



Lanmage
Clarity for life

Mirror2 Touch Color Doppler Diagnosis Ultrasound System

Technical Specification



I System Overview

1 Applications

- *ABD*
- *Renal*
- *ABD-Vascular*
- *GYN*
- *OB*
- *OB-1 (First trimester)*
- *OB-2/3(Second and third trimesters)*
- *Fetal Heart*
- *Urology*
- *Prostate*
- *Vascular*
- *Carotid*
- *P-Arterial (Peripheral arterial)*
- *Venous*
- *SMP (small parts)*
- *Thyroid*
- *Breast*
- *Testicle*
- *SmEye (small parts – eyes)*
- *MSK (Musculoskeletal)*
- *Orthopedics*
- *Cardiac*
- *Ped-Cardiac (Peripheral cardiac)*
- *TCD(Trans-cranial Doppler)*
- *EM (Emergency)*

2 *General application packages*

- Abdomen Application Package
- Obstetrics Application Package
- Gynecology Application Package
- Cardiac Application Package
- Vascular Application Package
- Small Parts Application Package
- Urology Application Package
- Pediatrics Application Package
- Orthopedics Application Package
- TCD Application Package
- Emergency Application Package
- Biopsy needle guidance function
- Lithotripsy positioning function
- TEI Heart function measurement
- Basic DICOM package
- DICOM3.0 Work List
- DICOM3.0 MPPS

3 *Imaging Modes*

- 1) B Mode
- 2) M mode
- 3) A Mode
- 4) CDFI (Color Doppler Flow Imaging)
- 5) Power (Power Doppler Flow Imaging)
- 6) DirPower (Directional Power Doppler Flow Imaging)
- 7) PW (Pulse Wave Doppler)
- 8) HPRF (High Pulse Repetition Frequency)
- 9) CW (Continuous Wave Doppler)
- 10) CM (Color M mode)
- 11) AMM (Anatomical M-Mode Up to 3 lines)
- 12) 3D (Optional)
- 13) 4D (Optional)
 - ✓ Real-time 3D imaging,
 - ✓ Real Skin Imaging,
 - ✓ Tomographic ultrasound Imaging
 - ✓ Depth View imaging
 - ✓ Cutting function
 - ✓ Volume measurement

4 *Image Optimization*

- 1) THI (Tissue Harmonic Imaging)
- 2) PHI (Pulse Inversion Harmonic Imaging)
- 3) TDI (Tissue Doppler Imaging)
- 4) TVM (Tissue Velocity M mode)
- 5) LanTissue (TSI Tissue Specific Imaging: general/ muscle/ fluid/ fat)
- 6) FCI (Frequency compound imaging Technology)
- 7) MCI (Multi-Angular compounding imaging)
- 8) LanSRI (Speckle removal imaging)
- 9) Doppler signal oversampling processing
- 10) One-touch quick image optimization
- 11) Raw data processing (B\M\C\PW Mode)

5 *Image Processing*

- 1) Trapezoid imaging
- 2) Panoramic Imaging (LanScape)
- 3) Quad/Dual display
- 4) Duplex for simultaneous B and spectral Doppler
- 5) Dual Live Mode (side by side live display)
- 6) Triplex mode for
 Simultaneous B + Color/Power + Spectral Doppler

6 *Smart Function*

- 1) Auto Trace & Calculation for PW
- 2) Peak flow capture (peak hold)
- 3) Real-time Automatic Doppler measurement
- 4) Auto IMT Measurements
- 5) Independent B-Steer & Color ROI-Steer
 (Available on linear transducers)
- 6) One touch full screen display
- 7) One-touch quick image optimization

7 Digital channels: >120 000

8 Multi-language Patient Reporting System

- English
- Russian
- French
- Spanish
- Portuguese
- Chinese

Transducers

1. There are four active transducer ports transducer connection
2. C1-5 Convex array probe
 - 2.1 Application: ABD, Renal, ABD-Vascular, Ped-ABD, GYN, OB, OB-1, OB-2/3, Fetal Heart, Urology, Prostate
 - 2.2. Frequency Bandwidth: 1.0-5.0 MHz
 - 2.3. Center frequency: 3.5MHz
 - 2.4. Field of View: 56 degree
 - 2.5. Depth: 420mm
 - 2.6. Radius: 59.1 ± 0.05 mm
 - 2.7. Trapezoidal imaging
 - 2.8. Biopsy guide available
3. L4-13 Linear array probe
 - 3.1. Application: Vascular, Carotid, PArterial, SMP, Thyroid, Breast, Testicle, SmEye, MSK, Orthopedics, ABD, EM

- 3.2. Frequency Bandwidth: 4-13 MHz
 - 3.3. Center frequency: 7.5MHz
 - 3.4. Field of View: 40mm
 - 3.5. Depth: 160mm
 - 3.6. Trapezoidal imaging
 - 3.7. B Mode Steer: 5°/10°/15°
 - 3.8. Biopsy guide available
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- 4. EC4-9 Endocavity array probe
 - 4.1. Application: Early OB, OB/GYN, Urology
 - 4.2. Frequency Bandwidth: 4.0 -9.0 MHz
 - 4.3. Center frequency: 6.5MHz
 - 4.4. Field of View: 140 degree
 - 4.5. Depth: 160mm
 - 4.6. Radius: 9.93mm
 - 4.7. Biopsy guide available
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- 5. P1-4 Phased array probe
 - 5.1. Application: Cardiac, Ped-Cardiac,TCD, ABD
 - 5.2. Frequency Bandwidth: 1.0-4.0 MHz
 - 5.3. Center frequency: 2.5MHz
 - 5.4. Field of View: 89 degree
 - 5.5. Depth: 380mm
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- 6. C4-9MC Micro-convex array probe
 - 6.1. Application: ABD, Renal, ABD-Vascular, Ped-ABD, GYN, OB, OB-1, OB-2/3, Ped-Cardiac, Urology, Prostate
 - 6.2. Frequency Bandwidth: 4.0-9.0 MHz
 - 6.3. Center frequency: 6.5MHz
 - 6.4. Field of View: 85 degree
 - 6.5. Depth: 160mm
 - 6.6. Radius: 14mm

7. 4C2-5n Convex array volume probe (4D probe)
 - 7.1 Application: ABD, OB,GYN
 - 7.2. Frequency Bandwidth: 2.0-6.0 MHz
 - 7.3. Center frequency: 4.0MHz
 - 7.4. Sweep angle: 35°~70°
 - 7.5. Field of View: 67 degree
 - 7.6. Depth: 310mm
 - 7.7. Radius: 39.45mm

Detail System Specifications

1. System Architecture

- 1.1. All-digital broadband beam-formers
- 1.2. Harmonic Imaging (THI)
- 1.3. Multi-Angular compounding imaging
- 1.4. Steering image (B, color and spectral Doppler modes)
- 1.5. Multi-frequency in B, color and Doppler imaging

2. Zoom

- 2.1. Write (regional acoustic zoom) and read zoom
- 2.2. Zoom ratio: 12 times
- 2.3. For real-time and frozen images

3. Ergonomic Design

- 3.1. Backlit and interactive task light control panel
- 3.2. Home based and function grouped design for control panel
- 3.3. LanScan one button quick image/spectrum optimization
- 3.4. Lighting of the keyboard controls
- 3.5. High quality stereo audio speaker system
- 3.6. Input and output connections on the rear panel
- 3.7. Front compartment for storage of accessories
- 3.8. Gel warmer (Two kinds of temperatures)

- 3.9. Endo-cavity probe dedicated holder
- 3.10. 4 Wheel swivel

4. Storage

- 4.1. 1 TB integrated HDD
- 4.2. DVD-R/W
- 4.3. USB ports: 8 ports for data transportation
- 4.4. Images storage format: BMP, JPG, TIFF and AVI
- 4.5. DICOM storage, print, worklist, MPPS, SR, Q/R

5. Cineloop

- 5.1. Support B, M, Spectral Doppler, Color, Power, DirPower
Simultaneous and independent review in duplex/triplex mode
- 5.2. Capacity:
 - B: Maximum 3000 frames
 - M, Spectral Doppler: 30s

6. Image Adjustment

6.1. B-Mode

- 6.1.1. Up to three frequencies in Tissue harmonic imaging
(probe dependent)
- 6.1.2. R/S: 4 levels
- 6.1.3. Persist: 5 levels
- 6.1.4. Dynamic range: 30-250dB, 5dB step
- 6.1.5. Rejection: 8 levels
- 6.1.6. Gain: 0-100dB,
- 6.1.7. DGC/TGC: eight levels
- 6.1.8. LGC: four levels
- 6.1.9. Gray scale map: 16 types
- 6.1.10. Colorize map: 16 types
- 6.1.11. Thermal Index: TIC, TIS, TIB
- 6.1.12. 2B, 4B and seamless dual screen formats
- 6.1.13. Invert (U/D) and transposed (L/R)
- 6.1.14. Focus Number: 4

- 6.1.15. Focus Depth : 8 levels (depth and probe dependent)
- 6.1.16. FOV: 6 levels
- 6.1.17. Image depth up to 38cm
- 6.1.18. Harmonic imaging technique is available for all probes
- 6.1.19. LanTissue: General, Liquid, Fat, Muscle

6.2. M-Mode

- 6.2.1 Rejection: 6 levels
- 6.2.2 Dynamic range: 30-120dB, step 5dB
- 6.2.3 Gain: 10-100%, step 3%
- 6.2.4 Gray scale maps: 16 levels
- 6.2.5 Colorize: 16
- 6.2.6 Sweep speed: 5 levels
- 6.2.7 Display format: V1:1, V1:2, V2:1, H2:3

6.3. Color Doppler Mode

- 6.3.1. Frequency: 2 levels
- 6.3.2. Gain: 10~100%, 2% steps
- 6.3.3. Wall filter: 5 levels
- 6.3.4. R/S: 4 levels
- 6.3.5. LanFlow: H, M, L
- 6.3.6. Priority: 5 levels
- 6.3.7. Smooth: 4 levels
- 6.3.8. Persist: 5 levels
- 6.3.9. Peak: 1 sec, 2 sec, 3 sec, off
- 6.3.10. Invert: On/Off
- 6.3.11. Baseline: 14 levels
- 6.3.12. Color Map: 8 levels
- 6.3.13. Color Width: 20%, 30%, 40%, 50%, 60%
- 6.3.14. Color Height: 0.5-12cm (probe dependent)
- 6.3.15. Color Center Depth: 1-16cm (probe dependent)
- 6.3.16. Steer: $\pm 10^\circ$, 20° (linear probe)
- 6.3.17. PRF range: 150 Hz to 12 kHz

6.4. Power Doppler Mode

- 6.4.1. Frequency: 2 levels
- 6.4.2. Gain: 10~100%, 3% steps
- 6.4.3. Wall filter: 5 levels
- 6.4.4. LanFlow: H, M, L
- 6.4.5. R/S: 4 levels
- 6.4.6. Priority: 5 levels
- 6.4.7. Smooth: 4 levels
- 6.4.8. Persist: 5 levels
- 6.4.9. Peak: 1 sec, 2 sec, 3 sec, off
- 6.4.10. PDI Map: 14 levels
- 6.4.11. PDI Width: 20%, 30%, 40%, 50%, 60%
- 6.4.12. PDI Height: 0.5-12cm(probe dependent)
- 6.4.13. PDI Center Depth: 1-16cm(probe dependent)
- 6.4.14. Steer: $\pm 10^\circ$, $\pm 20^\circ$ (Linear probe)

6.5. Pulse Wave Doppler Mode (PW)

- 6.5.1. Gain: 10-100%, 3% step
- 6.5.2. Frequency: 2 levels
- 6.5.3. Sweep speed: 5 levels
- 6.5.4. Rejection: 6 levels
- 6.5.5. Gray Scale Map: 8 types
- 6.5.6. Colorize map: 12 types
- 6.5.7. Dynamic range: 30-60dB, 5dB step
- 6.5.8. Angle correction: $\pm 89^\circ$, 1 step
- 6.5.9. Auto angle correction: 0, +60, -60
- 6.5.10. Gate size: 13 levels (0.5-20mm)
- 6.5.11. Invert: On, Off
- 6.5.12. Triplex/Duplex: On, Off
- 6.5.13. Baseline: 17 levels
- 6.5.14. Real-time auto Doppler trace and calculation
- 6.5.15. Velocity Scales: 0.15cm/s – 1025cm/s (angle 60)
- 6.5.16. HPRF

6.6. Continuous wave Doppler Mode (CW)

- 6.6.1. Gain: 10-100%, 3% step
- 6.6.2. Frequency: 2 levels

- 6.6.3. Sweep speed: 5 levels
- 6.6.4. Rejection: 6 levels
- 6.6.5. Gray Scale Map: 8 types
- 6.6.6. Colorize map: 12 types
- 6.6.7. Dynamic range: 30-60dB, 5dB step
- 6.6.8. Angle correction: $\pm 89^\circ$, 1 step
- 6.6.9. Auto angle correction: 0, +60, -60
- 6.6.10. Invert: On, Off
- 6.6.11. Triplex/Duplex: On, Off
- 6.6.12. Baseline: 17 levels
- 6.6.13. Real-time auto Doppler trace and calculation

7. Configuration

7.1. Monitor

- 7.1.1. 21-inch color LED monitor.
- 7.1.2. 12-inch touch screen.
- 7.1.3. Wide view angle of 170 degrees
- 7.1.4. Resolutions: 1920×1080
- 7.1.5. Omni directional mechanic arm

7.2. Peripheral Signals

- 7.2.1. VGA: 2 port (In and Out)
- 7.2.2. Video: 1 port (In)
- 7.2.3. S-Video: 2 port (In and Out)
- 7.2.4. Remote: 1 port
- 7.2.5. Audio: 2 ports (In and Out)
- 7.2.6. Ethernet: 1 port
- 7.2.7. USB: 8 ports
- 7.2.8. DVI: 1 ports

7.3. Power Requirements

- 7.3.1. Power supply voltage: 100 ~ 127 VAC or 220 ~ 240 VAC
- 7.3.2. Power supply frequency: 50/60 Hz
- 7.3.3. Power consumption: 500 VA

7.4. Dimensions and Weight

- 7.4.1. Height: 1380mm
- 7.4.2. Width: 590mm
- 7.4.3. Length: 995mm
- 7.4.4. Weight: 85kg (approx.)

7.5. Operating conditions

- 7.5.1. Ambient temperature: 0°C to 40°C
- 7.5.2. Relative humidity: 20% to 85% (no condensation)
- 7.5.3. Atmospheric pressure: 700 hPa to 1060 hPa

7.6. Storage and transportation conditions

- 7.6.1. Ambient temperature: -20°C to 55°C
- 7.6.2. Relative humidity: 30% to 95% (no condensation)
- 7.6.3. Atmospheric pressure: 700 hPa to 1060 hPa