

Vetus E7

Veterinary Diagnostic Ultrasound System

Datasheet



1 System Overview

1.1 Application

- Abdomen
- Cardiology
- Reproduction
- Small Parts
- Musculoskeletal
- Vascular

1.2 Transducer types

- Curved array
- Linear array
- Phased array

1.3 Features

- B-Mode
- THI and PSH™ (Phase Shift Harmonic Imaging)
- M-Mode/Color M-mode
- Free Xros M™ (Anatomical M-mode)
- Free Xros CM™ (Curved Anatomical M-mode)
- Color Doppler Imaging
- Power Doppler Imaging/Directional PDI
- Pulsed Wave Doppler
- Continuous Wave Doppler
- Tissue Doppler Imaging
- Tissue Tracking QA
- iScape™ View (Panoramic Imaging)
- Smart 3D™ (Freehand 3D)
- iBeam™ (Spatial Compound Imaging)
- iClear™ (Speckle Suppression Imaging)
- iTouch™ (Auto Image Optimization)
- Echo Boost™

- Zoom/iZoom (Full Screen Zoom)
- FCI (Frequency Compound Imaging)
- B steer
- ExFOV (Extended Field of View)
- HR Flow™ (High Resolution Flow)
- Raw data processing
- iScanhelper
- 1 active probe port
- Hard drive: 128 GB SSD or 1TB HDD
- 4-USB
- HDMI
- iStorage
- MedTouch
- MedSight
- Built-in Battery
- Power adapter
- Multilingual controls overlay
- AutoEF
- iNeedle™ (Needle Visualization)
- DICOM
- Clinical Measurement Package
- Mobile Trolley
- ECG module
- Internal WiFi
- Ultrasound gel
- Dual-Probe extend module
- U-Bank (2 batteries or 4 batteries)
- Barcode reader
- Footswitch
- External DVD R/W drive

1.4 Language support

- **Software:** Chinese, Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Icelandic, Italian, Lithuanian, Norwegian, Polish, Portuguese, Russian, Serbian, Spanish, Swedish, Turkish
- **Keyboard input:** English, Chinese, French, Italian, Portuguese, Russian, Spanish, Polish, German, Czech, Turkish, Finnish, Icelandic, Danish, Norwegian, Swedish, Hungarian, Serbian
- **Control panel overlay**
- **User manual**

2 Physical Specification

2.1 Dimensions and weight

- **Width:** 364±5 mm
- **Depth:** 322±5 mm
- **Height:** 44±3 mm
- **Weight:**
 - About 3.0 kg (without battery)
 - About 3.5 kg (with battery)

2.2 Monitor

- **15.6-inch high resolution color LED monitor**
- **Resolution:** 1920 ×1080
- **Automatic brightness adjustment**
- **Screen Saver**
- **Open angle adjustable:** 0 – 180°
- **View angle (right/left):** ≥170°

2.3 Handle

2.4 Probe port

1 port connect to a transducer

2.5 Electrical power

2.5.1 AC adapter Input

- **Voltage:** 100 – 240V AC
- **Frequency:** 50/60 Hz
- **Power input:** 2.0 – 1.0A

2.5.2 Battery

Lithium-Ion Battery Pack 14.4V, 6600mAh (single battery)

2.6 Operating Environment

- **Ambient temperature:** 0 – 40 °C
- **Relative humidity:** 20% – 85% (no condensation)
- **Atmospheric pressure:** 700hPa – 1060hPa

2.7 Storage & Transportation Environment

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

3 User Interface

3.1 Control panel

- **Power/Battery Indicator**
- **Function Keys**
- **Ergonomic Soft Key Operation**
- **Backlit keys, ensuring accurate work in the dark room**
- **Programmable keys, available for user-defined functions**
- **Key Brightness adjustment**

- Integrated speakers, audio volume adjustment

3.2 Touch screen

- 12.3-inch high sensitivity anti-glare color touch screen
- Resolution: 1920×720
- Digital brightness and contrast adjustment through preset
- Viewing angle: ≥170 degrees
- Support touch screen gestures
- Support either hand writing or with gloves on

3.3 System boot-up

3.3.1 SSD

- Boot-up from complete shut-down in about 22 sec (without McAfee)
- Boot-up from standby mode in about 5 sec
- Shut down in about 13 sec

3.3.2 HDD

- Boot-up from complete shut-down in about 69 sec (without McAfee)
- Boot-up from standby mode in about 5 sec
- Shut down in about 26 sec

3.4 Comments

- Supports text input and arrow
- Adjustable text size and arrow size and direction
- Supports home position
- Covers various application
- More than 500 comments items for versatile application
- User customizable

3.5 Bodymark

More than 67 bodymarks for versatile application

3.6 Screen information* (presettable)

- Logo
- Hospital name
- Exam date
- Exam time
- Acoustic power
- Mechanical index
- Tissue thermal index
- ID, Name, Gender, Age
- Probe model
- ECG icon (when ECG connected)
- Operator
- TGC Curve
- Focus position
- Thumbnail
- Imaging parameters
- Help guidance
- Dynamic Trackpad indices

*Not all items are listed in this part, detail info please refer to user manual.

4 Imaging Parameters

4.1 Overview

- Digital beamformer
- Up to 1032192 channels
- 64-beam forming

4.2 B-mode

- Frame rate (max): 1176 f/s
- A.Power: depend on probe
- TGC: 8 sliders
- Depth: 30 Levels
- Gain: 0 – 100, 1/step

- **Steer: 5 Levels** (available on linear transducers)
- **FOV: on/off**
- **FOV Size: random adjustable**
- **FOV Position: random adjustable**
- **Image Quality: Pen/Gen/Res** (depend on probe)
- **Persistence: 0 – 7, 1/step**
- **Dyn Ra.: 30 – 350**
- **Gray Map: 1 – 8, 1/step**
- **Tint Map: off, 1 – 8, 1/step**
- **ExFov: off, 1 – 2** (extended FOV available on convex and linear transducers)
- **iClear: Off, 1 – 7, 1/step**
- **iBeam: Off, 1 – 3, 1/step**
- **Line Density: L, M, H, UH**
- **L/R Flip: on/off**
- **U/D Flip: on/off**
- **Rotation: 0, 90°, 180°, 270°**
- **iTouch: On/off**
- **iTouch: -12 – 12, 3db/step**
- **LGC: 8 point**
- **Dual Live: on/off**
- **Auto Merge: on/off** (available on linear transducers)
- **H Scale: on/off**
- **Echo Boost: off, 1, 2** (available on phased transducers)
- **Smooth: 0 – 6, 1/step**
- **TSI (Tissue Specific Imaging): General, Muscle, Fluid, Fat**
- **Zoom Value: 0.8 – 10**
- **HDScope: off, 1 – 3, 1/step**
- **V1:1: on/off** (available on linear transducers)
- **iNeedle:**
- **B/iNeedle (on/off)**
- **Needle Dir.: Auto, Left, Right**

4.3 THI and PSH

- Available on all types of transducer
- Patent PSH™ technology, obtains purer harmonic, better contrast resolution, higher SNR, exceptional high frequency harmonic
- iClear™ available
- Image quality: depends on transducers

4.4 M-mode

- **A.Power: depend on probe**
- **Gain: 0 – 100, 1/step**
- **Depth: same as B**
- **Speed: 25mm/s, 35mm/s, 50mm/s, 65mm/s, 100mm/s, 200mm/s**
- **Dynamic Range: 30 – 180, 5/step**
- **Gray Map: 1 – 8, 1/step**
- **Tint Map: Off, 1 – 8, 1/step**
- **Display format: V2:3, V3:2, H2:3, V3:1, FULL**
- **M Soften: 0 – 4, 1/step**
- **Edge Enhance: 0 – 3, 1/step**
- **Color M-mode available** (convex and phased probe only)

4.5 Free Xros M

- **Speed: 25mm/s, 35mm/s, 50mm/s, 65mm/s, 100mm/s, 200mm/s**
- **Tint Map: Off, 1 – 8, 1/step**
- **Display Format: V2:3, V3:2, H2:3, V3:1**
- **Color Free Xros M available**
- **Gra Map: 1 – 8, 1/step**
- **Display: Cur./All; show A/B/C On/Off**

4.6 Free Xros CM

- Only available on TDI
- Speed: 25mm/s, 35mm/s, 50mm/s, 65mm/s, 100mm/s, 200mm/s
- Tint Map: Off, 1 – 8, 1/step
- Display Format: V2:3, V3:2, H2:3, V3:1
- Gray Map: 1 – 8, 1/step
- Angle: adjustable

4.7 Color Doppler Imaging

- Frame rate (max): 216 f/s
- PRF: 0.1 kHz – 14.3 kHz
- Velocity: 1.0 cm/s – 148.9 cm/s
- HR Flow™: High Resolution Flow provides better image quality and flow sensitivity
- A.power: same as B
- Gain: 0 – 100, 2/step
- Baseline: -8 – 8, 1/step
- Scale: 30 levels
- Quick Steer (available on linear transducers)
- Steer (available on linear transducers)
- ROI size/position: adjustable
- ROI Center Depth: adjustable
- Img Quality: 3 levels
- Persistence: 0 – 6, 1/step
- Smooth: 0 – 6, 1/step
- Color Map: V0 – V10; VV0 – VV9
- Flow State: L, M, H
- Priority: 0% – 100%, 1%/step
- WF: 8 Levels
- Line Density: L, M, H, UH
- Dual Live: on/off
- Invert: on/off
- Auto Invert: on/off (available on linear transducers)
- B/C Align: on/off

- Velocity tag: on/off
- Packet Size: 0 – 3, 1/step
- iTouch: On/off
- Smart Track: On/off

4.8 Power Doppler Imaging

- PRF: 0.1 kHz – 14.3 kHz
- HR Flow™: High Resolution Flow provides better image quality and sensitivity
- A.power: same as B
- Gain: 0 – 100, 2/step
- Steer (available on linear transducers)
- Scale: 30 steps
- ROI size/position: adjustable
- ROI Center Depth: adjustable
- Img Quality: Power/3 levels; HRFlow/1 level
- Persistence: 0 – 6, 1/step
- Smooth: 0 – 6, 1/step
- Dynamic Range: 10 – 70, 5/step
- Flow State: L, M, H
- Color Map: P0 – P3; dP0 – dP3
- Priority: 0% – 100%, 1/step
- WF: 8 levels
- Line Density: L, M, H, UH
- Dual Live: on/off
- Invert: on/off
- B/C Align: same as Color
- Packet Size: 0 – 3, 1/step
- iTouch: On/off
- Smart Track: On/off
- Auto Invert: On/off

4.9 PW/CW-Mode

- PW velocity: 11 cm/s – 770.0 cm/s
- CW velocity: 5 cm/s – 3850.0 cm/s
- PW PRF: 0.7 kHz – 20 kHz

- **CW PRF: 0.3 kHz – 100 kHz**
- **A.Power: same as B**
- **Gain: 0 – 100, 2/step**
- **Baseline: 9 levels**
- **Steer (available on linear transducers)**
- **Scale: 30 levels**
- **Audio: 0% – 100%, 2%/step**
- **Angle: -89 – 89, 1/step**
- **SVD: random adjustable**
- **Img Quality: 3 levels**
- **Speed: 25mm/s, 35mm/s, 50mm/s, 65mm/s, 100mm/s, 200mm/s**
- **SV: 0.5 – 30mm (PW only)**
- **SV position: random adjustable**
- **Dynamic range: 24 – 72, 2/step**
- **Gray map: 1 – 10, 1/step**
- **Tint Map: Off, 1 – 8, 1/step**
- **Display format: V2:3, V3:2, H2:3, V3:1, FULL**
- **Invert: On/off**
- **Auto Invert: on/off (available on linear transducers)**
- **WF (depend on probe)**
- **Quick Angle: -60°, 0°, 60°**
- **Duplex/Triplex: On/off**
- **HPRF: On/off**
- **iTouch: On/off**
- **T/F Res: 0 – 6, 1/step**
- **Auto Calculate: On/off**
- **Auto Calc Cycle: 1 – 5, 1/step**
- **Trace Sensitivity: 0 – 5, 1/step**
- **Auto Calc Parameter**
- **Trace Smooth: off, 1 – 4, 1/step**
- **Trace Area: Above, Below, All**
- **Auto Calc Loop**

4.10 Tissue Velocity/Energy Imaging

- **Available on phased array transducer**
- **Max frame rate: 1024 f/s**
- **PRF: 0.4 kHz – 14.3 kHz**
- **Velocity: 5 cm/s – 144.7 cm/s**
- **A.Power: same as B**
- **Gain: 0 – 100, 2/step**
- **Baseline: -8 – 8, 1/step (TVI only)**
- **Scale: 30 levels**
- **Img Quality: 2 levels**
- **Persistence: 0 – 6, 1/step**
- **Smooth: 0 – 6, 1/step**
- **Dyn Ra.: 10 – 70, 5/step (TEI only)**
- **Tissue State: L, M, H**
- **Color Map:**
 - TVI: TVV1 – TVV10
 - TEI: P0 – P3, dP0 – dP3
- **Priority: 0 – 100, 1%/step**
- **WF: 8 levels**
- **Line Density: L, M, H, UH**
- **Dual live: On/off**
- **Invert: On/off**
- **B/C Align: On/off**
- **Velocity tag: on/off (TVI only)**
- **Packet size: 0 – 3, 1/step**

4.11 Tissue Velocity Doppler

- **Available on phased array transducer**
- **Scale: 30 levels**
- **Velocity: 7.01 cm/s – 616.0 cm/s**
- **PRF: 0.7 kHz – 20 kHz**
- **A.power: same as B**
- **Gain: 0 – 100,2/step**
- **Baseline: 9 levels**

- Audio: 0 – 100%, 2%/step
- Angle: -89 – 89, 1/step
- SVD: random adjustable
- Img Quality: 2 levels
- Speed: 25mm/s, 35mm/s, 50mm/s, 65mm/s, 100mm/s, 200mm/s
- SV size: same as PW
- Dyn Ra.: 24 – 72, 2/step
- Gray Map: 1 – 10, 1/step
- Tint map: Off, 1 – 8, 1/step
- Display Format: V2:3, V3:2, H2:3, V3:1, FULL
- Invert: On/off
- WF: 10 levels
- Quick Angle: -60°, 0, 60°
- Duplex/triplex: same as PW
- T/F Res: 0 – 6, 1/step
- iTouch: On/off

4.12 Tissue Velocity Motion

- A.power: same as B
- Smooth: 0 – 6, 1/step
- Velocity tag: on/off
- Persistence: 0 – 6, 1/step
- Img Quality: 2 levels
- Tissue State: L, M, H
- Speed: 25mm/s, 35mm/s, 50mm/s, 65mm/s, 100mm/s, 200mm/s
- Display format: V2:3, V3:2, H2:3, V3:1, FULL
- Color Map: TVV1 – TVV10
- Packet Size: 0 – 3, 1/step
- Priority: 0% – 100%, 1%/step
- WF: 8 levels

4.13 iBeam™

- Spatial compound imaging
- 3 angles maximum

- Available on convex and linear transducers

4.14 iTouch™

- Auto image optimization
- B-mode: gain, TGC
- Color: gain
- Power: gain
- PW: gain, scale, PRF, WF

4.15 Echo Boost™

- Only for cardiac exams
- Improve the homogeneity of cardiac images through the whole field of view
- Better contrast resolution of myocardium tissue layers
- Better noise control in cardiac chambers and muscles

4.16 B steer

Only for linear transducers

4.17 ExFov

- Extended field of view
- Available for all transducers

4.18 Zoom

- Zoom: Spot zoom (write zoom) up to 10x, Pan zoom (read zoom) 0.8x – 10x
- iZoom: convertible 3 steps ;normal image, zoom standard area, zoom only image area

4.19 QSave

- Quick save image parameter setting after image adjustment done
- Support Save, Create, Restore

4.20 Tissue Tracking QA

- Available on P4-2s/P8-2s/P10-4s
- Tissue tracking quantitative analysis
- Mandatory ECG connection before TT QA cine acquisition
- Six views for analysis: ALAX, A4C, A2C, PSAXB, PSAXM, PSAXAP
- Reload: reload cine again for new study
- Edit: modify trace points
- Start tracking
- Accept & compute: start tracking myocardium movement when user accept trace result
- Display effect: 0/1; at 0, tracking in velocity vector arrow; at 1, tracking in dots
- Trace method: 3 point or manual for ALAX, A4C, A2C; manual for PSAXB, PSAXM, PSAXAP
- Bull's Eye: trace result in bull's eye model
- Torsion: Torsion rate curve display
- LGC: available
- Valve's open and close time index: MVC, MVC', AVC, AVO, MVO
- Data export: export data in CSV file
- Cycle: ECG triggered cardiac cycle recognition for analysis
- Auto play: stop, X1/10, X1/5, X1/4, X1/3, X1/2, X1, X2, X3
- Thickness: 1 – 30mm, 1mm/step; adjust trace thickness

- Track point: 20 – 40, 1/step
- Parameter: Volume, Speed, Displace., L Strain, L Strain R, T Strain, T Strain R, Area, R Strain, R Strain R, C Strain, C Strain R, Rotation, Rot. R
- Smooth: 0 – 4, 1/step

4.21 iNeedle™

- Needle visualization enhancement
- Best angle indicator
- Available on linear and curved transducers

4.22 AutoEF

- Adjust Frame
- Diastole FR
- Systole FR
- Volume curve: on/off
- Adjustment for the border of endocardium

4.23 Smart Track

- Continuously track the flow and detect the best color box position and angle in real time scanning.
- The linear probes in Vascular exam mode support the Smart Track function.

5 Cine Review and Post Processing

5.1 Cine review

- Available in all modes
- Frame by frame manual cineloop review or auto playback with variable speed
- Independent cine review in 2D Dual and Quad mode one by one

- Maximum cine memory is up to 25492 frames or 263.3 s (depend on the mode)
- Retrospective storage (online setting available, 1 – 120 s, or 1 – 120 cycles, pre-settable) and prospective storage (1 – 480 s, or 1 – 390 cycles, pre-settable)
- Frame compare: compare different frames for one cine in dual format
- Cine compare: compare two or more than two cines in dual or quad format
- Jump to first and jump to last: one keystroke review the first or last frame
- Start point and end point: selectable

5.2 Raw data processing

5.2.1 B-mode

- TGC
- Gain
- Dynamic range
- Gray map
- Tint map
- iClear
- L/R Flip
- U/D Flip
- Rotation
- LGC
- Dual Live
- Auto Merge
- H Scale
- Echo Boost
- Smooth
- Zoom Value

5.2.2 M-mode

- Gain
- Speed

- Dynamic Range
- Gray Map
- Tint Map
- Display format
- Edge Enhance

5.2.3 Color

- Gain
- Baseline
- Smooth
- Color map
- Dual Live
- Invert
- Priority
- Velocity tag

5.2.4 PW

- Gain
- Baseline
- Audio
- Angle
- Speed
- Dynamic range
- Gray map
- Tint Map
- Display format
- Invert
- WF
- Quick Angle
- T/F Res

6 Measurement/Analysis and Report

Not all measurements are listed in this part; For more detailed information please refer to User Manual

6.1 Generic measurements

6.1.1 B-Mode

- Distance
- Ellipse

- Trace
- Spline
- Cross
- Angle(2L)
- Angle(3P)
- Double Dist
- Trace Len
- Trace Len(Spline)
- Parallel
- Distance P-L
- IMT
- B-Profile
- B-Hist(Ellipse)
- B-Hist(Trace)
- B-Hist(Spline)
- B-Hist(Rectangle)
- Depth
- Color Vel
- Color Vel Profile
- Smart Trace
- -----
- Volume
- Volume(Ellipse)
- Volume(E+Dist.)
- Ratio(D)
- -----
- Volume
 - Volume
 - Volume(Ellipse)
 - Volume(E+Dist.)
- Ratio(A)
 - Area1
 - Area2
- Directional Ratio
 - D1
 - D2
- RAC
 - Sag
 - XS
- Volume Flow

- Vas Area
- TAMEAN
- TAMAX

6.1.2 M-Mode

- HR
- HR(R-R)
- Slope
- Distance
- Time
- Velocity

6.1.3 D-Mode

- PS/ED
- Vel
- HR
- HR(R-R)
- Time
- Acceleration
- D Trace
- -----
- Ratio(Vel)
- Ratio(VTI)
- -----
- Volume Flow
 - Vas Area
 - TAMEAN
 - TAMAX

6.2 AutoCalc

- PS
- ED
- MD
- PPG
- TAMAX
- Vol Flow(TAMAX)
- TAMEAN
- Vol Flow(TAMEAN)
- DT
- MPG
- MMPG
- VTI

- AT
- S/D
- D/S
- PI
- RI
- PV
- HR

6.3 Report

- Specific report template by application
- Editable value in report
- Images selectable
- Anatomy information
- User-defined report template
- Selecting report modules
- Adding/removing measurement items from the report
- Changing report layout
- Load/save comment
- Viewing history reports
- Preview and printing reports
- Able to Export as PDF file
- Set the calculation method for the final value in batch

7 Exam Storage and Management

7.1 Exam storage

- SSD:
 - 128 GB, more than 45.6 GB internal hard drive reserved for patient data storage
 - Capable of storage up to approximately 173242 single frames (FRM format)
- HDD:

- 1 TB, more than 866 GB internal hard drive reserved for patient data storage
- Capable of storage up to approximately 3290097 single frames (FRM format)

- Storage area:

- Pre-settable: image area, standard area, full-screen
- Image area: 1430×810
- Standard area: 1920×920
- Full-screen: 1920×1080

7.2 Exam management

- iStation™ workstation dedicated for patient exam management
- Patient exam query/retrieve
- Support review of current and past exam
- New exam, Active exam, Continue exam functions, End exam are available
- Support measurements and calculations on archived exam and images
- Export image as BMP/JPG/TIFF/DCM/FRM format (FRM: system format)
- Export cine as DCM/AVI/CIN/MP4 format (CIN: system format)
- Support backup/send to USB devices, DVD-RW media

8 Connectivity

8.1 Ethernet Network Connection

- Cable connection
- Wireless connection: Internal WIFI (including EAP Network)

8.2 DICOM 3.0

- DICOM Basic
 - Verify (SCU, SCP)
 - Print
 - Store
 - Storage Commitment
 - Media Exchange
- DICOM Worklist
- DICOM Query/Retrieve
- DICOM Modality Performed Procedure Step - MPPS
- DICOM Abdomen SR
- DICOM Cardiac SR
- DICOM Vascular SR

8.3 iStorage

Direct network storage tool between ultrasound system and personal computer

8.4 MedSight

- An interactive app that lets you transfer clinical images straight from the ultrasound system to a smart device, such as mobile phone or tablet PC
- Needs to be installed on mobile terminal
- Transfer images or clips from system to mobile terminal through WiFi
- Support both iOS (7.0 and above) and Android (4.0 and above) system
 - For iOS powered smart device: DICOM is mandatory
 - For Android powered smart device: DICOM not necessary

8.5 MedTouch

- Connect Ultrasound machine to smart devices based on Android and iOS system, such as tablet PC or mobile phone. Remote control of Ultrasound machine and tutorial software iScanHelper study on smart devices
- Support Android and iOS powered smart devices
 - Android 4.0 and above
 - iOS 7.0 and above
- DICOM not necessary

9 Probes

9.1 Curved array

9.1.1 C5-1s

- Application: Abdomen (Canine, Equine, Bovine, Ovine), Reproduction (Canine, Equine, Bovine, Ovine), MSK(Canine, Equine, Bovine, Ovine)
- Bandwidth: 1.2 – 6.0 MHz
- Depth: 4.0 – 40.0 cm
- Number of Elements: 128
- FOV (max): 61°
- Extended FOV: 72°
- Convex Radius: 60 mm
- Physical Footprint: 76.5×28 mm
- Footprint: 64.9×16.2 mm
- B-mode Frequencies: 1.2 – 3.8, 1.7 – 5.2, 2.0 – 6.0 MHz
- Harmonic Frequencies: 4.0, 5.0, 6.0 MHz
- Color Frequencies: 2.0, 2.5, 3.0, 3.5 (HR Flow) MHz
- PW Frequencies: 2.0, 2.5, 3.0 MHz

- **Biopsy Guide: NGB-022, available, multi angle, reusable; LPUBKG60, disposable**

9.1.2 C11-3s

- **Application: Abdomen (Canine, Feline), Cardiology (Canine, Feline), Reproduction (Canine, Feline), Small Parts (Canine, Feline), MSK (Canine, Feline)**
- **Bandwidth: 2.6 – 12.8 MHz**
- **Depth: 1.5 – 35.0 cm**
- **Number of Elements: 128**
- **FOV (max): 92°**
- **Extended FOV: 114°**
- **Convex Radius: 15 mm**
- **Physical Footprint: 32.8 × 25 mm**
- **Footprint: 27.4 × 8.4 mm**
- **B-mode Frequencies: 2.6 – 6.5, 3.2 – 7.9, 4.7 – 12.8 MHz**
- **Harmonic Frequencies: 6.0, 7.0, 8.0 MHz**
- **Color Frequencies: 4.4, 5.0, 5.7, 5.0 (HR Flow) MHz**
- **PW Frequencies: 4.4, 5.0, 5.7 MHz**
- **Biopsy Guide: NGB-018, available, multi angle, reusable**

9.2 Linear array

9.2.1 L13-3Ns

- **Application: Abdomen (Canine, Feline), Small Parts (Canine, Feline, Equine), MSK (Canine, Feline, Equine), Vascular (Canine, Feline, Equine)**
- **Bandwidth: 3.0 – 13.0 MHz**
- **Depth: 1.5 – 35.0 cm**
- **Number of Elements: 192**
- **Field of View (max): 3.82 cm**

- **Steered Angle: ±12°, ±6°, 0 (B steer); -20° – 20° (Color steer); -30° – 30° (PW steer)**
- **Physical Footprint: 56.8×21.2 mm**
- **Footprint: 43.5×8.2 mm**
- **B-mode Frequencies: 3.0 – 9.3, 5.4 – 11.2, 6.6 – 13.0 MHz**
- **Harmonic Frequencies: 9.0, 10.0, 11.0 MHz**
- **Color Frequencies: 4.2, 5.0, 6.2, 7.3 (HR Flow) MHz**
- **PW Frequencies: 4.2, 5.0, 6.2 MHz**
- **Biopsy Guide: NGB-053, available, multi-angle, reusable**

9.3 Phased array

9.3.1 P4-2s

- **Application: Cardiology (Canine, Equine, Bovine, Ovine)**
- **Bandwidth: 1.5 – 4.5 MHz**
- **Depth: 2.0 – 38.0 cm**
- **Number of Elements: 64**
- **Field of View (max): 90°**
- **Physical Footprint: 25.2×20.6 mm**
- **Footprint: 23.4×15.2 mm**
- **B-mode Frequencies: 1.5 – 2.5, 2.5 – 3.5, 3.5 – 4.5 MHz**
- **Harmonic Frequencies: 3.4, 3.8, 3.8, 4.2, 4.2 MHz**
- **Color Frequencies: 2.0, 2.3, 2.5, 2.5 (HR Flow) MHz; TDI: 3.0, 3.8 MHz**
- **PW Frequencies: 2.0, 2.3, 2.5 MHz; TDI: 2.5, 4.0 MHz**
- **CW Frequency: 2.0 MHz**
- **Biopsy Guide: NGB-011, available, multi angle, reusable**

9.3.2 P8-2s

- **Application:** Cardiology (Canine, Feline), Abdomen (Canine, Feline)
- **Bandwidth:** 2.3 – 8.0 MHz
- **Depth:** 2.0 – 38.0 cm
- **Number of Elements:** 96
- **Field of View (max):** 90°
- **Physical Footprint:** 30.5×23.2 mm
- **Footprint:** 19.5×11 mm
- **B-mode Frequencies:** 2.3 – 5.4, 2.8 – 7.4, 4.2 – 8.0 MHz
- **Harmonic Frequencies:** 5.0, 6.0, 7.0 MHz
- **Color Frequencies:** 2.7, 3.3, 4.0, 2.5 (HR Flow) MHz; TDI: 3.0, 3.8 MHz
- **PW Frequencies:** 2.7, 3.3, 4.0 MHz; TDI: 5.0, 6.0 MHz
- **CW Frequency:** 2.5 MHz
- **Biopsy Guide:** not available

9.3.3 P10-4s

- **Application:** Cardiology (Canine, Feline), Abdomen (Canine, Feline)
- **Bandwidth:** 3.0 – 11.4 MHz
- **Depth:** 2.0 – 38.0cm
- **Number of Elements:** 128
- **Field of View (max):** 90°
- **Physical Footprint:** 15.1×10.2 mm
- **Footprint:** 15×9.1 mm
- **B-mode Frequencies:** 3.0 – 6.8, 3.8 – 10.2, 4.6 – 11.4 MHz
- **Harmonic Frequencies:** 7.5, 8.0, 9.0 MHz
- **Color Frequencies:** 4.0, 5.0, 5.7, 2.5 (HR Flow) MHz; TDI: 3.0, 3.8 MHz
- **PW Frequencies:** 4.0, 5.0, 5.7 MHz; TDI: 5.0, 5.7 MHz

- **CW Frequency:** 5.0 MHz
- **Biopsy Guide:** not available

10 Peripheral Devices and Accessories

10.1 Built-in Battery for Main Unit

- Replaceable and rechargeable lithium battery
- Empty battery recharged to full in 4h
- Continuous work time: about 1.5 hour in B mode

10.2 Mobile Trolley

10.2.1 MT3

- Power supply module
- Dimensions (W×D): about 519 mm × 578 mm
- Platform height: 887 – 1207 mm; adjustable
- Weight:
 - Without retractable cable and probe extend module: about 28.8 kg
 - With retractable cable and without probe extend module: about 32.5 kg
 - Without retractable cable and with probe extend module: about 30.9 kg
 - With retractable cable and probe extend module: about 34.6 kg
- Probe holders
- Auxiliary output cable
- Probe extend module
- Cover grounding cable
- Printer bracket

10.2.2 MT2

- Dimensions (W×D): about 515 mm × 505 mm

- Platform height: 885 mm, 973 mm; 2 levels
- Weight:
 - Without printer bracket and probe extend module: about 15 kg
 - With printer bracket and probe extend module: about 18.8 kg
- Probe holders
- Probe extend module
- Printer bracket

10.3 Barcode reader

- 1-D barcode reader
- 2-D barcode reader
- JADAK HS-1M
- JADAK HS-1R (supporting RFID)

10.4 Footswitch

- USB port
- Support User-definable functions (Freeze, Save, Print)

10.5 U-Bank

- U-Bank with 2 batteries: 1.95 kg
- U-Bank with 4 batteries: 2.87 kg

10.6 ECG

- 6-pin, AHA/IEC, for 3-lead wires
- ECG wave display: on/off
- ECG source: Lead/External
- Position: 0 – 100%, 5%/step
- Trig mode: off/single/dual/timer
- Gain: 0 – 30, 1/step
- Sweep speed: 6 steps
- Invert: on/off

10.7 Built-in Wireless adapter

- Encryption: WPA, WPA2
- Max transfer speed: 300 Mbps
- Protocols: IEEE 802.11 ac/a/b/g/n
- Frequency: 2.4G/5G

11 System Inputs and Outputs

11.1 I/O Port

- USB 3.0: 4 ports
- Ethernet: 1 port
- HDMI: 1 port
- S-Video: 1 port

11.2 ECG module

ECG port: 1

11.3 Probe Extend module

Probe port: 2

12 Safety and Conformance

12.1 Quality standards

- ISO 9001
- ISO 13485

12.2 Design standards

- EN 60601-1 and IEC 60601-1
- EN 60601-1-2 and IEC 60601-1-2
- EN 60601-1-6 and IEC 60601-1-6
- EN 60601-2-37 and IEC60601-2-37
- EN 62304 and IEC 62304
- EN 62366 and IEC 62366
- EN ISO 17664 and ISO 17664

12.3 CE declaration

The device is fully in conformance with the low voltage directive 2014/35/EU and the EMC directive 2014/30/EU.

NOTICE:

Not all features or specifications described in this document may be available in all probes and/or modes.

Mindray Animal Medical reserves the right to make changes in specifications and features shown herein, or discontinue the product at any time without notice or obligation. Contact your Representative for the most current information.

