

GE Healthcare

# Venue 40 Ultrasound



healthymagination



## Product Description

Venue\* 40 delivers precision and exceptional image quality in an affordable, proven-reliable ultrasound system. Three probes, always connected, let you choose and perform a variety of exams easily and quickly. An intuitive touch interface makes Venue 40 easy to use. It boots up fast and recharges quickly. The sleek, portable design fits into tight spaces. The single-surface screen is easy to sanitize and clean with medical-grade disinfectants. High-resolution imaging and multiple transducer options help you care for a broad spectrum of patients in emergency, anesthesia, musculoskeletal, point-of-care, interventional and vascular access applications. Always-on B-Steer + Needle Recognition helps provide accurate detail in three key areas – needle, anatomy and motion. Pattern recognition technology accurately reveals the structure of a needle within anatomy, without needle blooming or distortion. Flexible data management and connectivity options, with optional DICOM\*\*, help speed image storage and archiving at the point of care and at the patient bedside.

## General Specification

### Dimensions and Weight for Console

- Height: 282 mm console only
- Width: 274 mm console only
- Depth: 56 mm console only
- Weight: approx. 3.6 kg (8 lbs.) with transducer

### Electrical Power for Console and Docking

- Voltage: 100 – 240 V AC
- Frequency: 50/60 Hz
- Power: Max. 180 VA

### Console Design

- Tablet Style
- Lithium-Ion Battery Pack (standard)
- 1 transducer port with SC-connector
- Speaker
- Docking station and docking cart are options
- Stylus

## User Interface

### Touch Screen

- Simplified layout
- Mode-specific controls
- Alphanumeric Keyboard
- Measurement
- Annotation
- Utility settings
- Patient information entry

- Touch and stylus user interface

### Display Screen

- 10.4 inch High-Resolution Color LCD
  - Display: 800x600
- 170-degree wide angle view

### Hard Keys

- 10 Ergonomic Hard Key Operation (backlit)
- On/Off button

### LED

- Battery life

## System Overview

### Packages

- Musculoskeletal
- Vascular Access
- Anesthesia
- Point of Care
- Interventional

### Transducer Types

- Linear Array
- Phased Array
- Convex Array

### Operating Modes

- B-Mode
- M-Mode
- Color Flow Mode (CFM)
- Power Doppler Imaging (PDI)
- B-Steer + Needle Recognition

### Standard Features

- High-Resolution 10.4 inch Color LCD
- Standard Cine Memory (120MB)
- Removable secure digital storage (SD)
- Loops storage from memory
- Automatic Optimization
  - Auto Tissue Optimization: ATO
- Distance/Area Measurement

### Software Features

- Applications
- Color/PDI
- M-Mode
- DICOM
- B-Steer + Needle Recognition

## Hardware Options

- Battery Pack
- Docking Cart
- Docking Station
- 3-probe port
- Transducers

## Media and Peripherals

- USB thermal B&W printer: Sony UPD-897 (option)
- Memory Stick (option)
- Footswitch (option)

## Display Modes

- B-Mode
- M-Mode
- CFM/PDI

## Display Annotation

- Institution/Hospital Name
- Date: MM/DD/YY and DD/MM/YY
- Time: 24 hours or 12 hours configurable
- Patient Name: Last, First
- Patient Identification: 16 characters
- Power Output Readout
  - MI: Mechanical Index
  - TIS, TIB, TIC: Thermal Index
- System Status (real-time or frozen)
- Transducer Orientation Marker: Coincides with a transducer orientation marking on the transducer
- Loop Replay
- Measurement Results Window
- Transducer Type
- Preset Name
- Imaging Parameters by Mode (current mode)
  - B-Mode:
    - Gain
    - Image Depth
    - Power Output: Low, Med, High
  - M-Mode:
    - Gain
    - Image Depth
    - Power Output: Low, Med, High
  - Color Flow Mode:
    - Color Gain
    - Image Depth
    - Power Output: Low, Med, High
  - Power Doppler Imaging Mode:
    - PDI Gain
    - Image Depth
    - Power Output: Low, Med, High

- B Scale Markers: Depth
- System Messages Display
- Annotation Library: 18 – 21 preset labels, defined by the application
- Customizable annotations: 18 available
- Keyboard for free text on screen
- Comments available in Live scan mode and Freeze mode
- Battery Status
- Biopsy Guide Line and Zone
- Primary Parameter Menu (depends on current mode)
  - B-Mode
    - ATO
    - B-Steer + Needle Recognition
  - M-Mode
    - Speed
  - Color Flow Mode
    - Angle Steer
    - PRF
    - Invert
  - Power Doppler Imaging Mode
    - Power Doppler Gain
    - Image Depth
    - Power Output: Low, Med, High
  - Cine Mode
    - Previous Frame
    - Next Frame
    - Play/Pause

## System Parameters

### System Setup

Diagnostic Categories: Customer focused  
(ex. Anesthesiology)

- Factory Default Application Data
- Languages setup for UI: English, German, French, Italian, Spanish, Portuguese, Simplified Chinese, Swedish, Norwegian, Danish, Finnish, Greek, Russian, Dutch, Japanese
- Languages for Manuals: English, French, Spanish, German, Italian, Portuguese, Japanese, Chinese, Czech, Danish, Dutch, Estonian, Finnish, Greek, Hungarian, Latvian, Lithuanian, Norwegian, Polish, Russian, Slovakian, Swedish, Korean
- Operation Error: Error message display
- Patient Name Format: Last, First
- System Boot Up: < 17 sec
- Transducer Loading: < 5 sec

## Pre-Processing

- Acoustic Power Output
- Color Flow Mode
  - Gain
  - Steer
  - PRF

## Post-Processing

- Auto Tissue Optimize (ATO)
- B-Steer + Needle Recognition

## Imaging Processing and Presentation

### Software Intensive Ultrasound Imaging Platform

- Digital Beamformer
  - Displayed Imaging Depth: Minimum Depth of Field: 0.5 cm (Zoom and transducer dependent); Maximum Depth of Field: 27 cm (transducer dependent)
- Continuous Dynamic Receive Focus/Aperture
- Multi-Frequency/Wideband Technology
- Image Reverse: Right/Left

### Cine Memory/Image Memory

- Standard Cine Memory (120MB)
- Cine Review: Frame-by-frame, Loop replay
- Live Scan Save: Configure save button to save an image during live scanning

### Image Archive/Connectivity

- Image Browser: Archived images from past patient appear, as well as images stored for the current patient
  - Previewing an Image
- Image Management (removable media)
  - Delete Selected Image
  - Review in Full Image Area
- One Print (Recording) UI Keys to approved printer
- Live Scan Save: Configure save button to save an image during live scanning
  - Archiving Format:
    - JPEG
    - MPEG4
- Capture Area:
  - Image Area
  - Full Screen
- Archiving Image Frames:
  - Single: stores single frame while in Freeze mode
  - Multiple: stores image loops while in Live scan mode
  - Patient Information Window, and Search/Create Patient Window
- Column header sorting in Image Review Screen by name, date, ID
- Automatic generation of patient ID

- Search by ID, First Name and Last Name
- DICOM
  - DICOM Store
  - Worklist Query
- Network Quicksave

## Scanning Parameters

### B-Mode

- B Acoustic Output: preset in 3 steps, toggle for Low, Med, High
- Thermal Index: TI
- Gain: preset in 3 steps, toggle for Low, Med, High
- Harmonics: defined by the application
- Depth: 0.5 – 27 cm, preset in 6 or less steps, transducer dependent
- Frequency: defined by the application
- Grey Map: defined by the application
- B-Steer +: depth specific steer angles  
*Optional on the 12L-SC and L8-18i-SC transducers*

### M-Mode

- B Acoustic Output: preset in 3 steps, toggle for Low, Med, High
- Thermal Index: TI
- Gain: preset in 3 steps, toggle for Low, Med, High
- Depth: 0.5 – 27 cm, preset in 4 steps or less, transducer dependent
- Speed: 7 steps
- Frequency: defined by the application

### Color Flow Mode

- Invert: On/Off
- CF Acoustic Output: preset in 3 steps, toggle for Low, Med, High
- PRF: preset in 3 steps, transducer dependent
- Gain: preset in 3 steps, toggle for Low, Med, High
- Steer: preset in 3 steps, toggle for Right, Center, Left
- CF Vertical Size (mm): default preset
- CF Center Depth (mm): default preset
- CF Frequency: defined by the application
- Color Map: preset, defined by the application

### PDI-Mode

- PDI Acoustic Output: preset in 3 steps, toggle for Low, Med, High
- PRF: preset in 3 steps, toggle for Low, Med, High, transducer dependent
- Gain: preset in 3 steps, toggle for Low, Med, High
- Steer: preset in 3 steps, toggle for Right, Center, Left
- PDI Vertical Size (mm): default preset
- PDI Center Depth (mm): default preset

- PDI Frequency: defined by the application
- Color Map: defined by the application

## Measurements and Calculations

- Distance
- Area
- Heart Rate/Time

## Obstetrics Measurements/Calculations

- Abdominal Circumference (AC)
- Amniotic Fluid Index (AFI) [Moore]
- Area
- Antero-PosteroTrunk Diameter and Transverse Trunk Diameter (APTD-TTD)
- Biparietal Diameter (BPD)
- Crown Rump Length (CRL)
- Estimated Fetal Weight (EFW)
- Femur Length (FL)
- Gestational Sac (GS)
- Head Circumference (HC)
- Humerus Length (HL)
- Occipitofrontal Diameter (OFD)
- Cardio-Thoracic Area Ratio (CTAR)
- Fetal Trunk Cross-Sectional Area (FTA)
- Spine Length (SL)
- Multi-Gestational Calculations
  - Up to 3 fetuses
  - Comparison of multiple fetus data on a graph and a worksheet

## OB Worksheet

- Patient Information
  - Fetus Number
  - CUA/AUA Selection
- Measurement Information
  - AFI
  - AC
  - HC
  - BPD
  - FL
- Calculation Information
  - EFW
  - EFW GP (growth percentile)
  - FL/BPD
  - FL/AC
  - HC/AC
  - FL/HC
  - CI (Cephalic Index)
- OB Graphs
  - Fetal Growth Curve Graphs
    - Quad views

- Fetal Growth Bar Graph
  - Ultrasound age and gestational age

## Transducers

- 12L-SC Wide Band Linear Transducer
  - Applications: Peripheral Vascular, Pediatric, Small Organ, Conventional Musculoskeletal, Superficial Musculoskeletal, Thoracic (fluid, Pleural and motion detection), Non vascular (including Nerve Block), Interventional, Abdominal, Neonatal Cephalic, Intraoperative, Vascular Access and Tissue Biopsy
  - Number of Elements: 192
  - FOV (max): 38.4mm
  - B-Mode Imaging Frequency: 8 – 13 MHz, factory preset, non-configurable
  - CFM Imaging Frequency: 4 – 6.67 MHz, factory preset, defined by application
  - Steered Angle: +/- 20
  - Biopsy Guide Available: Multi Angle, In plane, Out of plane
- 3S-SC Wide Band Phased Array Transducer
  - Applications: Abdominal, Fetal/OB, Pediatric, Neonatal Cephalic, Adult Cephalic (transcranial), Cardiac (Adult and Pediatric), Thoracic (fluid, Pleural and motion detection), Tissue Biopsy and Intraoperative
  - Number of Elements: 64
  - FOV: 60° – 90°, factory preset, non-configurable
  - B-Mode Imaging Frequency: 1.5 – 4.0 MHz, factory preset, non-configurable
  - CFM Imaging Frequency: 1.82 – 2.5 MHz, factory preset, defined by application
  - Biopsy Guide Available: Multi Angle
- 4C-SC Wide Band Convex Transducer
  - Applications: Fetal/OB, GYN, Urology, Abdominal, Pediatric, Thoracic (fluid, Pleural and motion detection), Conventional Musculoskeletal, Non vascular (including Nerve Block), Interventional, Intraoperative and Tissue Biopsy
  - Number of Elements: 128
  - Convex Radius: 60 mmR
  - FOV: 35-55°, application dependent
  - B-Mode Imaging Frequency: 2.5 – 6 MHz, factory preset, non-configurable
  - CFM Imaging Frequency: 2.22 – 2.67 MHz, factory preset, non-configurable
  - Biopsy Guide Available: Multi Angle

- L8-18i-SC Wide Band Linear Transducer
  - Applications: Peripheral Vascular, Pediatric, Small Organ, Conventional Musculoskeletal, Superficial Musculoskeletal, Non vascular (including Nerve Block), Thoracic (fluid, Pleural and motion detection), Interventional, Abdominal, Neonatal Cephalic, Intraoperative, Vascular Access and Tissue Biopsy
  - Number of Elements: 168
  - FOV (max): 25.2 mm
  - B-Mode Imaging Frequency: 8 – 18 MHz, factory preset, non-configurable
  - CFM Imaging Frequency: 4.44 – 8.7 MHz, factory preset, defined by application
  - Steered Angle: +/- 20
- E8CS-SC Wide Band Convex Transducer
  - Applications: Fetal/OB, GYN, Urology and Transvaginal
  - Number of Elements: 128
  - Convex Radius: 8.7 mmR
  - FOV: 145°, factory preset, non-configurable
  - B-Mode Imaging Frequency: 3.48 – 9.0 MHz, factory preset, non-configurable
  - CFM Imaging Frequency: 4.0 – 5.0 MHz, factory preset, non-configurable
- EN/IEC 60601-2-37 Particular requirements for the safety of ultrasonic medical diagnostic and monitoring equipment
- ISO 10993 Biological evaluation of medical devices
- AIUM/NEMA UD3 Acoustic output display (MI, TIS, TIB, TIC)
- Compliant with DIRECTIVE 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE) requirement.

Safety Type: Class I

EMC Type: Class A Group 1

## Inputs and Outputs

- Outputs
  - DVI-D interface on docking station and docking cart
- Connectors
  - USB interface on docking station and docking cart
  - Docking Connector
  - Removable SD card
  - Wireless LAN
  - Wired LAN

## Safety Conformance

### Venue 40 is:

Listed to UL 60601-1 by a Nationally Recognized Test Lab

- Certified to CAN/CSA-C 22.2 No. 601.1 by an SCC accredited Test Lab
- CE Marked to Council Directive 93/42/EEC on Medical Devices
- Conforms to the following standards for safety:
  - EN/IEC 60601-1 Electrical medical equipment
  - EN/IEC 60601-1-1 Electrical medical equipment
  - EN/IEC 60601-1-2 Electromagnetic compatibility
  - EN/IEC 60601-1-4 Programmable medical systems
  - EN/IEC 60601-1-6 General requirements for safety – Collateral Standard: Usability
  - EN/IEC 61157 Declaration of acoustic output

## About GE Healthcare

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About healthymagination GE's "healthymagination" is about better health for more people. For more information about healthymagination, visit [www.ge.com/healthymagination](http://www.ge.com/healthymagination).



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