

DP-50 Expert

Digital Ultrasonic Diagnostic Imaging System



Release 5.3.2

mindray

Mindray Confidential

DP-50 Expert

Ultrasound System

Performance Specifications

System Description

The DP-50 Expert is an ergonomically designed portable machine for multi-specialty use like adults, pregnant women, pediatric patients and neonates.

Intended Use

FDA Region: It is intended for use in fetal, abdominal, pediatric, small organ (breast, thyroid, testes), neonatal and adult cephalic, trans-rectal, trans-vaginal, musculoskeletal (conventional, superficial), cardiac (pediatric), peripheral vascular exams.

General Specification

Dimensions and Weight

Size: 147±5mm×361±5mm×358±5mm (Depth×Width×Height)
Net Weight: 8.1±0.5kg (without battery, two probe ports)

Electrical Power

Voltage: 100-240V~
Frequency: 50/60Hz
Input current: 1.5-0.8A

Battery

Lithium-ion
Battery Pack: 14.8V, 6600mAh
Charge time: < 3 hours (connected on AC power supply, with the system powered off)
Endurance time: > 120 min

Boot time

Boot time: >38s
Wake up time (from standby): >7s

Operating Environment

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

Storage & Transportation Environment

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

Probe

Probe Types

Convex array
Linear array

Scanning Methods

Electronic convex with extend FOV
Electronic linear with slant scanning and trapezoid

Probe Model

35C50EA	Convex
65C15EA	Micro-Convex
65EC10EA	Endocavity Micro-Convex
75L38EA	Linear
75L53EA	Linear
10L24EA	Linear
65EB10EA	Bi-plane (convex & convex)
35C20EA	Micro-Convex
65EC10ED	Endocavity Micro-Convex
75LT38EA	Intra-operative linear
65EL60EA	Endorectal Linear

Available Needle-guided Bracket for Probe:

35C50EA	NGB-001
75L38EA	NGB-002
35C20EA	NGB-003
65EC10EA	NGB-004
65EB10EA	NGB-004
65EC10ED	NGB-004
65C15EA	NGB-005
75L53EA	NGB-007
65EL60EA	NGB-009
75LT38EA	NGB-010
10L24EA	NGB-016

System Configuration

Standard Configuration

Display
15-inch LCD, LED backlight,
High-Resolution 1024 x 768
Contrast & Brightness adjustable
Screen Saver: Time presettable
Angle adjustable: 60°

Control Panel

Alphanumeric Keys
Function Keys
Knobs
User-defined Keys: Function presettable
8 segment TGC
Trackball: Color & Speed presettable
Key Backlight Brightness & Volume presettable
Integrated Speakers

Indicators: Power/Battery/Standby/HDD status

Handle

Phase Shift harmonic imaging
Trapezoid imaging
Slant scanning for linear probes (2D Steer)
iBeam™
iClear™ (Speckle Suppression Imaging)



iTouch™

ExFOV Imaging for Convex Probe

iStation™

1TB integrated hard disk

I/O Interfaces

Transducer port: 2
Power input port: 1 (Connect to the AC power supply)
USB port: 4
VGA OUT port: 1
Video OUT: 1
S-Video OUT: 1 (Separate video output)
Ethernet port: 1 (Connect to network)
Remote control port: 1
Equipotential terminal: 1

Multi-language screen display and control panel overlay

iScanHelper

Medsight

Application categories

Abdomen
Obstetrics
Gynecology
Cardiology
Small Parts
Urology
Vascular
Pediatric
Emergency
Nerve

Accessories

Operator's manual
Basic Volume
Advanced Volume
Operation Note
Gel
Power cord
US Power Cord
Probe holder
Grounded Cable
Video Printer Remote Cable

System Language

Software display available only German/Spanish/
French/Italian/Portuguese/Icelandic/Norwegian/
Swedish/Finnish/Turkish/Danish/ Indonesian
Operation manual available: English

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Options Supported

IMT (Auto Calculation of Intima-Media Thickness)

iScape View

DICOM basic

Task management

DICOM storage

DICOM print

DICOM storage commitment

DICOM media storage (including DICOM DIR)

DICOM Worklist

DICOM MPPS

DICOM Query/Retrieve

DICOM OB/GYN structured report

DICOM vascular structured report

DICOM cardiac structured report

Color Doppler

Power Doppler

PW

HPRF

Smart 3D

iWorks

Smart OB

Smart Bladder

Keys for option functions

Battery Pack

External USB DVD-RW

Footswitch:

971-SWNOM (2-pedal)

971-SWNOM (3-pedal)

FS-81-SP-2 (single-pedal)

Mobile trolley: UMT-170

Weight: 14.5±1 kg

Width: 505±20 mm

Depth: 536±20 mm

Height: Selective (not available after installed): 775±20 mm, 863±20 mm, 915±20 mm, 3 levels

Carrying bag

Network accessory package

Probes

Needle-guided brackets

Peripherals Supported

Black and White VideoPrinter

MITSUBISHI

P93W-Z Analog

SONY UP-X898MD Analog

Color Video Printer

SONY UP-D25MD Digital

Graph / text printer

HP OFFICEJET PRO 8100

LAN Accessory LPA11

Exam Mode

Adult ABD

ABD-Difficult

Ped-ABD

GYN

OB1

OB2/3

Urology

Prostate

Vascular

Thyroid

Breast

SMP

MSK (Musculoskeletal)

Nerve

Superficial

Orthopedic

Adult Cardiac

EM FAST

Imaging Mode

B-Mode

Tissue Harmonic Imaging

Phase Shift Harmonic Imaging

Slant scanning for linear probes (2D Steer)

Trapezoid Imaging for Linear Probe

ExFOV Imaging for Convex Probe

M-Mode

Color Mode

Power Mode

PW Mode

HPRF (High Pulse Repeat Frequency)

iScape™ (iScape View)

Display Mode:

B/C/D triplex mode

Dual live: B/C

Adjustable time line display format (V1:1, V1:2, V2:1, Full)

Single window

Dual-split: B/C, B/M, B/PW

Quad-split

Imaging Features

iBeam™ (Spatial Compounding Imaging for Linear and Convex Probe)

iScape™

Multi-frequency probes for 2D imaging modes

iClear™ (adaptive speckle suppression imaging for all probes)

iTouch™ (B/M): Auto Optimization

TSI (Tissue Specific Imaging)

iZoom™

Spot Zoom and Pan Zoom

B-Mode

Display Depth

Minimum: 0.9cm

Maximum: 38.8cm

Frame rate (Max.):

B-Mode: 400 fps

Adjustable focus number: 4

Adjustable focus positions (Max.): 16

Magnification factor:

Pan Zoom: 80%-1000%

Spot Zoom: Continuously adjustable

iZoom: Instant full screen view, two level

System dynamic range:

30~220dB, 5/step

Gain: 0~100dB, 51steps

TGC: 8

Colorize: On, off

Colorize map: Off, 1-25

Gray Map: 1-25, 1/step

FOV Size: Continuously adjustable, convex transducer only

IP: 1~8

Persistence: 0~7

R/L, U/D Flip

Rotation: 0°, 90°, 180°, 270°

Line Density: L, M, H, UH

iTouch Bright: -12~12dB, 3db/step

A.power: 0%~100%, 32steps

Smooth: 1~4

TSI: General, Fat, Fluid, Muscle

B Steer: 3 levels, linear transducer only

Trapezoid: On, off, linear transducer only

FOV Position: Continuously adjustable, convex transducer only

HScale: On, off

Middle Line: On, off

Gray Rejection: 0~5

y: 0~3

Curve: Adjustable

Gray Invert: On, off

iClear: On/off, 1-4, 1/step

iBeam: On/off

High FR: On, off (35C50EA/35C20EA THI)

Auto Merge: On, off, linear probe, Dual display mode

M-Mode

Speed: 1~6

IP: 1~8

Edge Enhance: 0~14

M Soften: 0~14

Time Mark: On, off

PW Mode

PRF: 0.7kHz – 24kHz

Baseline: -4~4

Audio: 0~100%, 2%/step

Angle: -89°~89°

Quick Angle: -60, 0, 60

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SVD:	Continuously
Speed:	1~6
iTouch (PW):	On/off
SV:	
	0.5~3 mm, 0.5 mm/step
	3~5 mm, 1 mm/step
	5~10 mm, 2.5 mm/step
	10~20 mm, 5 mm/step
Dynamic range:	24~72, 2/step
WF:	0~6
Duplex/Triplex:	On/ off
T/F Res:	0~4
Auto Calc:	On/ off
Auto Calc Cycle:	1~5
Auto Calc Param:	Setting auto spectrum calculation results
Trace Area:	Above/ Below/ All
Ref. Plane:	A, B, C
Display format:	2×2, 3×3, 4×4, 5×5
Adjust Slice	
Slice Position	
Reset Orientation	

Color Mode

Frame rate (Max.):	260 fps (35C50EA)
PRF (kHz):	0.3 (35C50EA)~ 15.5 (10L24EA)
Flow velocities (cm/s, probe dependent):	5.0 (35C50EA)~ 100.0 (10L24EA)
Gain:	0~100, 2/step
Baseline:	-8~8
Scale:	30 levels
Persistence:	0~4
Smooth:	0~4
ROI adjustment:	Continuously
Priority:	0%~100%, 11 levels
WF:	0~7
Line Density:	L, M, H, UH
Dual Live:	On/ off
Invert:	On/ off
B/C Align:	On/ off
Packet Size:	0~3

Power Mode

Dynamic Range:	0~70, 5/step
Power Map:	P0~P3; dP0~dP3

Display Annotations

Manufacturer logo	
Hospital name:	Up to 64 characters can be displayed
Exam date:	3 types selectable, YY/MM/DD, MM/DD/YY, DD/MM/YY
Exam time:	2 formats
Acoustic output indices:	MI, TIC, TIS, TIB
Freeze icon	

Gender	
Age	
ID:	Up to 64 characters can be displayed
Name:	Up to 64 characters can be displayed
Probe model	
Current exam mode	
Accession#	
Operator:	Up to 64 characters can be displayed
Menu	
Image	
Probe orientation mark	
Time line	
Coordinate axis, including depth, time, frequency	
TGC curve	
Focus	
Comment	
Body Mark	
Measure caliper	
Gray scale bar	
Thumbnail	
Help information	
Status icons	
Biopsy guideline	
Measure result window (up to 8 results can be displayed)	
Image parameters	

Comments and Body Mark

Comment

Text comment

Comment text for all exam modes	
Custom:	Add/delete/edit comment units in current menu

Arrow

Arrow Size	
Arrow position	
Arrow orientation	

Body Mark

Application package	
Body marks for all exam modes	
Custom:	Import/delete body marks

Storage/ Connection

1TB integrated hard disk	
External DVD-R/W (Optional)	
4 USB ports	
Image archive on hard disk, DVD, Medsight, iStorage and temporary saving in cine memory	
Clipboard	
Thumbnail	
Single-frame image formats: BMP, JPG, TIFF, DCM, FRM (supports off-line analysis)	

Multi-frame images formats: AVI, DCM, CIN, (supports off-line analysis)

Storage area:	
Image area:	640×522
Standard area:	800×600
Full-screen:	1024×768
iVision:	Demo player

Cine review: Auto, Manual (auto review segment can be set), supports linked cine review for 2D, M images.

Cine memory capacity (Max.)

Clip length presettable:	1-60s
B-Mode:	8632 frames
M-Mode:	90.5 s
PW:	84.8 s

Max. frames in HDD (B-Mode)

BMP:	> 406000
FRM:	> 118000

iStorage

DICOM:

DICOM Basic	
Task management	
DICOM storage	
DICOM print	
DICOM storage commitment	
DICOM media storage (including DICOM DIR)	

DICOM Worklist

DICOM MPPS

DICOM Query/Retrieve

Structured Report (SR)

MedSight

An interactive app that lets you transfer clinical images straight from Mindray Ultrasound system to a smart device, such as mobile phone or tablet PC

Needs to be installed on mobile terminal

Transfer images or clips from system to mobile terminal through WiFi

Support Android/iOS powered system

iStation™

Intelligent patient data management system

Integrated search engine for patient data

Detailed patient information view

Intelligent data backup/ restore

Patient data/ image sending

Patient data deleting

Exam managing: Create new exam, activate exam and continue exam

Recycle Bin

Task manager

Measure/Calc/Study

General

B-Mode	
Distance	

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Performance Specifications

Ellipse	HR
Trace	Time
Spline	Acceleration
Cross	D Trace
Angle	-----
Double Dist	Volume Flow
Trace Len	Vas Area
Parallel	TAMEAN
B-Profile	TAMAX
B-Hist (Ellipse)	
B-Hist (Trace)	
B-Hist (Spline)	
B-Hist (Rectangle)	
Depth	
IMT	

Volume	Auto Calculation
Volume (Ellipse)	PS
Volume (E+Dist.)	ED
Ratio (D)	MD
Ratio (Ellipse)	PPG
Ratio (Spline)	TAMAX
Ratio (Cross)	Vol Flow(TAMAX)
-----	TAMEAN
Volume	Vol Flow(TAMEAN)
Volume	DT
Volume (Ellipse)	MPG
Volume (E+Dist.)	MMPG
Ratio (A)	VTI
Ratio (Trace)	AT
Ratio (Ellipse)	S/D
Ratio (Spline)	D/S
Ratio (Cross)	PI
Volume Flow	RI
Vas Area	PV
TAMEAN	HR
TAMAX	
	Diagnostic Report
M-Mode	View/add images
HR	Data edit
Slope	Print
Distance	Import
Time	export (to PDF/RTF file)
Velocity	View history report
D-Mode	Obstetric analysis
PS/ED	Fetal growth curve
Vel	
	Measure/Calc/Study
	Quality Standards
	ISO 9001:2008
	ISO 13485:2003

Design Standards

EN 60601-1 and IEC 60601-1
EN 60601-1-2 and IEC 60601-1-2
EN 60601-2-37 and IEC 60601-2-37
EN ISO 14971 and ISO 14971
EN ISO10993-1 and ISO10993-1
EN 62366 and IEC 62366
EN 62304 and IEC 62304
EN ISO 17664
EN 1041
EN 980
IEC 60878

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