

UP600

Professional &
Reliable



Advanced ergonomic
imaging system with
consistency, resolution,
penetration and sensitivity.

Surgical Table
Surgical Light
Digital OR Solution
Ultrasound System

Benq
Because it matters

System Feature

- ◆ Display
 - 15" Flat panel wide view angle LCD display
 - 1024 x 768 pixels Resolution
 - User selectable screen save time-out period (1-60 minutes) for energy saving
- ◆ CPU: Intel dual core 2.5GHz
- ◆ Memory: 4GB DDR3 RAM
- ◆ Storage:
 - Internal 320GB hard drive
 - Image storage capacity up to 90,000 images
- ◆ All-digital broadband beamformer 4,096 digitally-processed channels. (Channel of engine: 128 channels)
- ◆ Frequency Range 2 to 16 MHz
- ◆ Audio Speakers: Integrated high performance stereo audio speakers
- ◆ Transducer Port
 - Up to two active universal transducer ports (all transducer support)
 - Transducer holder for transducer storage and easy access
 - Transducer holder can be removed for cleaning
- ◆ Physiological Interface
 - Standard 3-lead ECG interface (Optional)
 - R-wave trigger function
 - Heart-rate display
- ◆ Miscellaneous: Foot switch control - Freeze / Print (Optional)

Imaging Format

- 2D linear
- 2D curved
- 2D sector
- Dual 2D
- Panoramic

Imaging Modes

- 2D grayscale imaging with compounding technologies
- M mode / Anatomical M mode
- Tissue Harmonic Imaging (THI)
- Color Doppler
- Power Doppler
- High PRF pulsed wave (PW) Doppler
- High PRF Continuous wave (CW) Doppler
- Tissue Doppler Image (TDI)
- Duplex 2D/M mode
- Duplex 2D/PW Doppler
- Directional DPI (Directional Doppler Power Image)
- Triplex 2D, Color Doppler, PW Doppler
- Triplex 2D, Power Doppler, PW Doppler
- Dual image with one image active while another image frozen
- Color compare mode
- Zoom image
- Panoramic Image

Applications

- Abdominal
- Cardiology
- Gynecology
- Obstetric
- Pediatrics
- Small Parts
- Musculoskeletal
- Vascular

Physical Dimension

- Dimensions: 361x363x189mm(Close)
361x363x480mm(Open)
- Weight: 9kg without peripheral devices

Advanced Imaging Controls

- ◆ 2 D Grayscale Imaging
 - 255-level 2D gain adjustment
 - 8-segment TGC gain adjustment (pre-defined TGC curves optimized for consistently excellent imaging with minimal adjustment)
 - Imaging depth to 24cm, Depth adjustment depending on selected exam and transducer
 - From 1 to 12 transmit focal zones depending selected depth
 - 11 focal spans adjustment depending on focal position and focal number
 - Up to 280dB dynamic range (DYN) adjustment
 - 7 levels gray scale curve (GSC) adjustment
 - 7 levels persistent adjustment to produce smoother image
 - 3 levels line density selection
 - Broadband imaging with 3 frequency tuning range
 - Sector size and position control to adjust region of interest or increase frame rate (works for LA, CLA and PA)
 - 2D refresh to enable automatic update of 2-D images in real-time PW / CW and M duplex modes
 - 1400 m/s to 1700 m/s tissue acoustic characteristics adjustment
 - 13 chroma map combinations
 - Compounding imaging: Off, 1 (frequency), 2 (spatial)
 - Image orientation changing: Up/Down, Left/Right
 - 15-level user-selectable adaptive Image Fusion for improving image quality through boundary enhancement, image smoothing and system optimization
 - 5-level "Quality Scan" imaging for speckle reduction and contrast
 - From 1% to 100% acoustic output power adjustment
- Trapezoidal imaging to increase 5 degrees FOV for left and right sides (for linear array transducer only)
- Cine loop image review
- Dual imaging view
- Tissue Harmonic Imaging (THI) for all transducer
- Zoom image
- 256 level (8 bits) gray level image display
- Up to 500 frames/sec (depend on depth, field of view, line density)

Imaging Modes (detail)

- ◆ 2D
 - Available with all transducer
 - Image orientation changing: Up/Down, Left/Right
 - 255-level 2D gain adjustment
 - 8-segment TGC gain adjustment
 - Support 1 to 12 transmit focal zones depending selected depth
 - 11 focal spans depending on focal position and focal number
 - Dynamic range (DYN) adjustment
 - 7 levels gray scale curve (GSC) adjustment
 - 7 levels persistent adjustment
 - 3 levels line density selection
 - Broadband imaging with 3 frequency tuning range
 - Adjustable sector size and position control
 - 1400 m/s to 1700 m/s tissue acoustic characteristics adjustment
 - Chroma map
 - Gray map
 - Frequency and spatial compounding imaging
 - Adaptive Image Fusion
 - "Quality Scan" imaging for speckle reduction and contrast enhancement
 - Trapezoidal imaging
 - Dual imaging view
 - Tissue Harmonic Imaging (THI) for all transducer

- Image zooming: available to changing position/size of Zoom Region Of Interest (ZROI) within active image
- Support frame rate up to 500 frames/sec (depend on depth, field of view, line density)
- ◆ M mode
 - Available with all transducer
 - M lines position adjustment
 - Up to 3 M lines available (only for B+M duplex mode)
 - M Gain adjustment
 - Sweep speed adjustment
 - From 30% to 100% M Power selection
 - 5 levels chroma color map
 - Average and Peak methods for detection processing for the M trace display
 - Video invert to swap colors on the M trace display
 - Support 2D/M-mode display format for V1/3, V1/2, V2/3, H1/2, H1/4
 - Cine loop M trace review
 - Time marker
 - 256 level (8 bits) gray level image display
 - M compare dual display
- ◆ Color Doppler
 - Available with all transducer
 - Available to changing position/size of color flow box
 - 256-level color gain adjustment
 - 0.5-8kHz Pulse Repetition Frequency (PRF) adjustment
 - 4 levels color persistent adjustment
 - 30 selectable baseline positions
 - Able to change image orientation for left/right and up/down
 - 10 levels of color map adjustment
 - Directional DPI
 - 25-750Hz Wall filter adjustment (transducer dependent)
 - 256-level adjustable gray scale display priority between Color and B modes (B-Reject)
 - 4-level line density of color flow box adjustment
- 5-level color Doppler transmit frequency adjustment
- From 0% to 100% color Doppler output power adjustment
- Flow color invert
- 2D / Color side-by-side dual display
- Available to changing position/size of Zoom Region Of Interest (ZROI) within active image
- Simultaneous mode during PW mode
- 5 levels of steer angle (up to 20 degree) for linear array
- ◆ Power Doppler
 - Available with all transducer
 - Available to changing position/size of color flow box
 - 256-level color gain adjustment
 - 0.5-8kHz Pulse Repetition Frequency (PRF) adjustment
 - 4 levels color persistent adjustment
 - Able to change image orientation for left/right and up/down
 - 3 levels of color map adjustment for Power Doppler
 - 3 levels of color map adjustment for Directional Power Doppler
 - Directional DPI
 - 25-750Hz Wall filter adjustment (transducer dependent)
 - 256-level adjustable gray scale display priority between Color and B modes (B-Reject)
 - 4-level line density of color flow box adjustment
 - 5-level color Doppler transmit frequency adjustment
 - From 0% to 100% color Doppler output power adjustment
 - 2D / Power side-by-side dual display
 - Available to changing position/size of Zoom Region Of Interest (ZROI) within active image
 - Simultaneous mode during PW mode
 - 5 levels of steer angle (up to 20 degree) for linear array

- ◆ TDI
 - Available with Phased Array transducers
 - Available to changing position/size of color flow box
 - 0-255 level TDI gain adjustment
 - 0.5-4kHz Pulse Repetition Frequency (PRF) adjustment
 - 5 levels of color persistent adjustment
 - 30 selectable baseline positions
 - Image orientation changing: Up/Down, Left/Right
 - 4 levels of TDI color map adjustment
 - 50-750Hz wall filter adjustment
 - 256-level adjustable gray scale display priority between TDI and B modes (B-Reject)
 - 4-level line density of color flow box adjustment
 - 5-level TDI transmit frequency adjustment
 - 0-100% TDI output power adjustment
 - Flow color invert
 - 2D / TDI side-by-side dual display
 - Available to changing position/size of Zoom Region Of Interest (ZROI) within active image
 - Simultaneous mode during PW mode
- ◆ Pulsed wave (PW) Doppler
 - Available with all transducer
 - Adjustable range gate size from 0.75 mm to 20.5 mm
 - 0-255 level Spectral Doppler gain adjustment
 - 1-16kHz Pulse Repetition Frequency (PRF) adjustment
 - Flow invert to invert the spectral display in relation to the flow direction
 - From 30% to 100% PW output power adjustment
 - 50-750Hz Wall filter adjustment
 - 5-level spectral Doppler frequency adjustment
 - From 2 to 8 seconds of sweep speed adjustment
 - 10 levels dynamic range adjustment
 - 5 chroma color maps
- Video Invert to invert PW Spectral display in relation to brightness
- 5-level angle of the Spectral Doppler cursor adjustment (only for linear array transducers)
- 17 levels of baseline adjustment
- Up to 72 degree angle correction to adjust the Flow Direction cursor to align with the vessel axis
- Support display format for V1/3, V1/2, V2/3, H1/2, H1/4
- Duplex 2D and PW Doppler
- Triplex 2D, Color Doppler and PW Doppler
- Triplex 2D, Power Doppler and PW Doppler
- High-PRF capability in all modes including Duplex and Triplex
- Velocity scale range from 10cm/s to 600 cm/s (transducer dependent)
- Display annotations including Doppler mode, wall filter, gain, frequency, power, dynamic range, size of sample volume, inverted information, angle correction, gray map, velocity with cm/s
- Spectral cine review
- 256 level (8 bits) gray level image display
- 2D / PW side-by-side dual display
- ◆ Continuous wave (CW) Doppler
 - Available with Phased Array transducer
 - 0-255 level Spectral Doppler gain adjustment
 - 1-24kHz Pulse Repetition Frequency (PRF) adjustment
 - Flow invert to invert the spectral display in relation to the flow direction
 - From 30% to 100% CW output power adjustment
 - 25-185Hz Wall filter adjustment
 - From 2 to 8 seconds of sweep speed adjustment
 - 6 levels of dynamic range adjustment
 - 5 chroma color maps

- Video Invert to invert PW Spectral display in relation to brightness
- 17 levels of baseline adjustment
- Up to 72 degree angle correction to adjust the Flow Direction cursor to align with the vessel axis
- Support display format for V1/3, V1/2, V2/3, H1/2, H1/4
- High PRF Continuous wave (CW) Doppler
- Velocity scale range from 10cm/s to 1500 cm/s
- Display annotations including Doppler mode, wall filter, gain, frequency, power, dynamic range, inverted information, angle correction, gray map, velocity with cm/s
- Spectral cine review
- 256 level (8 bits) gray level image display
- 2D / CW side-by-side dual display
- Volume knob
- PATIENT key to access the Patient Information Window
- TUNING key to optimize the image quality during real time scanning
- FLOW INVERT key to inverts the direction of the blood flow
- END EXAM key to close the current exam
- MENU key to display/close System Menu or Soft Menu
- Time Gain Compensation (TGC) sliders (8 sliders)
- Annotation button
- Body mark button
- Review control to display the review list and create report
- Freeze control
- Angel control knob
- Dual display control
- Arrow button
- U/D button
- L/R button
- Delete button to remove the most recently inserted annotations or arrows
- Clear button to clear all measurements and calculations
- Mode control buttons: B, M, THI, Color Doppler, Power Doppler, TDI, PW,
- Set button to confirm a selection
- Zoom button
- Calculation buttons: Distance, Trace, Ellipse, Calculation Menu
- Update button to start/stop PW, CW or M mode trace
- Trackball
- Save button to save frozen image or clip
- Print button

Workflow

- ◆ Stress Echo (Optional)
- ◆ Display Annotation
 - Transducer Type
 - Frequency
 - TGC Curve
 - Grayscale (GSC)
 - Dynamic range (DYN)
 - Gain
 - Frame rate
 - Persistent
 - Image fusion
 - Depth
 - Transmit focal position
- ◆ Control Panel and User Interface
 - Intuitive operating principle for productivity
 - B and Doppler gain
 - Depth switch
 - Focus switch
 - PRF switch
 - Steer switch
 - Baseline switch
- ◆ Cineloop Review
 - Start/End/Play/Stop control
 - Loop speed adjustment
 - Frame-by-frame cine loop review
 - Panoramic image
 - Grayscale/Chroma/Orientation change in cineloop review

- ◆ Image Save and Data Exchange
 - Clip format support: AVI, MP4
 - Still image format support: JPG, BMP, TIF
 - One-key save feature for quick image save
- ◆ Image Presentation
 - Up/Down and Left/Right
 - Imaging Depth to 24cm
 - Duplex image format for V1/3, V1/2, V2/3, H1/2, H1/4
- ◆ Connectivity
 - DICOM store of still frame or cineloop image
 - DICOM patient worklist
 - USB device
 - 2 USB 2.0 Ports
 - Export PC and DICOM format image data to USB drive
 - Improve PC and DICOM format image data from USB drive
 - Network link
 - Type RJ-45 Gigabit Ethernet port
 - Static IP address or DHCP
 - VGA I/O
- Time measurement (Up to 10 measurement pairs)
- Slope measurement (Up to 10 measurement pairs)
- Heart rate measurement (Up to 10 measurement pairs)
- ◆ Doppler General Measurements
 - Basic Doppler Measurements: Velocity Time Integral (VTI), Pulsatility Index (PI), Resistive Index (RI), Pressure Gradient (PG), Acceleration Time (AT), End Diastolic Velocity (EDV) and Heart Rate (HR)
 - Trace measurement methods: Auto, Semi-auto, manual
 - Flow velocity measurement (Up to 6 measurement pairs)
 - Acceleration measurement (Up to 6 measurement pairs)
 - Time measurement (Up to 10 measurement pairs)
 - Heart rate measurement (Up to 10 measurement pairs)
- ◆ Cardiac Measurement Package
 - 2D Mode Left Ventricular function measurement
 - M-Mode Left Ventricular function measurement (Up to 2 measurement pairs)
 - M-Mode Mitral Valve measurement (Up to 10 measurement pairs)
 - M-Mode Aortic Valve measurement (Up to 10 measurement pairs)
 - Doppler mode Mitral Valve measurement (Up to 2 measurement pairs)
 - Doppler mode Aortic Valve measurement (Up to 2 measurement pairs)
 - Doppler mode Tricuspid Valve measurement (Up to 2 measurement pairs)
 - Pulmonary Valve measurement (Up to 2 measurement pairs)

Measurement and Analysis

- ◆ Measurement Tools and General Description
 - Distance measurement (Up to 19 distance measurement pairs)
 - Circumference/area by ellipse (Up to 6 distance measurement pairs)
 - Trace measurement (Up to 6 trace measurement pairs)
 - Volume measurement (Up to 4 measurement pairs)
 - Volume L x W x H measurement (Up to 6 measurement pairs)
 - Angle measurement (Up to 6 measurement pairs)
- ◆ M-mode Measurements
 - Distance measurement (Up to 10 measurement pairs)

- TEI Index measurement (Up to 10 measurement pairs)
- Proximal Isovelocity Surface Area (PISA) measurement (Up to 16 measurement pairs)
- ◆ OB/GYN Measurement Package
 - Measurement up to 4 babies
 - OB 2D measurement items: GS, CRL, BPD, HC, AC, FL, CER, OFD, Fibula, Foot, AA, APAD, HA, Humerus, Kidney, APTD, OOD, Radius, TAD, TC, THD, Tibia, TTD, Ulna, Umb VD, NT, LV, UT L, UT H, UT W, CX, EN-T, Rt OV L, Rt OV H, Rt OV W, Lt OV L, Lt OV H, Lt OV W, AFI D1, AFI D2, AFI D3, AFI D4
 - OB Doppler mode measurement items: Umb A, MCA, Rt Uterin A, Lt Uterin A, Fetal AO (Up to 2 measurement pairs)
 - Calculation included: menstrual age, estimated fetal age, estimated date of delivery, estimated fetal weight, average ultrasound age, cephalic index,
- ◆ Vascular Measurement Package
 - 2D: area reduction % for ICA, ECA, CCA, INT IL, EXT IL, ILIAC, CFA, PROFUN, LT CIR, SFA, POP,ATA, PERON, PTA, DR PED - left and right (Up to 6 measurement pairs)
 - 2D: diameter reduction % for ICA, ECA, CCA, INT IL, EXT IL, ILIAC, CFA, PROFUN, LT CIR, SFA, POP,ATA, PERON, PTA, DR PED – left and right (Up to 6 measurement pairs)
 - Doppler: systolic / diastolic ratio for INT IL, EXT IL, ILIAC, CFA, PROFUN, LT CIR, SFA, POP,ATA, PTA - left and right (Up to 2 measurement pairs)
 - Doppler: pulsatility index for INT IL, EXT IL, ILIAC, CFA, PROFUN, LT CIR, SFA, POP,ATA, PERON, PTA, DR PED - left and right (Up to 2 measurement pairs)
 - Doppler: resistive index for INT IL, EXT IL, ILIAC, CFA, PROFUN, LT CIR, SFA, POP,ATA, PERON, PTA, DR PED - left and right (Up to 2 measurement pairs)
- Methods for intima media thickness (IMT) measurement: auto tracing, manual tracing
- ◆ Small Parts Measurement Package
 - Left or right thyroid volume measurement (Up to 6 measurement pairs)
 - Left or right superior parathyroid volume measurement (Up to 6 measurement pairs)

Language Support

- On-screen text: English
- Operator's Manual / Quick Start Guide: English and Traditional Chinese

Printer

- Support Thermal Printer with S-video interface
- Support Thermal Printer with USB interface
- Support PC-Compatible Printer with USB interface (Optional)

Peripheral Devices

- Suitcase (Optional)
- Cart (Optional)

Electrical Power





- Voltage: 100 - 240 Volts AC
- Frequency: 50/60 Hz
- Power consumption: 297VA max.

Environmental Requirements

- Temperature: 10 degree C - 40 degree C
- Relative Humidity: 30% - 75% no condensation
- Atmosphere Pressure: 700 hPa - 1060 hPa

Transducers List and Picture

- Electronic switching of up to two imaging transducers

| Model | Picture | Transducer Type | Elements | Frequency | Application |
|-------|---|--------------------|----------|------------|--|
| C52 |  | Curve Linear Array | 128 | 2 ~ 5 MHz | <ul style="list-style-type: none"> •Fetal •Abdominal •Ob/GYN |
| LI15 |  | Linear Array | 128 | 5 ~ 16 MHz | <ul style="list-style-type: none"> •Pediatric •Breast •Thyroid •Testes •MSK(Musculoskeletal) •Vascular |
| P42 |  | Phase Array | 80 | 2 ~ 4 MHz | <ul style="list-style-type: none"> •Cardiac (Adult / Pediatric) •TCD •Abdominal |
| E94 |  | Micro Convex Array | 128 | 4 ~ 9MHz | <ul style="list-style-type: none"> •OB/GYN •Urology |

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