoustic output power Gain Dynamic range ROI size/position Scale Baseline Wall filter Packet size Tissue state Smooth B/C align Priority TVI maps TEI maps Invert Persistence Velocity tag (TVI only) Line density Image quality 	
<p>Tissue Velocity Doppler (included in TDI option)</p> <ul style="list-style-type: none"> Available on phased array transducer Display formats 	

Performance Specifications

Sample volume size
Sample gate depth
Scale
Baseline
Volume
PRF
Gain
Dynamic range
Sweep speed
Wall filter
Invert
Auto invert
Angle correction
Quick angle
Gray map
Tint map
Time/frequency resolution
Image quality
Duplex/Triplex
iTouch

Tissue Velocity Motion (included in TDI option)

Display formats
Dynamic range
Gain
M sweep speeds
M soften
Gray Map
Edge enhancement

Smart 3D™

Smart 3D
- Acquisition Method
- iClear
- Acquisition mode
- VR
- MPR
- Display formats
- VOI
- Reset
- Active quadrant
- VR orientation
- Inversion
- Accept VOI
- Flip
- Sync
- Render modes
- View direction
- Threshold
- Opacity
- Smooth
- Brightness
- Contrast
- Tint
- Face+
- MagiClean
- Hyaline:

Adjust the merging ratio of two render modes

Hyaline and iLive

- Thickness
- Depth VR

Auto rotation

- Rotation control
- Direction

Image Editing

- Area selection
- Undo
- Eraser
- Edit diameter

4D (option)

Available on all volume transducers

Static 3D and 4D

- 4D frame rate
- iClear
- VR
- MPR
- Display formats
- VOI

- Reset
- Active quadrant
- VR orientation
- Inversion
- Accept VOI
- Flip
- Sync
- Render modes
- Face+
- View direction
- Threshold
- Opacity
- Smooth
- Brightness
- Contrast
- Tint
- Depth VR

Color 3D

- Supports Color and Power mode
- Available in both Smart 3D and Static 3D

STIC

- Color STIC available
- Acquiring Time
- Support iPage+ viewing
- CMPR available
- SCV+ available
- 3 Slice and Niche available

iPage+

- Slice display mode: Slice only, Slice with SCV
- Slice cut direction
- Slice layout
- Active quadrant
- Reset
- Spacing
- Thickness
- Slice Number
- Slice Position

- Brightness
- Contrast

SCV+

- Display mode
- Reset
- Thickness
- Active quadrant
- Brightness
- Contrast
- Render modes
- Rotate RL
- Reverse
- SCV Enhance
- Opacity
- Trace Options
- Reset Curve, undo last
- MPR Measurement types
- Support labeled measurements

CMPR™

- Trace Options
- Active Quadrant
- Reset Curve
- Rotate RL

3D Layout

- 3 Slice
- Niche
- Reset
- Active Quadrant
- Niche Views

iLive

- Shading
- Move Light
- Light Position
- Render Modes
- Soft View
- Grad View

Smart FLC (Smart Follicle)

- Automatic follicle calculation
- Edit ROI and detect follicle contour automatically
- Undo
- Active Quadrant
- Calc
- Edit

Smart Planes CNS

- Available on SD8-1E transducer
- Detect automatically the standard sections of TCP, TTP, MSP and TVP
- Rotation around X/Y/Z axes
- Reference line
- Reset
- Thickness
- 3D iClear
- Brightness
- Contrast
- Auto comment supported
- Auto measurement supported
- Support editing measurement results

Performance Specifications

- Hide/show measurement results
- MSP adjust
- Support comment and bodymark on sectional plane

Smart Face

- Recognize fetal face automatically and then display the face in a recommended viewing angle
- FaceContact: -15 ~ 15

Smart-V™

- Auto 3D volume calculation
- Manual ROI on A, B, C plane separately
- Auto detect contour of target
- Volume result shows in result window

MPR Measurement

- Measurement types
- Support labeled measurements

Smart Track

Available on linear transducers in Upper Ext Artery, Upper Ext Vein, Lower Ext Artery, Lower Ext Vein, carotid, IMT EM Vascular exam.

Enable the function under Color/Power mode, the angle and the position of the ROI are adjusted automatically.

Enable the function under Color/Power+PW mode, the angle and the position of the PW sampling line, SV size, SV angle and SV position are adjusted automatically.

iScape™ View

- Available on all transducers
- Acquisition method
- Supports speed indicator
- Actual size
- Fit size
- Ruler
- Tint map
- Rotation

Natural Touch Elastography (option)

Available on L12-3E, L9-3E, and L14-5WE transducers in small part exam mode; L20-5E transducer in musculoskeletal exam mode; DE11-3E and V11-3HE in gynecology and prostate exam modes.

Support strain ratio measurement

Unique shell analysis function

Stress compensation technology reduces deeper tissue artifacts, obtains more uniform stress throughout whole field.

Stress indicator

Display format

Elasto Map

Smooth

Invert

Opacity

ROI size/position

Focus Position

Depth

STE Imaging (Sound Touch Elastography Imaging)

The SC6-1E probe supports the STE imaging in abdomen exam mode; the L12-3E, L9-3E, and L14-5WE probes support the STE imaging in breast, thyroid, and musculoskeletal exam mode.

Display Format

Invert

HQ Elasto

HF Elasto

Image Quality

Elasto Metric

Scale

Opacity

Map

ROI Width/Height

ROI Center Depth

iLayering

Filtering

RLB View

M-STB Index

M-STB Sensibility

iNatural

Smooth

Persistence

Map Position

STQ Imaging (Sound Touch Quantification Imaging)

The SC6-1E probe supports the STQ imaging in abdomen exam mode; the L12-3E, L9-3E, and L14-5WE probes support the STQ imaging in breast, thyroid, and musculoskeletal exam mode.

ROI Adjustment

Elasto Curve and Metric

E bar

M-STB Index

M-STB Sensibility

Filtering

Smooth

Persistence

High FR

Map Position

Lesion

The square height of the elasto curve represents the average value of the elasto metric for current frame.

Scale

E Avg

HQElasto

Smart Pelvic

Including auto evaluation package for anterior pelvic compartment, and auto evaluation package for anal levator hiatus.

This feature is available only under GYN or pelvic floor exam mode in 2D or 3D/4D imaging mode.

Set Rest and Valsalva frames

Measure automatically

Stress Echo (option)

Available on P7-3E/SP5-1E in cardiac exam 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.

ASE 16 (with score 4-7), ASE 17 (with score 4-7)

Customized stages

View: standard views (PSLA, PSAX, A4C, A2C), and customized views

Image acquisition

- R-wave trigger
- Acquire mode
- Ability to acquire frames or clips in B-mode, M-mode, Color, PW, and TDI

Image selection

- Attach the images with view annotation label (PSLA, PSAX, A4C, A2C, and customized views)

Review

- Automatically adjust to the number of images user-defined

Wall Motion Scoring

- ASE 16 (with score 4-7), or ASE 17 (with score 4-7)
- Graphical display of scoring (Normal, Hyperkinetic, Severely Hyperkinetic, Akinetic, Dyskinetic) LV volume measurement
- Measurement of LV Volume in all phases of cardiac cycle
- Reporting for both Wall Motion Scoring and LV volume measurement

iBeam™

- Spatial compound imaging
- 9 angles maximum
- Available on all convex and linear transducers

iClear™

- Speckle suppression imaging
- Available for B, 3D, 4D

iTouch™

- Auto image optimization
- B-mode
- Color
- Power
- PW
- Contrast imaging

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

Performance Specifications

ExFov

Extended field of view
Available for all convex, linear and volume transducers.

Zoom

Zoom
iZoom

QSave

Quick save image parameter setting after image adjustment done.
Support Save, Save as, Restore

Auto 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
Adjust Frame
Layout
Diastole FR
Systole FR
Volume curve

TDI QA (option)

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
Smooth
X scale
Std.Height
Std.Width
Std.Angle
Export

iNeedle (option)

Needle visualization enhancement
Available on all linear transducers
Needle steer

iScanHelper

Tutorial functions as a guide to show basic scanning skill with graphic of probe position, schematic of anatomy, and example clinical image.
Supports ABD, SMP, URO, OB, GYN applications.

UWN Contrast Imaging (option)

UWN (Ultra-Wideband Non-linear) contrast imaging technology, which provides exceptional contrast agent detecting capability, not only extracts second harmonic, but also non-linear fundamental signals.
Available on SC6-1E transducers
Supports Low MI contrast imaging

Micro Flow Enhancement (MFE) available

Timer1
Timer2
Pro capture
Retro capture
Dual live
MFE
MFE period
Destruct
Destruct voltage
Destruct time
iClear
Mix
Mix map
Persistence
Dynamic range
Gray map
Tint map
Supports U/D Flip and L/R Flip
Rotation
CEUS Position
Line density
FOV
FOV size/position
ExFov
Gain
iTouch
Image quality
Depth
TGC
Acoustic output power

The DC-88 is designed for compatibility with commercially available ultrasound contrast agents. Because the availability of these agents is subject to government regulation and approval, product features intended for use with these agents may not be commercially marketed nor made available before the contrast agent is cleared for use. Contrast related product features are enabled only on systems for delivery to an authorized country or region of use. Mindray medical systems make no claims concerning the safety or effectiveness of contrast agents.

UWN Contrast Imaging Quantitative Analysis (option)

Support Time-Intensity Curve analysis
Table display
Freehand ROI
Up to 8 ROIs
Delete all
Delete current
Fit curve
Raw curve
Motion tracking
X scale
Export

LVO (option)

Only available on SP5-1E

Dedicated left ventricle contrast imaging

Tissue Tracking with Quantitative Analysis (option)

Available on P7-3E/SP5-1E in adult cardiac/cardiac-difficult (car-penetration)/pediatric cardiac/neonatal cardiac.
Tissue tracking quantitative analysis
Mandatory ECG connection before TT QA cine acquisition
Six views for analysis
Reload
Edit
Start tracking
Accept & compute
Display effect
Trace method
Bull's eye
LGC
Valve's open and close time
index
Data export
Cycle
Auto play
Thickness
Track point
Parameter
Smooth

Cine Review and Raw Data Processing

Cine Review

Available in all modes
Frame by frame manual cineloop review or auto playback with variable speed
Maximum cine memory up to 24461 frames or 427s (M)
Maximum 4D cine memory up to 16215 frames
Retrospective and prospective storage are available and length is pre-settable (Max. time 480s, Max. frames: 480035).
Frame compare
Image/cine compare
Jump to first and jump to last

Raw Data Processing

B-mode:
TGC
Gain
Dyn Ra.
Gray Map
Tint Map
iClear
L/R Flip
U/D Flip
Rotation
LGC
Dual Live
Auto Merge
H Scale

Performance Specifications

Echo Boost
M-mode:
Gain
Speed
Dyn Ra.
Gray Map
Tint Map
Edge Enhance
Time Mark
Color:
Gain
Baseline
Smooth
Color Map
Priority
Dual Live
Invert
Velocity tag
B display only

PW:
Gain
Baseline
Volume
Angle
Speed
Dyn Ra.
Gray Map
Tint Map
Invert
WF
Quick Angle
T/F Res
Auto Calculate
- Auto Calc Cycle
- Auto Calc Parameter
- Trace Sensitivity
- Trace Smooth
- Trace Area
Time Mark

Measurement/Analysis and Report*

Generic Measurements

2D-mode
- Distance
- Ellipse
- Trace
- Spline
- Cross
- Angle
- Double Dist
- Trace Len
- Trace Len(Spline)
- Parallel
- IMT
- B-Profile
- B-Hist(Ellipse)
- B-Hist(Trace)

- B-Hist(Spline)
- B-Hist(Rectangle)
- Depth
- Color Vel
- Strain Hist
- Color Vel Profile

- Volume
- Volume(Ellipse)
- Volume(E+Dist.)
- Ratio(D)

- Volume
- Volume(Ellipse)
- Volume(E+Dist.)
- Ratio(A)
- Area1
- Area2
- Strain Ratio

- A
- B
- Volume Flow
- Vas Area
- TAMEAN
- TAMAX

M-mode

- HR
- HR (R-R)
- Slope
- Distance
- Time
- Velocity

Doppler mode

- PS/ED
- Vel
- HR
- HR (R-R)
- Time
- Acceleration
- D Trace

- Ratio(Vel)
- Ratio(VTI)

- Volume Flow
- Vas Area
- TAMEAN
- TAMAX

Automatic Doppler Spectrum Analysis

- Heart cycle pre-settable (1, 2, 3, 4, 5)
- Automatic real-time and retrospective tracing
- User-configurable display of items
- Support PI, RI, TAMAX, TAMEAN, Volume Flow calculations
- Appropriate factory setting

Specific report template by application

User-defined report template

Editable value in report

Images selectable
Able to Export as PDF/RTF file

Auto IMT

Intima-Media Thickness
Measurement
Automatic detection of IMT when ROI is set
Support CCA, ICA, ECA, Bulb IMT
Near wall and far wall detection
Angle selectable
IMT trend analysis

IVF

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.

Smart OB™

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

Smart NT™

NT auto measurement
Auto-detection of NT inside ROI

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

Exam Storage and Management

Exam Storage

1T hard drive and 128G SSD (used to install OS and Doppler software)
Up to 905 GB internal hard drive for patient data storage
Capable of storing up to approximate 858000 single frames
Direct digital storage of single frame and cine 2D, color and Doppler

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 images as (BMP/JPG/TIFF/DCM/AVI/MP4 format)
Support backup/send to USB devices, DVD-RW media

Performance Specifications

iWorks™ (option)

- Auto workflow protocol
- Templates are user-configurable
- Functions
- iWorks setup mode
- iWorks setup annotation
- iWorks setup bodymark
- iWorks setup measurement
- Template import and export are available

Connectivity

Ethernet Network Connection

- Cable connection
- Wireless connection

DICOM 3.0

- DICOM basic
- Verify (SCU, SCP)
- Print
- Store
- Storage Commitment
- Media Exchange
- DICOM Worklist (HL7 supported)
- DICOM Query/Retrieve
- DICOM Modality Performed
- Procedure Step - MPPS
- DICOM OB/GYN structured report
- DICOM Abdomen structured report
- DICOM Cardiac structured report
- DICOM Vascular structured report
- DICOM Breast structured Report

iStorage (included in UltraAssist)

- 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 Wi-Fi.
- Support both IOS and Android-powered system
- For IOS powered smart device:
 - DICOM is mandatory, IOS 5.0 or above; for Android-powered smart device: DICOM not necessary, Android 4.0 or above.

MedTouch

- Connect Ultrasound machine to smart devices, such as tablet PC or mobile phone. Remote control of Ultrasound machine, review of patient information, and tutorial software iScanHelper study on smart devices.
- Support IOS and Android powered smart devices

Android 4.0 or above

DICOM not necessary

Transducers

Curved array

SC6-1E (Single Crystal)

- Application: Gynecology, Obstetrics, Abdomen, Musculoskeletal, Vascular, Urology, Nerve
- Bandwidth: 1.3 - 5.7 MHz
- Convex Radius: 61.76 mm
- Physical Footprint: 65.1 mm × 16.4 mm
- Biopsy Guide: NGB-022, multi-angle, reusable

C11-3E

- Application: Abdomen, Transcranial
- Bandwidth: 2.6 - 12.8 MHz
- Convex Radius: 16.06 mm
- Physical Footprint: 32.8 mm × 25 mm
- Biopsy Guide: NGB-018, multi-angle, reusable

Endocavity

V11-3HE

- Application: Gynecology, Obstetrics, Urology
- Bandwidth: 2.6 - 12.8 MHz
- Convex Radius: 12.06 mm
- Physical Footprint: 24.9 mm × 21.8 mm
- Biopsy Guide: NGB-025, single angle, reusable

Volume Curved Array

SD8-1E (Single Crystal)

- Application: Gynecology, Obstetrics, Abdomen
- Bandwidth: 2.6 - 8.2 MHz
- Convex Radius: 45 mm
- Physical Footprint: 75.7 mm × 52.6 mm
- Biopsy Guide: NGB-039, multi-angle, reusable

DE11-3E

- Application: Gynecology, Obstetrics, Urology
- Bandwidth: 2.6 - 12.8 MHz
- Convex Radius: 12.06 mm
- Physical Footprint: 24.9 mm × 21.8 mm
- Biopsy Guide: NGB-027, single angle, reusable

Linear

L12-3E (ComboWave)

- Application: Musculoskeletal, Nerve, Small Parts, Vascular, Pediatric, Abdomen
- Bandwidth: 4.4 - 13.5 MHz
- Field of View (max): 38.1 mm
- Physical Footprint: 45.7 mm × 10.9 mm
- Biopsy Guide: NGB-007, multi-angle, reusable

L14-5WE

- Application: Musculoskeletal, Nerve, Abdomen, Pediatric, Vascular, Small Parts
- Bandwidth: 4.0-14.0 MHz (-20db)
- Number of Elements: 192
- Width (max): 5.44 cm
- Extended FOV: 20°
- Steer Angle:
 - B: +/-6°, +/-12°;
 - C/PW: +/-10°, +/-20°, +/-30°
- Depth: 1.5-28 cm
- Physical Footprint: 66 mm × 23 mm
- Aperture: 58.5 mm × 6 mm
- B-mode Frequencies: 4.0-9.6, 4.8 - 10.0, 6.0-12.6 MHz
- Harmonic Frequencies: 8.0, 10.0, 12.0 MHz
- Color Frequencies: 6.2, 7.3, 8.0, 8.0 (HR Flow) MHz
- PW Frequencies: 5.0, 6.2, 7.3 MHz
- Biopsy Guide: NGB-035, reusable

L9-3E (ComboWave)

- Application: Abdomen, Pediatric, Small Parts, Musculoskeletal, Vascular, Nerve, Obstetrics
- Bandwidth: 1.8 - 9.8 MHz
- Field of View (max): 43.7 mm
- Physical Footprint: 62 mm × 22 mm
- Biopsy Guide: NGB-034, multi-angle, reusable

L20-5E (ComboWave)

- Application: Abdomen, Small Parts, Musculoskeletal, Vascular, Nerve
- Bandwidth: 6 - 23 MHz
- Field of View (max): 28.5 cm
- Physical Footprint: 42.23 mm × 22.10 mm
- Biopsy Guide: not available

Phased Array

SP5-1E (Single Crystal)

- Application: Cardiac, Transcranial, Abdomen
- Bandwidth: 1.0 - 5.0 MHz
- Field of View (max): 90°
- Physical Footprint: 38.2 mm × 30.5 mm
- Biopsy Guide: NGB-011, multi-angle, reusable

P7-3E

- Application: Abdomen, Pediatric, Cardiac, Transcranial, Nerve
- Bandwidth: 2.3 - 7.2 MHz
- Field of View (max): 90°
- Physical Footprint: 34 mm × 24.5 mm
- Biopsy Guide: not available

Performance Specifications

Data Security

Support encrypt patient data saved in the local hard disk

Two encryption methods can be selected:

Factory or User Define

Support encrypt backup data, with user defined password

Support LDAP login authentication, with different level user permissions

Add coding security mechanism, the account would be locked if the password incorrectly typed in several times consecutively

Support encrypt DICOM data, add TLS encryption preset

Support delete patient data with one button

Support anonymously send or backup patient data

If there is no operation within specific time, the screen will be locked automatically

Add security log

Peripheral Devices and Accessories (Option)

Black/White Digital Video Printer

SONY UP-D898MD

MITSUBISHI P95DW-N

Black/White Analog Video Printer

MITSUBISHI P93W-Z

SONY UP-X898MD

Color Digital Printer

SONY UP-D25MD

Graph/Text Printer

HP Officejet Pro 8100

Gel Warmer

Easily be disassembled off system for cleaning

Temperature: 37° C, 40° C, off

Light indicator: Green--- working normally;
Flickering orange---working abnormally

Footswitch

USB port: FS-81-SP-2 (1-pedal)

USB port: 971-SWNOM (2-pedal)

USB port: 971-SWNOM (3-pedal)

Support User-definable functions (such as: Freeze, Save, Print)

ECG

6-pin, AHA/IEC, for 3-lead wires

ECG wave display: on/off

Gain: 0 - 30, 1/step

Sweep speed: 20 - 145 mm/s

Barcode Reader

Laser barcode scanner

Model: SYMBOL LS2208 (1D), SYMBOL DS4308 (2D)

Built-in Battery

Replaceable and rechargeable lithium battery

Restore from

standby mode: less than 12s

Full battery lasts more than 24h in standby mode

Light indicator for standby mode

Empty battery recharged to full in less than 4h

Continuous working

time of the main unit

powered by the

battery: no less than 75 mins.

System Inputs and Outputs

Video/Audio Input

Microphone: 1 port

Video/Audio Output

S-Video out: 1 port, PAL/NTSC

HDMI: 1 port

VGA out: 1 port

Audio out: 1 port

Physio Input

Support ECG/PCG signal

Support Respiratory Wave

ECG: 1 port

Other Input/Output

USB: 5 USB 3.0 ports, 1 more
dedicated USB port for printer

Ethernet: 1 port

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 IEC 60601-2-37

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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