



HIGH QUALITY **ULTRASOUND**
AND **DIAGNOSTIC SOLUTIONS**



P12PLUS

Digital Color Doppler Ultrasound System

Value and Efficiency

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TECHNICAL SPECIFICATIONS

1 General Specification

1.1 Application

- Abdomen
- Vascular
- Cardiology
- OB/Gynecology
- Urology
- Musculoskeletal
- Interventional ultrasound
- Small parts
- Anesthesiology
- Pediatrics
- Orthopedics
- Cephalic

1.2 Available Probe

- Convex probe
- Linear probe
- Phased array probe
- Volume probe
- TEE Probe
- Biplane Probe

1.3 Imaging Mode

- B
- THI/PHI
- M mode
- Anatomical M
- Color M
- CFM
- PDI/DPDI
- PW
- CW
- TDI
- TDI+PW
- TDI+M
- 3D/4D

1.4 Standard Function and Configuration

- 5-band adjustable frequency in B mode (fundamental wave and harmonic wave)
- SNRT
- Compound imaging
- LGC
- Tissue characteristic index
- Image rotation function

- HPRF
- Dual Live
- Simult mode
- Auto trace
- Auto IMT
- Auto NT
- Auto EF Scr-
- Zoom 2D
- Panoramic
- Biopsy guide S-
- Guide
- Tei index
- DICOM
- Trapezoid
- Wifi
- 3D/4D
- Auto Face
- S-Live
- S-Live Silhouette

1.5 Specific Function and Configuration

- Color Panoramic
 - Vis-Needle
 - Freehand 3D
 - S-Depth
 - Multi-Slice
 - AVC Follicle Elastography
 - ECG (Option)
 - Built-in Battery (Option)
 - Built-in DVD
- Color M
- Anatomic M
- TDI

1.6 Available Language

- Software: English, Spanish, Russian, French, Italian, German, Norwegian, Portuguese
- Keyboard: English, Simplified Chinese,
- Spanish, Russian, French, Italian, German, Norwegian, Portuguese
- User manual: English,

2 Physical Specification

2.1 Size and Weight

- Width: approx. 526mm
- Depth: approx. 751mm
- Height: approx. 1400mm
- Weight: approx. 77kg

2.2 Monitor

- LED screen 22"
- Resolution: 1920*1080
- Viewing angle: 178° (horizontal), 178° (vertical)
- Swivel angle: ±45°
- Up and down angle: -25° to 90°
- Height: 0-100mm

2.3 Touchscreen

- LCD screen 13"
- Resolution: 1920×1080
- Viewing angle: 80°(left and right), 80°(up and down)
- User preset for parameter layout

2.4 Control Panel

- User-oriented design
- Backlight design: panel buttons
- Multiple defined-keys
- TGC: 8 levels slider controls
- Adjustable sensitivity of trackball
- Pull-out keyboard
- Promotion and demotion difference: 0-230mm

2.5 Speaker

Hi-Fi Speaker

2.6 Caster

- Diameter: 5 inches
- Specification: all the 4 casters can be independently locked

2.7 Probe Port and Probe Holder

- General probe ports: 4 ports are activated and interchangeable,
- Pencil probe port
- Probe holder: 4
- Gel holder: 2
- Probe cable management

2.8 Power

- Power supply: 100~240V~, 2.7~1.1 A, 50/60Hz
- Maximum power output: 270VA
- Battery: Continuous work time: about 1.5 hour in B mode

2.9 Working Environment

- Temperature: 0°C~40°C
- Relative humidity: 30%~85%RH (no condensation)
- Atmospheric pressure: 700hPa~1060hPa
- System noise: ≤44dB

2.10 Storage and Transportation Environment

- Temperature: -20°C~+55°C
- Relative humidity: 20%~90% (no condensation)
- Atmospheric pressure: 700hPa~1060hPa

3 Annotation and Body Mark

- Annotation: text annotation and arrow annotation
- Manual text annotation by touch screen
- Front size of text annotation: adjustable
- Initial position
- Preset text annotation
- Arrow direction: adjustable
- All exams application included
- Body marks: 122 selectable
- Body marks classified by specific exam types, and position adjustable
- Preset customization

4 Monitor Information

- Manufacturer logo
- Hospital name
- System date and time
- Probe and exam item
- MI and TIS
- Operator
- Probe icon
- Patient ID, name, gender, date of birth and age
- GA
- Exam type icon
- Tissue temperature display (specified probe)

- Depth scale and focus position
- Image parameters
- Measurement result
- Body marks annotation

5 Image Parameter

5.1 Description

- Frame rate: ≥ 1493 fps
- Grayscale level: 256 levels
- Volume: 0 - 100, 101 levels adjustable
- System Boot up: Approx. 60s

5.2 B Mode

- Gain: 1-255 adjustable
- Scan depth: max 40cm (probe dependent)
- Compound imaging: Off, 1, 2 adjustable
- Frequency: 5 bands adjustable (fundamental wave: 5 bands; harmonic wave: 5 bands)
- Chroma: 1 -13, 13 types selectable
- Adaptive image fusion: 0 -15, 16 types selectable
- SNRT- μ -Scan: off, 1-8, 9 levels adjustable
- Line density: 3 levels adjustable (High/Med/Low)
- Persist: 0-60 adjustable
- Focus: 12, Focus span adjustable
- Dynamic range: 20-280
- Gray Map: 1-15, 15 selectable
- Power: 1-100% adjustable
- Tissue acoustic: 1400-1700
- TGC: 8 levels slider controls
- LGC: 2 bands
- Image inversion: Left and Right, Up and Down, Rotation
- Scan range and position: adjustable
- B steer mode: 3 levels adjustable
- Trapezoid imaging: Off, 1, 2
- Auto optimization

5.3 M Mode

- Gain: 1-255 adjustable
- Chroma: 1-5, 5 levels adjustable
- Display format: H1/2, H1/4, V1/3, V1/2, V2/3, O1/4
- Scan speed: Min, Slow, Med, Fast, Max
- Video inversion: On/Off

- M processing: Switch between average and peak values
- Power: 30-100% adjustable
- Color M: CFM, TDI

5.4 Anatomic M Mode

- Simultaneous display of 3 sample lines
- Angle and position of sample lines: adjustable

5.5 CFM Mode

- Frame rate: ≥ 160 fps
- Gain: 0-255 adjustable
- Power: 0-100% adjustable
- B reject: 0-255 adjustable
- Size and position of color ROI: adjustable
- Inversion: up, down, left, right
- Flow invert: On/Off
- Frequency: 5 bands adjustable
- Wall filter: 25 - 750 adjustable
- PRF: 0.5-8kHz adjustable
- Line density: Low, Med, High adjustable
- Color Map: 1-10 adjustable
- Color baseline adjustment: ± 15 levels, 31 adjustable
- Persist: 0-80, 5 levels adjustable
- ROI steer: 5 levels adjustable (linear probes)
- ROI color: adjustable
- One-key optimization

5.6 PDI/DPDI Mode

- Double real-time
- Power: 0-100%, 11 levels adjustable
- B reject: 0-255, 256 levels adjustable
- Persist: 0-80, 5 levels adjustable
- Color icon: 1-10, 10 levels adjustable
- Inversion: up, down, left, right
- Wall filter: 25 - 750 adjustable

5.7 PW Mode

- Gain: 0-255 adjustable
- Display format: H1/2, H1/4, V1/3, V1/2, V2/3, O1/4
- Simult: achievable
- Sample volume for PW Doppler: 0.7-21mm adjustable
- Sample position for PW Doppler: adjustable
- Inversion: On/Off

- Quick angle correction: 0°, 60°, -60° adjustable
- θ angle correction: 0-72° adjustable range
- Steer angle: 0, ± 16 , ± 20 , 5 levels adjustable
- Auto trace: achievable in real-time mode and frozen mode
- Baseline: 17 levels adjustable
- Frequency: 5 levels adjustable
- Wall filter: 25 - 750 adjustable
- PRF: 1-16kHz
- HPRF: achievable
- Scan speed: Min, Slow, Med, Fast, Max
- Chroma: 1-5 adjustable
- Dynamic range: 1-5, 5 levels adjustable
- Auto optimization

5.8 CW Mode

- Gain: 0-255 adjustable
- Display format: H1/2, H1/4, V1/3, V1/2, V2/3, O1/4
- Sample position for CW Doppler: adjustable
- Inversion: On/Off
- θ angle correction: 0-72° adjustable range
- Auto trace: achievable in real-time mode and frozen mode
- Baseline: ± 17 levels adjustable
- Wall filter: 25 - 750 adjustable
- PRF: 1-48KHz
- Scan speed: Slow, Fast, Max
- Chroma: 1-5 adjustable
- Dynamic range: 1-5 adjustable
- Tissue speed imaging: achievable
- Power%: 0-100, 11 levels adjustable
- B reject: 0-255, 256 levels adjustable
- Persist: 0-50, 5 levels adjustable
- Color icon: 1-14, 14 levels adjustable
- Inversion: up, down, left, right
- Flow invert: On/Off
- Wall filter: 25 - 750 adjustable

5.9 TDI+PW Mode

- PRF: 1-16kHz

5.10 TDI+M Mode

- Gain: 1-255 adjustable
- Chroma: 1-5, 5 levels adjustable
- Display format: H1/2, H1/4, V1/3, V1/2, V2/3,

O1/4

- Scan speed: Min, Slow, Med
- M processing: Switch between average and peak values
- Power: 30-100 adjustable

5.11 Freehand 3D

- Scan method: sector scan, linear scan
- Display mode: dual-split screen display, quad-split screen display, 3D full display
- Rotate X: rotate 4° along X axis
- Rotate Y: rotate 4° along Y axis
- Rotate Z: rotate 4° along Z axis
- Viewing angle: top, bottom, left, right, front, back
- 3D orientation: 0°, 90°, 180°, 270°
- Reset: default settings, swivel angle, viewing angle
- Render mode: Surface, Grad. Light, Skeleton, Transp. Min, X-Ray, S-Depth, S-Live
- Threshold: 0 - 255, 1 each step
- Contrast: 0 - 100, 1 each step
- Transparency: 0 - 100, 1 each step
- Brightness: 0 - 100, 1 each step
- Smoothness: 0 - 30, 1 each step
- Light position.: 0 - 9 , 1 each step
- B Chroma: 1 - 13, 1 each step
- 3D Chroma: 0 - 14 adjustable depending on the different render modes, 1 each step
- Edit: trace, box , eraser
- M-Slice
 - Display: 1*2, 2*2, 3*4, 3*3, 4*4, 5*5
 - Slice distance: 0.5 - 10.0 adjustable, 0.5 each step
 - Slice number: 3 - 29 adjustable, 2 each step
- AVC Follicle

5.12 3D/4D

- Display mode: dual-split screen display, quad-split screen display, 3D full display
- Rotate X: rotate 4° along X axis
- Rotate Y: rotate 4° along Y axis
- Rotate Z: rotate 4° along Z axis
- Up/Down: move the image up/down
- Left/Right: move the image left/right
- View: top, bottom, left, right, front, back
- 3D volume angle: 0°, 90°, 180°, 270°

- Reset: default settings, swivel angle, view angle
- Render mode: Surface, Grad. Light, Skeleton, Transp. Min, X-Ray, S-Depth, S-Live
- Free rotation: 0° , 45° , 90° , 180° , 270° , 360°
- Image quality: High, Med, Low
- Swivel angle: 5° to 120° (probe dependent)
- Stability: On/Off
- Edit ROI: On/Off
- Auto face: On/Off
- Reset: default settings, swivel angle, view angle
- Adjust light: On/Off (S-Live)
- Pre-activated mode: pre-activated mode return available
- Cine review: 0 - 499 adjustable, depending on the size of volume data
- Trackball (Rotate highlighted): Rotate, Rotate Z
- Threshold: 0 - 255, 1 each step
- Contrast: 0 - 100, 1 each step
- Transparency: 0 - 100, 1 each step
- Brightness: 0 - 100, 1 each step
- Smoothness: 0 - 30, 1 each step
- Light Position.: 0 - 9 , 1 each step
- 3D Chroma: 0 - 14 adjustable depending on the different render modes, 1 each step
- B Chroma: 1 - 13, 1 each step
- Edit: trace, box , eraser
- Display (C-Plane): AB, AC, BC, ABC
- M-Slice
 - Display: 1*2, 2*2, 3*4, 3*3, 4*4, 5*5
 - Slice distance: 0.5 - 10.0 adjustable, 0.5 each step
 - Slice number: 3 - 29 adjustable, 2 each step
- AVC Follicle

5.1 Compression - Elastography Imaging

- Available probe: linear, convex and endocavity
- Inversion: up, down, left, right
- Display mode: single display and dual live display
- Strain Map: 0 - 7 adjustable
- Map display: independent adjustment of left and right map
- Contrast: 0.02 - 2.0, 0.01 each step
- Transparency: 0.10 - 1.0, 0.02 each step

- Persist: 0.02 - 0.98, 0.02 each step
- Strain Ratio

5.15 Panoramic Imaging

- Real-time 2D panoramic imaging
- Reconstruction panoramic imaging
- CFM/PDI flow panoramic imaging (only linear)
- Probe types: linear, convex, micro convex
- Velocity Indicator
- Maximum scan length: 1m
- Rotation: 0 - 360°
- Zoom: 2 times
- Calculation

5.16 Biopsy Guide Function

- Biopsy lines angle quick adjustment
- Biopsy lines angle: adjustable
- Biopsy lines offset: adjustable
- Biopsy grid (Biplane probe)
- Presets customization

5.17 Vis-Needle

- Probe: L741, L752, 10I2, L742, 12L-A
- Image steer angle: 20°, 30°, 40°, 50°
- Biopsy lines depth: adjustable
- Dual Live

5.18 Magnification

- Zoom ratio: 0.8 - 10.0
- Scr-Zoom: One-key full screen display

5.19 Preset Exam

- User can preset the most ideal diagnostic mode depending on different probe and applications to optimize the imaging parameters and adjustment combination
- User-defined icon
- Import or export presets

6 Measurement/Analysis and Report

6.1 Measurement Settings

- BSA setting: Eastern, Western
- Cross Cursor Size: Small, Medium, Large
- Measure Line Size: Small, Medium, Large
- Distance Dash Line Display: On, Off
- Velocity Cross Line Display: On, Off
- Ellipse Cross Line Display: On, Off
- Line ID Display: On, Off
- Keep Result Window: On, Off
- Result Font Size: Small, Medium, Large
- Result Position: User can respectively set the result position of 2D/ dual-split+quad-split/ M/ Doppler mode. Right Top, Right Bottom, Left Top, Left Bottom
- Short-cut key preset for OB/Gyn, cardiology
- Auto/manual trace result display

6.2 Basic Measurement Package

- Obstetrics measurement package
- Small parts measurement package
- Gynecology measurement package
- Vascular measurement package
- Abdominal measurement package
- Cardiac measurement package
- Urology measurement package
- Pediatrics measurement package

6.3 Report

- Measurement values in the report can be edited
- Image insertion
- Report logo (170x60Pixel, bmp)
- Font size and color
- Background color
- Display items
- Application-specific measurement report
 - Fetal growth curves
 - Fetus anatomy evaluation
 - Fetus compare (four fetuses)

6.4 Auto Measurement

- Auto IMT
- Auto NT
- Auto EF
- AVC Follicle

7 Storage and Data Management

7.1 Storage

- Total storage: 500G; free: $\geq 466G$
- Maximum frames: 100-2000
- Maximum 3D cine: 77 frames
- Directly store to USB drive
- Prospective storage for contrast image

7.2 Data Management

- Image share service (Samba)
- Export data to USB drive or DVD
- Export format:
 - System format
 - Image format: BMP、JPG、TIF
 - Cine format: AVI、WMV
 - Report format: PDF、TXT
 - DICOM format
- Clipboard: thumbnail display, delete, export
- Create exam, activate exam, resume suspended exam, close exam
- Query/Retrieve service
- Review current exam and history exam
- Post-processing and post-measurement
- Show gallery

7.3 Network Connection

- Cable network
- Wireless network (the same function with cable network)

8 Cine Review

- Cine review: manual review frame by frame and auto play with adjustable speed
- Skip from first frame to last frame
- Auto play with trackball

9 System Input and Output

- Video output: 7
 - ✓ HDMI
 - ✓ DVI
 - ✓ VGA
 - ✓ RGB
 - ✓ VIDEO OUT: 2
 - ✓ S-VIDEO OUT
- Audio output
- Audio input
- Video input
- Physiological signal input: 1
- USB port:
 - ✓ 2 USB 3.0 ports, 4 USB 2.0 ports, 1 engineering port
- Foot switch input: 1
- Ethernet port: 1
- Video print port: 2

10 DICOM 3.0

- DICOM storage
- DICOM structured report
 - ✓ Gynecology structured report
 - ✓ Obstetrics structured report
 - ✓ Cardiology structured report
 - ✓ Vascular structured report
- DICOM storage commitment
- DICOM Worklist
- DICOM MPPS
- DICOM print
- DICOM Q/R

11 Probe

11.1 Convex Probe

- 3C-A
 - ✓ Application: Abdomen, Gyn/OB
 - ✓ Frequency range: 1.0-7.0MHz
 - ✓ Acoustic lens: 60mm×18mm
 - ✓ Biopsy bracket: NGB3C-A
- C1-6
 - ✓ Application: Abdomen, Gyn/OB
 - ✓ Frequency range: 1.0-8.0MHz
 - ✓ Acoustic lens: 60mm×16mm
 - ✓ Biopsy bracket: NGBC1-6
- 6V1
 - ✓ Application: Gynecology, Urology Frequency range: 3.0-15.0MHz
 - ✓ Acoustic lens: 32mm×10mm FOV: 135°
 - ✓ Biopsy bracket: NGB6V1
- 6V3
 - ✓ Application: Gynecology, Urology Frequency range: 3.0-15.0MHz
 - ✓ Acoustic lens: 41mm×10mm ;FOV: 200°
 - ✓ Biopsy bracket: NGB6V3-2
 - ✓ Temperature control
- 6V7
 - ✓ Application: Gynecology, Urology
 - ✓ Frequency range: 3.0-15.0MHz
 - ✓ Acoustic lens: 41mm×10mm
 - ✓ Biopsy bracket: NGB6V7
 - ✓ Temperature control
- 6V3A
 - ✓ Frequency range: 3.0-15.0MHz
 - ✓ Acoustic lens: 26mm×10mm
 - ✓ Temperature control
- C613
 - ✓ Application: Cardiology, Abdomen, pediatric cranial
 - ✓ Frequency range: 4.0-13.0MHz
 - ✓ Acoustic lens: 30mm×10mm
 - ✓ Biopsy bracket: NGBC613
- BCL10-5
 - ✓ Application: Urology
 - ✓ Frequency range: 4.0-16.0MHz
 - ✓ Acoustic lens: 41mm×10mm (convex probe), 64mm×9mm (linear probe)
 - ✓ Biopsy bracket: NGBBCL10-5

- ✓ Temperature control: not available

11.2 Linear Probe

- L741
 - ✓ Application: Vascular, Small parts, Musculoskeletal, Neurology
 - ✓ Frequency range: 4.0-16.0MHz
 - ✓ Acoustic lens: 49mm×10mm
 - ✓ Biopsy bracket: NGBL741
- L752
 - ✓ Application: Vascular, Small parts, Musculoskeletal, Neurology
 - ✓ Frequency range: 4.0-16.0MHz
 - ✓ Acoustic lens: 55mm×10mm
 - ✓ Biopsy bracket: NGBL752
- L742
 - ✓ Application: Vascular, Small parts, Musculoskeletal, Neurology
 - ✓ Frequency range: 4.0-16.0MHz
 - ✓ Acoustic lens: 42mm×10mm
 - ✓ Biopsy bracket: NGBL742-2
- 12L-A
 - ✓ Application: Small parts, Musculoskeletal, Vascular,
 - ✓ Frequency range: 3.0-17.0MHz
 - ✓ Acoustic lens: 55mm×8mm
 - ✓ Biopsy bracket: NGB12L-A
 - ✓ Temperature control: not available
- 12L-B
 - ✓ Application: Small parts, Musculoskeletal, Vascular
 - ✓ Frequency range: 3.0-17.0MHz
 - ✓ Acoustic lens: 42mm×7.0mm
 - ✓ Biopsy bracket: NGB12L-B, 39°/48°/60°
 - ✓ Temperature control: not available

11.3 Phased Array Probe

- 3P-A
 - ✓ Application: Adult cardiac, pediatric cardiac
 - ✓ Frequency range: 1.0-7.0MHz
 - ✓ Acoustic lens: 25mm×16mm
 - ✓ Biopsy bracket: NGB3P-A
- S1-5
 - ✓ Application: Adult cardiac, pediatric cardiac
 - ✓ Frequency range: 1.0-7.0MHz
 - ✓ Acoustic lens: 25mm×16mm
 - ✓ Biopsy bracket: NGBS1-5

- MPTEE
 - ✓ Application: transesophageal cardiac
 - ✓ Frequency range: 4.0-13.0MHz
- 7P-B
 - ✓ Application: Adult cardiac, pediatric cardiac
 - ✓ Frequency range: 2.0-9.0MHz
 - ✓ Acoustic lens: 21mm×12mm

11.4 Volume Probe

- VC6-2
 - ✓ Application: Gynecology, Abdomen
 - ✓ Frequency range: 2.0-7.0MHz
 - ✓ Acoustic window: 150mm×86mm
- VE9-5
 - ✓ Application: Trans-rectal, Trans-vaginal
 - ✓ Frequency range: 2.0-13.0MHz
 - ✓ Acoustic window: 24mm×24mm

11.5 Intraoperative Probe

- 6CI-A
 - ✓ Application: Intraoperative
 - ✓ Frequency range: 3.0-15.0MHz
 - ✓ Acoustic window: 35mm×9mm
 - ✓ Temperature control
- 6CT-A
 - ✓ Application: Intraoperative
 - ✓ Frequency range: 3.0-15.0MHz
 - ✓ Acoustic window: 35mm×9mm
 - ✓ Temperature control
- 12LI-A
 - ✓ Application: Intraoperative
 - ✓ Frequency range: 4.0-16.0MHz
 - ✓ Acoustic window: 37mm×8mm
 - ✓ Temperature control
- 12LT-A
 - ✓ Application: Intraoperative
 - ✓ Frequency range: 4.0-16.0MHz
 - ✓ Acoustic window: 37mm×8mm
 - ✓ Temperature control
- 10I2
 - ✓ Application: Vascular, Small parts, Musculoskeletal, Neurology
 - ✓ Frequency range: 4.0-16.0MHz
 - ✓ Acoustic lens: 28mm×10mm

12 Accessories

12.1 Printer

- Printer types
 - ✓ Color ink jet printer
 - ✓ B/W video printer
 - ✓ Color video printer
- Print type
 - ✓ Video print
 - ✓ Network print
 - ✓ USB print
 - ✓ Windows print
- Video invert
- User can add printer

12.2 Built-in Wi-Fi

12.3 Footswitch

12.4 USB barcode scanner (Optional)

12.5 DVD R/W drive

12.6 Built-in Battery (Optional)

12.7 1T hard Disc

12.8 ECG Cable (Optional)

13 Safety and Certification

- Certification: ISO 9001, ISO 13485
- Comply with:
 - ✓ CSA C22.2 No. 601-1,
 - ✓ EN 60601-1 and IEC 60601-1,
 - ✓ EN 60601-1-2 and IEC 60601-1-2,
 - ✓ EN 60601-1-6 and IEC 60601-1-6,
 - ✓ EN 60601-2-37 and IEC 60601-2-37, EN 62304 and IEC 62304,
 - ✓ EN 62366 and IEC 62366
- Certification: ISO 9001, ISO 13485

NOTE:

- The specifications of this system may change without any prior notification.
- Some products or features may not be available in some countries.
- Please contact your local Medisono sales representative for more information.

Service Information:



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