

**Hisense Medical**



# HD80 Series Ultrasound System

**Datasheet**

**Release 1.0**

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The HD80 series of high-end color Doppler ultrasound systems produced by Hisense Medical adopts a new-generation "Wide-Field" ultrasound platform with a CPU+GPU architecture. It features an all-new design in hardware, core system links, and logic systems. The transformation from hardware beamforming to software beamforming has exponentially increased the computing power and speed of the ultrasound device, resulting in improved overall field uniformity and spatial resolution, higher frame rate, as well as significantly enhanced imaging quality and accuracy for various high-end imaging functions.

## 1 Overview



### 1.1 Applications

- Abdomen
- Obstetrics
- Gynecology
- Cardiac
- Small Parts
- Urology
- Vascular
- Pediatric
- Emergency
- Anesthesia
- Transvaginal&Transrectal
- Musculoskeletal
- Nerve
- Others

### 1.2 Probe Types

- Convex Array Probe
- Line Array Probe
- Phased Array Probe
- Volume Probe

- Endo-cavity
- Micro-convex Probe

### 1.3 Imaging Modes

- B-mode
- Tissue Harmonic Imaging
- Reverse Harmonic
- M-mode/Color M-mode
- Anatomical M-mode (optional)
- Curve Anatomical M-mode (optional)
- Color Doppler Imaging
- Power Doppler/Directional Power Doppler
- Pulsed Wave(PW) Doppler
- Continuous Wave(CW) Dopple (optional)
- Tissue Doppler Imaging(TDI) (optional)
- Strain Rate Imaging (optional)
- Freehand 3D Imaging
- 4D (optional)
- Multi-Slice
- Elasto (optional)
- Pano (optional)
- Contrast (optional)

### 1.4 Configuration Features

- B-mode
- Tissue Harmonic Imaging
- Reverse Harmonic
- TSI
- $TGC \geq 8$ ,  $LGC \geq 8$
- Spatial Composite Imaging
- Speckle Suppression Imaging
- EFOV imaging
- Auto
- Zoom (including full-screen Zoom)
- Echo Enhance
- HiPure
- Color Doppler Imaging
- Auto Track (optional)
- Power Doppler/Directional Power Doppler
- High-resolution flow imaging (optional)
- MFI
- Ribbon flow imaging (optional)
- Pulsed Wave(PW) Doppler
- HPRF
- CW Doppler

- M-mode/Color M-mode
- Anatomical M-mode
- Curve Anatomical M Mode
- TDI (including TVI, TVD, TVM and TEI) (optional)
- TDI Analysis (optional)
- Pano (optional)
- Freehand 3D Imaging
- 4D (optional)
- Niche
- OminiView
- Multi-slice
- Biopsy Enhancement (optional)
- Biopsy Guidance
- 3D Spectrum (optional)
- SCV Color Velocity Imaging)
- MSV (optional)
- Elasto (optional)
- Elasto Analysis (optional)
- Shear Wave Elastography (optional)
- Contrast (optional)
- Contrast Analysis (optional)
- Steer
- Dual-Mode
- Measurement Software Package
- Auto trace measurement
- Auto IMT (optional)
- Auto EF (optional)
- Auto NT (optional)
- Auto FLC (optional)
- Auto Pelvic (optional)
- Auto BL (optional)
- Auto MSK (optional)
- Auto OB (optional)
- Auto SP (optional)
- Auto AFI (optional)
- Auto UM (optional)
- Auto Hip (optional)
- Multi probe
- Auto workflow
- Teaching Software (optional)
- DEMO
- DVR (optional)

- Monitor share
- Task Manager
- DICOM 3.0/DICOM structure report
- Measurement Software Package
- 4 Activatable Probe Interfaces
- 1TB HDD
- DVD R/W Drive
- 6 ↑ USB Ports
- 256GB SSD (System)
- Battery
- ECG

#### 1.5 Supported Languages

- Software: Chinese and English
- Keyboard Input: English and Chinese
- User Manual: English and Chinese

## 2 Physical Specifications



#### 2.1 Dimensions and Weight

- Height (mm) : 1373-1573
- Width (mm) : 616mm
- Depth (mm) : 906mm
- Weight: about 94KG(not include battery)

#### 2.2 Monitor

- 23.8" High Resolution Color LCD Monitor
- 21.5" High Resolution Color LCD Monitor
- Resolution: 1920×1080
- Angle of View: 178°
- Adjustable Screen Brightness and Contrast (Manual, Automatic)
- Tilt: 20 degrees(up) to 90 degrees(down)
- Rotation: - 90 degrees to +90 degrees

#### 2.3 Speaker

- High Fidelity Stereo
- Power: 2×10w

#### 2.4 Ergonomic Omnidirectional Rotatable Monitor

##### Support Arm

- Rotation: ±90 degrees (from the center)
- Up and Down Movement: 170mm
- Front and Back Stretch: 465mm

#### 2.5 Casters

- Diameter: 125mm
- Front and Rear Casters (4): Braking and Unlocking

#### 2.6 Probe Connectors and Covers

- Connectors: 4 Activatable Probe Connectors
- Covers: 5 plus an Endo-probe Holder

#### 2.7 Power Supply

- Voltage: 220V~
- Frequency: 50/60Hz
- Power: 700VA
- Fuse: 250V~, 5A

#### 2.8 Battery

- standby: time ≥ 2.5 h
- continuous working hours: Max scan time ≥ 20 min

#### 2.9 Operating Conditions

- Ambient Temperature: 0°C ~ 40°C
- Relative Humidity: 20% ~ 85% (No Condensation)
- Atmospheric Pressure: 70kPa ~ 106kPa

#### 2.10 Storage and Transportation Conditions

- Ambient Temperature: -20°C ~ 55°C
- Relative Humidity: 20% ~ 95% (No Condensation)
- Atmospheric Pressure: 70kPa ~ 106kPa

### 3 Human-Machine Interaction

#### 3.1 Control Panel



- The panel is designed to be user-centric and easy to operate.
- The panel features the backlighting of keys with adjustable backlight brightness user-defined keys.
- 8-segment TGC
- Standard Keyboard
- Adjustable key tone and trackball speed
- rotated and raised - Rotation: ±90 degrees (from the center) - -Up and Down Movement: 0mm to 200mm

#### 3.2 Touch Screen

- 13.3" high sensitivity anti-glare, anti-fingerprint color and 10-point capacitive touch screen.
- Resolution: 1920x1080
- Adjustable brightness and contrast via presets.
- Viewing Angle: 170 degrees

#### 3.3 Startup/Shutdown

- Boot-up from shut-down: Less than 75 sec
- Shut-down: Less than 15 sec

#### 3.4 Annotate

- Support for text and arrow annotate.
- Adjustable arrow size
- Support for start point setting.
- Cover all Applications.
- User-definable

#### 3.5 Bodymark

- More than 132 individual Bodymark for various applications.

#### 3.6 Teaching software

- Support abdomen,obstetrics,gynecology,cardiac,sm all Parts,urology,vascular,

musculoskeletal

### 3.7 Screen Information\*

- Public Information:
    - Hisense Logo
    - Hospital Name
    - Exam Date
    - Exam Time
    - Output Power
    - Mechanical Index
    - Tissue Temperature Indication
    - Probe Name
    - ECG Logo (when the ECG is connected)
    - TGC Curve
    - Focus Position
    - Thumbnail
    - Image Parameters
    - Trackball Operation Help In tions
- \*All items are not represented in this section, please refer to the User Manual for details.

- Steer: Line Array Probes Available,  $\pm 20^\circ$ ,  $5^\circ/\text{step}$
- WFOV: Line Array Probes Available:  $27^\circ$  curve/phase Probes Available:  $30^\circ$
- Depth: 0-50cm, 1cm/step (which varies with probe)
- FR (Max.): 1000f/s (Convex Array Probes)
- Output Power: 1%-100%
- TGC: 8 -segment
- LGC: 8 -segment
- Dynamic Range: 30-320, 10/step
- Gain: 0-255, 5/ step
- Focus Numbe 1-16 (probe related)
- Focus Position: Dynamically Adjustable
- Density  $\geq 512$  ultrasonic lines per frame
- Persist: 5 steps
- L/R Flip and U/D Flip: on/off
- Rotate: 0, 90, 180 and 270
- Gray map: 20 types
- Tint map: 0-7, 8 types
- Spacial compound: 0-4, 5 steps
- Edge enhancement: 0-5, 6 steps
- scann area: curve/phase Probe available
- Hipure: 0-5, 6 steps
- Echo enhance: phase Probe available, 0-2, 3 steps
- smooth: 0-5, 6 steps
- TSI: 3 steps

## 4 Image Parameters



### 4.1 Overview

- Digital Beam Enhancer
- Multi Beams Synthesis
- Digital channels 8000000
- Frequency 1-30 Mhz

### 4.2 B-mode

- Display Formats: Single, Dual and Quad
- Persist: 0-5 level
- AUTO: Automated Optimization
- Frequency Composite Imaging
- B| SRI: Dual Real Time Comparison

### 4.3 Harmonic Imaging

- Available for all probes

### 4.4 M-mode/Color M-mode

- Display Formats: V2:3, V3:2, V3:1 and H2:3, full screen (V: vertical, H: horizontal)
- Available for Color M-mode
- Output Power: 1%-100%
- Gain: 0-255, 5/step
- Scanning Speed: 6 steps (1-6)
- Tint map: 0-6,7 types
- Gray map: 14 types
- Edge Enhancement: 0-4 steps
- DR: 30-320, 10/steps
- Line correlation: 0-4, 5steps

- Sensitivity: CM parameters, 0-6, 7 steps
- Wall filter: CM parameters, 1-6, 6 steps
- Flow state: CM parameters, 0-8, 9 steps
- Color map: CM parameters, 0-7, 8 steps
- Color priority: CM parameters, 0-7, 8 steps
- Smooth: CM parameters, 0-4, 5 steps

#### 4.5 Anatomical M-mode Imaging

- Display Formats V2:3, V3:2, V3:1, H2:3, (V: vertical, H: horizontal)
- Available for Color Anatomical M-mode
- Up to three sampling lines
- Simultaneous display of three M-sampling line graphs.
- Gray map: 0-7, 8 steps
- Tint map: 0-19, 20 steps
- Dynamic Range: 30-320, 10/ steps
- Anatomical line angle: 3°-180°, 3°/ steps

#### 4.6 Color Doppler Imaging

- Dual Real Time
- Max. Velocity: 37cm/s
- Steer: Max. 20 degrees (line array probes)
- Max. Frame Rate: 500f/s
- Output Power: 1%-100%
- Gain: 0-255, 5/step
- Baseline: 21 steps (-10-10, 1/step)
- Wall Filter: 1-6, 6 steps
- SCALE: 2.895cm/s-4.1067m/s
- Sensitivity: 0-6, 7 types
- Flow State: 0-8, 9 steps
- Smooth: 5 steps
- Same Width for B/C-mode: on/off
- Color Priority: 0-7, 8 steps
- Color Map: 8 types
- Flip: on/off
- Persist: 0-6, 6 steps
- Line Density: Low/Medium/High
- Display: Vel/Var
- Scan range: Line/curve probe Available
- Ribbon flow imaging: 0-3, 4 steps
- Auto track: Line probe Available: on/off
- High-resolution flow imaging: 0-3, 4 steps

#### 4.7 Power Doppler

- Support for Directional Power Doppler
- Output Power: 1%-100%
- Gain: 0-255, 5/step
- Steer: Max. 20 degrees (line array probes)
- Wall Filter: 1-6, 6 steps
- SCALE: 2.895cm/s-4.1067m/s
- Sensitivity: 7 steps
- Flow State: 9 types (0-8)
- Smooth: 5 steps
- Color Priority: 0-7, 8 steps
- Color Map: 0-7, 8 types
- Persist: 0-6, 7 steps
- Scan range: Line/curve probe Available
- High-resolution flow imaging: 0-3, 4 steps

#### 4.8 PW/CW-Mode

- Display Formats: V2:3, V3:2, V3:1 and H2:3, Full Screen, Duplex/Triplex (PW only) (V: vertical, H: horizontal)
- PW Speed: Max. 16m/s
- PW Speed: Min 0.02cm/s
- CW Speed: Max 32m/s
- CW Speed: Min 0.05cm/s
- SV: 0.5-31mm, 60 steps (Values may vary with probes, and this value is specific to L15-5E)
- SV Depth: Adjustable
- Speed Scale: Max. 25m/s
- Baseline: 21 steps
- PW Steer: Max. 20 degrees (line array probes)
- Volume: 0-100, 10 steps
- PW SCALE: 2.9cm/s-16m/s
- CW SCALE: 10.3cm/-32m/s
- Gain: 0-255, 5/step
- Dynamic Range: 60-260, 10/step
- Scanning Speed: 6 steps (PW)
- Wall Filter: 9 steps
- Flip: on/off
- Angle Correction -89~ +89 °, 1°/step
- Quick Angle Correction: -60°, 0°, 60°
- Gray map: 20 types
- Tint map: 8 types
- Time/Frequency Resolution: 4 steps

- Tracing Range: top, bottom and all
- Audio Noise Reduction: 0-4, 5 steps
- Tracing: on/off
- Smooth: 1-4, 4 steps

#### 4.9 TVI (Tissue Velocity Imaging)

- Available for phased array probes.
- Dual Real Time
- Same Width for B/C-mode: on/off
- Flip: on/off (TVI only)

#### 4.10 TVD (Tissue Velocity Doppler) (included in TDI)

- Available for phased array probes.
- Display Formats: V2:3, V3:2, V3:1 and H2:3, Full Screen, Duplex/Triplex (V: vertical, H: horizontal)
- SV: 0.5-30 mm, 60 steps
- Sampling Depth: Adjustable
- Speed Scale: Max: 16m/s
- Speed Scale: Min: 0.05cm/s
- Baseline: -1.0-+1.0, 0.1/step, total of 21 steps
- Gain: 0-255, 5/step
- Volume: 0-100%, 10 steps
- SCALE: 0-255, 5/steps
- Dynamic Range: 60-260,10 steps
- Scanning Speed: 6 steps
- Wall Filter: 1-9,1/step
- Flip: on/off
- Angle Correction: -89-89 °, 1°/step;
- Quick Angle Correction: -60°, 0°, 60°
- Gray map: 0-19, 1/step, 20 types
- Time/Frequency Resolution: 0-3,4 steps
- sensitivity: 0-2
- Scan speed: 1-6
- Power: 1%-100%
- smooth: 1-4

#### 4.11 TVM (Tissue Velocity M-mode) (included in TDI)

- Display Formats: V2:3, V3:2, V3:1 and H2:3, full screen (V: vertical, H: horizontal)
- Output Power: 1.0%-100.0%
- Dynamic Range: 60-260, 10/step
- Gain: 0-255, 5/step

- Scanning Speed: 1-6,1 steps
- Edge Enhancement 0-4,1/step
- Line persist: 0-4, 1/step

#### 4.12 Free hand 3D Imaging

- Free hand 3D Imaging
  - Probes: Line Array, Convex Array, Endo-probe and Micro-convex

#### 4.13 4D Imaging

- Available for all 4D probes.
- Static 3D and 4D
  - Render Mode: Surface, Skeleton, Depth, Real Skin, Inverse, Max and Min, silhouette mode
  - Split-screen Mode: 1, 2 and 4
  - Rotation: 0, 90, 180 and 270
  - Ref slice: A,B,C,3D
  - Edit VOI: on/off
  - Reset VOI: on/off
  - Full Reset: on/off
  - View Orientation: top/bottom, bottom/top, left/right, right/left, front/back and back/front
  - 3D Rotation cine
  - 2D ChromaMap: 10 types
  - 3D ChromaMap: 10 types
  - 3D Minimum threshold: 1-254
  - 3D Maximum threshold: 2-255
  - 2D light: 0-1, 0.1/step
  - 3D light: 0-1, 0.1/step
  - Focus
  - 2D SRI Filter: -1-4 1/step
  - 3D SRI Filter: -1-4 1/step
- MagiCut
  - CutMode: Eraser,Ellipse,Rectangle,Polygon
  - CutPos:Inside,Outside
  - Undo: undo, undo all
  - Auto face
- OminiView
  - Reference slice: A,B,C
  - Split screen: 1,2,4
  - Undo,delete
  - Delete All

- 2D Tint: 0-9
- 2D SRI Filter: -1-4, 1/step
- Tickness: 0.0-20.0, 1/步
- Multi-Slice
  - Reference slice: A,B,C
  - Layout: 1\*1,1\*2,2\*2,3\*3,4\*4,5\*5
  - Rset
  - 2D tint: 0-9
  - Oblique Angle:  $\pm 90^\circ$ , 5°/step
  - Spacing: 0.5-10.0, 0.5/ step
  - 2D SRI Filter: -1-4, 1/ step
  - Tickness: 0.0-20.0, 1/step
- Niche
  - Reference slice: A,B,C
  - Layout: 1,2,4
  - 2D tint: 0-9
  - 2D SRI Filter: -1-4, 1/step

#### 4.14 Pano

- Available for all probes.
- Acquisition Methods: B-mode, C-mode and Power-mode.
- Supports the center display and mobile display collection modes

#### 4.15 Elasto

- Support for multiple probes.
- Support for strain rate measurements.
- Support Elasto QA
- Pressure Indicator: support for frame-by-frame view of image pressure levels.
- Display Formats: Dual real-time
- Elasto map: 1-6, 6 types
- Flip: U/D,L/R
- Persist: 0-3
- Contrast: 0-13
- Remove: 0-2
- Line density: low/middle/high
- E sensitivity: 0-5
- Smooth: 6 steps
- Opacity: 0-5

#### 4.16 Contrast

- Support: L12-3EB, SC7-1E
- MFE
- Contrast QA
- Two timers
- Forward save, Max 120sec
- Backward save, Max 480sec
- Destruct: On/Off
- Contrast Mix: On/Off
- Double real-time: On/Off
- MFE: On/Off
- MFE Period: Min, 0.2, 0.4, 0.6, 0.8, 1.0, Max
- Dynamic range: 30-320,10/step
- Speckle noise suppression: 0-5,6 steps
- Line density: low, middle, high
- Persist: 0-4,5steps
- steer (only line probe) : -20-20
- Power: 1.5%-100%
- Tint map: 0-7,8 steps
- Gray map: 0-18,19 steps
- Destruct voltage: 0-80, step 1
- Duration: 500ms-2000ms, step 25ms

#### 4.17 Contrast QA

- Support 8 ROI
- Support ROI type: trace, ellipse
- Curve Fitting
- Table Display
- Motion

#### 4.18 Zoom

- Zoom: up to 0.8x-10.0x for front-end, and 0.8x-10.0x for back-end.
- Full-screen Zoom: normal image, zoom in on standard image area to full screen, zoom in on image area to full screen only.

#### 4.19 QSave

- Intended for QSave of conditions after image parameter adjustment.
- Support for saving and exporting.

## 5 Cine Review and Raw Data Processing

### 5.1 Cine Review

- Available for all modes. Cine memory 1G.
- Support for manual Review frame by frame and automatic Review with adjustable speeds: 1/4, 1/2, 1, 1.5, 2 and 4
- Maximum cine memory capacity 480s (mode-related)
- Maximum 4D cine memory capacity 64 frames
- Support for backward and forward storage and possible time length preset.
- Image Comparison: Support for comparing cine and single frames
- Skip to first and last frames: One-click for the skip to the initial frame and the last frame

#### 5.2 Raw Data Processing

- B-mode  
Gain  
Dynamic Range  
Gray scale 256  
Gray map  
Tint map  
Flip  
Edge enhancement  
Smooth  
Hi pure
- M mode  
Speckle noise suppression  
Dynamic Range  
Gain  
Gray map  
Tint map
- C mode  
Gain  
Flip  
Color Map  
Color hidden
- PW mode  
Trace  
Baseline  
Gain  
Dynamic Range

- Gray map  
Tint map  
Cardiac cycle
- CW mode  
Invert  
Baseline  
Dynamic Range  
Gray map  
Tint map  
Angle correct

## 6 Measurement/Analysis and Report\*

### 6.1 General Measurement

- B-mode  
-Depth  
-Angle  
-Distance  
-Area  
-Perimeter  
-Volume  
-Dual Distance  
-Parallel Lines  
-Length of Curve  
-Length Ratio  
-Area Ratio  
- IMT  
-Histogram  
-Cross Section  
-Strain  
-Strain Ratio  
-Color Velocity
- M mode  
-Distance  
-Time  
-Slope  
-Heart Rate  
-AC Velocity
- Doppler Mode  
- Velocity  
-Acceleration  
-Time  
-Heart Rate  
-Speed Ratio

- VTI Ratio
- D Tracing
- S/D
- PI
- RI
- Blood Flow

## 6.2 Clinical Measurement Package

- Abdomen
  - B mode
  - Liver
  - Common Hepatic Duct
  - Internal Diameter of Portal Vein
  - Gallbladder
  - Common Bile Duct
  - Pancreas
  - Spleen
  - Kidney: length, width, thickness and cortical thickness
  - Adrenal: length ,width ,thickness
  - Aorta: abdominal aorta thick diameter, abdominal aorta wide diameter
  - Abdominal Aortic Diameter Stenosis Ratio
  - Abdominal Aortic Area Stenosis Ratio
  - Iliac Artery Diameter
  - Bladder: Preurinary bladder length diameter, preurinary bladder thickness diameter, preurinary bladder width diameter, posturinary bladder length diameter, posturinary bladder thickness diameter, posturinary bladder width diameter
  - Prostate :length ,width ,thickness
  - Spermatophore :length ,width ,thickness
  - Internal Diameter of Splenic Vein
  - Abdominal Aortic Aneurysm
  - Renal Cysts
- M mode
  - distance
  - Time.
  - Slope
  - Heart rate.
- Doppler Mode
  - Renal Vessels
  - Abdominal Artery: Abdominal arteries: abdominal aorta, abdominal trunk, superior mesenteric artery, inferior mesenteric artery, common hepatic artery, proper hepatic artery, splenic artery
  - Abdominal veins: inferior vena cava, inferior vena cava reflux, portal vein, left hepatic vein, middle hepatic vein, right hepatic vein, splenic vein, superior mesenteric vein, inferior mesenteric vein
  - Renal vessels: renal artery, segmental artery, interlobar artery, arcual artery, renal vein
- Gynecology
  - B mode
  - Uterine Body: length, width, thickness, endometrial thickness.
  - Cervix: length, width and thickness.
  - Ovary: length, width and thickness at the
    - left/right side.
  - Follicles: 1-8
  - Uterine Fibroids: Distances 1, 2 and 3.
  - Ovarian Cysts: Distances 1, 2 and 3
    - lesion1,2: d1, d2, d3
  - Residual urine volume: post urinary bladder length diameter, post urinary bladder thickness diameter, post urinary bladder width diameter
    - Resting state: Detrusor muscle thickness, detrusor muscle average thickness, bladder neck distance R, vesicourethral posterior Angle R, urethral inclination Angle (R), anorectal Angle (R), bladder posterior wall distance R, cervix lowest point distance R, ampulla distance of rectum R, anterior and posterior diameter of anal levator hiatus R, left and right diameter of anal levator hiatus R, anal levator muscle thickness R, Angle of

anal levator muscle R, anal levator muscle-urethra space R, Hiatus area of levator anal muscle R  
 -Valsalva: bladder neck distance V, vesicourethral thick Angle V, urethral inclination Angle V, anorectal Angle V, bladder posterior wall distance V, cervix minimum distance V, ampulla distance V, anterior rectal wall bulge height, anterior and posterior diameter of anal levator hiatus V, left and right diameter of anal levator hiatus V, anal levator muscle thickness V, Angle between anal levator muscle V, anal levator musculus space V

- M mode
  - distance
  - Time.
  - Slope
  - Heart rate.
- Dopplor mode
  - Arteria uteri
  - Ovarian artery
- Obstetrics
- B mode
  - Early pregnancy
    - Gestational sac
    - Yolk sac
    - Head hip diameter
    - Double top diameter
    - Head circumference
    - Belly Circumference
    - Femur length
    - Humerus is long
    - Clear layer of neck
    - The intracranial transparent layer
    - Long nose bone
    - Amniotic fluid depth
  - Early pregnancy heart
    - Ao Diam
    - LVOT Diam
    - RVOT Diam
    - RV Diam
    - RVIDd

- IVSd
- LVIDd
- RVIDs
- IVSs
- LVIDs
- LV Diam
- LV Area
- RV Area
- LA Diam
- LA Area
- Heart area
- RV Diam
- RA Diam
- MPA Diam
- Z Score:Left ventricular long-axis (AV Diam, Ao Asc Diam) , aortic arch (AV Diam, Ao Asc Diam, Ao Decs Diam, IVC Diam) , aortic short axis (PV Diam, MPA Diam, RPA Diam, LPA Diam) , oblique aortic short axis (Duct Art Diam) , four-chamber heart (TV Diam, RVIDd, RV Diam, RV Area, MV Diam, LVIDd, LV Diam, LV Area, )
- Medium Pregnancy
  - Fetal Biology: biparietal diameter, occipital diameter, head circumference, abdominal circumference, femoral length, humeral length, placental thickness, transverse abdominal diameter, posterior abdominal diameter and cervical fold
  - Amniotic Fluid Indexes: AF1,AF2,AF3,AF4
  - Fetal Bone Length: femur length, clavicle length, humerus length, radius length, ulna length, tibia length and fibula length
- Early pregnancy: gestational sac, yolk sac, cephalic gluteal diameter, double parietal diameter, head circumference, abdominal circumference, humerus length, cervical hyaline layer, intracranial

hyaline layer, nasal bone length, amniotic fluid depth

- Advanced Measurements: thick trunk diameter, transverse trunk diameter, transverse trunk section, chest diameter, cardiac circumference, cardiac area, chest circumference, vertebral length, cerebellar diameter, posterior cranial fossa pool, lateral cerebral ventricle, cerebral hemisphere, external eye spacing, internal eye spacing, orbit, ear length, facial angle, clavicular length, ulnar length, radial length, tibial length, fibular length, mid-shaft phalanges, foot length, umbilical vein diameter, fetal kidney length and cervical length

- Fetal Heart: Ao Diam, LVOT Diam, RVOT

Diam, RVID Diam, RVIDd, IVSd, RVIDs, LVIDd, RVIDs, IVSs, LVIDs, LV Diam, LV Area, RV Area, LA Diam, LA Area, Cardiac Area, RV Diam, RA Diam, MPA Diam and IVS.

- Z Score: Left ventricular long-axis (AV Diam, Ao Asc Diam) , aortic arch (AV Diam, Ao Asc Diam, Ao Desc Diam, IVC Diam) , aortic short axis (PV Diam, MPA Diam, RPA Diam, LPA Diam) , oblique aortic short axis (Duct Art Diam) , four-chamber heart (TV Diam, RVIDd, RV Diam, RV Area, MV Diam, LVIDd, LV Diam, LV Area, )

- Late Pregnancy: Same with Medium Pregnancy

-Medium and Late Pregnancy

- M mode
  - distance
  - Time.
  - Slope
  - Heart rate.
- Doppler mode
  - Fetal heart rate

- Uterine artery.
- Ovarian artery.
- Fetal aorta.
- Ascending aorta
- Descending aorta
- Left ventricular outflow tract
- Right ventricular outflow tract
- Umbilical artery.
- Venous catheter.
- Placental artery.
- Middle cerebral artery

- Cardiac:
- B mode

-Distance:

LA/Ao, RVAWd, RVDd, IVSd, LVIDd, LVPWd, IVSs, LVIDs, LVPWs, LV Major, LV Minor, LA Major, LA Minor, LA Diam, RA Major, RA Minor, RV Major, RV Minor

- Area:

LV Area (d) , LV Area (s) , RV Area (d) , RV Area (s) , LA Area, RA Area

- Volume & Myocardial Weight:

LA Vol (A-L) : LA apical, LAA(A2C), LAA(A4C)

LA Vol (Simpson) : LAA(A2C), LAA(A4C)

RA Vol (A4C)

LV Mass (Cube) : IVSd, LVIDd, LVPWd

LV Mass (A-L) : LVLd apical, LVAd sax Epi, LVAd sax Endo

LV Mass (T-E) : LVAd sax Epi, LVAd sax Endo, a, d

LV Mass: LVAd sax MV, LVAs sax MV

- Vessels:

Ao Diam, Ao Arch Diam, Ao Asc Diam, Ao Desc Diam, LVOT Diam, MPA Diam, RVOT Diam, IVC Diam (Insp) , IVC Diam (Expis)

- Left Ventricular Function:

Simpson: A2Cd, A2Cs, A4Cd, A4Cs, HR

- LV(2D): LVIDd, LVIDs, HR
- Aortic Valve:
  - AV Diam, ACS, AVA, AVA(VTI)[LVOT Diam,LVOT VTI,AV VTI], PISA AR[AR Rad,AR Als Vel,AR VTI], CO(LVOT)[LVOT Diam,LVOT VTI,AV HR]
- Mitral Valve:
  - MV Diam, MVA, MCS, MV EPSS, MVA(VTI)[LVOT Diam,LVOT VTI,MV VTI], PISA MR[MR Rad,MR Als Vel,MR VTI]
- Pulmonary Valve:
  - PV Diam, PISA PR[PR Rad,PR Als Vel,PR VTI], CO(RVOT)[RVOT Diam,RVOT VTI,PV HR]
- Tricuspid Valve:
  - TV Diam, TVA, PISA TR[TR Rad,TR Als Vel,TR VTI], RVSP[TR Vmax,RAP]
- PISA:
  - PISA MR[MR Rad,MR Als Vel,MR VTI], PISA AR[AR Rad,AR Als Vel,AR VTI], PISA TR[TR Rad,TR Als Vel,TR VTI], PISA PR[PR Rad,PR Als Vel,PR VTI]
- Bypass:
  - VSD Diam, ASD Diam, PDA Diam, PFO Diam
- M mode
  - Distance: RVAWd, RVDd, IVSd, LVIDd, LVPWd, IVSs, LVIDs, LVPWs, LA/Ao, ACS, RVOT Diam
  - Time: LVPEP, LVET, RVPEP, RVET
  - LV(Teich): IVSd,LVIDd,LVPWd, IVSs,LVIDs,LVPWs, HR
  - LV(M): LVIDd, LVIDs, HR
  - LV Mass(Cube): IVSd, LVIDd, LVPWd
  - Aortic Valve: ACS, LVPEP, LVET
  - Mitral Valve: MV ALL, MV D-E Amp, MV E-F Slope, MV EPSS, MV E Amp, MV A Amp, MV C-O dur, LVET
  - Pulmonary Valve: RVPEP, RVET, RVOT Diam
- Dopplor mode
  - Aortic Valve: AV Vmax, AV VTI, AV HR, AVA(VTI) , AV AccT, LVOT VTI, CO(LVOT) , LVET, LVPEP, AR Vmax, AR DecT, AR PHT, PISA AR
  - Mitral Valve: MV Vmax, MV E Vel, MV A Vel, MV E Dur, MV A Dur, MV Ea(lateral), MVA(PHT) , MVA(VTI) , MV VTI, MV HR, MV AccT, MV DecT, IVRT, IVCT, LV Tei Index, MR Vmax, MR VTI, dP/dt, MV Peak e', MV Peak lat, MV Peak Sept, PISA MR
  - Pulmonary Valve: RVOT Vmax, RVOT VTI, CO(RVOT) , PV Vmax, PV VTI, PV HR, PV AccT, MPA Vmax, RPA Vmax, LPA Vmax, RVET, RVPEP, PAEDP, PISA PR
  - Tricuspid valve: TV Vmax, TV E Vel, TV A Vel, TV VTI, TV HR, TV Peak e', RVSP, RV Tei Index, PISA TR
  - Pulmonary vein: PVein S Vel, PVein D Vel, PVein A Vel, PVein A Dur, PVein S VTI, PVein D VTI, PVein DecT
  - PISA: PISA AR, PISA MR, PISA PR, PISA TR
  - Bypass: VSD Vmax, ASD Vmax, PDA Vel(d) ,PDA Vel(s)
  - TDI: MV Ea(medial), MV Aa(medial), MV ARa(medial), MV DRa(medial), MV Sa(medial), MV Ea(lateral), MV Aa(lateral), MV ARa(lateral), MV DRa(lateral), MV Sa(lateral)
- Urology
- B mode
  - Kidneys: length, width, thickness, renal cortical thickness and renal cysts
  - Renal Lesion: d1, d2, d3,
  - Prostate: length, width, thickness
  - Spermatophor: length, width, thickness
  - Bladder: Pre/posterior bladder: Length Diameter,Width Diameter and Thickness Diameter,Posturinary bladder: Length Diameter,Width Diameter and Thickness Diameter,
- M mode

- distance
- Time.
- Slope
- Heart rate.
- Dopplor mode
  - Abdominal aorta
  - Renal artery.
  - segmental artery
  - Interlobar artery
  - arcual artery
  - Renal veins
- vessels
- B mode
  - Abdominal vessels: portal vein, splenic vein, splenic artery, aorta, iliac artery
  - Carotid artery.
  - Upper Extremity Artery
  - Upper Extremity Vein
  - Lower Extremity Artery
- M mode
  - distance
  - Time.
  - Slope
  - Heart rate.
- Dopplor mode
  - Carotid artery.
  - Upper Extremity Artery
  - Upper Extremity Vein
  - Lower Extremity Artery
- Small Parts
  - Thyroid: Length, Width, and Thickness.
  - Isthmus Thick Diameter
  - Masses
  - Nodules
  - Cysts
- M mode
  - distance
  - Time.
  - Slope
  - Heart rat
- Dopplor mode
  - velocity
  - Time

- HR
- accelerated velocity
- PS/ED
- D Trace

### 6.3 Automated Measurements

- Obstetric: BPD\HC\OFD\VAC\HL\FL
- IMT: support carotid, internal carotid, external carotid and bifurcation arteries.

- Auto EF
- Auto NT
- Auto Trace
- Auto FLC
- Auto Pelvic
- Auto Hip
- Auto BL
- Auto MSK
- Auto AFI
- Auto UM

### 6.4 Reports

- Specialized reports for each area of application.
- Editable measurements in the reports.
- Optional images.
- Presetable information including Hospital.

Exportable reports in PDF/Word format

\*All measurements are not listed in this section. For more information on measurements, please refer to the User Manual.

## 7 Exam Storage and Management

### 7.1 Exam Storage

- 1TB mechanical hard drive + 256GB solid state drive, remaining space of 800GB intended for storing the patient information.
- Storage of up to 113,664 single-frame images.
- Direct storage of digital single frames and cine files in each mode

### 7.2 Exam Management

- Patient Information Management System  
Patient Exam Inquiry/Access
- Support for viewing the current and

- historical exams.
- Support for creating new exams, activating exams, continuing exams, and ending exams.
- Support for measurements of stored images and cine.
- Export images in BMP/JPEG/AVI format.
- Support for backing up patient data to USB devices and DVD-ROMs.
- deletes images with one click

## 8 Connectivity

- 8.1 Network Connection Support
- 8.2 DICOM 3.0 basic
- 8.3 DICOM Worklist
- 8.4 DICOM Structure Report

## 9 Probes (optional)



### 9.1 Linear Array

- L12-3EB (Composite)  
Application: Abdomen, superficial tissues, small parts (excluding eyes), peripheral vasculature  
Bandwidth: 3.6-18MHz  
Elements: 192  
(Max.) Scan Range: 38.4mm  
Depth: 1.0-16.0cm  
Dimensions: 53.5mm×19mm×140mm  
B-mode Frequency Points: 3.6-5.0M, 5.5-7.5M, 6.7-9.3M, 8.4-11.6M, 10.1-15.2M  
Field of View (FoV): 38mm  
Doppler Frequency Points: 5.0M, 5.4M, 6.0M, 7.0M, 8.0M
- L9-3E (Single Crystal)  
Application Areas: Abdomen, Superficial, Small Parts, Peripheral Vascular,

Musculoskeletal, Nerve, Obstetrics  
Bandwidth: 3.2-12.7MHz  
Elements: 192  
Field of View (FoV): 38mm  
Scan Range: 38°

### 9.2 Convex Array

- C5-1E (Composite)  
Application: Abdomen, gynecology, obstetrics, and pediatrics  
Bandwidth: 1-6.3MHz  
Elements: 192  
(Max.) Scan Range: 70°  
Radius: 60mm  
Depth: 5.0-40.0cm  
Dimensions: 78mm×25.5mm×150mm  
B-mode Frequency Points: 1.6M-1.9M, 2.3-2.7M, 3.1-3.5M, 3.8-4.2M, 4.7-5.3M  
Field of View (FoV): 89°  
Doppler Frequency

Points: 2.0M, 2.5M, 3.3M, 4.0M, 4.3M

### 9.3 Phased Array

- P4-1EL (Composite)  
Application: Cardiology, Pediatric Cardiology, Cranial, Abdomen  
Bandwidth: 1.0-5.0 MHz  
Number of Elements: 96  
Maximum Scan Angle: 89° (120° with extended mode)  
Field of View (FoV): 90°  
Imaging Depth: 5.0-41.0 cm  
Physical Dimensions: 34.9mm×26.8mm×130mm  
B-mode Frequencies: 1.3-2.1MHz, 1.1-2.9MHz, 1.4-3.6MHz, 1.7-4.3MHz, 3.7-4.3MHz  
C-mode Frequencies: 1.9MHz, 2.0MHz, 2.5MHz, 3.0MHz, 3.3MHz  
PW-mode Frequencies: 1.9MHz, 2.0MHz, 2.5MHz, 3.0MHz, 3.3MHz
- P4-1EB  
Application Areas: Cardiac, Pediatric Cardiac, Brain, Abdomen, Thoracic  
Bandwidth: 0.9-5.0MHz

Elements: 96  
Scan Angle: 90°

#### 9.4 Endocavity

- E9-3E (Composite)  
Application: GYN and URO, transvaginal, and transrectal  
Bandwidth: 2.8-10.4MHz  
Elements: 192  
(Max.) Scan Range: 180°  
Depth: 1.0-16.0cm  
Dimensions: 22.8mm×17.73mm×335mm  
Radius: 11mm  
B-mode Frequency Points: 2.8-5.2M,3.5-6.5M,4.2-7.8M,4.9-9.1M,5.3-9.8M  
Harmonic frequency point: 4.2-7.8M,4.9-9.1M,5.6-10.4M  
Doppler Frequency Points: 4M,4.6M,5.0M,6.0M,6.5M

### 10 Accessories (optional)

10.1 Printer Driver (pre-installed driver) for below recommended model:

- Sony UP-D898MD/X898MD
- Sony UP\_D25MD
- HP8210

#### 10.2 Built-in DVD

#### 10.3 Gel Warmer

- Warm gel with 2 temperature options
- Easy to disassemble for cleaning
- Temperatures: 37°C and 40°C
- Temperature Control Accuracy: ±3°C
- Overvoltage and over-temperature protection indication
- Power switch: on/off
- Dimensions: 77.8mm (W) ×79mm (D) ×151.4mm (H)
- Weight: about 380g

#### 10.4 Foot Switch

- Number of pedals: 1 pedal/3 pedals
- port: USB
- Support for user-defined features
- Protection Level: IPX8 (1.2m)

#### 10.5 ECG

- 6-pin, AHA/IEC and 3-lead
- ECG Waveform d=Display: on/off
- Gain: 0-3, 1/step
- Sweep Speed: 1-6, 1/step

#### 10.6 Barcode Scanner

- Laser Barcode Scanner
- Dimensions: 1D,2D
- 1D Model: LS2208
- 2D Model: DS6707-SR

#### 10.7 Built-in wireless card

- Operating frequency: 650M
- Band: 2.4G/5G
- Port: USB (built-in)
- Antenna mode: Built-in

### 11 System I/O

#### 11.1 Video/Audio Input

- Built-in Microphone: 1
- External Microphone Interface (3.5mm): 1

#### 11.2 Video/Audio Output

- Composite Video Output/RCA: 1
- S-terminal Output: 1
- HDMI Interface: 1
- VGA Output: 1
- DVI-D: 1
- Audio Output: 1(Stereo)

#### 11.3 Physiological Signal Input

- Support for ECG signals
- ECG: 1(built-in)

#### 11.4 Other I/Os

- USB: 6
- Network Port: 1
- Printer Control Port: 1
- Foot Switch Interface: 1

### 12 Security and Certification

#### 12.1 Applicable Standards

- MDR 2017/745
- EN ISO 15223-1:2021
- EN ISO 13485:2016
- ISO20417:2021
- ISO 12052:2017
- EN ISO 14971:2019

- ISO 10993-1:2018
- ISO 10993-5:2009
- ISO 10993-10:2021
- ISO 10993-23:2021
- EN 60601-1:2006/A1:2013
- EN 60601-1-2: 2015
- EN 60601-1-6:2010
- EN60601-2-37:2007+A1:2015
- RoHS
- WEEE
- Package and transport standard: ISTA 3B series

# Hisense Medical

## Qingdao Hisense Medical Co., Ltd.

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Qingdao Hisense Medical Co., Ltd. reserves the right to perform technical upgrades and optimizations on its products. Product designs and specifications are subject to change and will be updated accordingly. All images in this brochure are for illustrative purposes only. Actual products may differ in color due to variations in photography and display settings. Please refer to the physical product for accurate representation.

**Hisense Medical**



# HD60 Series

## Hisense Ultrasound Transducers List

Release 1.0

## 1 Overview

### 1.1 Applications

- Abdomen
- Obstetrics
- Gynecology
- Cardiac
- Small Parts
- Urology
- Vascular
- Pediatric
- Emergency
- Anesthesia
- Transvaginal&Transrectal
- Musculoskeletal
- Others

### 1.2 Probe Types

- Convex Array Probe
- Line Array Probe
- Phased Array Probe
- Volume Probe
- Endo-cavity
- Micro-convex Probe

### 1.3 Imaging Modes

- B-mode
- Tissue Harmonic Imaging
- M-mode/Color M-mode
- Anatomical M-mode
- Curve Anatomical M-mode
- Color Doppler Imaging
- Power Doppler/Directional Power Doppler
- Pulsed Wave(PW) Doppler
- Continuous Wave(CW) Doppler
- Tissue Doppler Imaging(TDI)
- Freehand 3D Imaging
- 4D
- Multi-Slice
- Elasto
- Pano
- 3D Spectrum
- SCV Color Velocity Imaging

- Strain Rate Imaging

### 1.4 Configuration Features

- B-mode
- Tissue Harmonic Imaging
- M-mode/Color M-mode
- Color Doppler Imaging
- Power Doppler/Directional Power Doppler
- Pulsed Wave(PW) Doppler
- CW Doppler
- HPRF
- HD Color
- Speckle Suppression Imaging
- Auto
- Zoom (including full-screen Zoom)
- Spatial Composite Imaging
- Steer
- Raw Data Processing
- Anatomical M-mode
- Curve Anatomical M Mode
- Pano
- Trapezoidal
- Dual-Mode
- Power Doppler/Directional Power Doppler
- Freehand 3D Imaging
- 4D
- 3D Spectrum
- SCV Color Velocity Imaging
- Niche Imaging
- OminiView
- Multi-slice
- Auto IMT
- Tissue Specific Imaging
- Auto EF
- Auto NT
- Elasto
- Biopsy Enhancement
- Biopsy Guidance
- TDI (including TVI, TVD, TVM and TEI)
- DICOM 3.0/ DICOM structure report
- Measurement Software Package

- Task Manager
- Teaching Software
- Digital processing channels 5000000
- 4 Activatable Probe Interfaces
- 1TB HDD (Data)
- DVD R/W Drive
- 6 USB Ports
- 256GB SSD (System)

### 1.5 Supported Languages

- Software: Chinese and English
- Keyboard Input: English and Chinese
- User Manual: English and Chinese

## 2 Physical Specifications

### 2.1 Dimensions and Weight

- Height(mm): 1,385-1,755
- Width(mm): 595
- Depth(mm): 890
- Weight: about 90kG

### 2.2 Monitor

- 21.5" High Resolution Color LCD Monitor
- Resolution: 1920×1080
- Angle of View: 178°
- Adjustable Screen Brightness and Contrast (Manual, Automatic)
- Tilt: 20 degrees(up) to 90 degrees(down)
- Rotation: - 90 degrees to +90 degrees

### 2.3 Speaker

- High Fidelity Stereo
- Power: 2×10w

### 2.4 Ergonomic Omnidirectional Rotatable Monitor Support Arm

- Rotation: ±90 degrees (from the center)
- Up and Down Movement: 280mm
- Front and Back Stretch: 550mm

### 2.5 Casters

- Diameter: 125mm
- Front and Rear Casters (4): Braking and Unlocking

### 2.6 Probe Connectors and Covers

- Connectors: 4 Activatable Probe Connectors

- Covers: 5 plus an Endo-probe Holder

### 2.7 Power Supply

- Voltage: 220V~
- Frequency: 50/60Hz
- Power: Max.700VA
- Fuse: 250V~, 5A

### 2.8 Operating Conditions

- Ambient Temperature: 5-40°C
- Relative Humidity: 30-80%(No Condensation)
- Atmospheric Pressure: 70kPa~106kPa

### 2.9 Storage and Transportation Conditions

- Ambient Temperature: -20-55°C
- Relative Humidity: 30-93% (No Condensation)
- Atmospheric Pressure: 70kPa~106kPa

## 3 Human-Machine Interaction

### 3.1 Control Panel

- The panel is designed to be user-centric and easy to operate.
- The panel features the backlighting of keys with adjustable backlight brightness
- user-defined keys.
- 8-segment TGC
- Standard Keyboard
- Adjustable key tone and trackball speed
- rotated and raised.
  - Rotation: ±90 degrees (from the center)
  - -Up and Down Movement: 0mm to 200mm

### 3.2 Touch Screen

- 13.3" high sensitivity anti-glare, anti-fingerprint color and 10-point capacitive touch screen.
- Resolution: 1920x1080
- Adjustable brightness and contrast via presets.
- Viewing Angle: 170 degrees

### 3.3 Startup/Shutdown

- Boot-up from shut-down: Less than 52 sec
- Shut-down : Less than 33 sec

### 3.4 Annotate

- Support for text and arrow annotate.
- Adjustable arrow size
- Support for start point setting.
- Cover all Applications.
- User-definable.

### 3.5 Bodymark

- More than 132 individual Bodymark for various applications.

### 3.6 Screen Information\*

- Public Information:
  - Hisense Logo
  - Hospital Name
  - Exam Date
  - Exam Time
  - Output Power
  - Mechanical Index
  - Tissue Temperature Indication
  - Probe Name
  - ECG Logo (when the ECG is connected)
  - TGC Curve
  - Focus Position
  - Thumbnail
  - Image Parameters
  - Trackball Operation Help In tions

\*All items are not represented in this section, please refer to the User Manual for details.

## 4 Image Parameters

### 4.1 Overview

- Digital Beam Enhancer
- Multi Beams Synthesis

### 4.2 B-mode

- Display Formats: Single, Dual and Quad
- Persist: 0-5 level
- AUTO: Automated Optimization
- Frequency Composite Imaging
- System Frequency Range 2.0 – 21.0 MHz
- B|SRI: Dual Real Time Comparison
- Steer: Line Array Probes Available,  $\pm 20^\circ$ ,  $5^\circ$ /step

- WFOV: Line Array Probes Available,  $8^\circ$ .
- Depth: 2.0-40cm, 1 cm/step (which varies with probes) (referenced parameters for the convex array probe)
- FR (Max.): 1000f/s (Convex Array Probes)
- Output Power: 1%-100%
- TGC: 8 -segment
- LGC: 8 -segment
- Dynamic Range: 30-320, 10/step
- Gain: 0-255, 5/step
- Focus Number: 1-16 (probe related)
- Focus Position: Dynamically Adjustable
- Density  $\geq 512$  ultrasonic lines per frame
- Persist: 5 steps
- L/R Flip and U/D Flip: on/off
- Rotate: 0, 90, 180 and 270
- Gray map: 20 types
- Tint map: 0-7, 8 types

### 4.3 Harmonic Imaging

- Available for all probes.

### 4.4 M-mode/Color M-mode

- Display Formats: V2:3, V3:2, V3:1 and H2:3, full screen (V: vertical, H: horizontal)
- Available for Color M-mode
- Output Power: 1%-100%
- Gain: 0-255, 5/step
- Scanning Speed: 6 steps (1-6)
- Tint map: 0-6,7 types
- Gray map: 14 types
- Edge Enhancement: 0-4 steps

### 4.5 Anatomical M-mode Imaging

- Display Formats: V2:3, V3:2, V3:1 and H2:3 (V: vertical, H: horizontal)
- Available for Color Anatomical M-mode
- Up to three sampling lines.
- Simultaneous display of three M- sampling line graphs.
- Tint map: 8 types
- Gray map: 0-13 types

### 4.6 Color Doppler Imaging

- Dual Real Time

- Max. Velocity: 37cm/s
  - Steer: Max. 20 degrees (line array probes)
- Max. Frame Rate: 400f/s
- Output Power: 1%-100%
- Gain: 0-255, 5/step
- Baseline: 21 steps (-10-10, 1/step)
- Wall Filter: 1-9 steps
- PRF: 0.5-16.8 kHz
- Sensitivity: 0-6, 7 types (non-uniform progression)
- Flow State: 0-8, 9 steps
  - Smooth: 5 steps
- Same Width for B/C-mode: on/off
- Color Priority: 0-7, 8 steps
- Color Map: 0-7,8 types
- Flip: on/off
- Persist: 0-6, 6steps
- Line Density: Low/Medium/High
- Speed Scale: Max. 25m/s
- Baseline: 21 steps
- PW Steer: Max. 20 degrees (line array probes)
- Volume: 0-100, 10 steps
- PW PRF: 0.5-20kHz
- CW PRF: 0.9-20kHz
- Gain: 0-255, 5/step
- Dynamic Range: 60-260, 10/step
- Scanning Speed: 6 steps (PW)
- Wall Filter: 9 steps
- Flip: on/off
- Angle Correction: -88 to +88 °, 2°/step
- Quick Angle Correction: -60°, 0°, 60°
- Gray map: 20 types
- Tint map: 8 types
- Time/Frequency Resolution: 4 steps
- Tracing Range: top, bottom and all
- Audio Noise Reduction: 0-4, 5 steps
- Tracing: on/off
- Smooth: 1-4, 4 steps

#### 4.7 Power Doppler

- Support for Directional Power Doppler
- Output Power: 1%-100%
- Gain: 0-255, 5/step
  - Steer: Max. 20 degrees (line array probes)
- Wall Filter: 1-6, 6steps
- PRF: 0.5-14.5kHz
- Sensitivity: 7 steps
- Flow State: 9 types (0-8)
- Smooth: 5 steps
- Color Priority: 0-7, 8 steps
- Persist: 0-6,7 steps

#### 4.8 PW/CW-Mode

- Display Formats: V2:3, V3:2, V3:1 and H2:3, Full Screen, Duplex/Triplex (PW only) (V: vertical, H: horizontal)
- PW Speed: Max. 24.9m/s
- PW Speed: Min. 0.5m/s
- CW Speed: Max. 24.9m/s
- SV: 0.5-30 mm, 60 steps (Values may vary with probes, and this value is specific to P4-2B)
- SV Depth: Adjustable

#### 4.9 TVI (Tissue Velocity Imaging)

- Available for phased array probes.
- Dual Real Time
- Same Width for B/C-mode: on/off
- Flip: on/off (TVI only)

#### 4.10 TVD (Tissue Velocity Doppler) (included in TDI)

- Available for phased array probes.
- Display Formats: V2:3, V3:2, V3:1 and H2:3, Full Screen, Duplex/Triplex (V: vertical, H: horizontal)
- SV: 0.5-30 mm, 60 steps
- Sampling Depth: Adjustable
- Speed Scale: Max. 3.69m/s
- Baseline: -1.0-+1.0, 0.1/step, total of 20 steps (P4-2B TVD mode baseline)
- Baseline: 0-255, 5/step, total of 51 steps (P4-2B TVI mode baseline)
- Volume: 0-100%, 10 steps

- PRF: 0.5-8.6kHz (P4-2B TVD mode)
- Gain: 0-255, 5/step
- Dynamic Range: 60-260, 10 steps
- Scanning Speed: 6 steps
- Wall Filter: 1-9, 1/step
- Flip: on/off
- Angle Correction: -88 to +88 °, 2/step
- Quick Angle Correction: -60°, 0°, 60°
- Gray map: 0-19, 1/step, 20 types
- Time/Frequency Resolution: 0-3, 4 steps

#### 4.11 TVM (Tissue Velocity M-mode) (included in TDI)

- Display Formats: V2:3, V3:2, V3:1 and H2:3, full screen (V: vertical, H: horizontal)
- Output Power: 1.0%-100.0%
- Dynamic Range: 60-260, 10/step
- Gain: 0-255, 5/step
- Scanning Speed: 1-6, 1 steps
- Gray map: 0-13, 1/step, 14 types
- Edge Enhancement 0-4, 1/step

#### 4.12 Free hand 3D Imaging

- Free hand 3D Imaging
  - Probes: Line Array, Convex Array, Endo-probe and Micro-convex.

#### 4.13 4D Imaging

- Available for all 4D probes.
- Static 3D and 4D
  - Rotation: 0, 90, 180 and 270.
  - Edit VOI: on/off
  - Reset VOI: on/off
  - Full Reset: on/off
  - Split-screen Mode: 1, 2 and 4
  - Render Mode: Surface, Skeleton, Depth, Real Skin, Inverse, Max and Min.
  - Light Source Render Imaging
  - View Orientation: top/bottom, bottom/top, left/right, right/left, front/back and back/front.
  - Threshold: 1-255, 1/step
  - Brightness: 0%-100%, 2%/step
  - 2D ChromaMap: 9 types

- 3D ChromaMap: 9 types
- OminiView
- 3D Layout
  - u 3 Slice (Stereo Triplanar Imaging)
  - u Niche (Niche Imaging)
- Reset: All, Reset Curve, Reset Orientation
- Active Profiles: A, B, C, 3 Sections/Niche
- Niche View: internal and external

#### • MagiCut

- CutMode: Eraser, Ellipse, Rectangle, Polygon
- CutPos: Inside, Outside
- Undo: undo, undo all

#### • MPR Measurement

- Measurement Methods: distance, tracing, area, angle, volume, length ratio and area ratio.
- Support for application measurement projects.
- Available for all probes.
- Acquisition Methods: B-mode, C-mode and Power-mode.

#### 4.14 Pano

- Available for all probes.
- Acquisition Methods: B-mode, C-mode and Power-mode.

#### 4.15 Elasto

- Support for multiple probes.
- Support for strain rate measurements.
- Pressure Indicator: support for frame-by-frame view of image pressure levels.
- Display Formats: Dual real-time
- Elasto map: 0-3, 4 types
- Flip: U/D, L/R
- Persist: 0-3
- Contrast: 0-13
- Remove: 0-2

#### 4.16 Zoom

- Zoom: up to 0.8x-10.0x for front-end, and 0.8x-10.0x for back-end.
- Full-screen Zoom: normal image, zoom in on standard image area to full screen, zoom in on image area to full screen only.

#### 4.17 QSave

- Intended for QSave of conditions after image parameter adjustment.
- Support for saving and exporting.

#### 4.18 Biopsy Enhancement

- Biopsy Needle Display Enhancement
- Available for line\Convex array probes.
- Steer: Adjustable at 30°, 45° and 60°

### 5 Cine Review and Raw Data Processing

#### 5.1 Cine Review

- Available for all modes.
- Support for manual Review frame by frame and automatic Review with adjustable speeds: 1/4, 1/2, 1, 1.5, 2 and 4.
- Maximum cine memory capacity of 6500 fps or 180s (mode-related).
- Maximum 4D cine memory capacity of 80 sec.
- Support for backward and forward storage and possible time length preset.
- Frame Contrast: Intended for comparing single frame images.
- Image Comparison: Support for comparing cine and single frames
- Skip to first and last frames: One-click for the skip to the initial frame and the last frame

#### 5.2 Raw Data Processing

- B-mode Gain  
Dynamic Range Gray map  
Gray scale  $\geq 256$   
Tint map  
Flip
- M mode

Dynamic Range Gain

Gray map Tint map

- Color mode Gain  
Flip  
Color Map
- PW mode Flip

Dynamic Range Gray map

Tint map

### 6 Measurement/Analysis and Report

#### 6.1 General Measurement

- Depth
- Angle
- Distance
- Area
- Perimeter
- Volume
- Dual Distance
- Parallel Lines
- Length of Curve
- Length Ratio
- Area Ratio
- IMT
- Histogram
- Cross Section
- Strain
- Strain Ratio
- Color Velocity
- Head Area
- Abdomen Area

- M mode  
-Distance  
-Time  
-Slope  
-Heart Rate  
-AC Velocity  
- Velocity
- Doppler Mode  
- Velocity  
-Acceleration  
-Time  
-Heart Rate

- Speed Ratio
- VTI Ratio
- D Tracing
- PS/ED
- Blood Flow

## 6.2 Clinical Measurement Package

- Abdomen
- B Mode
  - Liver
  - Common Hepatic Duct
  - Internal Diameter of Portal Vein
  - Gallbladder
  - Common Bile Duct
  - Pancreas
  - Spleen
  - Kidney: length, width, thickness and cortical thickness
  - Adrenal: length and width
  - Abdominal Aortic Diameter Stenosis Ratio
  - Abdominal Aortic Area Stenosis Ratio
  - Iliac Artery Diameter
  - Bladder
  - Prostate
  - Spermatophore
  - Internal Diameter of Splenic Vein
  - Abdominal Aortic Aneurysm
  - Renal Cysts Doppler Mode
  - Renal Vessels
  - Abdominal Artery/Vein
  - Renal Aorta
  - Segmental Artery
  - Interlobar Artery
  - Arcuate Artery
  - Renal Vein
- Gynecology
  - Uterine Body: length, width, thickness, endometrial thickness.
  - Cervix: length, width and thickness.
  - Ovary: length, width and thickness at the left/right side.

- Follicles: 1-8
- Uterine Fibroids: Distances 1, 2 and 3.
- Ovarian Cysts: Distances 1, 2 and 3.

### • Obstetrics

- Early Pregnancy: gestational sac, yolk sac, cephalic and breech diameter, biparietal diameter, head circumference, abdominal circumference, humeral length, cervical hyaline layer, cranial hyaline layer, nasal length and amniotic fluid depth.
- Early Pregnancy Heartbeats: Ao Diam, LVOT Diam, RVOT Diam, RVID Diam, RVIDd, IVSd, LVIDd, RVIDs, IVSs, LVIDs, LV Diam, LV Area, RV Area, LA Diam, LA Area, Cardiac Area, RV Diam, RA Diam and MPA Diam.
- Medium Pregnancy
  - Fetal Biology: biparietal diameter, occipital diameter, head circumference, abdominal circumference, femoral length, humeral length, placental thickness, transverse abdominal diameter, posterior abdominal diameter and cervical fold.
  - Amniotic Fluid Indexes: AF1, AF2, AF3 and AF4
  - Fetal Bone Length: femur length, clavicle length, humerus length, radius length, ulna length, tibia length and fibula length
  - Advanced Measurements: thick trunk diameter, transverse trunk diameter, transverse trunk section, chest diameter, cardiac circumference, cardiac area, chest circumference, vertebral length, cerebellar diameter, posterior cranial fossa pool, lateral cerebral ventricle, cerebral hemisphere, external eye

spacing, internal eye spacing, orbit, ear length, facial angle, clavicular length,

ulnar length, radial length, tibial length, fibular length, mid-shaft phalanges, foot length, umbilical vein diameter, fetal

kidney length and cervical length

-Fetal Heart: Ao Diam, LVOT Diam, RVOT Diam, RVID Diam, RVIDd, IVSd, RVIDs,

LVIDd, RVIDs, IVSs, LVIDs, LV Diam, LV

Area, RV Area, LA Diam, LA Area, Cardiac Area, RV Diam, RA Diam, MPA Diam and IVS.

-Late Pregnancy: Same with Medium Pregnancy

-Medium and Late Pregnancy

Heartbeats: Same with Early Pregnancy

- Z Score:

Left ventricular long-axis (AV Diam, Ao Asc Diam), aortic arch (AV Diam, Ao Asc Diam, Ao Desc Diam, IVC Diam), aortic short axis (PV Diam, MPA Diam, RPA Diam, LPA Diam), oblique aortic short axis (Duct Art Diam) and four-chamber heart (TV (Diam, RVIDd, RV Diam, RV Area, MV Diam, LV Diam, LVIDd, LV Diam and LV Area)

- Cardiac:

-Distance:

LA/Ao, RVA Wd, RVDd, IVSd, LVIDd, LVPWd, IVSs, LVIDs, LVPWs, LV Major, LV Minor, LA Major, LA Minor, LA Diam, RA Major, RA Minor, RV Major, RV Minor

-Area:

LV Area(d), LV Area(s), RV Area(d), RV Area(s), LA Area, RA Area

-Volume & Myocardial Weight:

LA Vol(A-L): LA apical, LAA(A2C), LAA(A4C)

LA Vo (I Simpson): LAA(A2C), LAA(A4C) RA Vol(A4C)

LV Mass(Cube): IVSd, LVIDd, LVPWd

LV Mass(A-L): LVAd apical, LVAd sax Epi, LVAd sax Endo

LV Mass(T-E): LVAd sax Epi, LVAd sax Endo, a, d

LV Mass: LVAd sax MV, LVAs sax MV

- Vessels:

Ao Diam, Ao Arch Diam, Ao Asc Diam, Ao Desc Diam, LVOT Diam, MPA Diam, RVOT Diam, IVC Diam(Insp), IVC

Diam(Expis)

-Left Ventricular Function: Simpson:

A2Cd, A2Cs, A4Cd, A4Cs, HRLV(2D): LVIDd, LVIDs, HR

-Auto EF

-Aortic Valve:

AV Diam, ACS, AVA, AVA(VTI) [LVOT Diam, LVOT VTI, AV VTI], PISA AR [AR Rad, AR Als Vel, AR VTI], CO(LVOT) [LVOT Diam, LVOT VTI, AV HR]

-Mitral Valve:

MV Diam, MVA, MCS, MV EPSS, VA(VTI) [LVOT Diam, LVOT(VTI), MV VTI], PISA MR [MR Rad, MR Als Vel, MR VTI]

-Pulmonary Valve:

PV Diam, PISA PR [PR Rad, PR Als Vel, PR VTI], CO(RVOT) [RVOT Diam, RVOT VTI, PV HR]

-Tricuspid Valve:

TV Diam, TVA, PISA TR [TR Rad, TR Als Vel, TR VTI], RVSP [TR Vmax, RAP]

-PISA:

PISA MR [MR Rad, MR Als Vel, MR], PISA AR [AR Rad, AR Als Vel, AR VTI], PISA TR [TR Rad, TR Als Vel, TR VTI], PISA PR [PR Rad, PR Als Vel, PR VTI]

-Bypass:

VSD Diam, ASD Diam, PDA Diam, PFO Diam

- Urology

- Prostate: Length, Width and Thickness

-Pre/posterior bladder: Length Diameter, Width Diameter and Thickness Diameter

-Kidneys: length, width, thickness, renal cortical thickness and renal cysts.

-Adrenal: Length and Width.

-Testicles Length, Width and Thickness

-Spermatophore: Length, Width and Thickness

## 6.4 Automated Obstetric Measurements

- Vessels

- Abdominal Vessels: portal vein, splenic vein, splenic artery, and aortailiac artery

- Carotid Artery

- Upper Extremity Artery

- Upper Extremity Vein

- Lower Extremity Artery

- Lower Extremity Vein

- Small Parts

- Thyroid: Length, Width, and Thickness.

- Isthmus Thick Diameter

- Masses

- Nodules

- Cysts

- Nerve

- 2D General Measurements

- Distance

- Angle

- Area

- Volume

- Length Ratio

- Area Ratio

- M General Measurements

- Distance

- Time

- Slope

- HR

- Doppler General Measurements

- Time

- HR

- Velocity

- Acceleration

- D Trace

- S/D

- Intended for reducing the user's measurement time and increasing efficiency.

## 6.3 IMT

- Carotid Intima-Media Thickness Measurement
- Automatically calculates thickness after the sampling frame selection.
- Support of IMT in the carotid, internal carotid, external carotid and bifurcation arteries.

- Support for BPD (biparietal diameter), HC (head circumference), OFD (occipital frontal diameter), AC (abdominal circumference), HL (humerus length) and FL (femur length).
- Support for manual modification by the user.

## 6.5 Reports

- Specialized reports for each area of application.
- Editable measurements in the reports.
- Optional images.
- Presetable information including Hospital.
- Exportable reports in PDF/Word format.

\*All measurements are not listed in this section. For more information on measurements, please refer to the User Manual.

## 7 Exam Storage and Management

### 7.1 Exam Storage

- 1TB mechanical hard drive + 256GB solid state drive, remaining space of 800GB intended for storing the patient information.
- Storage of up to 113,664 single-frame images.
- Direct storage of digital single frames and cine files in each mode.

### 7.2 Exam Management

- Patient Information Management System
- Patient Exam Inquiry/Access
- Support for viewing the current and historical exams.
- Support for creating new exams, activating exams, continuing exams, and ending exams.
- Support for measurements of stored images and cine.
- Export images in BMP/JPEG/AVI format.
- Support for backing up patient data to USB devices and DVD-ROMs.

## 8 Connectivity

### 8.1 Network Connection Support

### 8.2 DICOM 3.0 basic

### 8.3 DICOM Worklist

## 8.4 DICOM Structure Report

## 9 Probes

### 9.1 Convex Array Probe

- C5-1E (Composite)
  - Application: Abdomen, gynecology, obstetrics, and pediatrics
  - Bandwidth: 1-5MHz
  - Elements: 192
  - (Max.)Scan Range: 60°
  - Radius: 59.5mm
  - Depth: 5.0-40.0cm
  - Physical Dimensions: 78mm×25.5mm× 150mm
  - Field of View (FoV): 89°
  - B-mode Frequency Points: 1.8M, 2.5M, 3.3M, 4M and 5M
  - Harmonic Frequency Points: 3.5M, 4M and 5M
  - Doppler Frequency Points: 2.5M and 3.3M

## 9.2 Line Array Probe

- L12-3EB
  - Application: Abdomen, superficial tissues, small parts (excluding eyes), peripheral vasculature, and nerves
  - Bandwidth: 3.6-15.3MHz
  - Elements: 192
  - (Max.) Scan Range: 38.5mm
  - Depth: 1.0-16.0cm
  - Dimensions: 53.5mm×19mm×140mm
  - Field of View (FoV): 38mm
  - B-mode Frequency Points: 3.6 to 5.0 M, 3.8-9.2 M, 4.6-11.4 M, 5.8-14.2 M, 10.0-13.9 M
  - Harmonic Frequency Points: 5.0-12.2M, 5.8-14.2M,6.3-15.3M
  - Doppler Frequency Points: 5.0M, 5.4M, 6.0M, 7.0M, 8.0M

## 9.3 Phased Array Probe

- P4-1E (Composite)
  - Application: Cardiac, ped cardiac, and brain
  - Bandwidth: 1-4MHz
  - Elements: 96
  - (Max.)Scan Angle: 90°
  - Depth: 5.0-40.0cm
  - Dimensions: 34.9mm×26.8mm×130mm
  - B-mode Frequency Points: 1.8M, 2M, 2.5M, 3M, and 4M
  - Harmonic Frequency Points: 3.5M, 4M, and 5M
  - Doppler Frequency Points: 2M and 2.5M
  - CW Frequency Points: 2M and 2.5M

## 9.4 Endo-cavity probe

- E9-3E
  - Application: GYN and URO, transvaginal, and transrectal
  - Bandwidth: 3-9MHz
  - Elements: 192
  - Scan Angle: 200°
  - Depth: 1.0-16.0cm
  - Dimensions: 22.80mm ×17.73mm ×334.96mm
  - Field of View (FoV): 180°

-Radius: 10.32mm

-B-mode Frequency Points: 6M, 7M, and 8.5M

-Harmonic Frequency Points:3.5M and 4M

-Doppler Frequency Points: 4M and 5M

-Doppler Frequency Points: 4.3M and 5M

## 10 Peripherals & Accessories

### 10.1 Printer

- B/W Heat Transfer Printer: UP-D897
- Color Heat Transfer Printer: UP\_D25MD

### 10.2 Built-in DVD

### 10.3 Gel Warmer

- Warm gel with 2 temperature options
- Easy to disassemble for cleaning
- Temperatures: 37°C and 40°C
- Temperature Control Accuracy:  $\pm 3^{\circ}\text{C}$
- Overvoltage and over-temperature protection indication
- Power switch: on/off
- Dimensions: 77.8mm (W) x 79mm (D) x 151.4mm (H)
- Weight: about 380g

### 10.4 Foot Switch

- Number of pedals: 1 pedal/3 pedals.
- Interface: PAG.M0.4GLAC39A3 Pedal
- Support for user-defined features
- Protection Level: IPX8 (1.2m)

### 10.5 ECG

- 6-pin, AHA/IEC and 3-lead
- ECG Waveform d=Display: on/off
- Gain: 0-3, 1/step
- Sweep Speed: 0-2,1/step

### 10.6 Barcode Scanner

- Laser Barcode Scanner
- Dimensions: 1D
- 1D Model: LS2208

## 11 System I/O

### 11.1 Video/Audio Input

- Built-in Microphone: 1

- External Microphone Interface (3.5mm): 1

#### 11.2 Video/Audio Output

- Composite Video Output/RCA: 1
- S-terminal Output: 1
- HDMI Interface: 1
- VGA Output: 1
- DVI-D: 1
- Audio Output: 1(Stereo)

#### 11.3 Physiological Signal Input

- Support for ECG signals
- ECG: 1(built-in)

#### 11.4 Other I/Os

- USB: 6
- Network Port: 1
- Printer Control Port: 1
- Foot Switch Interface: 1

### 12 Security and Certification

#### 12.1 Applicable Standards

- MDR 2017/745
- EN ISO 15223-1:2016
- EN 1041:2008+A1:2013
- EN ISO 13485:2016
- ISO 12052:2017
- EN ISO 14971:2019
- ISO 10993-1:2018
- ISO 10993-5:2009
- ISO 10993-10:2010
- EN 60601-1:2006/A1:2013
- EN 60601-1-2: 2015
- EN 60601-1-6:2010
- EN60601-2-37:2007+A1:2015
- RoHS
- WEEE
- Package and transport standard: ISTA 3B series

**Hisense Medical**

# Aisense Series Ultrasound System

## Datasheet

Release 1.0



Some functions and features in the datasheet are optional and will be charged separately. Please refer to the official quotation.

<https://medical.hisense.com/>

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Hisense Intelligent Portable Color Doppler Ultrasound is a compact system designed for high efficiency, ease of use, and lightweight mobility. Powered by the Hpower holographic imaging technology platform, it supports advanced features such as elastography, contrast-enhanced imaging, and intelligent measurement technologies. With specialized capabilities including real-time multi-line acquisition and multi-gate sampling, it delivers precise imaging alongside rapid diagnosis, simplifying clinical workflows and improving overall efficiency.

## 1 System Overview



### 1.1 Applications

- Abdominal
- Obstetrics
- Gynecology
- Cardiology
- Pediatric Cardiology
- Craniocerebral
- Small Organs
- Superficial Tissues
- Urology
- Peripheral Vascular
- Musculoskeletal
- Neurology
- Pediatrics
- Emergency
- Transvaginal, Transrectal
- Thoracic
- Pelvic
- IVF (In Vitro Fertilization)

### 1.2 Probe Types

- Convex Array
- Linear Array
- Phased Array
- Endocavity
- Micro-Convex
- Volume

### 1.3 Imaging Modes

- B-mode
- Tissue Harmonic
- Pulse Inversion Harmonic
- M-mode/Color M-mode
- Anatomic M-mode
- Curved Anatomic M-mode (CAMM)
- Color Doppler Imaging
- Power Doppler/Directional Power Doppler
- PW (Pulsed Wave) Doppler
- CW (Continuous Wave) Doppler (optional)
- TDI (Tissue Doppler Imaging) including TVI, TVD, TVM, TEI (optional)
- Freehand 3D (Unreleased)
- Elastography (optional)
- Panoramic Imaging (optional)

- Contrast Imaging (optional)

#### 1.4 Configuration Features

- B-mode
- Tissue Harmonic
- Pulse Inversion Harmonic
- Tissue-Specific Imaging
- Scan Depth
- Scan Range
- Line Density
- TGC (Time Gain Compensation)  $\geq 8$  segments, LGC (Lateral Gain Compensation)  $\geq 8$  segments
- Spatial Compound Imaging
- Frequency Compound Imaging
- Extended Imaging
- One-Key Optimization (B, C, PW)
- Support for Front-End Amplification and Back-End Amplification
- Support for One-Key Full-Screen Zoom
- Grayscale Map
- Pseudo-Color Map
- Dynamic Range
- Speckle Noise Reduction Imaging
- Myocardial Enhancement
- HiPure
- Frame Correlation
- Offline Analysis
- Image Stitching
- Auto Tracking (optional)
- Vertical Flip, Horizontal Flip, Rotation

- Color Doppler Imaging
- Power Doppler/Directional Power Doppler
- High-Resolution Blood Flow Imaging (optional)
- Micro-Blood Flow
- Color Masking
- PW (Pulsed Wave) Doppler
- High Pulse Repetition Frequency (HPRF)
- CW (Continuous Wave) Doppler (optional)
- M-mode/Color M-mode
- Anatomic M-mode (AMM) (optional)
- Curved Anatomic M-mode (CAMM) (optional)
- TDI (Tissue Doppler Imaging) including TVI, TVD, TVM, TEI (optional)
- TDI Quantitative Analysis (optional)
- Wide-Field Imaging (2D Wide-Field)
- Freehand 3D (Unreleased)
- Puncture Guidance
- Puncture Enhancement (optional)
- MSV (Multi-Sample Volume) Blood Flow Analysis (Unreleased) (optional)
- Multi-PW (Multi-Sample Line Pulsed Wave) (optional)
- C-Elasto (Compression Elastic Imaging) (optional)
- C-Elasto QA (Elastic Quantitative Analysis) (Unreleased) (optional)
- Contrast Imaging (optional)
- Linear Array 2D/Color Deflection
- Raw Data Processing
- Dual-Display Imaging

- Dual Real-Time Comparison (BB/BC)
- Measurement Software Packages
  - Routine Measurement Software Package
  - Abdominal Application Software Package
  - Obstetric Application Software Package
  - Gynecological Application Software Package
  - Cardiac Application Software Package
  - Vascular Application Software Package
  - Small Organ Application Software Package
  - Urological Application Software Package
  - Pediatric Application Software Package
  - Neurological Application Software Package
    - Pelvic Floor Measurement Package
- Automatic Spectrum Measurement
- Auto IMT (Intima-Media Thickness) Measurement (optional)
- Auto EF (Left Ventricular Ejection Fraction) with Automatic Endocardial Tracing (Unreleased,optional)
- Auto NT (Nuchal Translucency) Measurement (optional)
- Auto FLC (Follicle) Measurement(Unreleased,optional)
- Auto Pelvic (Pelvic Floor) Automatic Measurement (Unreleased,optional)
- Auto BL (Bladder Volume) Automatic Measurement (Unreleased,optional)
- Auto MSK (Musculoskeletal) Automatic Measurement (Unreleased,optional)
- Auto OB (Multi-Frame Obstetric) Automatic Measurement (Unreleased,optional)
- Auto SP (Single-Frame Obstetric) Automatic Measurement (Unreleased,optional)
- Auto AFI (Amniotic Fluid Index) Automatic Measurement (Unreleased,optional)
- Auto UM (Uterine Fibroid) Automatic Measurement (Unreleased,optional)
- Auto Hip (Hip Joint) Automatic Measurement (Unreleased,optional)
- IVF Application (Unreleased,optional)
- Auto Nerve (Nerve) Automatic Measurement (Unreleased,optional)
- Auxiliary Automatic Recognition, Measurement and Analysis for Thyroid, Breast, Carotid Artery, Heart, Obstetrics, Thorax and Abdomen (Unreleased)
- Multi Probe
- HiStep Physical Examination Mode (Unreleased,optional)
- Teaching Software (optional)
- Annotations and Body Position Diagrams
- Voice Annotations (Unreleased)
- DEMO Show Library
- DVR (Digital Video Recorder) Function (Unreleased,optional)
- Gesture Presets
- Built-in Electronic User Manual
- Image Workstation
- Touch Screen Projection (Unreleased)

- Task Manager
- DICOM 3.0
- 1 Activable Probe Interface
- 5 USB Ports
- HDMI Interface
- Ethernet Port
- 256GB Solid-State Drive (SSD)
- ECG (Electrocardiography)
- WIFI Module
- Mobile Device Transmission
- Battery

### 1.5 Supported Languages

- Software: Chinese、English、Russian、Ukrainian、Spanish
- Keyboard Input: Chinese、English、Russian、Ukrainian、Spanish
- User Manual: Chinese、English、Russian、Ukrainian

## 2 Physical Specifications



### 2.1 Dimensions and Weight

- Width (mm): 368
- Depth (mm): 325
- Thickness (mm): 54.5 (including foot pads)

- Weight: 4.2Kg (including battery, excluding power adapter)

### 2.2 Display

- 15.6-inch high-resolution color LCD display
- Resolution: 1920×1080
- Viewing Angle: 170°
- Adjustable screen brightness (support automatic) and contrast
- Maximum display opening angle: 180°

### 2.3 Speakers

- High-fidelity stereo sound system
- Power: 2×2W

### 2.6 Probe Interface

- Probe Interface: 1 activable probe interface
- Support extending to 2 and 3

### 2.7 Adapter Power Supply

- Voltage: 220V~
- Frequency: 50/60Hz
- Power: 150VA

### 2.8 Battery

- Nominal Voltage: 14.4V
- Rated Capacity: 6.2Ah
- Charging Time: 5 hours
- Operating Time: 2 hours

### 2.9 Operating Environment

- Ambient Temperature: 0°C~40°C
- Relative Humidity: 20%~85% (non-condensing)

- Atmospheric Pressure: 70kPa~106kPa

### 2.10 Storage and Transportation Environment

- Ambient Temperature: -20°C~55°C
- Relative Humidity: 20%~95% (non-condensing)
- Atmospheric Pressure: 70kPa~106kPa

## 3 Human-Machine Interaction

### 3.1 Control Panel

- User-centric panel design for easy operation
- Backlit panel buttons with adjustable backlight brightness
- Multiple user-customizable buttons
- Adjustable key tone and trackball speed to meet different needs

### 3.2 Touch Screen



- 12.3-inch high-sensitivity anti-glare, anti-fingerprint color 10-point capacitive touch screen
- Resolution: 1920x720
- Preset-adjustable brightness and contrast
- Viewing Angle: 170 degrees

### 3.3 System On/Off

- System cold start time less than 60 seconds
- Shutdown time less than 15 seconds

### 3.4 Standby

- Standby entry time (fan stops working) less than 10 seconds
- Standby wake-up time less than 10 seconds

### 3.4 Annotations

- Support for text annotations, arrow annotations, and voice annotations
- Support for customizable arrow annotation buttons
- Adjustable arrow size and shape, built-in no less than 10 arrow types
- Adjustable text size
- Support for starting point setting
- Coverage of general practice applications
- Support for Chinese-English switching
- Support for custom annotation terms and layout

### 3.5 Body Position Diagrams

- More than 132 body position diagrams for various applications
- Support for probe position saving
- Coverage of general practice applications
- Support for importing custom body position marker diagrams

### 3.6 Teaching Mentor



- Support for section teaching of abdomen, urology, gynecology, peripheral blood vessels, obstetrics, small organs, heart, musculoskeletal system, and peripheral nerves
- One-key screen projection of teaching images to upper computer

### 3.7 DEMO Show Library

- Built-in DEMO demonstration images/videos
- Support for custom demonstration directories

### 3.8 Screen Information\*

- Public Information:
  - Hisense Logo
  - Hospital Name
  - Examination Date
  - Examination Time
  - Acoustic Power
  - Mechanical Index (MI)
  - Thermal Index (TI)
  - Probe Name
  - ECG Logo (when ECG is connected)
  - TGC Curve
  - Focal Position
  - Thumbnail
  - Image Parameters

- Trackball Operation Help Indicator

\*Not all items are reflected in this section; please refer to the user manual for details.

## 4 Image Parameters

### 4.1 Overview

- Digital Beam Enhancer
- Multi-Beam Synthesis
- Digital channels 700 000
- Frequency 1-21 Mhz

### 4.2 B-mode

- Display Formats: Single-frame, Dual-frame, Quad-frame
- Speckle Reduction: 0-6 levels
- AUTO: One-key optimization
- Dual Real-Time: Dual real-time comparison
- Deflection Angle: Applicable for linear array probes,  $\pm 25^\circ$ ,  $5^\circ/\text{step}$
- Extended Imaging (Linear Array):  $\pm 36^\circ$  left and right
- Extended Imaging (Convex/Phased Array):  $\pm 41^\circ$  left and right
- Depth: 1.0-55cm, 0.9cm/step (probe-dependent, may vary)
- Maximum Frame Rate: 1000f/s (phased array)
- Acoustic Power: 1%-100%
- TGC: 8 segments
- LGC: 8 segments
- Dynamic Range: 30-400, 3-4 steps/level
- Gain: 1-255, 2 step/level

- Number of Foci: 1-16 (probe-dependent)
- Focal Position: 16 steps, dynamically adjustable
- Line Density: Low/Medium/High/Ultra-High
- Frame Correlation: 0-7, 8 levels
- Horizontal/Vertical Flip: On/Off
- Rotation: 0°, 90°, 180°, 270°
- Grayscale Map: 0-8, 9 types
- Pseudo-Color: 0-8, 9 types
- Spatial Compound: 0-4, 5 levels
- Edge Enhancement: 0-5, 6 levels
- Scan Range: Applicable for convex/phased array probes, levels vary with probes
- Hipure: 0-5, 6 levels
- Myocardial Enhancement: Applicable for phased array probes, 0-2, 3 levels
- Smoothing: 0-6, 7 levels
- TSI (Tissue-Specific Imaging): Normal Tissue, Fluid Tissue, Fat Tissue, Muscle Tissue
- Midline: On/Off

#### 4.3 Harmonic

- Applicable for all probes

#### 4.4 M-mode/Color M-mode

- Display Formats: V2:3, V3:2, V3:1, H2:3, Full Screen (V: Vertical, H: Horizontal)
- Color M-mode available
- Acoustic Power: 1%-100%
- Gain: 1-255, 2 step/level
- Scan Speed: 1-6, 6 levels
- Pseudo-Color: 0-8, 9 levels

- Grayscale Map: 0-8, 9 levels
- Edge Enhancement: 0-5, 6 levels
- Dynamic Range: 30-400, 3-4 steps/level
- Line Correlation: 0-6, 7 levels
- Sensitivity: Parameter under CM, 0-4, 5 levels
- Wall Filter: Parameter under CM, 0-8, 9 levels
- Sample Volume: Parameter under CM, maximum level varies with color sample box, 2.0-max
- Blood Flow Status: Parameter under CM, 0-6, 7 levels
- Color Map: Parameter under CM, 0-7, 8 types
- Color Priority: Parameter under CM, 0-6, 7 levels
- Smoothing: Parameter under CM, 0-4, 5 levels

#### 4.5 Anatomic M-mode

- Display Formats: V2:3, V3:2, V3:1, H2:3 (V: Vertical, H: Horizontal)
- Up to three sample lines
- Support simultaneous display of three M-mode sample line images at the same level
- Pseudo-Color: 0-8, 9 levels
- Grayscale Map: 0-8, 9 levels
- Dynamic Range: 30-400, 3-4 steps/level
- Anatomic Line Angle: 0°-360°, 3°/step

#### 4.6 Curved Anatomic M-mode (CAMM)

- Support drawing sample lines at custom positions and angles for more effective motion

analysis of M-mode images at different angles and positions

- Edit, undo, and delete drawn curves
- Display Formats: V2:3, V3:2, V3:1, H2:3 (V: Vertical, H: Horizontal)
- Pseudo-Color: 0-8, 9 levels
- Grayscale Map: 0-8, 9 levels
- Scan Speed: 1-6, 6 levels

#### 4.7 Color Doppler Imaging

- Dual Real-Time: On/Off
- Sample Box Angle:  $\pm 30$  degrees (linear array probes)
- Maximum Frame Rate: 500f/s
- Acoustic Power: 1%-100%
- Gain: 1-255, 2 step/level
- Baseline: -10-10, 21 levels
- Wall Filter: 0-8, 9 levels
- SCALE: 0.6cm/s-3.9m/s
- Sensitivity: 0-4, 5 levels
- Blood Flow Status: 0-6, 7 levels
- Smoothing: 0-6, 7 levels
- B/C Same Width: On/Off
- Color Priority: 0-6, 7 levels
- Color Map: 0-7, 8 types
- Color Flip: On/Off
- Line Density: Low/Medium/High/Ultra-High
- Display Mode: Vel/Var
- Frame Correlation: 0-6, 7 levels
- Scan Range: Applicable for convex/phased array probes, levels vary with probes
- Auto Tracking: Linear array carotid artery,

upper and lower extremity arteries and veins, On/Off

- High-Resolution Blood Flow: On/Off
- Velocity Marker: On/Off

#### 4.8 Power Doppler

- Support Directional Power Doppler
- Dual Real-Time: On/Off
- Acoustic Power: 1%-100%
- Gain: 1-255, 2 step/level
- Sample Box Angle: Maximum 30 degrees (linear array probes)
- Wall Filter: 0-8, 9 levels
- SCALE: 0.6cm/s-3.9m/s
- Sensitivity: 0-4, 5 levels
- Blood Flow Status: 0-6, 7 levels
- Smoothing: 0-6, 7 levels
- Color Priority: 0-6, 7 levels
- Color Map: 0-7, 8 types
- Frame Correlation: 0-6, 7 levels
- Scan Range: Applicable for convex/phased array probes, levels vary with probes
- Micro-Blood Flow: On/Off

#### 4.9 PW/CW Modes

- Display Formats: V2:3, V3:2, V3:1, H2:3, Full Screen, Dual/Triple Synchronization (PW only) (V: Vertical, H: Horizontal)
- PW Maximum Velocity: 16m/s
- PW Minimum Velocity: 0.03cm/s
- CW Maximum Velocity: 32m/s
- CW Minimum Velocity: 0.03cm/s
- Sample Volume: 0.5-35mm, 0.5mm/step

(PW only), 70 levels (varies with probes)

- Sample Volume Depth: Adjustable to match sample box depth
- Baseline: -10-10, 21 levels
- PW Deflection: Maximum 30 degrees (linear array probes)
- Volume: 0-100, 2 steps/level
- PW SCALE: 4.06cm/s-16m/s
- CW SCALE: 10.78cm/s-32m/s
- Gain: 1-255, 2 step/level
- Dynamic Range: 30-400, 11 steps/level
- Scan Speed: 0-7, 8 levels
- Wall Filter: 0-8, 9 levels
- Spectrum Flip: On/Off
- Correction Angle: -89~+89°, 1°/step
- Quick Angle Correction: 3 levels (0°, 60°, -60°)
- Grayscale Map: 0-9, 10 levels
- Pseudo-Color: 0-8, 9 levels
- Time-Frequency Adjustment: 0-3, 4 levels
- Tracing: On/Off
- Tracing Range: Upper, Lower, All
- Audio Noise Reduction: 0-4, 5 levels
- Spectrum Smoothing: 0-4, 5 levels
- Duplex/Triplex

#### 4.12 Multi-Sample Volume (MSV) Blood Flow Analysis (optional)

- Hisense-exclusive function, acquiring blood flow spectrum information through multiple sample volumes to assist doctors in evaluating diseases such as vascular plaques and stenosis

- Applicable for linear array vascular conditions
- Display Formats: V2:3, V3:2, V3:1, H2:3, Full Screen (V: Vertical, H: Horizontal)
- Number of Sample Volumes: 3-7, 5 levels
- Sample Line Angle: -30-30, 5°/step
- Sample Volume: 0.5-35.0mm, 0.5mm/step (PW only), 70 levels (varies with probes)
- Correction Angle: -89~+89°, 1°/step
- Quick Angle Correction: 3 levels
- Envelope: Single envelope display, display all envelopes
- Baseline: -10-10, 21 levels
- Pseudo-Color: 0-8, 9 levels
- Volume: 0-100, 2 steps/level
- Scan Speed: 0-7, 8 levels
- Spectrum Flip: On/Off
- Envelope Range: Upper, Lower, All
- Time-Frequency Adjustment: 0-3, 4 levels

#### 4.13 TVI (Tissue Velocity Imaging)

- Applicable for phased array probes
- Dual Real-Time: On/Off
- B/C Same Width: On/Off
- Color Flip: On/Off

#### 4.14 TVD (Tissue Velocity Doppler) Imaging (Included in TDI)

- Applicable for phased array probes
- Display Formats: V2:3, V3:2, V3:1, H2:3, Full Screen, Duplex/Triplex (V: Vertical, H: Horizontal)
- Sample Volume: 0.5-35mm, 70 steps

- Sample Depth: Adjustable
- Maximum Velocity: 12m/s
- Minimum Velocity: 0.05cm/s
- Baseline: -10-+10, 1 step/level, total 21 steps
- TVD SCALE: 13.5cm/s-12m/s
- Gain: 1-255, 2 step/level
- Volume: 0.5-35, 0.5 steps/level
- Dynamic Range: 30-400, 11 steps/level
- Scan Speed: 0-7, 8 levels
- Wall Filter: 0-8, 9 levels
- Correction Angle: -89-89°, 1°/step
- Quick Correction Angle: 3 levels
- Grayscale Map: 0-9, 10 levels
- Time-Frequency Adjustment: 0-3, 4 steps
- Audio Noise Reduction: 0-4, 5 levels
- Acoustic Power: 1%-100%
- Spectrum Smoothing: 0-4, 5 levels
- Pseudo-Color: 0-8, 9 levels

#### 4.15 TVM (Tissue Velocity M-mode) (Included in TDI)

- Display Formats: V2:3, V3:2, V3:1, H2:3, Full Screen (V: Vertical, H: Horizontal)
- Acoustic Power: 1.0%-100.0%
- Gain: 1-255, 2 step/level
- M Scan Speed: 1-6, 6 levels
- Sensitivity: 0-4, 5 levels
- Frame Correlation: 0-6, 7 levels
- Wall Filter: 0-8, 9 levels
- Color Map: 0-7, 8 types

- Tissue Priority: 0-6, 7 levels
- Tissue Status: 0-6, 7 levels
- Smoothing: 0-4, 5 levels

#### 4.16 Freehand 3D

- Freehand 3D
  - Probes: Linear array, Convex array, Endocavity, Micro-convex

#### 4.18 Wide-Field Imaging

- Supported by linear array, convex array, phased array, and micro-convex probes
- Acquisition Method: B-mode
- Support centered display acquisition mode and moving display acquisition mode

#### 4.19 Elastic Imaging

- Supported by multiple probes
- Support strain rate measurement
- Support elastic quantitative analysis
- Pressure Indication: Support frame-by-frame pressure check
- Display Format: Dual Real-Time
- Elastic Map: E0-E5, 6 types
- Vertical/Horizontal Flip: On/Off
- Frame Correlation: 0-3
- Contrast: 0-20
- Removal: 0-2
- Line Density: Low/Medium/High/Ultra-High
- E Sensitivity: 0-4
- Smoothing: 5 levels
- Opacity: 0-5

#### 4.20 Contrast Imaging

- Support dual timer display
- Contrast Destruction: On/Off
- Vertical Flip, Horizontal Flip
- Contrast Mixing: Contrast Imaging/C&T
- Dual Real-Time: On/Off
- Dynamic Range: 30-400, 4 steps/level
- Contrast Image Position: On/Off
- Acoustic Power: 1.0%-100%
- Pseudo-Color: 0-8, 9 levels
- Grayscale Map: 0-8, 9 levels
- Destruction Voltage: 0-80, 1 step/level
- Duration: 500ms-2000ms, 25ms/step

#### 4.21 Zoom

- Support Front-End Zoom
- Support Back-End Zoom, 0.8x-10.0x
- Full-Screen Zoom: Normal image, zoom standard image area to full screen, zoom only image area to full screen

#### 4.22 Quick Save Image Parameters

- For quick saving of adjusted image parameter conditions
- Support save and export

### 5 Cine Playback and Raw Data Processing

#### 5.1 Cine Playback

- Applicable in all modes
- Support frame-by-frame manual playback and speed-adjustable automatic playback, playback speeds: 1/10, 1/5, 1/4, 1/3, 1/2, 1, 2, 3
- Switch between automatic

playback/manual playback

- Maximum Cine Memory Capacity: 480s (mode-dependent)
- Support post-image storage and pre-image storage, time length configurable
- Maximum pre-storage time no less than 120s
- Maximum post-storage time no less than 480s
- Image Comparison: Support cine comparison and single-frame comparison
- Jump to First Frame and Jump to Last Frame: One-click jump to initial frame and last frame
- Set as Start and Set as End: Support setting playback start point, support editing stored cine length

#### 5.2 Raw Data Processing

- B-mode:
  - Gain
  - Dynamic Range
  - Grayscale: 256
  - Pseudo-Color
  - Vertical Flip
  - Horizontal Flip
  - Edge Enhancement
  - Smoothing
  - Hi pure
  - Speckle Reduction
- M-mode
  - Dynamic Range
  - Gain

- Grayscale Map
- Pseudo-Color
- C-mode
- Gain
- Color Flip
- Color Map
- Color Masking
- Vertical Flip
- Horizontal Flip
- PW mode
- Flip
- Tracing
- Tracing Range
- Quick Correction Angle
- Baseline
- Dynamic Range
- Grayscale Map
- Pseudo-Color
- Correction Angle
- Cardiac Cycle
- CW mode
- Flip
- Dynamic Range
- Baseline
- Pseudo-Color
- Quick Correction Angle
- Correction Angle
- Grayscale Map

## 6 Measurements

### 6.1 Routine Measurements

- B-mode
- Depth
- Angle
- Distance
- Area
- Perimeter
- Volume
- Dual Distance
- Parallel Lines
- Curve Length
- Length Ratio
- Area Ratio
- IMT (Intima-Media Thickness)
- Histogram
- Cross-Sectional View
- Blood Flow Volume
- Strain
- Strain Ratio
- Color Velocity
- M-mode
- Distance
- Time
- Slope
- Heart Rate
- Velocity
- AC Velocity
- Doppler Mode
- Velocity

- Acceleration
- Time
- Heart Rate
- Velocity Ratio
- VTI Ratio
- D Tracing
- S/D (Systolic/Diastolic Ratio)
- PI (Pulsatility Index)
- RI (Resistivity Index)
- Blood Flow Volume

## 6.2 Professional Measurements

### Abdominal

- B-mode
- Liver
- Common Hepatic Duct
- Portal Vein Diameter
- Gallbladder: Gallbladder Length, Gallbladder Thickness, Gallbladder Wall Thickness
- Common Bile Duct
- Pancreas: Pancreatic Head, Pancreatic Body, Pancreatic Tail, Pancreatic Duct
- Spleen: Length, Thickness, Width, Area
- Kidney: Length, Thickness, Width, Cortical Thickness
- Adrenal Gland: Length, Thickness, Width
- Aorta: Abdominal Aorta Thickness, Abdominal Aorta Width
- Abdominal Aorta Diameter Stenosis Ratio
- Abdominal Aorta Area Stenosis Ratio

- Iliac Artery Diameter
- Bladder: Pre-Void Bladder Length, Pre-Void Bladder Thickness, Pre-Void Bladder Width, Post-Void Bladder Length, Post-Void Bladder Thickness, Post-Void Bladder Width
- Prostate: Length, Thickness, Width
- Seminal Vesicle: Length, Thickness, Width
- Splenic Vein Diameter
- Splenic Artery Diameter
- Abdominal Aortic Aneurysm: Length, Thickness, Width
- Renal Cyst 1, 2
- M-mode
- Distance
- Time
- Slope
- Heart Rate
- Doppler Mode
- Abdominal Arteries: Abdominal Aorta, Celiac Trunk, Superior Mesenteric Artery, Inferior Mesenteric Artery, Common Hepatic Artery, Proper Hepatic Artery, Splenic Artery
- Abdominal Veins: Inferior Vena Cava, Inferior Vena Cava Reflux, Portal Vein, Left Hepatic Vein, Middle Hepatic Vein, Right Hepatic Vein, Splenic Vein, Superior Mesenteric Vein, Inferior Mesenteric Vein
- Renal Vessels: Renal Artery, Segmental Artery, Interlobar Artery, Arcuate Artery, Renal Vein

### Gynecology

- B-mode
- Uterine Body: Length, Width, Thickness,

## Endometrial Thickness, Uterus-Tracing, Endometrium-Tracing

- Cervix: Length, Width, Thickness
- Ovary: Left/Right Ovary Length, Width, Thickness
- Follicle: 1-20
- Uterine Fibroid 1, 2: Distance 1, 2, 3
- Ovarian Cyst 1, 2: Distance 1, 2, 3
- Lesion 1, 2: d1, d2, d3
- Residual Urine: Post-Void Bladder Length, Post-Void Bladder Thickness
- Resting State: Detrusor Thickness, Mean Detrusor Thickness, Bladder Neck Distance R, Vesicourethral Posterior Angle R, Urethral Inclination Angle (R), Anorectal Angle (R), Posterior Bladder Wall Distance R, Lowest Cervical Point Distance R, Rectal Ampulla Distance R, Levator Ani Hiatus Anteroposterior Diameter R, Levator Ani Hiatus Left-Right Diameter R, Levator Ani Thickness R, Levator Ani Angle R, Levator Ani-Urethra Space R, Levator Ani Hiatus Area R, Shuttle R
- Valsalva: Bladder Neck Distance V, Vesicourethral Thickness Angle V, Urethral Inclination Angle V, Anorectal Angle V, Posterior Bladder Wall Distance V, Lowest Cervical Distance V, Rectal Ampulla Distance V, Anterior Rectal Wall Prolapse Height, Levator Ani Hiatus Anteroposterior Diameter V, Levator Ani Hiatus Left-Right Diameter V, Levator Ani Thickness V, Levator Ani Angle V, Levator Ani-Urethra Space V, Shuttle V
- Anal Contraction State: Levator Ani Thickness C, Levator Ani Angle C, Levator Ani-Urethra Space C, Internal Anal Sphincter Injury Rate, External Anal Sphincter Injury Rate

- M-mode
  - Distance
  - Time
  - Slope
  - Heart Rate
- Doppler Mode
  - Uterine Artery
  - Time
  - Heart Rate
  - Velocity
  - Acceleration
  - D Tracing
  - Ovarian Artery

## Obstetrics

- Gestational Sac
- Yolk Sac
- Crown-Rump Length (CRL)
- Biparietal Diameter (BPD)
- Head Circumference (HC)
- Abdominal Circumference (AC)
- Femur Length (FL)
- Humerus Length (HL)
- Nuchal Translucency (NT)
- Intracranial Translucency (IT)
- Nasal Bone Length
- Amniotic Fluid Depth
- First-Trimester Fetal Heart Rate
- Ao Diam (Aorta Diameter)
- LVOT Diam (Left Ventricular Outflow Tract Diameter)

- RVOT Diam (Right Ventricular Outflow Tract Diameter)
- RV Diam (Right Ventricular Diameter)
- RVIDd (Right Ventricular Internal Diameter diastole)
- IVSd (Interventricular Septum Diameter diastole)
- LVIDd (Left Ventricular Internal Diameter diastole)
- RVIDs (Right Ventricular Internal Diameter systole)
- IVSs (Interventricular Septum Diameter systole)
- LVIDs (Left Ventricular Internal Diameter systole)
- LV Diam (Left Ventricular Diameter)
- LV Area (Left Ventricular Area)
- RV Area (Right Ventricular Area)
- LA Diam (Left Atrial Diameter)
- LA Area (Left Atrial Area)
- Cardiac Area
- RA Diam (Right Atrial Diameter)
- MPA Diam (Main Pulmonary Artery Diameter)
- Z-Score: Left Ventricular Long Axis (AV Diam, Ao Asc Diam), Aortic Arch (AV Diam, Ao Asc Diam, Ao Desc Diam, IVC Diam), Aortic Short Axis (PV Diam, MPA Diam, RPA Diam, LPA Diam), Oblique Aortic Short Axis (Duct Art Diam), Four-Chamber View (TV Diam, RVIDd, RV Diam, RV Area, MV Diam, LVIDd, LV Diam, LV Area)
- Second Trimester
  - Fetal Biology: Biparietal Diameter, Head Circumference, Abdominal Circumference, Femur Length, Humerus Length, Placental Thickness, Occipitofrontal Diameter, Abdominal Transverse Diameter, Abdominal Thickness, Nuchal Fold
  - Amniotic Fluid Index (AFI): AF1, AF2, AF3, AF4
  - Fetal Long Bones: Femur Length, Clavicle Length, Humerus Length, Radius Length, Ulna Length, Tibia Length, Fibula Length
- First Trimester: Gestational Sac, Yolk Sac, Crown-Rump Length, Biparietal Diameter, Head Circumference, Abdominal Circumference, Humerus Length, Nuchal Translucency, Intracranial Translucency, Nasal Bone Length, Amniotic Fluid Depth
- Advanced Measurements: Trunk Thickness, Trunk Transverse Diameter, Trunk Cross-Section, Cardiac Circumference, Cardiac Area, Thoracic Circumference, Vertebral Length, Cerebellar Diameter, Cisterna Magna, Lateral Ventricle, Cerebral Hemisphere, Outer Orbital Distance, Inner Orbital Distance, Orbit, Ear Length, Facial Angle, Clavicle Length, Ulna Length, Radius Length, Tibia Length, Fibula Length, Middle Phalanx, Foot Length, Umbilical Vein Diameter, Fetal Kidney Length, Cervical Length
- M-mode
  - Distance
  - Time
  - Slope
  - RVIDd (Right Ventricular Internal Diameter diastole)
  - IVSd (Interventricular Septum Diameter diastole)

- LVIDd (Left Ventricular Internal Diameter diastole)
- RVIDs (Right Ventricular Internal Diameter systole)
- IVSs (Interventricular Septum Diameter systole)
- LVIDs (Left Ventricular Internal Diameter systole)
- Fetal Heart Rate
- Doppler Mode
- Fetal Heart Rate
- Uterine Artery
- Ovarian Artery
- Fetal Aorta
- Ascending Aorta
- Descending Aorta
- Left Ventricular Outflow Tract
- Right Ventricular Outflow Tract
- Umbilical Artery
- Ductus Venosus
- Placental Artery
- Middle Cerebral Artery

#### Cardiology

- B-mode
- Distance:
  - LA/Ao (Left Atrial/Aortic Ratio), RVAWd (Right Ventricular Anterior Wall Diameter diastole), RVDd (Right Ventricular Diameter diastole), IVSd (Interventricular Septum Diameter diastole), LVIDd (Left Ventricular Internal Diameter diastole), LVPWd (Left Ventricular Posterior Wall

Diameter diastole), IVSs (Interventricular Septum Diameter systole), LVIDs (Left Ventricular Internal Diameter systole), LVPWs (Left Ventricular Posterior Wall Diameter systole), LV Major (Left Ventricular Major Axis), LV Minor (Left Ventricular Minor Axis), LA Major (Left Atrial Major Axis), LA Minor (Left Atrial Minor Axis), LA Diam (Left Atrial Diameter), RA Major (Right Atrial Major Axis), RA Minor (Right Atrial Minor Axis), RV Major (Right Ventricular Major Axis), RV Minor (Right Ventricular Minor Axis)

- Area:
  - LV Area (d) (Left Ventricular Area diastole), LV Area (s) (Left Ventricular Area systole), RV Area (d) (Right Ventricular Area diastole), RV Area (s) (Right Ventricular Area systole), LA Area (Left Atrial Area), RA Area (Right Atrial Area)
- Volume & Myocardial Mass:
  - LA Vol (A-L) (Left Atrial Volume (Apical-Long Axis)): LA apical (Left Atrial Apical), LAA(A2C) (Left Atrial Appendage (Apical 2-Chamber)), LAA(A4C) (Left Atrial Appendage (Apical 4-Chamber))
  - LA Vol (Simpson) (Left Atrial Volume (Simpson's Method)): LAA(A2C) (Left Atrial Appendage (Apical 2-Chamber)), LAA(A4C) (Left Atrial Appendage (Apical 4-Chamber))
  - RA Vol (A4C) (Right Atrial Volume (Apical 4-Chamber))
  - LV Mass (Cube) (Left Ventricular Mass (Cube Method)): IVSd (Interventricular Septum Diameter diastole), LVIDd (Left Ventricular Internal Diameter diastole),

LVPWd (Left Ventricular Posterior Wall Diameter diastole)

LV Mass (A-L) (Left Ventricular Mass (Apical-Long Axis)): LVLd apical (Left Ventricular Length diastole apical), LVAd sax Epi (Left Ventricular Area diastole short axis Epicardial), LVAd sax Endo (Left Ventricular Area diastole short axis Endocardial)

LV Mass (T-E) (Left Ventricular Mass (Teichholz Method)): LVAd sax Epi (Left Ventricular Area diastole short axis Epicardial), LVAd sax Endo (Left Ventricular Area diastole short axis Endocardial), a, d

LVAd sax MV (Left Ventricular Area diastole short axis Mitral Valve), LVAs sax MV (Left Ventricular Area systole short axis Mitral Valve)

- Vessels:

Ao Diam (Aorta Diameter), Ao Arch Diam (Aortic Arch Diameter), Ao Asc Diam (Ascending Aorta Diameter), Ao Desc Diam (Descending Aorta Diameter), LVOT Diam (Left Ventricular Outflow Tract Diameter), MPA Diam (Main Pulmonary Artery Diameter), RVOT Diam (Right Ventricular Outflow Tract Diameter), IVC Diam (Insp) (Inferior Vena Cava Diameter (Inspiration)), IVC Diam (Expis) (Inferior Vena Cava Diameter (Expiration))

- Left Ventricular Function:

Simpson: A2Cd (Apical 2-Chamber diastole), A2Cs (Apical 2-Chamber systole), A4Cd (Apical 4-Chamber diastole), A4Cs (Apical 4-Chamber systole), Heart Rate

LV(2D) (Left Ventricular (2D)): LVIDd (Left

Ventricular Internal Diameter diastole), LVIDs (Left Ventricular Internal Diameter systole), Heart Rate

- Aortic Valve:

AV Diam (Aortic Valve Diameter), ACS (Aortic Cusp Separation), AVA (Aortic Valve Area), AVA(VTI) (Aortic Valve Area (VTI Method)) [LVOT Diam (Left Ventricular Outflow Tract Diameter), LVOT VTI (Left Ventricular Outflow Tract Velocity-Time Integral), AV VTI (Aortic Valve Velocity-Time Integral)], PISA AR (Proximal Isovelocity Surface Area Aortic Regurgitation) [AR Rad (Aortic Regurgitation Radius), AR Als Vel (Aortic Regurgitation Aliasing Velocity), AR VTI (Aortic Regurgitation Velocity-Time Integral)], CO(LVOT) (Cardiac Output (Left Ventricular Outflow Tract)) [LVOT Diam (Left Ventricular Outflow Tract Diameter), LVOT VTI (Left Ventricular Outflow Tract Velocity-Time Integral), AV HR (Aortic Valve Heart Rate)]

- Mitral Valve:

MV Diam (Mitral Valve Diameter), MVA (Mitral Valve Area), MCS (Mitral Cusp Separation), MV EPSS (Mitral Valve E-Point Septal Separation), MVA(VTI) (Mitral Valve Area (VTI Method)) [LVOT Diam (Left Ventricular Outflow Tract Diameter), LVOT VTI (Left Ventricular Outflow Tract Velocity-Time Integral), MV VTI (Mitral Valve Velocity-Time Integral)], PISA MR (Proximal Isovelocity Surface Area Mitral Regurgitation) [MR Rad (Mitral Regurgitation Radius), MR Als Vel (Mitral Regurgitation Aliasing Velocity), MR VTI (Mitral Regurgitation Velocity-Time Integral)]

- Pulmonary Valve:
  - PV Diam (Pulmonary Valve Diameter), PISA PR (Proximal Isovelocity Surface Area Pulmonary Regurgitation) [PR Rad (Pulmonary Regurgitation Radius), PR Als Vel (Pulmonary Regurgitation Aliasing Velocity), PR VTI (Pulmonary Regurgitation Velocity-Time Integral)], CO(RVOT) (Cardiac Output (Right Ventricular Outflow Tract)) [RVOT Diam (Right Ventricular Outflow Tract Diameter), RVOT VTI (Right Ventricular Outflow Tract Velocity-Time Integral), PV HR (Pulmonary Valve Heart Rate)]
- Tricuspid Valve:
  - TV Diam (Tricuspid Valve Diameter), TVA (Tricuspid Valve Area), PISA TR (Proximal Isovelocity Surface Area Tricuspid Regurgitation) [TR Rad (Tricuspid Regurgitation Radius), TR Als Vel (Tricuspid Regurgitation Aliasing Velocity), TR VTI (Tricuspid Regurgitation Velocity-Time Integral)], RVSP (Right Ventricular Systolic Pressure) [TR Vmax (Tricuspid Regurgitation Maximum Velocity), RAP (Right Atrial Pressure)]
- PISA:
  - PISA MR (Proximal Isovelocity Surface Area Mitral Regurgitation) [MR Rad (Mitral Regurgitation Radius), MR Als Vel (Mitral Regurgitation Aliasing Velocity), MR TVI (Mitral Regurgitation Time-Velocity Integral)], PISA AR (Proximal Isovelocity Surface Area Aortic Regurgitation) [AR Rad (Aortic Regurgitation Radius), AR Als Vel (Aortic Regurgitation Aliasing Velocity), AR VTI (Aortic Regurgitation Velocity-Time Integral)], PISA TR (Proximal Isovelocity Surface Area Tricuspid Regurgitation) [TR Rad (Tricuspid Regurgitation Radius), TR Als Vel (Tricuspid Regurgitation Aliasing Velocity), TR VTI (Tricuspid Regurgitation Velocity-Time Integral)], PISA PR (Proximal Isovelocity Surface Area Pulmonary Regurgitation) [PR Rad (Pulmonary Regurgitation Radius), PR Als Vel (Pulmonary Regurgitation Aliasing Velocity), PR VTI (Pulmonary Regurgitation Velocity-Time Integral)]
- Shunt:
  - VSD Diam (Ventricular Septal Defect Diameter), ASD Diam (Atrial Septal Defect Diameter), PDA Diam (Patent Ductus Arteriosus Diameter), PFO Diam (Patent Foramen Ovale Diameter)
- M-mode
  - Distance: RVAWd (Right Ventricular Anterior Wall Diameter diastole), RVDd (Right Ventricular Diameter diastole), IVSd (Interventricular Septum Diameter diastole), LVIDd (Left Ventricular Internal Diameter diastole), LVPWd (Left Ventricular Posterior Wall Diameter diastole), IVSs (Interventricular Septum Diameter systole), LVIDs (Left Ventricular Internal Diameter systole), LVPWs (Left Ventricular Posterior Wall Diameter systole), LA/Ao (Left Atrial/Aortic Ratio), ACS (Aortic Cusp Separation), RVOT Diam (Right Ventricular Outflow Tract Diameter)
  - Time: LVPEP (Left Ventricular Pre-Ejection Period), LVET (Left Ventricular Ejection Time), RVPEP (Right Ventricular Pre-Ejection Period), RVET (Right Ventricular Ejection Time)
  - LV(Teich) (Left Ventricular (Teichholz Method)): IVSd (Interventricular Septum Diameter diastole), LVIDd (Left Ventricular Internal Diameter diastole), LVPWd (Left

Ventricular Posterior Wall Diameter diastole), IVSs (Interventricular Septum Diameter systole), LVIDs (Left Ventricular Internal Diameter systole), LVPWs (Left Ventricular Posterior Wall Diameter systole), Heart Rate

- LV(M) (Left Ventricular (M-mode)): LVIDd (Left Ventricular Internal Diameter diastole), LVIDs (Left Ventricular Internal Diameter systole), Heart Rate
- LV Mass(Cube) (Left Ventricular Mass (Cube Method)): IVSd (Interventricular Septum Diameter diastole), LVIDd (Left Ventricular Internal Diameter diastole), LVPWd (Left Ventricular Posterior Wall Diameter diastole)
- Aortic Valve: ACS (Aortic Cusp Separation), LVPEP (Left Ventricular Pre-Ejection Period), LVET (Left Ventricular Ejection Time)
- Mitral Valve: MV ALL (Mitral Valve Anterior Leaflet Length), MV D-E Amp (Mitral Valve D-E Amplitude), MV E-F Slope (Mitral Valve E-F Slope), MV EPSS (Mitral Valve E-Point Septal Separation), MV E Amp (Mitral Valve E Amplitude), MV A Amp (Mitral Valve A Amplitude), Tei Index (MV C-O dur (Mitral Valve Closure-Opening Duration), LVET (Left Ventricular Ejection Time))
- Pulmonary Valve: RVPEP (Right Ventricular Pre-Ejection Period), RVET (Right Ventricular Ejection Time), RVOT Diam (Right Ventricular Outflow Tract Diameter)
- Doppler Mode
  - Aortic Valve: AV Vmax (Aortic Valve Maximum Velocity), AV VTI (Aortic Valve Velocity-Time Integral), AV HR (Aortic Valve Heart Rate), AVA(VTI) (Aortic Valve Area (VTI Method)), AV AccT (Aortic Valve Acceleration Time), LVOT VTI (Left Ventricular Outflow

Tract Velocity-Time Integral), CO(LVOT) (Cardiac Output (Left Ventricular Outflow Tract)), LVET (Left Ventricular Ejection Time), LVPEP (Left Ventricular Pre-Ejection Period), AR Vmax (Aortic Regurgitation Maximum Velocity), AR DecT (Aortic Regurgitation Deceleration), AR PHT (Aortic Regurgitation Pressure Half-Time), PISA AR (Proximal Isovelocity Surface Area Aortic Regurgitation)

- Mitral Valve: MV Vmax (Mitral Valve Maximum Velocity), MV E Vel (Mitral Valve E Velocity), MV A Vel (Mitral Valve A Velocity), MV E Dur (Mitral Valve E Duration), MV A Dur (Mitral Valve A Duration), MV Ea(medial) (Mitral Valve Ea Velocity (medial)), MV Ea(lateral) (Mitral Valve Ea Velocity (lateral)), MVA(PHT) (Mitral Valve Area (Pressure Half-Time Method)), MVA(VTI) (Mitral Valve Area (VTI Method)), MV VTI (Mitral Valve Velocity-Time Integral), MV HR (Mitral Valve Heart Rate), MV AccT (Mitral Valve Acceleration Time), MV DecT (Mitral Valve Deceleration Time), IVRT (Isovolumic Relaxation Time), IVCT (Isovolumic Contraction Time), LV Tei Index (Left Ventricular Tei Index), MR Vmax (Mitral Regurgitation Maximum Velocity), MR VTI (Mitral Regurgitation Velocity-Time Integral), dP/dt (Pressure Change Rate), MV Peak e' (Mitral Valve Peak e' Velocity), MV Peak lat (Mitral Valve Peak Lateral Velocity), MV Peak sept (Mitral Valve Peak Septal Velocity), PISA MR (Proximal Isovelocity Surface Area Mitral Regurgitation)
- Pulmonary Valve: RVOT Vmax (Right Ventricular Outflow Tract Maximum Velocity), RVOT VTI (Right Ventricular Outflow Tract Velocity-Time Integral), CO(RVOT) (Cardiac Output (Right Ventricular Outflow Tract)), PV Vmax (Pulmonary Valve Maximum Velocity), PV VTI (Pulmonary Valve Velocity-Time

Integral), PV HR (Pulmonary Valve Heart Rate), PV AccT (Pulmonary Valve Acceleration Time), MPA Vmax (Main Pulmonary Artery Maximum Velocity), RPA Vmax (Right Pulmonary Artery Maximum Velocity), LPA Vmax (Left Pulmonary Artery Maximum Velocity), RVET (Right Ventricular Ejection Time), RVPEP (Right Ventricular Pre-Ejection Period), PAEDP (Pulmonary Artery End-Diastolic Pressure), PISA PR (Proximal Isovelocity Surface Area Pulmonary Regurgitation)

- Tricuspid Valve: TV Vmax (Tricuspid Valve Maximum Velocity), TV E Vel (Tricuspid Valve E Velocity), TV A Vel (Tricuspid Valve A Velocity), TVA(PHT) (Tricuspid Valve Area (Pressure Half-Time Method)), TV VTI (Tricuspid Valve Velocity-Time Integral), TV HR (Tricuspid Valve Heart Rate), TV Peak e' (Tricuspid Valve Peak e' Velocity), RVSP (Right Ventricular Systolic Pressure), RV Tei Index (Right Ventricular Tei Index), PISA TR (Proximal Isovelocity Surface Area Tricuspid Regurgitation)

- Pulmonary Vein: PVein S Vel (Pulmonary Vein S Velocity), PVein D Vel (Pulmonary Vein D Velocity), PVein A Vel (Pulmonary Vein A Velocity), PVein A Dur (Pulmonary Vein A Duration), PVein S VTI (Pulmonary Vein S Velocity-Time Integral), PVein D VTI (Pulmonary Vein D Velocity-Time Integral), PVein DecT (Pulmonary Vein Deceleration Time)

- PISA: PISA AR (Proximal Isovelocity Surface Area Aortic Regurgitation), PISA MR (Proximal Isovelocity Surface Area Mitral Regurgitation), PISA PR (Proximal Isovelocity Surface Area Pulmonary Regurgitation), PISA TR (Proximal Isovelocity Surface Area Tricuspid Regurgitation)

- Shunt: VSD Vmax (Ventricular Septal Defect Maximum Velocity), ASD Vmax (Atrial Septal Defect Maximum Velocity), PDA Vel(d) (Patent Ductus Arteriosus Velocity (diastole)), PDA Vel(s) (Patent Ductus Arteriosus Velocity (systole))

- TDI: MV Ea(medial) (Mitral Valve Ea Velocity (medial)), MV Aa(medial) (Mitral Valve Aa Velocity (medial)), MV ARa(medial) (Mitral Valve ARa Velocity (medial)), MV DRa(medial) (Mitral Valve DRa Velocity (medial)), MV Sa(medial) (Mitral Valve Sa Velocity (medial)), MV Ea(lateral) (Mitral Valve Ea Velocity (lateral)), MV Aa(lateral) (Mitral Valve Aa Velocity (lateral)), MV ARa(lateral) (Mitral Valve ARa Velocity (lateral)), MV DRa(lateral) (Mitral Valve DRa Velocity (lateral)), MV Sa(lateral) (Mitral Valve Sa Velocity (lateral))

#### Urology

- B-mode
  - Kidney: Length, Width, Thickness, Cortical Thickness
  - Renal Cyst: Distance 1, 2, 3
  - Renal Lesion: d1, d2, d3
  - Prostate: Length, Width, Thickness
  - Seminal Vesicle: Length, Width, Thickness
  - Bladder: Pre-Void Bladder Length, Pre-Void Bladder Thickness, Pre-Void Bladder Width, Post-Void Bladder Length, Post-Void Bladder Thickness, Post-Void Bladder Width
- M-mode
  - Distance
  - Heart Rate
  - Time
  - Slope

- Doppler Mode
- Abdominal Aorta
- Renal Artery
- Segmental Artery
- Interlobar Artery
- Arcuate Artery
- Renal Vein

#### Vascular

- B-mode
  - Abdominal Vessels: Portal Vein, Splenic Vein, Splenic Artery, Aorta, Iliac Artery
  - Carotid Artery
  - Upper Extremity Artery
  - Upper Extremity Vein
  - Lower Extremity Artery
  - Lower Extremity Vein
- M-mode
  - Distance
  - Heart Rate
  - Time
  - Slope
- Doppler Mode
  - Carotid Artery: Common Carotid Artery, Internal Carotid Artery, External Carotid Artery, Sinus, Vertebral Artery, Subclavian Artery
  - Lower Extremity Artery: Abdominal Aorta, Common Iliac Artery, Internal Iliac Artery, External Iliac Artery, Common Femoral Artery, Superficial Femoral Artery, Deep Femoral Artery, Popliteal Artery, Tibiofibular Artery Trunk, Posterior Tibial Artery, Dorsalis Pedis

- Artery, Peroneal Artery, Anterior Tibial Artery
  - Upper Extremity Artery: Subclavian Artery, Axillary Artery, Brachial Artery, Ulnar Artery, Radial Artery, Vertebral Artery, Innominate Artery
  - Lower Extremity Vein: Inferior Vena Cava, Inferior Vena Cava Reflux, Common Iliac Vein, Common Iliac Vein Reflux, Internal Iliac Vein, Internal Iliac Vein Reflux, External Iliac Vein, External Iliac Vein Reflux, Common Femoral Vein, Common Femoral Vein Reflux, Femoral Vein, Femoral Vein Reflux, Deep Femoral Vein, Deep Femoral Vein Reflux, Great Saphenous Vein, Great Saphenous Vein Reflux, Popliteal Vein, Popliteal Vein Reflux, Tibiofibular Vein Trunk, Tibiofibular Vein Trunk Reflux, Posterior Tibial Vein, Posterior Tibial Vein Reflux, Peroneal Vein, Peroneal Vein Reflux, Anterior Tibial Vein, Anterior Tibial Vein Reflux, Gastrocnemius Vein, Gastrocnemius Vein Reflux, Soleus Vein, Soleus Vein Reflux
  - Transcranial Doppler: Middle Cerebral Artery, Anterior Cerebral Artery, Posterior Cerebral Artery, Anterior Communicating Artery, Posterior Communicating Artery, Basilar Artery, Internal Carotid Artery, Vertebral Artery
  - Upper Extremity Vein: Subclavian Vein, Axillary Vein, Cephalic Vein, Basilic Vein, Ulnar Vein, Radial Vein

#### Small Organs

- B-mode
  - Thyroid: Length, Width, Thickness
  - Isthmus Thickness
  - Mass
  - Nodule

- Breast: Mass
- Testis: Length, Width, Thickness, Mass
- Cyst
- M-mode
- Distance
- Heart Rate
- Time
- Slope
- Doppler Mode
- Velocity
- Time
- Heart Rate
- Acceleration
- S/D (Systolic/Diastolic Ratio)
- Superior Thyroid Artery
- Inferior Thyroid Artery
- D Tracing

#### Pediatrics

- B-mode
- Hip Joint
- d/D Ratio
- M-mode
- Distance
- Heart Rate
- Time
- Slope
- Doppler Mode
- Velocity
- Time

- Heart Rate
- Acceleration
- S/D (Systolic/Diastolic Ratio)
- D Tracing

#### 6.3 Automatic Measurements

- IMT (Intima-Media Thickness): Support Common Carotid Artery, Internal Carotid Artery, External Carotid Artery, Bifurcation
- RIMT (Resistive Intima-Media Thickness): Support Common Carotid Artery, Internal Carotid Artery, External Carotid Artery, Bifurcation (Unreleased)
- Auto EF (Automatic Ejection Fraction)
- Auto NT (Automatic Nuchal Translucency)
- Automatic Spectrum Envelope
- Auto FLC (Automatic Follicle Count) (Unreleased)
- Auto Pelvic (Automatic Pelvic Floor) (Unreleased)
- Auto Hip (Automatic Hip Joint) (Unreleased)
- Auto BL (Automatic Bladder Volume) (Unreleased)
- Auto MSK (Automatic Musculoskeletal) (Unreleased)
- Auto AFI (Automatic Amniotic Fluid Index) (Unreleased)
- Auto UM (Automatic Uterine Fibroid) (Unreleased)
- Auto Nerve (Automatic Nerve) (Unreleased)
- DU-A (Thyroid/Breast/eFast/Carotid Artery Auxiliary Diagnosis) (Unreleased)

## 6.4 Reports

- Specialized reports for each application area
- Editable report measurement values
- Selectable images
- Presetable hospital information
- Exportable PDF format reports

\*Not all measurements are listed in this chapter; please refer to the user operation manual for more measurement information.

## 7 Examination Storage Management

### 7.1 Examination Storage

- 256GB Solid-State Drive (SSD), more than 98GB of space for patient information storage
- Can store up to 20,000 single-frame images
- Directly store digital single-frame and cine files in various modes

### 7.2 Examination Management

- Patient Information Management System
- Patient examination query/acquisition
- Support browsing current and historical examinations
- Support creating new examination, activating examination, ending examination
- Support measurements on stored images and cine
- Export image formats: BMP/JPG/TIFF/MP4/AVI
- Support backing up patient data to USB devices
- Support one-key image deletion

## 8 Connectivity

### 8.1 Support Network Connection

### 8.2 Support Wifi Connection

### 8.3 Support Mobile Device Transmission

### 8.4 DICOM 3.0 Basic

- DICOM Send, DICOM Store
- DICOM Image Printing and Preset
- DICOM Storage Commitment and Preset
- DICOM MPPS (Modality Performed Procedure Step) and Preset
- DICOM Query/Retrieve and Preset
- DICOM Structured Report and Preset (Obstetrics & Gynecology, Vascular, Cardiology)
- DICOM Media Storage
- DICOM Task Management
- DICOM Worklist

## 9 Probes (optional)

### 9.1 Linear Array

- L12-3S

Application Areas: Abdominal, Superficial, Small Organs, Soft Tissue, Peripheral Vessels, Pediatric

Bandwidth: 3.5-13 MHz

Elements: 192

### 9.2 Convex Array

- C5-1

Application Area: Abdominal, Obstetrics & Gynecology, Vascular, Pediatric

Bandwidth: 1.5-6.0 MHz

Elements: 128

Scan Angle: 6° ~99°

### 9.3 Phased Array

- P4-1S

Application Areas: Cardiology, Craniocerebral, Abdominal, Thoracic

Bandwidth: 1.3-4.4 MHz

Elements: 64

Scan Angle: 9° ~169°

### 9.4 Endocavity

- E9-4S

Application Areas: Obstetrics & Gynecology, Urology, Anorectal, Transvaginal

Bandwidth: 4-10MHz

Elements: 128

Scan Angle: 15° ~179°

## 10 Accessories (optional)

10.1 Printer Driver (Factory-Installed Driver) for below recommended printer model

- Sony UP-D898MD/X898MD
- Sony UP-D25MD

### 10.4 Foot Switch

- Number of Pedals: 1 Pedal/3 Pedals
- Interface: USB
- Support user-customizable functions
- Protection Class: IPX8 (1.2m)

### 10.5 ECG (Electrocardiography)

- 6-pin, AHA/IEC, 3-lead
- ECG Waveform Display: On/Off
- Gain: 0-100, 1 step/level
- Scan Speed: 1-6, 1 step/level

### 10.6 Built-in Wireless Network Card

- Operating Frequency: 650M
- Frequency Band: 2.4G/5G
- Interface: M.2
- WIFI6

## 11 System Input/Output

### 11.1 Video/Audio Input

- Built-in Microphone: 1

### 11.2 Video/Audio Output

- HDMI Interface: 1

### 11.3 Physiological Signal Input

- Support ECG Signal
- ECG: 1

### 11.4 Other Input/Output

- USB: 5
- Ethernet Port: 1

## 12 Safety and Certification

### 12.1 Quality Certification

- MDR Certificate
- ISO: 13485
- Shandong Medical Device Registration Certificate No.: 20252060460
- Shandong Medical Device Production

License No.: 20250071

## 12.2 Applicable Standards

- GB 10152-2009 Ultrasonic Diagnostic Equipment - Requirements for Safety
- YY/T0767-2023 Medical Ultrasonic Equipment - Performance Requirements for Color Doppler Ultrasound Diagnostic Equipment
- YY/T 0108-2008 Medical Ultrasonic Equipment - Test Methods for Ultrasonic Power
- YY/T 1142-2013 Medical Ultrasonic Equipment - Phased Array Ultrasonic Probes
- GB 9706.1-2020 Medical Electrical Equipment - Part 1: General Requirements for Safety
- GB/T 14710-2009 Medical Electrical Equipment - Environmental Requirements and Test Methods
- YY/T 1420-2016 Medical Ultrasonic Equipment - Doppler Ultrasound Systems for Vascular Imaging
- YY/T 1057-2016 Medical Ultrasonic Equipment - Ultrasonic Transducers
- GB/T 16886.5-2017 Biological Evaluation of Medical Devices - Part 5: Tests for in Vitro Cytotoxicity
- GB 9706.237-2020 Medical Electrical Equipment - Part 2-37: Particular Requirements for the Safety of Ultrasonic Diagnostic and Monitoring Equipment
- YY 9706.102-2021 Medical Electrical Equipment - Part 102: Particular Requirements

## Remarks

- All rights reserved by Qingdao Hisense Medical Co., Ltd.
- Hisense Medical reserves the right to change the product design, specifications, parameters.
- Some functions and probes in above spec are optional and will be charged separately, please refer to the actual quotation.

# Hisense Medical

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Qingdao Hisense Medical Co., Ltd. reserves the right to perform technical upgrades and optimizations on its products. Product

**Hisense Medical**



# HD70 Series Ultrasound System

**Datasheet**

**Release 1.0**

Some functions and features in the datasheet are optional and will be charged separately. Please refer to the official quotation.

<https://medical.hisense.com/>

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The HD70 series of high-end color Doppler ultrasound systems produced by Hisense Medical adopts a new-generation "Wide - Field" ultrasound platform with a CPU+GPU architecture. It features an all-new design in hardware, core system links, and logic systems. The transformation from hardware beamforming to software beamforming has exponentially increased the computing power and speed of the ultrasound device, resulting in improved overall field uniformity and spatial resolution, higher frame rate, as well as significantly enhanced imaging quality and accuracy for various high-end imaging functions.

## 1 Overview



### 1.1 Applications

- Abdomen
- Obstetrics
- Gynecology
- Cardiac
- Small Parts
- Urology
- Vascular
- Pediatric
- Emergency
- Anesthesia
- Transvaginal&Transrectal
- Musculoskeletal
- Nerve
- Others

### 1.2 Probe Types

- Convex Array Probe
- Line Array Probe
- Phased Array Probe

- Volume Probe
- Endo-cavity
- Micro-convex Probe

### 1.3 Imaging Modes

- B-mode
- Tissue Harmonic Imaging
- Reverse Harmonic
- M-mode/Color M-mode
- Anatomical M-mode
- Curve Anatomical M-mode (optional)
- Color Doppler Imaging
- Power Doppler/Directional Power Doppler
- Pulsed Wave(PW) Doppler
- Continuous Wave(CW) Doppler
- Tissue Doppler Imaging(TDI)
- Strain Rate Imaging (optional)
- Freehand 3D Imaging
- 4D (optional)
- Multi-Slice
- Elasto (optional)
- Pano (optional)
- Contrast (optional)

### 1.4 Configuration Features

- B-mode
- Tissue Harmonic Imaging
- Reverse Harmonic
- TSI
- $TGC \geq 8$ ,  $LGC \geq 8$
- Spatial Composite Imaging
- Speckle Suppression Imaging
- EFOV imaging
- Auto
- Zoom (including full-screen Zoom)
- Echo Enhance
- HiPure
- Color Doppler Imaging
- Auto Track
- Power Doppler/Directional Power Doppler
- High-resolution flow imaging
- MFI
- Ribbon flow imaging
- Pulsed Wave(PW) Doppler
- HPRF
- CW Doppler
- M-mode/Color M-mode
- Anatomical M-mode

- Curve Anatomical M Mode
- TDI (including TVI, TVD, TVM and TEI)
- TDI Analysis
- Pano
- Freehand 3D Imaging
- 4D
- Niche
- OminiView
- Multi-slice
- Biopsy Enhancement
- Biopsy Guidance
- 3D Spectrum
- SCV Color Velocity Imaging)
- MSV
- Elasto
- Elasto Analysis
- Contrast
- Contrast Analysis
- Steer
- Dual-Mode
- Measurement Software Package
- Auto trace measurement
- Auto IMT
- Auto EF
- Auto NT
- Auto FLC
- Auto Pelvic
- Auto BL
- Auto MSK
- Auto OB
- Auto SP
- Auto AFI
- Auto UM
- Auto Hip
- Multi probe
- Auto workflow
- Teaching Software
- DEMO
- DVR
- Monitor share
- Task Manager
- DICOM 3.0/DICOM structure report
- Digital processing channels 8000000
- Measurement Software Package
- 4 Activatable Probe Interfaces
- 1TB HDD

- DVD R/W Drive
- 6 ↑ USB Ports
- 256GB SSD (System)
- Battery
- ECG

#### 1.5 Supported Languages

- Software: Chinese and English
- Keyboard Input: English and Chinese
- User Manual: English and Chinese

## 2 Physical Specifications



#### 2.1 Dimensions and Weight

- Height (mm) : 1373-1573
- Width (mm) : 616mm
- Depth (mm) : 906mm
- Weight: about 94KG(not include battery)

#### 2.2 Monitor

- 23.8" High Resolution Color LCD Monitor
- 21.5" High Resolution Color LCD Monitor
- Resolution: 1920×1080
- Angle of View: 178°
- Adjustable Screen Brightness and Contrast (Manual, Automatic)
- Tilt: 20 degrees(up) to 90 degrees(down)
- Rotation: - 90 degrees to +90 degrees

#### 2.3 Speaker

- High Fidelity Stereo
- Power: 2×10w

#### 2.4 Ergonomic Omnidirectional Rotatable Monitor

##### Support Arm

- Rotation: ±90 degrees (from the center)
- Up and Down Movement: 170mm

- Front and Back Stretch: 465mm

#### 2.5 Casters

- Diameter: 125mm
- Front and Rear Casters (4): Braking and Unlocking

#### 2.6 Probe Connectors and Covers

- Connectors: 4 Activatable Probe Connectors
- Covers: 5 plus an Endo-probe Holder

#### 2.7 Power Supply

- Voltage: 220V~
- Frequency: 50/60Hz
- Power: 700VA
- Fuse: 250V~, 5A

#### 2.8 Battery

- standby: time  $\geq$  2.5 h
- continuous working hours: Max scan time  $\geq$  20 min

#### 2.9 Operating Conditions

- Ambient Temperature: 0°C ~ 40°C
- Relative Humidity: 20% ~ 85% (No Condensation)
- Atmospheric Pressure: 70kPa ~ 106kPa

#### 2.10 Storage and Transportation Conditions

- Ambient Temperature: -20°C ~ 55°C
- Relative Humidity: 20% ~ 95% (No Condensation)
- Atmospheric Pressure: 70kPa ~ 106kPa

- Adjustable key tone and trackball speed
- rotated and raised.- Rotation:  $\pm 90$  degrees (from the center) - -Up and Down Movement: 0mm to 200mm

#### 3.2 Touch Screen

- 13.3" high sensitivity anti-glare, anti-fingerprint color and 10-point capacitive touch screen.
- Resolution: 1920x1080
- Adjustable brightness and contrast via presets.
- Viewing Angle: 170 degrees

#### 3.3 Startup/Shutdown

- Boot-up from shut-down: Less than 75 sec
- Shut-down : Less than 15 sec

#### 3.4 Annotate

- Support for text and arrow annotate.
- Adjustable arrow size
- Support for start point setting.
- Cover all Applications.
- User-definable

#### 3.5 Bodymark

- More than 132 individual Bodymark for various applications.

#### 3.6 Teaching software

- Support abdomen, obstetrics, gynecology, cardiac, small parts, urology, vascular, musculoskeletal

#### 3.7 Screen Information\*

- Public Information:
  - Hisense Logo
  - Hospital Name
  - Exam Date
  - Exam Time
  - Output Power
  - Mechanical Index
  - Tissue Temperature Indication
- Probe Name
- ECG Logo (when the ECG is connected)
- TGC Curve
- Focus Position
- Thumbnail
- Image Parameters

## 3 Human-Machine Interaction

#### 3.1 Control Panel



- The panel is designed to be user-centric and easy to operate.
- The panel features the backlighting of keys with adjustable backlight brightness user-defined keys.
- 8-segment TGC
- Standard Keyboard

- Trackball Operation Help In tions
- \*All items are not represented in this section, please refer to the User Manual for details.

## 4 Image Parameters



### 4.1 Overview

- Digital Beam Enhancer
- Multi Beams Synthesis

### 4.2 B-mode

- Display Formats: Single, Dual and Quad
- Persist: 0-5 level
- AUTO: Automated Optimization
- System Frequency Range 2.0 – 21.0 MHz
- Frequency Composite Imaging
- B|SRI: Dual Real Time Comparison
- Steer: Line Array Probes Available,  $\pm 20^\circ$ , 5°/step
- WFOV: Line Array Probes Available: 27°  
curve/phase Probes Available: 30°
- Depth: 0-50cm, 1cm/step (which varies with probe)
- FR (Max.): 1000f/s (Convex Array Probes)
- Output Power: 1%-100%
- TGC: 8 -segment
- LGC: 8 -segment
- Dynamic Range: 30-320, 10/step
- Gain: 0-255, 5/ step
- Focus Number 1-16 (probe related)
- Focus Position: Dynamically Adjustable
- Density  $\geq 512$  ultrasonic lines per frame
- Persist: 5 steps
- L/R Flip and U/D Flip: on/off
- Rotate: 0, 90, 180 and 270
- Gray map: 20 types
- Tint map: 0-7, 8 types

- Spacial compound: 0-4, 5 steps
- Edge enhancement: 0-5, 6 steps
- scann area: curve/phase Probe available
- Hipure: 0-5, 6 steps
- Echo enhance: phase Probe available, 0-2, 3 steps
- smooth: 0-5, 6 steps
- TSI: 3 steps

### 4.3 Harmonic Imaging

- Available for all probes

### 4.4 M-mode/Color M-mode

- Display Formats: V2:3, V3:2, V3:1 and H2:3, full screen (V: vertical, H: horizontal)
- Available for Color M-mode
- Output Power: 1%-100%
- Gain: 0-255, 5/step
- Scanning Speed: 6 steps (1-6)
- Tint map: 0-6,7 types
- Gray map: 14 types
- Edge Enhancement: 0-4 steps
- DR: 30-320, 10/steps
- Line correlation: 0-4, 5steps
- Sensitivity: CM parameters, 0-6, 7steps
- Wall filter: CM parameters, 1-6, 6steps
- Flow state: CM parameters, 0-8, 9 steps
- Color map: CM parameters, 0-7, 8 steps
- Color priority: CM parameters, 0-7, 8 steps
- Smooth: CM parameters, 0-4, 5 steps

### 4.5 Anatomical M-mode Imaging

- Display Formats V2:3, V3:2, V3:1, H2:3, (V: vertical, H: horizontal)
- Available for Color Anatomical M-mode
- Up to three sampling lines
- Simultaneous display of three M-sampling line graphs.
- Gray map: 0-7, 8 steps
- Tint map: 0-19, 20 steps
- Dynamic Range: 30-320, 10/ steps
- Anatomical line angle: 3°-180°, 3°/ steps

### 4.6 Color Doppler Imaging

- Dual Real Time
- Max. Velocity: 37cm/s
- Steer: Max. 20 degrees (line array probes)

- Max. Frame Rate: 500f/s
- Output Power: 1%-100%
- Gain: 0-255, 5/step
- Baseline: 21 steps (-10-10, 1/step)
- Wall Filter: 1-6, 6 steps
- SCALE: 2.895cm/s-4.1067m/s
- Sensitivity: 0-6, 7 types
- Flow State: 0-8, 9 steps
- Smooth: 5 steps
- Same Width for B/C-mode: on/off
- Color Priority: 0-7, 8 steps
- Color Map: 8 types
- Flip: on/off
- Persist: 0-6, 6steps
- Line Density: Low/Medium/High
- Display: Vel/Var
- Scan range: Line/curve probe Available
- Ribbon flow imaging: 0-3,4 steps
- Auto track: Line probe Available: on/off
- High-resolution flow imaging: 0-3, 4 steps

#### 4.7 Power Doppler

- Support for Directional Power Doppler
- Output Power: 1%-100%
- Gain: 0-255, 5/step
- Steer: Max. 20 degrees (line array probes)
- Wall Filter: 1-6, 6steps
- SCALE: 2.895cm/s-4.1067m/s
- Sensitivity: 7 steps
- Flow State: 9 types (0-8)
- Smooth: 5 steps
- Color Priority: 0-7, 8 steps
- Color Map: 0-7, 8 types
- Persist: 0-6,7 steps
- Scan range: Line/curve probe Available
- High-resolution flow imaging: 0-3, 4 steps

#### 4.8 PW/CW-Mode

- Display Formats: V2:3, V3:2, V3:1 and H2:3, Full Screen, Duplex/Triplex (PW only) (V: vertical, H: horizontal)
- PW Speed: Max. 16m/s
- PW Speed: Min 0.02cm/s
- CW Speed: Max 32m/s
- CW Speed:Min 0.05cm/s
- SV: 0.5-31mm, 60 steps (Values may vary with probes, and this value is specific to L15-5E)

- SV Depth: Adjustable
- Speed Scale: Max. 25m/s
- Baseline: 21 steps
- PW Steer: Max. 20 degrees (line array probes)
- Volume: 0-100, 10 steps
- PW SCALE: 2.9cm/s-16m/s
- CW SCALE: 10.3cm/-32m/s
- Gain: 0-255, 5/step
- Dynamic Range: 60-260, 10/step
- Scanning Speed: 6 steps (PW)
- Wall Filter: 9 steps
- Flip: on/off
- Angle Correction -89~ + 89 °, 1°/step
- Quick Angle Correction: -60°, 0°, 60°
- Gray map: 20 types
- Tint map: 8 types
- Time/Frequency Resolution: 4 steps
- Tracing Range: top, bottom and all
- Audio Noise Reduction: 0-4, 5 steps
- Tracing: on/off
- Smooth: 1-4, 4 steps

#### 4.9 TVI (Tissue Velocity Imaging)

- Available for phased array probes.
- Dual Real Time
- Same Width for B/C-mode: on/off
- Flip: on/off (TVI only))

#### 4.10 TVD (Tissue Velocity Doppler) (included in TDI)

- Available for phased array probes.
- Display Formats: V2:3, V3:2, V3:1 and H2:3, Full Screen, Duplex/Triplex (V: vertical, H: horizontal)
- SV: 0.5-30 mm, 60 steps
- Sampling Depth: Adjustable
- Speed Scale: Max: 16m/s
- Speed Scale: Min: 0.05cm/s
- Baseline: -1.0-+1.0, 0.1/step, total of 21 steps
- Gain: 0-255, 5/step
- Volume: 0-100%, 10 steps
- SCALE: 0-255, 5/steps
- Dynamic Range: 60-260,10 steps
- Scanning Speed: 6 steps

- Wall Filter: 1-9,1/step
- Flip: on/off
- Angle Correction: -89-89 °, 1°/step;
- Quick Angle Correction: -60°, 0°, 60°
- Gray map: 0-19, 1/step, 20 types
- Time/Frequency Resolution: 0-3,4 steps
- sensitivity: 0-2
- Scan speed: 1-6
- Power: 1%-100%
- smooth: 1-4

#### 4.11 TVM (Tissue Velocity M-mode) (included in TDI)

- Display Formats: V2:3, V3:2, V3:1 and H2:3, full screen (V: vertical, H: horizontal)
- Output Power: 1.0%-100.0%
- Dynamic Range: 60-260, 10/step
- Gain: 0-255, 5/step
- Scanning Speed: 1-6,1 steps
- Edge Enhancement 0-4,1/step
- Line persist: 0-4, 1/step

#### 4.12 Free hand 3D Imaging

- Free hand 3D Imaging
  - Probes: Line Array, Convex Array, Endo-probe and Micro-convex

#### 4.13 4D Imaging

- Available for all 4D probes.
- Static 3D and 4D
  - Render Mode: Surface, Skeleton, Depth, Real Skin, Inverse, Max and Min, silhouette mode
  - Split-screen Mode: 1, 2 and 4
  - Rotation: 0, 90, 180 and 270
  - Ref slice: A,B,C,3D
  - Edit VOI: on/off
  - Reset VOI: on/off
  - Full Reset: on/off
  - View Orientation: top/bottom, bottom/top, left/right, right/left, front/back and back/front
  - 3D Rotation cine
  - 2D ChromaMap: 10 types
  - 3D ChromaMap: 10 types
  - 3D Minimum threshold: 1-254
  - 3D Maximum threshold: 2-255
  - 2D light: 0-1, 0.1/step
  - 3D light: 0-1, 0.1/step

- Focus
- 2D SRI Filter: -1-4 1/step
- 3D SRI Filter: -1-4 1/step

- MagiCut
  - CutMode: Eraser,Ellipse,Rectangle,Polygon
  - CutPos:Inside,Outside
  - Undo: undo, undo all

- Auto face

- OminiView
  - Reference slice: A,B,C
  - Split screen: 1,2,4
  - Undo,delete
  - Delete All
  - 2D Tint: 0-9
  - 2D SRI Filter: -1-4, 1/step
  - Tickness: 0.0-20.0, 1/步

- Multi-Slice
  - Reference slice: A,B,C
  - Layout: 1\*1,1\*2,2\*2,3\*3,4\*4,5\*5
  - Rset
  - 2D tint: 0-9
  - Oblique Angle: ±90°, 5°/step
  - Spacing: 0.5-10.0, 0.5/ step
  - 2D SRI Filter: -1-4, 1/ step
  - Tickness: 0.0-20.0, 1/step

- Niche
  - Reference slice: A,B,C
  - Layout: 1,2,4
  - 2D tint: 0-9
  - 2D SRI Filter: -1-4, 1/step

#### 4.14 Pano

- Available for all probes.
- Acquisition Methods: B-mode, C-mode and Power-mode.
- Supports the center display and mobile display collection modes

#### 4.15 Elasto

- Support for multiple probes.
- Support for strain rate measurements.
- Support Elasto QA
- Pressure Indicator: support for frame-by-frame view of image pressure levels.

- Display Formats: Dual real-time
- Elasto map: 1-6, 6 types
- Flip: U/D,L/R
- Persist: 0-3
- Contrast: 0-13
- Remove: 0-2
- Line density: low/middle/high
- E sensitivity: 0-5
- Smooth: 6 steps
- Opacity: 0-5

#### 4.16 Contrast

- Support: L12-3EB, SC7-1E
- MFE
- Contrast QA
- Two timers
- Forward save, Max 120sec
- Backward save, Max 480sec
- Destruct: On/Off
- Contrast Mix: On/Off
- Double real-time: On/Off
- MFE: On/Off
- MFE Period: Min, 0.2, 0.4, 0.6, 0.8, 1.0, Max
- Dynamic range: 30-320,10/step
- Speckle noise suppression: 0-5,6 steps
- Line density: low, middle, high
- Persist: 0-4,5steps
- steer (only line probe) : -20-20
- Power: 1.5%-100%
- Tint map: 0-7,8 steps
- Gray map: 0-18,19 steps
- Destruct voltage: 0-80, step 1
- Duration: 500ms-2000ms, step 25ms

#### 4.17 Contrast QA

- Support 8 ROI
- Support ROI type: trace, ellipse
- Curve Fitting
- Table Display
- Motion

#### 4.18 Zoom

- Zoom: up to 0.8x-10.0x for front-end, and 0.8x-10.0x for back-end.
- Full-screen Zoom: normal image, zoom in on standard image area to full screen, zoom in on image area to full screen

only.

#### 4.19 QSave

- Intended for QSave of conditions after image parameter adjustment.
- Support for saving and exporting.

### 5 Cine Review and Raw Data Processing

#### 5.1 Cine Review

- Available for all modes.
- Support for manual Review frame by frame and automatic Review with adjustable speeds: 1/4, 1/2, 1, 1.5, 2 and 4
- Maximum cine memory capacity 480s (mode-related)
- Maximum 4D cine memory capacity 64 frames
- Support for backward and forward storage and possible time length preset.
- Image Comparison: Support for comparing cine and single frames
- Skip to first and last frames: One-click for the skip to the initial frame and the last frame

#### 5.2 Raw Data Processing

- B-mode  
Gain  
Dynamic Range  
Gray scale 256  
Gray map  
Tint map  
Flip  
Edge enhancement  
Smooth  
Hi pure
- M mode  
Speckle noise suppression  
Dynamic Range  
Gain  
Gray map  
Tint map
- C mode  
Gain  
Flip  
Color Map  
Color hidden

- PW mode
  - Trace
  - Baseline
  - Gain
  - Dynamic Range
  - Gray map
  - Tint map
  - Cardiac cycle
- CW mode
  - Invert
  - Baseline
  - Dynamic Range
  - Gray map
  - Tint map
  - Angle correct

- Heart Rate
- Speed Ratio
- VTI Ratio
- D Tracing
- S/D
- PI
- RI
- Blood Flow

## 6.2 Clinical Measurement Package

- Abdomen
  - B mode
    - Liver
    - Common Hepatic Duct
    - Internal Diameter of Portal Vein
    - Gallbladder
    - Common Bile Duct
    - Pancreas
    - Spleen
    - Kidney: length, width, thickness and cortical thickness
    - Adrenal: length, width, thickness
    - Aorta: abdominal aorta thick diameter, abdominal aorta wide diameter
    - Abdominal Aortic Diameter Stenosis Ratio
    - Abdominal Aortic Area Stenosis Ratio
    - Iliac Artery Diameter
    - Bladder: Preurinary bladder length diameter, preurinary bladder thickness diameter, preurinary bladder width diameter, posturinary bladder length diameter, posturinary bladder thickness diameter, posturinary bladder width diameter
    - Prostate :length, width, thickness
    - Spermatophore :length, width, thickness
    - Internal Diameter of Splenic Vein
    - Abdominal Aortic Aneurysm
    - Renal Cysts
  - M mode
    - distance
    - Time.
    - Slope
    - Heart rate.
  - Doppler Mode
    - Renal Vessels

## 6 Measurement/Analysis and Report\*

### 6.1 General Measurement

- B-mode
  - Depth
  - Angle
  - Distance
  - Area
  - Perimeter
  - Volume
  - Dual Distance
  - Parallel Lines
  - Length of Curve
  - Length Ratio
  - Area Ratio
  - IMT
  - Histogram
  - Cross Section
  - Strain
  - Strain Ratio
  - Color Velocity
- M mode
  - Distance
  - Time
  - Slope
  - Heart Rate
  - AC Velocity
- Doppler Mode
  - Velocity
  - Acceleration
  - Time

- Abdominal Artery: Abdominal arteries: abdominal aorta, abdominal trunk, superior mesenteric artery, inferior mesenteric artery, common hepatic artery, proper hepatic artery, splenic artery
- Abdominal veins: inferior vena cava, inferior vena cava reflux, portal vein, left hepatic vein, middle hepatic vein, right hepatic vein, splenic vein, superior mesenteric vein, inferior mesenteric vein
- Renal vessels: renal artery, segmental artery, interlobar artery, arcual artery, renal vein
- Gynecology
  - B mode
  - Uterine Body: length, width, thickness, endometrial thickness.
  - Cervix: length, width and thickness.
  - Ovary: length, width and thickness at the
    - left/right side.
    - Follicles: 1-8
    - Uterine Fibroids: Distances 1, 2 and 3.
    - Ovarian Cysts: Distances 1, 2 and 3
    - lesion1,2: d1, d2, d3
    - Residual urine volume: post urinary bladder length diameter, post urinary bladder thickness diameter, post urinary bladder width diameter
    - Resting state: Detrusor muscle thickness, detrusor muscle average thickness, bladder neck distance R, vesicourethral posterior Angle R, urethral inclination Angle (R), anorectal Angle (R), bladder posterior wall distance R, cervix lowest point distance R, ampulla distance of rectum R, anterior and posterior diameter of anal levator hiatus R, left and right diameter of anal levator hiatus R, anal levator muscle thickness R, Angle of anal levator muscle R, anal levator muscle-urethra space R, Hiatus area of levator anal muscle R
    - Valsalva: bladder neck distance V, vesicourethral thick Angle V, urethral inclination Angle V, anorectal Angle V, bladder posterior wall distance V, cervix minimum distance V, ampulla distance V, anterior rectal wall bulge height, anterior and posterior diameter of anal levator hiatus V, left and right diameter of anal levator hiatus V, anal levator muscle thickness V, Angle between anal levator muscle V, anal levator musculus space V
- M mode
  - distance
  - Time.
  - Slope
  - Heart rate.
- Dopplor mode
  - Arteria uteri
  - Ovarian artery
- Obstetrics
- B mode
  - Early pregnancy
    - Gestational sac
    - Yolk sac
    - Head hip diameter
    - Double top diameter
    - Head circumference
    - Belly Circumference
    - Femur length
    - Humerus is long
    - Clear layer of neck
    - The intracranial transparent layer
    - Long nose bone
    - Amniotic fluid depth
    - Early pregnancy heart
    - Ao Diam
    - LVOT Diam
    - RVOT Diam
    - RV Diam
    - RVIDd
    - IVSd
    - LVIDd
    - RVIDs
    - IVSs
    - LVIDs
    - LV Diam
    - LV Area
    - RV Area

- LA Diam
- LA Area
- Heart area
- RV Diam
- RA Diam
- MPA Diam
- Z Score:Left ventricular long-axis (AV Diam, Ao Asc Diam) , aortic arch (AV Diam, Ao Asc Diam, Ao Decs Diam, IVC Diam) , aortic short axis (PV Diam, MPA Diam, RPA Diam, LPA Diam) , oblique aortic short axis (Duct Art Diam) , four-chamber heart (TV Diam, RVIDd, RV Diam, RV Area, MV Diam, LVIDd, LV Diam, LV Area, )
- Medium Pregnancy
- Fetal Biology: biparietal diameter, occipital diameter, head circumference, abdominal circumference, femoral length, humeral length, placental thickness, transverse abdominal diameter, posterior abdominal diameter and cervical fold
- Amniotic Fluid Indexes: AF1,AF2,AF3,AF4
- Fetal Bone Length: femur length, clavicle length, humerus length, radius length, ulna length, tibia length and fibula length
- Early pregnancy: gestational sac, yolk sac, cephalic gluteal diameter, double parietal diameter, head circumference, abdominal circumference, humerus length, cervical hyaline layer, intracranial hyaline layer, nasal bone length, amniotic fluid depth
- Advanced Measurements: thick trunk diameter, transverse trunk diameter, transverse trunk section, chest diameter, cardiac circumference, cardiac area, chest circumference, vertebral length, cerebellar diameter, posterior cranial fossa pool, lateral cerebral ventricle, cerebral hemisphere, external eye spacing, internal eye spacing, orbit, ear

length, facial angle, clavicular length, ulnar length, radial length, tibial length, fibular length, mid-shaft phalanges, foot length, umbilical vein diameter, fetal kidney length and cervical length

- Fetal Heart: Ao Diam, LVOT Diam, RVOT Diam, RVID Diam, RVIDd, IVSd, RVIDs, LVIDd, RVIDs, IVSs, LVIDs, LV Diam, LV Area, RV Area, LA Diam, LA Area, Cardiac Area, RV Diam, RA Diam, MPA Diam and IVS.

- Z Score:Left ventricular long-axis (AV Diam, Ao Asc Diam) , aortic arch (AV Diam, Ao Asc Diam, Ao Decs Diam, IVC Diam) , aortic short axis (PV Diam, MPA Diam, RPA Diam, LPA Diam) , oblique aortic short axis (Duct Art Diam) , four-chamber heart (TV Diam, RVIDd, RV Diam, RV Area, MV Diam, LVIDd, LV Diam, LV Area, )

- Late Pregnancy: Same with Medium Pregnancy

- Medium and Late Pregnancy

- M mode
  - distance
  - Time.
  - Slope
  - Heart rate.
- Dopplor mode
  - Fetal heart rate
  - Uterine artery.
  - Ovarian artery.
  - Fetal aorta.
  - Ascending aorta
  - Descending aorta
  - Left ventricular outflow tract
  - Right ventricular outflow tract
  - Umbilical artery.
  - Venous catheter.
  - Placental artery.
  - Middle cerebral artery
- Cardiac:
- B mode
  - Distance:

LA/Ao, RVAWd, RVDd, IVSd,  
 LVIDd, LVPWd, IVSs, LVIDs, LVPWs,  
 LV Major,  
 LV Minor, LA Major, LA Minor, LA  
 Diam, RA Major, RA Minor, RV Major,  
 RV Minor

- Area:  
 LV Area (d), LV Area (s), RV Area  
 (d), RV Area (s), LA Area, RA Area

- Volume & Myocardial Weight:  
 LA Vol (A-L) : LA apical, LAA(A2C),  
 LAA(A4C)  
 LA Vol (Simpson) : LAA(A2C),  
 LAA(A4C)  
 RA Vol (A4C)  
 LV Mass (Cube) : IVSd, LVIDd, LVPWd  
 LV Mass (A-L) : LVLd apical, LVAd sax  
 Epi, LVAd sax Endo  
 LV Mass (T-E) : LVAd sax Epi, LVAd sax  
 Endo, a, d  
 LV Mass: LVAd sax MV, LVAs sax MV

- Vessels:  
 Ao Diam, Ao Arch Diam, Ao Asc Diam,  
 Ao Desc Diam, LVOT Diam, MPA Diam,  
 RVOT Diam, IVC Diam (Insp), IVC Diam  
 (Expis)

- Left Ventricular Function:  
 Simpson: A2Cd, A2Cs, A4Cd, A4Cs,  
 HR  
 LV(2D): LVIDd, LVIDs, HR

- Aortic Valve:  
 AV Diam, ACS, AVA, AVA(VTI)[LVOT  
 Diam, LVOT VTI, AV VTI], PISA AR[AR  
 Rad, AR Als Vel, AR VTI], CO(LVOT)[LVOT  
 Diam, LVOT VTI, AV HR]

- Mitral Valve:  
 MV Diam, MVA, MCS, MV EPSS,  
 MVA(VTI)[LVOT Diam, LVOT VTI, MV VTI],  
 PISA MR[MR Rad, MR Als Vel, MR VTI]

- Pulmonary Valve:  
 PV Diam, PISA PR[PR Rad, PR Als Vel, PR  
 VTI], CO(RVOT)[RVOT Diam, RVOT VTI, PV  
 HR]

- Tricuspid Valve:  
 TV Diam, TVA, PISA TR[TR Rad, TR Als  
 Vel, TR VTI], RVSP[TR Vmax, RAP]

- PISA:  
 PISA MR[MR Rad, MR Als Vel, MR VTI], PISA  
 AR[AR Rad, AR Als Vel, AR VTI], PISA TR[TR  
 Rad, TR Als Vel, TR VTI], PISA PR[PR Rad, PR  
 Als Vel, PR VTI]

- Bypass:  
 VSD Diam, ASD Diam, PDA Diam, PFO  
 Diam

- M mode
  - Distance: RVAWd, RVDd, IVSd,  
 LVIDd, LVPWd, IVSs, LVIDs, LVPWs,  
 LA/Ao, ACS, RVOT Diam
  - Time: LVPEP, LVET, RVPEP, RVET
  - LV(Teich): IVSd, LVIDd, LVPWd,  
 IVSs, LVIDs, LVPWs, HR
  - LV(M): LVIDd, LVIDs, HR
  - LV Mass(Cube): IVSd, LVIDd, LVPWd
  - Aortic Valve: ACS, LVPEP, LVET
  - Mitral Valve: MV ALL, MV D-E Amp,  
 MV E-F Slope, MV EPSS, MV E Amp,  
 MV A Amp, MV C-O dur, LVET
  - Pulmonary Valve: RVPEP, RVET, RVOT  
 Diam
- Dopplor mode
  - Aortic Valve: AV Vmax, AV VTI, AV HR,  
 AVA(VTI), AV AccT, LVOT VTI,  
 CO(LVOT), LVET, LVPEP, AR Vmax, AR  
 Dect, AR PHT, PISA AR
  - Mitral Valve: MV Vmax, MV E Vel, MV A  
 Vel, MV E Dur, MV A Dur, MV  
 Ea(lateral), MVA(PHT), MVA(VTI), MV  
 VTI, MV HR, MV AccT, MV DecT,  
 IVRT, IVCT, LV Tei Index, MR Vmax, MR  
 VTI, dP/dt, MV Peak e', MV Peak lat, MV  
 Peak Sept, PISA MR
  - Pulmonary Valve: RVOT Vmax, RVOT  
 VTI, CO(RVOT), PV Vmax, PV VTI, PV  
 HR, PV AccT, MPA Vmax, RPA Vmax,  
 LPA Vmax, RVET, RVPEP, PAEDP, PISA  
 PR
  - Tricuspid valve: TV Vmax, TV E Vel, TV A  
 Vel, TV VTI, TV HR, TV Peak e', RVSP,  
 RV Tei  
 Index, PISA TR
  - Pulmonary vein: PVein S Vel, PVein D  
 Vel, PVein A Vel, PVein A Dur, PVein S

- VTI, PVein D VTI, PVein DecT
- PISA: PISA AR, PISA MR, PISA PR, PISA TR
- Bypass: VSD Vmax, ASD Vmax, PDA Vel(d), PDA Vel(s)
- TDI: MV Ea(medial), MV Aa(medial), MV ARa(medial), MV DRa(medial), MV Sa(medial), MV Ea(lateral), MV Aa(lateral), MV ARa(lateral), MV DRa(lateral), MV Sa(lateral)
- Urology
- B mode
  - Kidneys: length, width, thickness, renal cortical thickness and renal cysts
  - Renal Lesion: d1, d2, d3,
  - Prostate: length, width, thickness
  - Spermatophor: length, width, thickness
  - Bladder: Pre/posterior bladder: Length Diameter, Width Diameter and Thickness Diameter, Posturinary bladder: Length Diameter, Width Diameter and Thickness Diameter,
- M mode
  - distance
  - Time.
  - Slope
  - Heart rate.
- Dopplor mode
  - Abdominal aorta
  - Renal artery.
  - segmental artery
  - Interlobar artery
  - arcual artery
  - Renal veins
- vessels
- B mode
  - Abdominal vessels: portal vein, splenic vein, splenic artery, aorta, iliac artery
  - Carotid artery.
  - Upper Extremity Artery
  - Upper Extremity Vein
  - Lower Extremity Artery
- M mode
  - distance
  - Time.
  - Slope

- Heart rate.
- Dopplor mode
  - Carotid artery.
  - Upper Extremity Artery
  - Upper Extremity Vein
  - Lower Extremity Artery
- Small Parts
  - Thyroid: Length, Width, and Thickness.
  - Isthmus Thick Diameter
  - Masses
  - Nodules
  - Cysts
- M mode
  - distance
  - Time.
  - Slope
  - Heart rat
- Dopplor mode
  - velocity
  - Time
  - HR
  - accelerated velocity
  - PS/ED
  - D Trace

### 6.3 Automated Measurements

- Obstetric: BPD\HC\OFD\VAC\HL\FL
- IMT: support carotid, internal carotid, external carotid and bifurcation arteries.

- Auto EF
- Auto NT
- Auto Trace
- Auto FLC
- Auto Pelvic
- Auto Hip
- Auto BL
- Auto MSK
- Auto AFI
- Auto UM

### 6.4 Reports

- Specialized reports for each area of application.
  - Editable measurements in the reports.
  - Optional images.
  - Presetable information including Hospital.
- Exportable reports in PDF/Word format

\*All measurements are not listed in this section. For

more information on measurements, please refer to the User Manual.

## 7 Exam Storage and Management

### 7.1 Exam Storage

- 1TB mechanical hard drive + 256GB solid state drive, remaining space of 800GB intended for storing the patient information.
- Storage of up to 113,664 single-frame images.
- Direct storage of digital single frames and cine files in each mode

### 7.2 Exam Management

- Patient Information Management System Patient Exam Inquiry/Access
- Support for viewing the current and historical exams.
- Support for creating new exams, activating exams, continuing exams, and ending exams.
- Support for measurements of stored images and cine.
- Export images in BMP/JPEG/AVI format.
- Support for backing up patient data to USB devices and DVD-ROMs.
- deletes images with one click

## 8 Connectivity

### 8.1 Network Connection Support

### 8.2 DICOM 3.0 basic

### 8.3 DICOM Worklist

### 8.4 DICOM Structure Report

## 9 Probes



### 9.1 Convex Array Probe

- **C5-1E**

Application: Abdomen, gynecology, obstetrics, and pediatrics

Possibility of attaching a biopsy guidance  
Bandwidth: 1.6-5.3MHz  
Elements: 192  
(Max.) Scan Range: 60°  
Radius: 60mm  
Depth: 5.0-40.0cm  
Dimensions: 78mm×25.5mm×150mm  
B-mode Frequency Points: 1.6M-1.9M,2.3-2.7M,3.1-3.5M,3.8-4.2M,4.7-5.3M  
Harmonic Frequency Points: 3.3-3.7M,3.8-4.2M,4.7-5.3M  
Doppler Frequency Points: 2.0M,2.5M,3.3M,4.0M,4.3M

### 9.2 Line Array Probe

- **L12-3EB**

Application: Abdomen, superficial tissues, small parts (excluding eyes), peripheral vasculature  
Bandwidth: 3.6-13.9MHz  
Elements: 192  
(Max.) Scan Range: 38.4mm  
Field of View (FoV): 38mm  
Depth: 1.0-16.0cm  
Dimensions: 53.5mm×19mm×140mm  
B-mode Frequency Points: 3.6-5.0M,5.5-7.5M,6.7-9.3M,8.4-11.6M,10.1-13.9M  
Harmonic Frequency Points: 7.2-10.0M,8.4-11.6M,9.1-12.5M  
Doppler Frequency Points: 5.0M,5.4M,6.0M,7.0M,8.0M

### 9.3 Endocavitary Array Probe

- **E9-3E**

Application: GYN and URO, transvaginal, and transrectal  
Possibility of attaching a biopsy guidance  
Bandwidth: 2.8-10.4MHz  
Elements: 192  
(Max.) Scan Range: 180°  
Depth: 1.0-16.0cm  
Dimensions: 22.8mm×17.73mm×335mm  
Radius: 11mm  
B-mode Frequency Points: 2.8-5.2M,3.5-6.5M,4.2-7.8M,4.9-9.1M,5.3-9.8M  
Harmonic frequency point: 4.2-7.8M,4.9-9.1M,5.6-10.4M  
Doppler Frequency Points:

- 4M,4.6M,5.0M,6.0M,6.5M
- P4-1EL  
Application: Cardiac, ped cardiac, and brain
  - Bandwidth: 1.3-4.5MHz
  - Elements: 96
  - (Max.)Scan Angle: 90°
  - Depth: 5.0-40.0cm
  - Dimensions: 34.9mm×26.8mm×130mm
  - B-mode Frequency Points: 1.3-2.2M, 1.5-2.5M, 1.9-3.1M, 2.3-3.8M, 2.6-4.3M
  - Harmonic frequency point: 2.4-4.0M, 2.6-4.4M,2.7-4.5M
  - PW Frequency Points: 1.9M,2.0M, 2.5M, 3.0M,3.3M
  - CW Frequency Points: 1.9M, 2.5M

## 10 Accessories

### 10.1 Printer Model Supported

- Sony UP-D898MD/X898MD
- Sony UP\_D25MD
- HP8210

### 10.2 Built-in DVD

### 10.3 Gel Warmer

- Warm gel with 2 temperature options
- Easy to disassemble for cleaning
- Temperatures: 37°C and 40°C
- Temperature Control Accuracy: ±3°C
- Overvoltage and over-temperature protection indication
- Power switch: on/off
- Dimensions: 77.8mm (W) ×79mm (D) ×151.4mm (H)
- Weight: about 380g

### 10.4 Foot Switch

- Number of pedals: 1 pedal/3 pedals
- port: USB
- Support for user-defined features
- Protection Level: IPX8 (1.2m)

### 10.5 ECG

- 6-pin, AHA/IEC and 3-lead
- ECG Waveform d=Display: on/off
- Gain: 0-3, 1/step
- Sweep Speed: 1-6, 1/step

### 10.6 Barcode Scanner

- Laser Barcode Scanner
- Dimensions: 1D,2D
- 1D Model: LS2208
- 2D Model: DS6707-SR

### 10.7 Built-in wireless card

- Operating frequency: 650M
- Band: 2.4G/5G
- Port: USB (built-in)
- Antenna mode: Built-in

## 11 System I/O

### 11.1 Video/Audio Input

- Built-in Microphone: 1
- External Microphone Interface (3.5mm): 1

### 11.2 Video/Audio Output

- Composite Video Output/RCA: 1
- S-terminal Output: 1
- HDMI Interface: 1
- VGA Output: 1
- DVI-D: 1
- Audio Output: 1(Stereo)

### 11.3 Physiological Signal Input

- Support for ECG signals
- ECG: 1(built-in)

### 11.4 Other I/Os

- USB: 6
- Network Port: 1
- Printer Control Port: 1
- Foot Switch Interface: 1

## 12 Security and Certification

## 12.1 Applicable Standards

- MDR 2017/745
- EN ISO 15223-1:2021
- EN ISO 13485:2016
- ISO20417:2021
- ISO 12052:2017
- EN ISO 14971:2019
- ISO 10993-1:2018
- ISO 10993-5:2009
- ISO 10993-10:2021
- ISO 10993-23:2021
- EN 60601-1:2006/A1:2013
- EN 60601-1-2: 2015
- EN 60601-1-6:2010
- EN60601-2-37:2007+A1:2015
- RoHS
- WEEE
- Package and transport standard: ISTA 3B series

# Hisense Medical

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