



# VINNO<sup>R</sup>500



Datasheet  
V1.42.22



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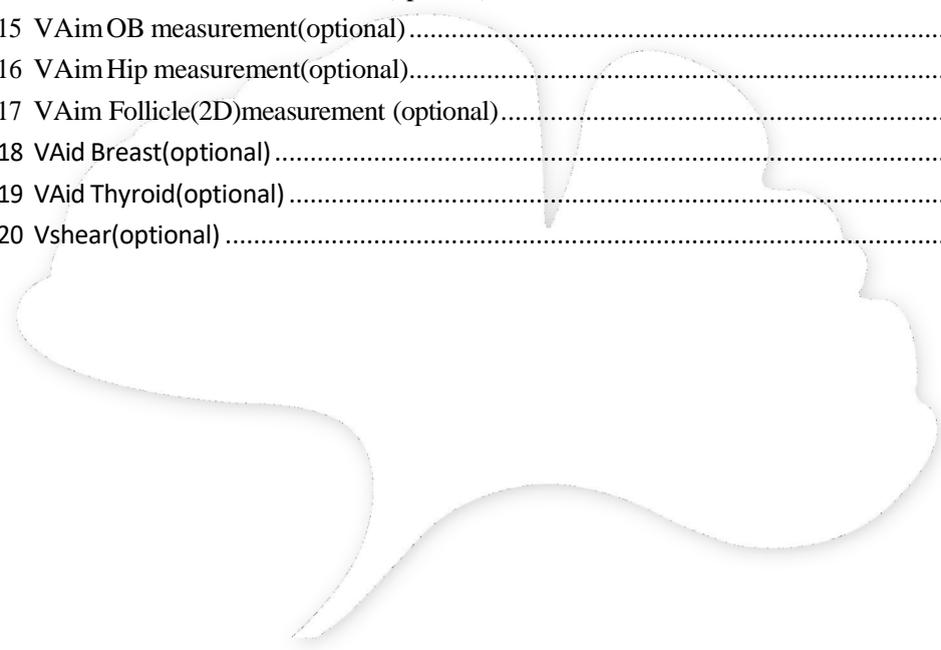
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# VINNO<sup>R</sup>500

## Ultrasound System Specifications

Extremely portable and exceptional performance VINNO R500 meets all your clinical needs by:

- Unmatched image quality
- All ranges of features, functions, and probes
- Flexible and customized simple workflow
- Powered by Artificial intelligent technologies
- Extremely flexible and compact design with 23.8 inch monitor



and increased Doppler sensitivity

- Directional-enhanced information compiling for more tissue detail and reduction of angle-generated artifacts
- Next generation adaptive image processing for noise and artifact reduction that improves tissue presentation and edge definition
- Fully independent, triplex multiple mode operation for easy in Doppler procedures
- Multi-processors allow simultaneous mode changes and support for advanced system functionality
  - VLuminous Flow provides the color Doppler flow innovatively in a 3D view with excellent sensitivity, which can help understand the structure of blood flow and small vessels intuitively
  - Sync ROI enables the width of 2D scan area is synchronized with the CF ROI, which effectively improves the frame rate
  - Zscore analysis, provide a new way for fetal heart evaluation
  - Support to export 3D data for 3D printer(optional)

## 1. System Overview

### 1.1 Architecture

- VINNO R500 brings a confident diagnostic experience with the extraordinary processing power of our breakthrough VLucid<sup>+</sup> Platform, to deliver superior image quality, thanks to its exceptional intelligent architecture
- The new generation VLucid<sup>+</sup> platform is capable of processing multiple data streams simultaneously
- The new 12 bit, low noise, digital circuitry, with up to 350 dB dynamic range has improved 2D performance



- Support multiple DICOM server configuration(optional)
- Background transfer, supports background export without interrupting the actual scan
- Foot switch(optional)
- VReport, a customer-centric tool for report templates design, makes the whole report procedure more smooth and individual(optional)
- Customized user interface, allows user to change the position of buttons on the touch screen, also the size of ‘probe&app’ UI window is adjustable
- VWork, an intelligent feature, which enables users to configure workflows for every application scenario. This leads to easy and effective adherence to a department protocol and saves operation time to a great extent

## 1.2 Applications

- Abdomen
- Obstetric
- Gynecology
- Cardiology
- Urology
- Vascular
- TCD
- Small Parts
- Pediatrics

## 1.3 Imaging features

- 2D grayscale imaging
- Harmonic
- VFusion
- VSpeckle
- VTissue
- Auto imaging optimization
- Live Track(optional)
- Easy Comparative Function to compare previous exam
- M mode
- Color Doppler
- Power Doppler
- Pulse wave Doppler
- Multi Doppler(optional)
- PWV(optional)
- Simultaneous 2D and M mode
- Duplex 2D/PW Doppler
- Triplex 2D/Color/PW Doppler
- High PRF pulsed wave Doppler
- Continuous wave Doppler
- HD Zoom
- FULL screen imaging to enlarge imaging size
- Dual real time imaging without compromising imaging size
- PView for panoramic imaging (optional)
- TView for trapezoidal imaging
- Elastography imaging
- Needle Enhancement
- SGC (Scanline gain compensation)
- Cardiac Quantification(optional)



- 2D auto follicle
- Free 3D (optional)
- 3D/4D imaging
- HQ 3D/4D
- HQ Silhouette (optional)
- Tomographic display (MCUT)
- Inversion mode
- Magic Cut(optional)
- Free View(optional)
- Niche view
- Light Lab(optional)
- Color 3D(optional)
- ECG(optional)
- Tissue Doppler (TD) mode
- Tissue Velocity Imaging (TVI)
- Tissue Velocity M (TVM)
- Auto EF (optional)
- Stress echo(optional)
- Strain imaging(optional)
- Auto NT(Nuchal translucency) (optional)
- Auto IT, automatic measurement of Intracranial translucency(optional)
- VLuminous flow, a feature which shows the blood flow in a 3-D view with excellent sensitivity
- VAid Breast(optional)
- VAid Thyroid(optional)
- VAid HRI(optional)
- Color M-mode
- Curved M mode, user can draw any curved sample line freely and get corresponding results
- Multi-line Angular M-Mode, Up to 4 sample lines
- Sync B/C width, the width of B mode interest area is always be the same with the CF mode
- Live IMT, display intima-media thickness in real time(optional)
- VAim(optional)  
(Vino for OB, Follicle, Hip, Pelvic, LEVA
- 3D Smart Face, an intelligent tool for fetal face optimization(optional)
- VNavIn, a tool that navigates inside the 3D volume data and projects an inside-out perspective image that displays the inner most structures like virtual endoscopy(optional)
- AMAS(optional)<sup>(\*)</sup> a two-imaging site protocol, time delay between ECG R to foot (inflection point) of the Common Carotid artery and Femoral artery PW Doppler is auto calculated. Key-in the distance between Carotid and Femoral artery, system calculates the PWV+
- Shear wave Elastography imaging(Vshear)(optional)
- VFlow, A directional adaptive color flow filter to increase the sensitivity of blood flow

#### 1.4 Standard features

- Up to 25MHz high frequency in system platform
- Up to 12 000 000 system processing channels



- Up to 40 cm scanning depth
- Up to 1500 seconds standard cine storage
- SSD-500G
- SSD-1T/2T(optional)
- HDD-1T/2T/4T (optional)
- USB Flash Drive(optional)
- Integrated DVDRW
- Integrated black/white thermal video printer slot
- 3D Mesh(optional)
- Patient information database
- Image archive on hard drive
- Quick store to USB memory stick
- Quick store to hard drive
- Quick print to B/W and color thermal

#### video printer

- Network storage and printing
- Full measurement and analysis package
- Real time auto wave Doppler track and calculations
- Vascular calculations
- Cardiac calculations
- OB calculations and tables
- Gynecological calculations
- Urological calculations
- Renal calculations
- Volume calculations
- 3D Volume calculations(optional)
- Wireless networking for easy data sharing, storage and printing
- Bluetooth for image data transfer
- Gel Warmer(optional)
- Image data transfer directly by E-Mail with network access

- Up-to-date connectivity and data management solutions, wireless, LAN, Bluetooth, E-Mail, integrated database
- DICOM 3.0 compatibility
- 4 active probe ports with the CW probe compatible
- 7 USB ports
- 8 TGC slides
- Average 9 multiple adjustable frequency in every probe and mode
- Up to 512 line density
- 1 DVI-D interface
- 1 Audio in interface, 1 Audio out interface
- 1 Speaker interface
- 1 RJ45 interface



## 1.5 Language support

- Software: Chinese, English, German, Greek, Malay, Portuguese, Romanian, Spanish, Swedish, French, Polish, Russian, Uyghur, Ukraine, Italian, Czech, Hungarian
- Keyboard input: Chinese, English, German, Greek, Malay, Portuguese, Romanian, Spanish, Swedish, Polish, Norwegian, Danish, Finnish, French, Russian, Italian, Czech, Cambodia, Polski, Ukraine
- Control panel overlay: English
- User manual: Chinese, English, German, Russian, Portuguese, Spanish, Italian, French

## 2. Ergonomics

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- Unique human oriented design for comfort and convenience
- Fully articulating 23.8 inch high resolution flat panel display
- Easy access DVD media drive
- 4 easy access transducer ports
- 5 transducer holders (removable for easy cleaning, include one endocavity holder)
- Integrated touchable alphabetic keyboard
- Simple, easy and effective cable management structure



## 2.1 Keyboard

- Intuitive, configurable and touchable interactive operation interface
- Ergonomic hard keys for general ultrasound operations
- 8 TGC slides, functionality at any depth
- Backlight keys
- Keyboard adjustable
  - Swivel range:  $-45^{\circ}$  -  $45^{\circ}$
  - Down/up range: 150 mm

## 2.2 Touch screen

Highly sensitive 15.6 inch LED technology touch screen

- Resolution: 1920\*1080 pixels
- Intuitive, configurable and touchable interactive operation interface
- Ergonomic hard keys for general ultrasound operations
- Touch Screen adjustable
  - Tilt range:  $45^{\circ}$  -  $90^{\circ}$

## 2.3 Image display screen

- 23.8 inch high resolution LED technology, pixel resolution:

1920x1080

- Brightness, contrast and color temperature adjustment
- View angle :  $-178^{\circ}$  ~  $178^{\circ}$
- Number of color: 16.7M
- Adjustable Gamma curve optimization for dedicated applications
- Multifunctional support arm design
- Independent tilt and swivel adjustment
  - Swivel range:  $\pm 180$ degrees
  - Tilt range:  $-20-90$  degrees
  - Up/down : 80mm

## 2.4 Wheels

- Diameter: 125mm
- Front castor (2 ea): Total lock  
Rear castor (2 ea): Total lock

## 2.5 Touch gestures

- Swipe down/up: display/remove projected image on touch screen
- Swipe horizontally: page up/down or review images/cine loops one by one
- Swipe from left edge to right: display hidden menu on projected image.
- Image parameter adjustment
- Measurement on projected image on touch screen
- Rotate or erase on projected 3D/4D image on touch screen



## 2.6 System boot-up

- Boot-up from shut-down: about 80sec
- Shut-down: about 9 sec

## 2.7 Comments

- Supports text input and arrow
- Support freehand marking on touch screen
- Adjustable text size and arrow size
- Supports home position
- Covers various application
- User customizable

## 2.8 Bodymark

- More than 215 bodymarks for versatile application
- User customizable

## 2.9 Peripherals

- B&W thermal video printer: Sony UP-D898MD(optional)
- B&W thermal video printer: Sony UP-X898MD(optional)
- Color thermal video printer: Sony UP-D25MD (optional)

## 2.10 Dimensions and Weight

- Height: 1420mm
- Width: 605mm
- Depth: 940mm
- Net Weight: 60kg

## 2.11 Electrical Power

- Voltage: 100-240V AC
- Frequency: 50/60Hz
- Power: < 700VA for console only
- Support built in battery(optional)
  - Scan time in B Mode: about 1.5 h
  - Charging time: ≤4h

## 2.12 Operating Environment

- Ambient temperature: 10-40° C
- Relative humidity: 30-75%
- Atmospheric pressure: 700hPa-1060hPa

## 2.13 Storage & Transportation

### Environment

- Ambient temperature: -10-50° C
- Relative humidity: 10%-90% (no condensation)
- Atmospheric pressure: 700hPa-1060hPa



### 3. Transducers

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#### 3.1 Transducer Technology

- Xcen technology for wideband frequency
- Pure wave technology for high resolution imaging
- Unique and high technical Xcen probe connector to adapt all different type of VINNO product models

#### 3.2 Transducer types

- Convex array
- Linear array
- Phase array
- 4D probe
- Endocavity probe
- CW probe
- Matrix probe

#### 3.3 Transducer selection

- Electronic switching of transducers
- User customizable imaging presets for each transducer and application
- Automatic dynamic receiving focus in all transducers
- Multiple adjustable transmit focal zone

#### F2-5C Broadband Curved Array

- Application: Abdomen, OB/Gyn, Urology, Pediatric
- Transducer Elements:128
- Physical Footprint: 72mm × 27mm
- Footprint: 17mm × 64mm
- Convex Radius: 60mm
- Field Of View: 60 degree
- B Mode Frequency : 1.0-8.0MHz
- Harmonic Mode Frequency: 1.0-8.0MHz
- Center Frequency: 3.4MHz
- CF Mode Frequency: 2.0-4.0MHz
- PW Mode Frequency: 2.0-4.0MHz
- Pulsed Wave Doppler, Color Doppler, Power Doppler, Harmonic, B-Mode
- Multi-Imaging Frequency Setting in 2D, Harmonic, Color Doppler and Wave Doppler Modes
- Reusable Biopsy Guide available

#### S2-9C Broadband Curved Array

- Application: Abdomen, OB/Gyn, Urology, Pediatric
- Transducer Elements:128
- Physical Footprint: 88mm × 31mm
- Footprint: 18mm × 67mm
- Convex Radius: 60mm
- Field Of View: 66degree
- B Mode Frequency: 1-8.0MHz
- Harmonic Mode Frequency: 1.0-8.0MHz
- Center Frequency: 3.5MHz
- CF Mode Frequency: 1.8-4.0MHz
- PW Mode Frequency: 1.8-4.0MHz



- Pulsed Wave Doppler, Color Doppler, Power Doppler, Harmonic, B-Mode
- Multi-Imaging Frequency Setting in 2D, Harmonic, Color Doppler and Wave Doppler Modes
- Reusable Biopsy Guide available

### **X2-6C Single Crystal Curved Array**

- Application: Abdomen, OB/Gyn, Urology, Pediatric
- Transducer Elements:192
- Physical Footprint: 76mm × 27mm
- Footprint: 16.8mm × 70mm
- Convex Radius: 60mm
- Field Of View: 75 degree
- B Mode Frequency : 1.0-8.0MHz
- Harmonic Mode Frequency: 1.5-6.0MHz
- Center Frequency: 4.0MHz
- CF Mode Frequency: 1.8-4.0MHz
- PW Mode Frequency: 1.8-4.0MHz
- Pulsed Wave Doppler, Color Doppler, Power Doppler, Harmonic, B-Mode
- Multi-Imaging Frequency Setting in 2D, Harmonic, Color Doppler and Wave Doppler Modes
- Reusable Biopsy Guide available

### **D2-6C broadband curved array volume probe**

- Application: Abdomen, OB/Gyn, Urology
- Transducer Elements:128
- Physical Footprint: 75.5mm × 49.2mm

- Convex Radius: 40mm
- Field Of View: 75degree
- B Mode Frequency : 2.0-6.0 MHz
- Harmonic Mode Frequency: 3.0-6.0MHz
- Center Frequency: 4.0MHz
- CF Mode Frequency: 2.5-4.0MHz
- PW Mode Frequency: 2.5-4.0MHz
- Pulsed Wave Doppler, Color Doppler, Power Doppler, Harmonic, B-Mode, 3D/4D Grayscale and 3D Color Modes
- Multi-Imaging Frequency Setting in 2D, 3D/4D, Harmonic, Color Doppler and Wave Doppler Modes

### **G3-9M broadband micro convex array**

- Application: Pediatric, Abdomen, Cardiac
- Transducer Elements:128
- Physical Footprint: 34.2mm × 28.7mm
- Footprint: 11.2mm × 25mm
- Convex Radius: 15mm
- Field Of View: 103degree
- B Mode Frequency : 5.0-10.0MHz
- Harmonic Mode Frequency: 4.0-12.0MHz
- Center Frequency: 6.5MHz
- CF Mode Frequency: 4.0-5.0MHz
- PW Mode Frequency: 4.0-5.0MHz
- Pulsed Wave Doppler, Color Doppler, Power Doppler, Harmonic, B-Mode
- Multi-Imaging Frequency Setting in 2D, Harmonic, Color Doppler and Wave Doppler Modes



- Reusable Biopsy Guide available

**F4-9E broadband micro convex endocavity array**

- Application: OB/Gyn, Urology
- Transducer Elements:128
- Physical Footprint: 32.5mm x 44.2mm
- Footprint: 10.7mm × 21mm
- Convex Radius: 10mm
- Field Of View: 150degree
- B Mode Frequency: 3.0-11.0MHz
- Harmonic Mode Frequency: 4.0-11.0MHz
- Center Frequency: 6.5MHz
- CF Mode Frequency: 4.0-5.0MHz
- PW Mode Frequency: 4.0-5.0MHz
- Pulsed Wave Doppler, Color Doppler, Power Doppler, Harmonic, B-Mode
- Multi-Imaging Frequency Setting in 2D, Harmonic, Color Doppler and Wave Doppler Modes
- Reusable Biopsy Guide available

**G4-9E broadband micro convex endocavity array**

- Application: OB/Gyn, Urology
- Transducer Elements: 128
- Physical Footprint: 40mm x 32.4mm
- Footprint: 9mm × 18.1mm
- Convex Radius: 11.5mm
- Field Of View: 136degree
- B Mode Frequency: 5.0-10.0MHz
- Harmonic Mode Frequency: 4.0-11.0MHz

- Center Frequency: 6.5MHz
- CF Mode Frequency: 4.0-5.0MHz
- PW Mode Frequency: 4.0-5.0MHz
- Pulsed Wave Doppler, Color Doppler, Power Doppler, Harmonic, B-Mode
- Multi-Imaging Frequency Setting in 2D, Harmonic, Color Doppler and Wave Doppler Modes
- Reusable Biopsy Guide available

**G4-9EV broadband micro convex endocavity array**

- Application: OB/Gyn, Urology
- Transducer Elements: 160
- Physical Footprint: 65mm x 28mm
- Footprint: 11mm × 25mm
- Convex Radius: 12mm
- Field Of View: 136degree
- B Mode Frequency: 5.0-10.0MHz
- Harmonic Mode Frequency: 4.0-11.0MHz
- Center Frequency: 6.5MHz
- CF Mode Frequency: 4.0-5.0MHz
- PW Mode Frequency: 4.0-5.0MHz
- Pulsed Wave Doppler, Color Doppler, Power Doppler, Harmonic, B-Mode
- Multi-Imaging Frequency Setting in 2D, Harmonic, Color Doppler and Wave Doppler Modes
- Reusable Biopsy Guide available

**X4-9E Single Crystal micro convex endocavity array (crank and straight handle )**

- Application: OB/Gyn, Urology



- Transducer Elements:192
- Physical Footprint: 32.4mm x 40mm
- Footprint: 10mm × 18mm
- Convex Radius: 8.8mm
- Field Of View: 180degree
- B Mode Frequency: 3.0-11.0MHz
- Harmonic Mode Frequency: 4.0-11.0MHz
- Center Frequency: 6.5MHz
- CF Mode Frequency: 4.0-5.0MHz
- PW Mode Frequency: 4.0-5.0MHz
- Pulsed Wave Doppler, Color Doppler, Power Doppler, Harmonic, B-Mode
- Multi-Imaging Frequency Setting in 2D, Harmonic, Color Doppler and Wave Doppler Modes
- Reusable Biopsy Guide available

#### **D4-9E broadband micro convex 4D endocavity array**

- Application: Ob/Gyn, Urology
- Transducer Elements:148
- Physical Footprint:32.5mm x 39.5mm
- Convex Radius: 10mm
- Field Of View: 141degree
- B Mode Frequency: 4.0 - 11.0MHz
- Harmonic Mode Frequency: 4.0-11.0MHz
- Center Frequency: 6.5MHz
- CF Mode Frequency: 4.0-5.0MHz
- PW Mode Frequency: 4.0-5.0MHz
- Pulsed Wave Doppler, Color Doppler, Power Doppler, Harmonic, B-Mode, 3D/4D Grayscale

- Multi-Imaging Frequency Setting in 2D, 3D/4D, Harmonic, Color Doppler and Wave Doppler Modes

#### **BP4-9 Biplane array**

##### **BP4-9L**

- Application: Gyn, Urology
- Transducer Elements:128
- Physical Footprint: 30mm x 26mm
- Footprint: 8mm × 60mm
- Aperture Size: 26mm
- B Mode Frequency Range: 6.0-12.0MHz
- Harmonic Mode Frequency: 6.0-15.0MHz
- Center Frequency: 7.3MHz
- CF Mode Frequency: 3.0-6.3MHz
- PW Mode Frequency: 3.0-6.3MHz
- Pulsed Wave Doppler, Color Doppler, Power Doppler, Harmonic, B-Mode

##### **BP4-9C**

- Application: Gyn, Urology
- Transducer Elements:128
- Physical Footprint: 30mm x 26mm
- Footprint: 11mm × 24mm
- Convex Radius: 10mm
- Field Of View: 150degree
- B Mode Frequency: 5.0-10.0MHz
- Harmonic Mode Frequency: 4.0-9.0MHz
- Center Frequency: 6.5MHz
- CF Mode Frequency: 4.0-5.0MHz
- PW Mode Frequency: 4.0-5.0MHz
- Pulsed Wave Doppler, Color Doppler, Power Doppler, Harmonic, B-Mode



- Reusable Biopsy Guide available

#### **F4-12L broadband linear array**

- Applications: Vascular, Small Parts
- Transducer Elements:128
- Physical Footprint: 52.5mm × 25mm
- Footprint: 9mm × 44mm
- Aperture Size: 38.4mm
- B Mode Frequency : 3.0 -18.0 MHz
- Harmonic Mode Frequency:

6.0-18.0MHz

- Center Frequency: 7.3MHz
- CF Mode Frequency: 3.0-6.3MHz
- PW Mode Frequency: 3.0-6.3MHz
- Pulsed Wave Doppler, Color Doppler, Power Doppler, Harmonic, B-Mode
- Multi-Imaging Frequency Setting in 2D, Harmonic, Color Doppler and Wave Doppler Modes
- Reusable Biopsy Guide available

#### **X4-12L broadband linear array**

- Applications: Vascular, Small Parts
- Transducer Elements:192
- Physical Footprint: 53.2mm ×

23.4mm

- Footprint: 6.7mm × 40mm
- Aperture Size: 38.4mm
- B Mode Frequency : 3.0 -17.0MHz
- Harmonic Mode Frequency:

6.0-17.0MHz

- Center Frequency: 7.3MHz
- CF Mode Frequency: 3.0-6.3MHz
- PW Mode Frequency: 3.0-6.3MHz
- Pulsed Wave Doppler, Color Doppler,

Power Doppler, Harmonic, B-Mode

- Multi-Imaging Frequency Setting in 2D, Harmonic, Color Doppler and Wave Doppler Modes

- Reusable Biopsy Guide available

#### **X6-16L broadband linear array**

- Applications: Vascular, Small Parts
- Transducer Elements:192
- Physical Footprint: 52.8mm × 26mm
- Footprint: 6.7mm × 40mm

- Aperture Size: 38.4mm

- B Mode Frequency: 3.0 -19.0MHz

- Harmonic Mode Frequency:

8.0-19.0MHz

- Center Frequency: 10.0MHz

- CF Mode Frequency: 5.0-13.0MHz

- PW Mode Frequency: 5.0-13.0MHz

- Pulsed Wave Doppler, Color Doppler, Power Doppler, Harmonic, B-Mode

- Multi-Imaging Frequency Setting in 2D, Harmonic, Color Doppler and Wave Doppler Modes

- Reusable Biopsy Guide available

#### **X3-10L Low-frequency linear array**

- Applications: Musculoskeletal, Peripheral Vascular

- Transducer Elements:192

- Physical Footprint: 61mm × 26mm

- Footprint: 11mm × 50mm

- Aperture Size: 46mm

- B Mode Frequency: 3.0-15.0MHz

- Harmonic Mode Frequency:

3.0-15.0MHz



- Center Frequency: 6.0MHz
- CF Mode Frequency: 3.0-6.3MHz
- PW Mode Frequency: 3.0-6.3MHz
- Pulsed Wave Doppler, Color Doppler, Power Doppler, Harmonic, B-Mode
- Multi-Imaging Frequency Setting in 2D, Harmonic, Color Doppler and Wave Doppler Modes
- Reusable Biopsy Guide available

#### **U5-15LE broadband linear array**

- Applications: Small Parts, Breast, Vascular
- Transducer Elements:256
- Physical Footprint: 99mm × 26mm
- Footprint: 7.5mm × 55mm
- Aperture Size: 51mm
- B Mode Frequency : 3.0 -16.5 MHz
- Harmonic Mode Frequency: 8.0-15.0MHz
- Center Frequency: 8.5MHz
- CF Mode Frequency: 5.0-8.0MHz
- PW Mode Frequency: 5.0-8.3MHz
- Pulsed Wave Doppler, Color Doppler, Power Doppler, Harmonic, B-Mode
- Multi-Imaging Frequency Setting in 2D, Harmonic, Color Doppler and Wave Doppler Modes
- Reusable Biopsy Guide available

#### **I7-18L broadband linear array (Hock Stick)**

- Applications: Vascular, Small Parts
- Transducer Elements:128
- Physical Footprint: 31.8mm x 10mm

- Footprint: 4.9mm × 28mm
- Aperture Size: 25.6mm
- B Mode Frequency: 6.0-12.0MHz
- Harmonic Mode Frequency: 8.0-20.0MHz
- Center Frequency: 8.5MHz
- CF Mode Frequency: 5.0-13.0MHz
- PW Mode Frequency: 5.0-13.0MHz
- Pulsed Wave Doppler, Color Doppler, Power Doppler, Harmonic, B-Mode
- Multi-Imaging Frequency Setting in 2D, Harmonic, Color Doppler and Wave Doppler Modes

#### **X9-22L broadband linear array**

- Applications: MSK, Nerve, Small Parts
- Transducer Elements:192
- Physical Footprint: 45mm x 25.4mm
- Footprint: 5.1mm × 32mm
- Aperture size: 28.8mm
- B mode Frequency : 9.0-23.0 MHz
- Harmonic Mode Frequency: 12.0-23.0MHz
- Center Frequency: 15.0MHz
- CF Mode Frequency: 8.3-16.7MHz
- PW Mode Frequency: 8.3-16.7MHz
- Pulsed Wave Doppler, Color Doppler, Power Doppler, Harmonic, B-Mode
- Multi-Imaging Frequency Setting in 2D, Harmonic, Color Doppler and Wave Doppler Modes

#### **X10-23L broadband linear array**

- Applications: Small Parts



- Transducer Elements:128
- Physical Footprint: 49.6mm x 22.2mm
- Footprint: 4mm × 16mm
- Aperture Size: 12.8mm
- B Mode Frequency : 10.0-20.0MHz
- Harmonic Mode Frequency: 15.0-24.0MHz
- Center Frequency: 13.0MHz
- CF Mode Frequency: 11.1-16.7MHz
- PW Mode Frequency: 11.1-16.7MHz
- Pulsed Wave Doppler, Color Doppler, Power Doppler, Harmonic, B-Mode
- Multi-Imaging Frequency Setting in 2D, Harmonic, Color Doppler and Wave Doppler Modes

#### **G1-4P phased array**

- Applications: Cardiac, Abdomen, TCD
- Transducer Elements: 64
- Physical Footprint: 34.2mm × 28.7mm
- Footprint: 15mm × 22mm
- Aperture Size: 18mm
- Field Of View: 90degree
- B Mode Frequency : 1.0-8.0 MHz
- Harmonic Mode Frequency: 1.0-6.0MHz
- Center Frequency: 2.8MHz
- CF Mode Frequency: 1.7-3.3MHz
- PW Mode Frequency: 1.7-3.3MHz
- Pulsed Wave Doppler, Continuous Wave Doppler, Color Doppler, Power Doppler, Harmonic, B-Mode
- Multi-Imaging Frequency Setting in

2D, Harmonic, Color Doppler and Wave Doppler Modes

- Reusable Biopsy Guide available

#### **S1-6P phased array**

- Single Crystal Technology
- Applications: Cardiac, Abdomen, TCD
- Transducer Elements: 96
- Physical Footprint: 36mm x 29mm
- Footprint: 16mm × 23mm
- Aperture Size: 19.2mm
- Field Of View: 90degree
- B Mode Frequency : 1.0-8.0 MHz
- Harmonic Mode Frequency: 1.0-8.0MHz
- Center Frequency: 3.5MHz
- CF Mode Frequency: 1.7-3.3MHz
- PW Mode Frequency: 1.7-3.3MHz
- Pulsed Wave Doppler, Continuous Wave Doppler, Color Doppler, Power Doppler, Harmonic, B-Mode
- Multi-Imaging Frequency Setting in 2D, Harmonic, Color Doppler and Wave Doppler Modes
- Reusable Biopsy Guide available

#### **G3-10P phased array**

- Application: Pediatric Cardiology, Abdomen
- Transducer Elements: 64
- Physical Footprint: 33mm x 33mm
- Footprint: 12mm × 18.6mm
- Aperture Size: 10.2mm
- Field Of View: 90degree
- B Mode Frequency: 3.0-15.0 MHz



- Harmonic Mode Frequency: 3.0-10.0MHz
- Center Frequency: 5.0MHz
- CF Mode Frequency: 3.3-5.7MHz
- PW Mode Frequency: 3.3-5.7MHz
- Pulsed Wave Doppler, Continuous Wave Doppler, Color Doppler, Power Doppler, Harmonic, B-Mode
- Multi-Imaging Frequency Setting in 2D, Harmonic, Color Doppler and Wave Doppler Modes

### **G1-3R Pencil Probe**

- Applications: TCD
- Transducer Elements:2
- Physical Footprint: 17.1mm × 17.1mm

## **4. Advanced Imaging controls**

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### **4.1 VFusion**

- Available on all transducers and for 2D, 3D/4D (except phase array probe)
- Operate in conjunction with VSpeckle, harmonic imaging

### **4.2 VSpeckle**

- Available on all transducers and for 2D, 3D/4D

- Virtually eliminate speckle noise artifact and dynamically enhances tissue margins
- Selectable multiple levels of speckle noise reduction and smoothing
- Operates in conjunction with VFusion and harmonic imaging

### **4.3 VTissue**

- Advanced imaging processing to adapt to the speed of the ultrasound variation in different tissue
- Improved detail resolution and conspicuity of lesions
- Presentable sound and speed in different applications
- One touch operation to ease diagnosis
- Better detection in diffuse lesions of organs

### **4.4 3D/4D**

#### **4.4.1 3D/4D HQ Grad**

- Amazing high image quality
- Extreme realistic rendering images
- Similar operation as normal Rendering

#### **4.4.2 Inversion mode**

- This render mode is used to



display anechoic structures such as vessels

- It invert the gray values of the rendered image, such as black image information become white and vice versa

#### **4.4.3 Magic Cut(optional)**

- Ability to edit images, make possible to cut away structure obstructing the view in the ROI
- Several cutting methods available
- Have quality index to indicate if there is proper external force

#### **4.4.4 Niche view**

- Display 3 orthogonal planes centered on ROI
- Use Depth to translate the selected plane
- Each imaging plane or Niche image can be selected using image reference

#### **4.4.5 Free View(optional)**

- Provide any plane view to visualize the internal tissue information
- Improve the contrast resolution to facilitate the detection of diffuse lesions in organs

#### **4.4.6 3D Smart Face(optional)**

An intelligent tool for fetal face optimization. This tool detects the fluid/tissue interface and smartly removes noise in front of the baby inside the ROI, to obtain an optimal baby face.

- Use Auto key on the keyboard to remove the obstacle in front of the baby
- Only works on 3D Render
- Can not use this feature together with MagicCut

#### **4.4.7 VNavIn (optional)**

A tool that navigates inside the 3D volume data and projects an inside-out perspective image that displays the inner most structures like virtual endoscopy

- This feature is useful in body structures which are surrounded by fluid, like gynecology, obstetrics, abdomen, vascular, or any other fluid-filled areas.
- Two ways to perform VNavIn Auto and Manual
- Depth mapping to enhance the depth perception

#### **4.5 Tissue Doppler (TD)**

- Present wall motion spectrum by



using Doppler principle

- Provide wall motion direction and velocity information

#### 4.6 Tissue Velocity Imaging (TVI)

- Color codes the velocities in tissue
- Present tissue color imaging by using Doppler principle
- This color image is overlaid onto the 2D image
- Captures low flow but high amplitude signals associated with wall motion

#### 4.7 Stress Echo(optional)

- Stress echo is a non-invasive, dynamic evaluation of myocardial structure and its function under an external stress(exercise or pharmacology)
- 12 Ready to use templates (max 8 stages \* 6 views) Editable
- User definable template
- Re-arrange & Select default template
- 10 View names available
- 14 Stage names are available (can add user defined stage name)
- One Touch Shuffle (Stage / View)
- Touch & Compare any view of stage
- Systole only review

#### 4.8 Strain Imaging(optional)

- Auto-ROI (after selecting Mitral Valve Plane)
- Adjust Segment-wise (Longitudinal strain)
- Adjust Segment-wise and Rotate whole ROI (Radial & Circumf. Strain)
- ECG to select heart cycle
- View based Bulls Eye view
- Result type (Peak Strain or Peak Time)Parameter type (L Strain & C Strain)
- Bull's Eye

#### 4.9 Tissue Velocity M mode(TVM) (optional)

- Color codes the velocities in tissue
- Present wall motion spectrum based on tissue moving
- This color image is overlaid onto the 2D image
- Captures low flow but high amplitude signals associated with wall motion

#### 4.10 Multi-angle M mode

- Sample on moving tissue from multi-angle
- Present wall motion spectrum based on tissue moving



#### 4.11 Curved M mode

Draw the route of the sample line freely and obtain the corresponding anatomical M-mode. This might be helpful to obtain myocardial wall motion.

- Color curved M mode is available
- TVI & M mode is available

#### 4.12 VAid (optional)

- An artificial intelligent detection tool for breast/Thyroid imaging
- Works in real-time detection, as well as on the stored (single or cine) imagele

- Reverse function: on/off
- 2D optimization: on/off
- Centerline: on/off
- L/R flip and U/D flip: on/off
- VFusion :  $\cong$  7steps
- VSpeckle :  $\cong$  13 steps
- Harmonic imaging both tissue harmonic and phase inversion
- Cineloop image review
- Selectable 2D line density
- Dual imaging with independent cineloop
- 256(8 bit) gray level
- Gray filter:  $\cong$  7 steps
- Persistence:  $\cong$  8steps
- Selectable image angles, probe Dependent
- Adjustable Gain: 0-100%
- Selectable Dynamic range: 30-350 db
- VSharpen(enhance edge contrast) :  $\cong$  8steps
- Smooth(improve spatial resolution):  $\cong$  11steps
- EdgeEnhance (improve detail information and contrast):  $\cong$  6steps
- Gray Map:  $\cong$  32types
- Tint Map:  $\cong$  24types
- TGC: 8 slides on control pannel
- SGC: 8 ponds on touch pannel
- TI heat index: TIB, TIS, TIC
- Rotation: 0° ,90° ,180° ,270
- PAN/Zoom  $\cong$  24 steps in Real/Freez mode

### 5. Imaging modes

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#### 5.1 2D Imaging

- Pre-defined ATGC (adaptive temporal gain compensation) curves optimized for consistently excellent imaging
- Display format: Single, Dual, Quad
- Adjustable B/M acoustic output: 10-100%



## 5.2 Harmonic Imaging

- Supports both tissue harmonic and phase inversion imaging (transducer and frequency dependence)
- Second harmonic processing to reduce artifacts and improve image clarity
- Maximize detail resolution and enhance contrast
- Available on all imaging transducers
- Extends high performance imaging capabilities to all patient body types

## 5.3 M mode

- Selectable sweeping rates, 10steps
- Selectable display format prospective or retrospective (V2/3, V1/3, V1/2, H1/2, H3/4, full screen)
- Chroma colorization with multiple color maps
- Cineloop review for retrospective analysis of M-mode data
- 256 gray levels
- Acoustic output: 10%-100%
- Gray filter:  $\cong$  7steps

- Dynamic range: 108db-128db, 2db/step
- Vsharpen:  $\cong$  6steps
- Gray Map:  $\cong$  32types
- Tint Map:  $\cong$  24types
- Gain: 0-100%
- Color M mode: available
- MultiAngle: available

## 5.4 Color Doppler mode

- Available on all imaging transducers
- Automatically adapts transmit and receive bandwidth processing based on the color box position
- Cineloop review with full playback control
- Color flow M mode display for tissue motion and flow velocity
- Revert: on/off
- Selectable baseline, line density, flash reduction, persistence, maps, frequency, PRF, wall filter, packet size, color level, sensitivity, focus position, acoustic power, and smooth
- FULL screen imaging to larger image size
- L/R flip and U/D flip: on/off
- Frequency:  $\cong$  4steps, depend on probes
- Baseline: 0-100%
- Acoustic power: 5% -100%
- Line density:  $\cong$  5 steps



- Flash reduction:  $\cong$  5 steps
- Persistence:  $\cong$  7 steps
- Color Map:  $\cong$  33types
- Smooth :  $\cong$  7steps
- Sensitivity:  $\cong$  5 steps
- Transparency:  $\cong$  6steps
- Color level:  $\cong$  15steps
- Packet size:  $\cong$  7 steps
- Color gain: 0-100%
- Adjustable region of interest
- Region of interest
- Baseline invert
- Simultaneous mode during PW mode
- Zoom

### 5.5 Power Doppler mode

- High sensitive mode for small vessel visualization
- Available on all transducers
- Cineloop review
- Display format: Single, Dual, Quad
- Selectable line density, flash reduction, persistence, maps, frequency, PRF, wall filter, packet size, color level, sensitivity, focus position, acoustic power, and smooth
- Color maps:  $\cong$  24 types
- Color levels:  $\cong$  11 steps
- Sensitivity:  $\cong$  5steps
- Smooth:  $\cong$  7steps
- Persistence:  $\cong$  7steps

- Individual controls for gain
- Adjustable region of interest

### 5.6 Pulsed Wave (PW) Doppler

- Angle correction with automatic velocity scale adjustment
- Normal, invert display around horizontal zero line
- Auto optimization: on/off
- Invert: on/off
- Selectable display format prospective or retrospective (V2/3, V1/3, V1/2, H1/2, H3/4, full screen)
- Selectable gray filter, dynamic range, frequency, PRF, wall filter, baseline, angel correct, sample volume
- Gray filter:  $\cong$  6steps
- Dynamic range: 108db-128db
- Baseline: 5%-95%
- Sample volume: 0mm-28mm
- Angle correct:  $-80^{\circ} \sim 80^{\circ}$
- Trace Sensitivity:  $\cong$  21steps
- Audio Volume:  $\cong$  27steps
- Spectrum Optimize:  $\cong$  28steps
- Gray map:  $\cong$  13types
- Tint map:  $\cong$  11types
- Selectable sweep speeds:  $\cong$  10 steps
- Maximum velocity range: 12m/s
- PW acoustic output: 5%-100%
- Trace direction: above, below, above and below



- Trace type: max, mean, max and mean
- Cardiac cycle: 1-5
- Selectable low frequency signal filtering with adjustable wall filter settings
- Selectable chroma colorization maps
- Auto function to optimize spectral Doppler display
- Digitally enhanced stereo output
- 256 gray levels
- Post-processing in frozen mode includes map, baseline, invert, angle and chroma
- Simultaneous or duplex mode of operation
- Simultaneous 2D, color Doppler, pulsed Doppler
- High PRF capability in all modes including duplex and triplex

### 5.7 Continuous Wave Doppler (CW)

- User can measure distance and area
- Cineloop review
- Selectable gray filter, dynamic range, PRF, wall filter, baseline, angle correct, sample volume, acoustic power, etc.
- Gray filter:  $\cong$  6 steps
- Dynamic range: 108db-128db
- Angle correct:  $-80^{\circ}\sim 80^{\circ}$
- Trace Sensitivity:  $\cong$  21 steps
- Audio Volume:  $\cong$  27 steps

- Spectrum Optimize:  $\cong$  28 steps
- Gray map:  $\cong$  13 types
- Tint map:  $\cong$  11 types
- acoustic output: 5%-100%

### 5.8 Elastography imaging

- Shows the spatial distribution of tissue elasticity properties in a region of interest to estimate the strain before and after tissue distortion caused by external force
- The strain estimation is scaled by color to have smooth distribution display
- Have quality index to indicate if there is proper external force
- Precision: 0,1,2,3,4
- Resolution: 0,1,2,3,4
- Sensitivity: 0-10
- Transparency:  $\cong$  13steps
- Smooth:  $\cong$  7steps
- Line density:  $\cong$  7steps
- Persistence:  $\cong$  7steps
- Map: EI0
- Display format: Single, Dual, Quad

### 5.9 3D/4D

- 3D/4D rotation
- Grayscale imaging controls
- Selectable rendering



Approaches: HQ Surface, HQ Grad, HQ Silhouette, Surf Texture, Surf Smooth, Grad Light, Surf HDR, Trans Max, X-ray, Transp Min, Light

- Unique high quality rendering algorithm
- Review volume
- Volume Angle: 15%-85%
- Quality: low, mid, good, high, best
- Threshold: 0-255 256Steps
- Transparency: 0.1-2, 0.1/step
- Display format: single, dual, MRP, Quad
- Image Reference: A, B, C, 3D
- Flip: 0°, 90°, 180°, 270°
- View: Front/Back, Back/Front; Left/Right, Right/Left; Up/Down, Down/Up
- Rotation Direction: X, Y, Z
- 3D Map:  $\cong$  10 types
- Tint maps:  $\cong$  24Types
- Gray maps:  $\cong$  32Types
- 2D VSpeckle:  $\cong$  4types
- 3D VSpeckle:  $\cong$  4types
- Render Type: Gray, GrayInv

### MCUT

- Slice Number: 2x2, 3x3, 4x4, 5x5
- Max Slice Number: 25
- Gray Map:  $\cong$  32 types
- Tint Map:  $\cong$  24 types
- Cut plane: A, B, C
- Rotation Direction: X, Y, Z
- Volume Angle: 15-85°
- Interval: 1mm-20mm,

0.5mm/step

- Quality: low, mid, good, high, best

### Free view(optional)

- Direction: X, Y, Z
- Route: curve, straight line
- Reference image: A, B, C
- Slice thickness: 0mm-20mm
- Active line: 1, 2, 3
- Mix: 10-90
- Threshold: 256 steps
- Transparency: 0.1-2.0, 0.1/step

### Magic cut(optional)

- Erase mode: Inside Lasso, Outside Lasso, big circle, small circle
- Erase type: trace, rectangle, ellipse
- Rotation direction: X, Y, Z

### Niche view

- Model type: upper, lower
- Display format: single, quad
- Rotation direction: X, Y, Z
- Image reference: A, B, C, N

### 5.10 PView (optional)

- Real time extended field of view composite imaging
- Ability to back up and realign the image during acquisition
- Full zoom, cineloop review and image rotation capabilities



### 5.11 TView

- Expand view of scanning

### 5.12 Auto optimization

- Intelligent one button automatic optimization in 2D and Doppler modes
- Automatically adjust PRF and baseline in Doppler

### 5.13 Live Track (including angle free flow)(optional)

- Once the function is enabled, system automatically tracks the vascular and adjust the ROI position、angle in CF and PW mode, the sample volume、steer、correct angle
- Applications: carotid
- Probe:  
X4-12L,X6-16L,X3-10L,U5-15LE,F4-12L

### 5.14 Tissue Doppler Imaging (TD)

- Present wall motion spectrum by using Doppler principle
- Provide wall motion direction and velocity information
- Available on all sector transducer for cardiac imaging
- Selectable frequency, PRF, wall filter

- Gain
- Sweep speed:  $\geq 10$ steps
- Baseline: 5%-95%
- Angle correct:  $\pm 80^\circ$
- Sample volume: 0.5mm-10mm
- Spectrum optimize:  $\geq 20$ steps
- Acoustic power: 5%-100%
- Dynamic range: 92db-128db
- Trace sensitive:  $\geq 21$ steps
- Gray filter:  $\geq 6$ steps
- Audio volume:  $\geq 27$ steps
- Mode: max, mean, max and mean
- Direction: above, below, above and below
- Heart cycle: 1-5
- Gray map:  $\geq 13$ types
- Tint map:  $\geq 11$ types

### 5.15 Tissue Velocity Imaging (TVI)

- Color codes the velocities in tissue
- Present tissue color imaging by using Doppler principle
- This color image is overlaid onto the 2D image
- Captures low flow but high amplitude signals associated with wall motion
- Available on all sector transducer for cardiac imaging
- Tissue velocity M mode display for wall motion(optional)



- Gain
- Velocity
- Color level:  $\cong$  16steps
- Transparency:  $\cong$  13steps
- Smooth:  $\cong$  7steps
- Line density:  $\cong$  3steps
- Persistence:  $\cong$  7steps
- Color map:  $\cong$  10types

### 5.16 Tissue Velocity M mode (TVM)

#### (optional)

- Color codes the velocities in tissue
- Present wall motion spectrum based on tissue moving
- This color image is overlaid onto the 2D image
- Captures low flow but high amplitude signals associated with wall motion
- Selectable frequency, PRF, Focus position
- Baseline: 5%-95%(M), 0%-100%(CF)
- Color level:  $\cong$  16steps
- Transparency:  $\cong$  13steps
- Packet size: 3,4,5,6
- Acoustic power: 5%-100%(CF), 10%-100%(M)
- Display format: Single, Dual, Quad

## 6. Touch Panel Interface

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### 6.1 2D mode

- New patient
- BodyPattern
- Archive
- Comments
- End exam
- Report
- Sys setting
- Probe&App
- Pview
- Tview
- Fullscreen
- L/R
- U/D
- Center line
- VTissue
- VSpeckle
- VFusion
- Gray Filter
- Persistence
- Display Format
- Image reference
- Maps
- Frequency
- Focus position
- Focus#
- Dynamic Range
- Line density
- VSharpen
- Biopsy
- Image angle



- Focus width
- Smooth
- Acoustic power
- Elastosonography
- EdgeEnhance
- NeedleEnhance
- SGC

- Probe&App
- Invert
- Full Screen
- L/R
- U/D
- Baseline
- Flash Reduction
- Line density
- Persistence
- Display format
- Sync display
- Transparency
- Image reference
- Maps
- Frequency
- PRF
- Wall filter
- Packet size
- Colorlevel
- Sensitivity
- Focus position
- Acoustic power
- Smooth

## 6.2 M Mode

- New patient
- BodyPattern
- Archive
- Comments
- End exam
- Report
- Sys setting
- Probe&App
- Maps
- Dynamic range
- Acoustic power
- Sweep speed
- Gray filter
- VSharpen
- ECG

## 6.4 PW/CW mode

## 6.3 CF mode

- New patient
- BodyPattern
- Archive
- Comments
- End exam
- Report
- Sys setting

- New patient
- BodyPattern
- Archive
- Comments
- End exam
- Report
- Sys setting
- Probe&App



- Invert
- Duplex/Triplex
- Sweep speed
- Gray filter
- Dynamic range
- Trace sensitive
- Auto trace
- Mode/direction
- Maps
- Frequency
- PRF
- Wall filter
- Baseline
- Steer
- Sample volume
- Audio Volume
- Spectrum optimize
- Acoustic power

### 6.5 3D mode

- Comments
- Probe&App
- BodyPattern
- Probe&App
- Back to 2D
- Start3D
- Render
- Display format
- Image reference
- View
- Gray map
- VSpeckle
- Quality

- Threshold
- Transparency
- Volume angle
- Auto rotate (after data acquisition)
- Movement step (after data acquisition)
- HQ Grad(after data acquisition)
- Rotation angle (after data acquisition)
- Rotation direction (after data acquisition)
- 3DMcut(after data acquisition)
- Magic Cut (after data acquisition)
- Free View(after data acquisition)

### 6.6 4D mode

- Comments
- Probe&App
- Body Pattern
- Probe&App
- Back to 2D
- Start 4D
- Rotation direction
- Render
- Display format
- Image reference
- View
- Gray map
- VSpeckle
- Quality
- Threshold
- Transparency
- Volume angle



## 7. System Feature

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### 7.1 Display modes

- Simultaneous capability
  - 2D/PW/CF or PDI
  - 2D/CF or PDI
  - 2D/M
  - Dual, 2D/2D
  - Dual, 2D/2D+CF or PDI
  - Dual, duplex and triplex
  - Duplex and Triplex mode
  - Quad display in 3D/4D application
  - 25 slice images display in 3D/4D application
  - Time line display
  - Independent dual 2D/PW or CW
  - Timed based sweep update mode

### 7.2 Display annotation

- Institution/hospital name
- Date: 3 types selectable, Year-Month-Day, Day-Month-Year, Month-Day-Year
- Time: 2 types selectable, 24hours and 12 hours
- Operator identification

- Patient: First Name, Middle Name, Family Name
- Patient identification: 20 characters
- Gestational age from LMP/BBT/DOC/IVF/GA/Avg.US
- VINNO image symbol: Ginkgo leaf
- Power output index
  - MI: mechanical index
  - TIS: thermal index soft tissue
  - TIC: thermal index cranial (Bone)
  - TIB: thermal index bone
- Probe orientation marker: coincide with a probe orientation marking on the probe
- Gray/color bar
- Measurement result window
- Probe type
- Application name
- Image depth
- Imaging parameters by mode
  - 2D/M mode: acoustic power output, gain, frequency, frame rate, dynamic range
  - Color mode: color acoustic power output, color gain, color flow frequency, PRF, wall filter
  - PW/CW mode: Doppler acoustic power output, Doppler gain, Doppler frequency, PRF, wall filter, sample depth, SV(PW)
  - Scanline Gain Compensation(SGC) with 8 slides



adjustment

- Focus zone marker
- Body pattern
- PW and CW scale markers:

time/speed

- M scale markers: time/depth, time

- System measurement display
- System message display
- Biopsy guide line
- Heart rate

### 7.3 Simple User Operation Interface

- Simple user interface and easy workflow, allows one step on probe & application switch, and intuitive user parameter control

### 7.4 Cineloop

- Acquisition, storage in memory and display of up to 340000 frames, 1500 seconds long of 2D, color and PW/CW images for review
- Available to decide StartFrame and EndFrame
- Frame by frame manual cine loop review or auto playback with variable speed: 400%, 200%, 100%, 60%, 50%, 40%, 20%
- Frame compare: displays one cine in dual format and allows frame by frame

compare side by side

- Acquisition, storage, measurements and replay

### 7.5 Quick save feature

- The system provides quick save function through USB stick, internal/external HDD, DVD during or after exam
- Configurable saving file format, VRD (VINNO Raw Data), DICOM, AVI, MP4, PNG

### 7.6 ECG (optional)

- One 3-lead ECG input
- Gain, sweep rate and display position controls
- Automatic heart rate calculation and display
- Fault condition display

### 7.7 Archive

- Patient data input which include patient ID, First Name, Middle Name, Family Name, Data of Birth, sex, Perf.Physician, Ref.Physician, exam operator
- Physical data such as weight, height
- Patient exam management
- Patient exam images storage and



management

- Import VRD format data into the system from outside media, such as USB stick, external HDD, DVD
- Export patient data into outside medias

### 7.8 Report

- Automatically pull patient data into the report
- Automatically load measurement worksheet into the report
- Pull related exams' images into the report
- Write comments in the report
- Print report through network or local printer

### 7.9 Connectivity

- Standard connectivity features
  - Local print to on-board or off-board video printers through USB port
  - Page report print
  - Image export to removable media (DVD, external HDD, USB stick)
- Ethernet Network Connection
  - Cable connection
  - Wireless connection: need wireless routing adaptor
- Network linkage
  - Image export to

network storage servers

- DICOM export and retrieve (optional)
- Mobile data transfer solution by
  - Blue tooth
  - email
  - Hot point connection
- VCloud
- export 3D data for 3D printer(optional)
- Integrated DVDRW
  - Support standard DVD media
    - Data storage formats include VRD, DICOM, AVI, MP4, PNG
    - JPEG,BMP,PNG,VRD and DICOM images stored in disc can be recalled on the VINNO system
    - PNG and AVI/MP4 images can be played on normal computers
- On-board patient exam storage
- Direct digital storage of static image or cineloop images to internal hard disk drives
- Fully integrated user interface

### 7.10 Probes/application

- Selectable multiple applications
- Edit exist application preset
- Edit user defined preset
- Rename preset
- Return to factory preset
- Quick save user defined



parameters in related application

## 7.11 Safety Conformance

- Regulatory Notice:

This device is tested to meet all applicable requirements in relevant. According to Regulation (EU) 2017/745 concerning medical devices.

- Conformity to Standards:

- IEC

60601-1:2005/A1:2012+A2:2020

Medical electrical equipment - Part 1: General requirements for basic safety and essential performance

- IEC 60601-1-2:2014/A1:2020

Medical electrical equipment - Part 1-2: General requirements for basic safety and essential performance - Collateral Standard: Electromagnetic disturbances - Requirements and tests

- IEC

60601-1-6:2010/A1:2013+A2:2020

Medical electrical equipment - Part 1-6: General requirements for basic safety and essential performance - Collateral standard: Usability

- IEC 60601-2-37:2007/A1:2015

Medical electrical equipment - Part 2-37: Particular requirements for the basic safety and essential performance of ultrasonic medical diagnostic and monitoring equipment

- IEC 61157:2007/A1:2013 Standard

means for the reporting of the acoustic output of medical diagnostic ultrasonic equipment

- ISO 10993-1:2018 Biological evaluation of medical devices - Part 1: Evaluation and testing within a risk management process

- IEC 62304:2006/A1:2015 Medical device software - Software life-cycle processes

- IEC 62366-1:2015/A1:2020 Medical devices - Application of usability engineering to medical devices

- WEEE according to 2012/19/EU

- RoHS according to 2011/65/EU

## 8. Measurement and Analysis

### 8.1 Measurement in different modes

#### 8.1.1 Generic Measurement in 2D

##### mode

- Depth
- Distance
- Perimeter

- Length and width

##### method

- Ellipse method
- Polygon method
- Spline method
- Tracing method



- Area
  - Length and width method
  - Ellipse method
  - Polygon method
  - Spline method
  - Tracing method
- Volume
  - Single line method
  - Dual line method
  - Triple line method
  - Single ellipse method
    - Single ellipse and single line method, Trace&H
- Angle
  - PolyLine, TwoLine
- %Stenosis
  - Diameter method
  - Square meter method
- A/B ratio
  - Diameter ratio
  - Square meter ratio

- Time
- Slop (Velocity)
- Heart rate
- %Stenosis
- A/B ratio
  - Diameter ratio
  - Time ratio
  - Speed ratio

### 8.1.2 Generic Measurement in CM mode

- CFVP
  - point
  - profile

### 8.1.3 Generic Measurement in M mode

- Depth
- Distance

### 8.1.4 Measurement in PW mode

- Methods: Manual, Semi-Automatic, Automatic, Real-Time Automatic
- Velocity
- Time
- Acceleration
- PS (Peak Speed in systole period)
- ED (The speed in the end of diastole period)
- MD (Minimum speed in diastole period)
- Mean Vel(Max)
- Mean Vel(Mean)
- PI (Pulsatility Index)
- RI (Resistance Index)
- PS and ED ratio
- ED and PS ratio
- A and B ratio (A/B ratio)
  - Speed ratio
  - Time ratio
- Auto Flow Volume(optional)
- MaxPG ( maximum pressure gradient)
- MeanPG (Mean pressure gradient)
- SV ( Stroke Volume)
  - Each volume diameter



stroke volume

- Cardiac output
- Heart rate
- $SV(LVOT)/SV(RVOT)$

## 8.2 Measurement in different applications

### 8.2.1 Abdominal Measurement

- General abdomen
- Difficult abdomen
- Kidney
- Renal vessel
- Abdominal trauma

### 8.2.2 Small Part Measurement

- Thyroid
- Breast
- Testis
- Musculoskeletal
- Upper and lower extremity joint
- Nerve block

### 8.2.3 Vessel Measurement

- Carotid artery
- Upper artery
- Upper vein
- Lower artery
- Lower vein
- Vessel puncture
- Transcranial Doppler

### 8.2.4 Gynecology Measurement

- Uterus and Pelvic
- Follicle

### 8.2.5 Urology Measurement

- Bladder
- Prostate
- Renal
- Kidney and ureter
- Pelvic Floor dysfunction

### 8.2.6 Pediatric Measurement

- Neonatal Head
- Neonatal Abdomen
- Pediatric Abdomen
- Pediatric Hip

### 8.2.7 Obstetrics Measurement

- OB Early
- OB Mid
- OB Late
- Fetal Heart

### 8.2.8 Cardiac Measurement

- General
- LV
- MV
- Ao
- LA
- RV
- TV
- PA
- Auto EF



### **8.2.9 Auto NT (Nuchal Translucency ) measurement(optional)**

- Automatically detect Nuchal Translucency in interest box
- Automatically report thickness result of NT

### **8.2.10 Auto IMT (Intima-Media Thickness) measurement**

- Automatically detect intima media thickness in interest box
- Automatically report the result of IMT
- Available in linear probe

### **8.2.11 Live IMT (Intima-Media Thickness) measurement (optional)**

- Real-time automatically display IMT items with the different ROI positions
- The IMT items include: max, min, average, SD, points (how many points are used for the result), size of ROI .
- Available in carotid application

### **8.2.12 Auto IT (Intracranial translucency) measurement(optional)**

- Support Auto IT(Intracranial translucency) measurement
- Draw the ROI and the system analyses and displays the result

### **8.2.13 Auto Follicle(2D/3D)(3D optional)**

- Just click on the area of follicle in B mode, the area of this follicle will be reported automatically
- Report the area of different follicle in the volume data automatically

### **8.2.14 Smart 3D Volume Measurement(optional)**

- Trace the margin of the irregular circle in different slices of volume data in irregular shape
- Automatically report the volume of the irregular object

### **8.2.15 VAim OB measurement(optional)**

- VAim OB is an intelligent tool for fetal growth calculation, just one touch to activate the measurement items ( BPD, OFD, HC, AC, FL, HL ) and get the results, helps to make clinical decisions quickly and confidently, improving the speed and ease of exams
- The intelligent results will be add into the worksheet and report automatically



### 8.2.16 VAim Hip

#### measurement(optional)

VAim Hip is an intelligent solution in the assessment of DDH(Developmental Dysplasia of Hip) with one simple touch.

- Based on ‘Ped HIP’ application

### 8.2.17 VAim Follicle(2D)measurement

#### (optional)

An intelligent tool for follicle calculation, one touch to get the follicle status, dedicated for women’s reproductive health.

- Choose left or right follicle
- Automatically identify all the follicles with different colors and calculate follicle volume and diameter

### 8.2.18 VAid Breast(optional)

VAid Breast is an automatic tool for breast lesion detection in real-time or on stored images (static & cine)

- For static image: Depicts boundaries of the Breast lesions and displays the size
- For cine(real time scan or stored cine):The number and position of the Breast lesion can be indicated in real time.

### 8.2.19 VAid Thyroid(optional)

VAid Thyroid is a tool for Thyroid lesion detection in real-time or on stored images (static & cine)

- For static image: Depicts boundaries of the thyroid lesions and displays the size
- For cine(real time scan or stored cine):The number and position of the Thyroid lesion can be indicated in real time.

### 8.2.20 VShear (optional)

VShear (Shear Wave Imaging) is an ultrasound imaging technique that assesses the hardness of the tissue by measuring the propagation velocity of shear waves in the target tissue

- Type: Cs (m/s), E (kPa), G (kPA)
- Measurement items: SWV, Young's modulus(E), Shear modulus(G), SWV Ratio, E Ratio, G Ratio, E/B Ratio
- Compatible probe: Convex array, Linear array, Endocavity probe



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## **VINNO Technology (Suzhou) Co., Ltd**

VINNO is focusing on producing premium diagnostic ultrasound development to provide customer clinical value through Continuous Innovation, Excellent Performance and Accessible Solutions.



**Thanks you for your interest in VINNO.**

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