

TECHNICAL SPECIFICATION

Version 1.0



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ECUBE 9

SYSTEM SPECIFICATION

Featuring ALPINION's core imaging technologies, the E-CUBE 9 delivers user superior image quality without case dependency.



ERGONOMIC DESIGN
EFFICIENT WORKFLOW
EXTREME ACCURACY



01 SYSTEM INTRODUCTION

PHYSICAL DIMENSIONS

- Weight: 90kg
- Height: 1340/1570 mm
- Width: 590mm
- Depth: 845mm

MONITOR

- 17" Wide LCD
- Brightness, contrast adjustment (OSD button)
- IPS (In plane switching) technology
- Monitor tilt
 - > 10 degree up, 90 degree down
 - > ±90 degree swivel
- Integrated stereo speakers
- Display size: 1366 X 768
- Recording area: 880 X 660

ARTICULATING MONITOR ARM (ERGONOMIC VERSION)

- Adjustable Tilt/Swivel, Rotate (±180 degree), Up/down (130mm)
- Safety space for protecting of hands during arm folding operation

TRANSDUCER CONNECTOR

- 3 active Transducer ports (high density array port)
- Anti-dust connector door

CONTROL PANEL

- Back-lit Alphanumeric keyboard
- Alphanumeric QWERTY keyboard for multi-language (English, German, French, Spanish, Italian and Portuguese)
- 8 steps TGC(Time Gain Compensation) keys
- 5 Soft keys
- 3 User define keys
- 14 Power preset keys
- On/Off task light and back-lit illumination of control panel
- Height adjustments
 - > Up/down: 100mm
 - > Swivel: ±25 degree

CONSOLE DESIGN AND USER INTERFACE

- 3 active Transducer ports
- Integrated HDD (Capacity: 500GB)
- Integrated DVD-R/W Drive
- On-board Storage for Peripherals
 - > B/W Printer, Color Printer, DVD recorder
- Control panel lift mechanism
- 5 Transducer holders, detachable for cleaning and washing
- Air Filters
- Integrated Gel warmer
 - > 3 temperature levels
- Front Handle
- Rear Handle
- Wheel- lock Mechanism
 - > Front -wheel : Bi- Brake system (Direction lock & Total lock)
 - > Back-wheel : Total Lock
- 5 USB ports : Front side (1 ea) , Back side (4 ea)
- Thumbnail images on-screen
- On-line Help key

HARD DISK DRIVE

- Internal 300 GB hard disk drive for patient database management

ELECTRICAL POWER

- Voltage: 100 - 120V, 220 - 240V
- Frequency: 50/60Hz
- Power: Max. 750 VA with Built-in and On-Board Peripherals

SYSTEM ON/OFF AND RESPONSE TIME

- Boot up time: 90 sec
- Shutdown time: 30 sec
- Response time: 0.5 sec (B-Mode --> Duplex Mode), 1.0 sec (B-Mode --> Triplex Mode)

LANGUAGE SUPPORT

- English
- German
- French
- Spanish
- Italian
- Portuguese

02 SYSTEM OVERVIEW

APPLICATIONS

- Abdominal
- Obstetrical
- Gynecological
- Cardiac
- Vascular
- Urological
- Small Parts and Superficial
- Pediatric and Neonatal
- Transcranial
- Emergency Medicine

OPERATING MODES

- B-Mode
- M-Mode
- Color Flow-Mode
- Power Doppler Mode
- Directional Power Doppler Mode
- PW Doppler Mode with High PRF
- 3D/4D Volume Mode
- SRI
- full SRI
- Spatial compounding
- Frequency compounding

DISPLAY MODES

- 2D (Fundamental and Harmonic)
- M mode
- Duplex mode
 - > PW Doppler Mode (B/PW)
 - > Color Flow Mode (B/CFM)
 - > Power Doppler Mode (B/ PDI)
 - > Directional Power Doppler Mode
- Real Time Triplex Mode (B + CFM or PDI / PW or CW)
- 3D/4D Mode
- Zoom : Write/ Read/Pan (Write zoom up to 8x)
- Colorized Image(B/M/PW)
- Virtual Convex
 - > Left/Right steer

- > Trapezoid Imaging
- Full Screen
- Quad Screen Display
- Time Line Display
 - > Independent Dual B/PW Display
 - > Display Formats
 - Vertical : 1/2, 1/3, 2/3
 - Horizontal : 1/2, 1/3, 2/3
 - > Full : Time Line Only (PW / M)
- Maximum Depth : 30cm with SC1-6/ C1-6/ SVC1-6/ P1-5

DISPLAY ANNOTATION

- Institution/Hospital Name: 25 Characters
- Date: 3 types selectable
 - > YYYY/MM/DD, MM/DD/YYYY, DD/MM/YYYY
- Time: 2 types selectable
 - > 24 hours, 12 hours
- Operator Identification
- Patient Name: First, last, middle name
- Patient Identification: 64 Characters
- Gestational Age form
 - > LMP/EDC/GA
- Acoustic power output
 - > MI (Mechanical Index)
 - > TIS (Thermal Index Soft Tissue)
 - > TIC (Thermal Index Cranial(Bone))
 - > TIB (Thermal Index Bone)
- System Status (real-time or frozen)
- Transducer Directional Marker
- Image Preview: Thumbnails
- Gray/Color Bar
- Cine Gauge
- Measurement Summary Window
- Measurement Results Window: presettable display location
- Transducer Type
- Application Name
- Imaging Parameters by Mode (currents mode highlighted)
 - > B/M Mode
 - Imaging Frequency
 - Gain
 - Persist
 - Rejection
 - Edge Enhancement
 - Gray Map
 - Dynamic Range
 - Image Depth
 - Line Density
 - Power output
 - > Color Flow Mode
 - Doppler Frequency
 - Color Gain
 - Persist

- Edge Enhancement
- Gray Map
- Dynamic Range
- PRF
- Wall Filter
- Threshold
- Spatial Filter
- Ensemble
- Line Density
- Color Power output
- Image Depth
- > PW Mode
 - Doppler Frequency
 - Doppler Gain
 - Doppler Power
 - Reject
 - Dynamic Range
 - PRF
 - Sample Volume Width
 - Wall Filter
 - Angle Correction
- TGC Curve: On/Off
- Body Pattern: 134 types
- B Scale Markers
- M Scale Markers
 - > Time/Depth
- Caps Lock: On/Off
- System Message Display
- Trackball Functionality Status Display
- Heart Rate
- Biopsy Guide Line and Zone
- Focal Zone mark

ANNOTATION PACKAGE

- Arrow
 - > Arrow size: 1,2,3,4
 - > Rotate Arrow
- Body pattern
- Text
 - > Text size: small, medium, large

2D IMAGE PROCESSING

B MODE

- Gain: 0-90 dB (1dB increments)
- Transmit Frequency: up to 7 selectable transmit frequencies, THI is included
- Transmit Focus position: 30 types position
- Multi Focus: Max 8
- Line Density: 6 steps
- Dynamic Range: Up to 170 dB Processing Dynamic Range
- Persist: 5 steps
- Reject: 10 steps

- 10 user-selectable gray maps
- 10 user-selectable color maps
- SRI(Speckle Reduction Imaging): On/Off
- Full SRI
- Spatial Compounding: 3 steps
- Frequency Compounding: 3 steps
- Multi Beam
- Transmit Power: 100% (2% steps)

M MODE

- MD Cursor
- M Sweep Speed: 6 steps
- M Invert
- 10 user-selectable M-mode Gray maps
- 10 user-selectable M-mode Color maps
- M Gain: 0-90 dB (1dB increments)
- M Frequency: 3 selectable frequencies
- M Transmit Power: 100% (2% steps)
- Dynamic Range: 30-150 Db (3dB)
- Reject: 10 steps

PW MODE

- PW Transmit Power: 100% (2% steps)
- PW Transmit Frequency: 3 selectable frequencies
- SV Gate Width: 13 Steps (0.7,1,2,3,4,5,6,7,8,9,10,11 and 15mm)
- PW Gain: 0-98 dB (1dB increments)
- PW Sweep Speed: 6 steps
- Invert: On/Off
- Duplex: On/Off
- Angle Correct: $\pm 89^\circ$, (1° step)
- Base Line: 16 steps
- Wall Filter: 7 steps
- Maximum/Minimum Velocity Scales
 - > Max: 6.9m/sec (Angle/Transducer dependent)
 - > Min: 10cm/sec
- PW Scale: khz, m/s, cm/s
- PRF: 300Hz-2500Hz (@30cm), 300-7500 Hz (@10cm)
- HPRF: 3000Hz-18000Hz (@30cm), 8000-18000Hz (@10cm)
- Dynamic Range: 30-120dB (2dB steps)
- Steered Linear 0°-15°
- 10 user selectable gray maps
- 10 user selectable color maps
- Reject: 10 steps
- Time Resolution: 7 steps
- Update: Frozen, Live, 2, 3, 4, 8 and 16 sec

CW MODE

- Tx Frequency: 2 selectable frequencies
- Wall Filter: 0-9 steps
- CW Sweep Speed: 6 steps
- Doppler Color Maps: 8 steps

- PRF: Max. +/- 40kHz(+/- 15m/sec), Min (35cm/sec)

COLOR FLOW MODE

- CF Transmit Power: 100% (2% steps)
- CF Transmit Focus position: 30 types position
- Gain: 1-40dB (0.5 dB)
- CF Wall Filter: 8steps (8Hz-3000Hz)
- PRF: 300Hz-7000Hz
- CF Transmit Frequency: 3 selectable frequencies
- Invert: On/Off
- CF Display Mode: Veolocity, Variance, Power (V/V-T/V-P/P-T/T/P)
- CF Scale: kHz, cm/s, m/s
- Base Line: 40 steps
- Ensemble: 6 steps
- Line Density: 0-2 (1 steps)
- 10 user selectable color maps
- Threshold 0-100 %
- CF Axial Resolution: 8 steps
- CF Temporal Averaging: 12 steps
- CF Steering: -15°, -10°, -5°, +5°, +10°, +15°
- Triplex Mode: 2D+PW+CF, 2D+PW+PD

POWER DOPPLER MODE

- PDI Transmit Power: 100% (2%)
- PDI Gain: 40 dB
- Wall Filter: 7 steps
- PDI Adaptive Wall Filter: On/Off (Auto Wall Filter)
- PDI PRF: 100Hz-1100Hz
- PDI Transmit Frequency: 3 selectable frequiecies
- Line Density: 0-2 (1 step)
- 10 User selectable color maps
- PDI Temporal Averaging: 12 steps
- PDI Steering: -15°, -10°, -5°, +5°, +10°, +15°
- Triplex Mode: 2D+PW+PD
- Multi Beam: Dual Beam

VOLUME MODE

- Rendering mode
 - > Surface (Gradient/Texture)
 - > Surface Smooth Mode (Gradient/Texture with filter)
 - > Light Mode
 - > MIN IP (Intensity Projection)
 - > MAX IP (Intensity Projection)
 - > X-Ray
- Viewing volume data
 - > 3D/4D (Live and Review)
- MPR + VR
- Volume CT View
- Cube View
- Slices
 - > Multi slice view

- Standard
- Editing volume
 - > Inside Contour/Box
- Annotating volume data
 - > Comment
 - > Arrow
 - > body pattern
- Measurements
 - > Distance
 - > Area
 - > Angle
 - > Volume
 - > COVOL
- Navigation
- Cine
 - > 3D Rotation
 - > 4D Cine Loop

CINELOOP REIEW

- 3,600 Frames (180 sec) with standard CINE memory
- Cine replay speed: 200%, 100%, 50%, 25% (4 types)
- Cine gauge and cine image number display
- Cine reiew: Frame by frame, Loop
- Start and End Frame Selections for Loop Playback
- Measurement and calculation capability

IMAGE ARCHIVE/CONNECTIVITY

- Preview: displays thumbnail images of the acquired data for the current exam
- E-View: An enlarged preview of the image
- Recalling Images form the Preview
- Image Management
 - > Select All/Unselect All
 - > Permanent Store
- Hard disk drive Image Storage: Min 300GB
- Ethernet Network Connection
- Archiving Format:
 - > DICOM with ultrasound raw data
 - > Standard DICOM
 - > Sencondary Capture
- 5 USB ports
- DVD/CD write and read capabilities
- Export Image Format
 - > Bitmap
 - > JPEG
 - > DICOM
 - > WMV
- DICOM 3.0 Connectivity
- DICOM Structured Report
- DICOM Verification
- DICOM Storage
- DICOM Storage Commitment

- Modality Worklist

03 MEASUREMENTS/CALCULATIONS

GENERAL MEASUREMENTS/CALCULATIONS

B MODE

- Distance
- Diameter
- Circumference
- Area
- % Stenosis
- Volume
- Ratio
- Angle
- Heart Rate

PW MODE

- Velocity
- PI (Pulsatility Index)
- RI (Resistance Index)
- S/D Ratio (Systole/Diastole Ratio)
- A/B Ratio
- PG Mean (Pressure Gradient Mean)
- PG Max (Pressure Gradient Max.)
- Acceleration
- HR (Heart Rate)
- Time (Velocity Time)

M MODE

- Distance
- HR (Heart Rate)
- Slope
- Time
- Ratio (% Distance)

B/PW MODE

- Auto & Manual Trace
 - > PS (Peak Systole)
 - > ED (End Diastole)
 - > PD (Peak Diastole)
 - > PS/ED (Peak Systole/End Diastole)
 - > PI (Pulsatility Index)
 - > RI (Resistance Index)
 - > TAmx (Time avg. max. Velocity)
 - > TAmx (Time avg. mean. Velocity)
 - > VTI (Velocity Time Integral)
 - > HR (Heart Rate)

OBSTETRICS MEASUREMENTS/CALCULATIONS

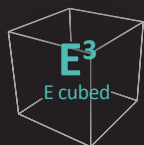
- Abdominal Circumference (AC)
- Anterior Posterior Thoracic Diameter (APTD)
- Binocular Distance (BOD)
- Biparietal Diameter (BPD)
- Cerebellum (CEREB)
- Clavicle (CLAV)
- Crown Rump Length (CRL)
- Estimated Fetal Weight (EFW)
- Fibula (FIB)
- Femur Length (FL)
- Fetal Trunk Area (FTA)
- Gestational Sac (GS)
- Head Circumference (HC)
- Humerus Length (HL)
- Length of Vertebra (LV)
- Middle Abdomen Diameter (MAD)
- Occipital Frontal Diameter (OFD)
- Radius (RAD)
- Transverse Abdominal Diameter (TAD)
- Transverse Cerebella Diameter (TCD)
- Tibia Length (TIB)
- Transverse Thoracic Diameter (TTD)
- Ulna Length (ULNA)
- Multi-Gestational Calculation
 - > Up to 4 fetuses comparison of multiple fetuses data on a graph and a worksheet
- OB Worksheet
- Patient Information
 - > Fetus Number
 - > CUA/AUA Selection
 - > Fetus Position
 - > Placenta
- Measurement Information

REPORT PACKAGE

- Abdominal
- Obstetrical
- Gynecological
- Cardiac
- Vascular
- Emergency Medicine
- Urological
- Small Parts and Superficial

E-CUBE 9

TRANSDUCER SPECIFICATION



ERGONOMIC DESIGN
EFFICIENT WORKFLOW
EXTREME ACCURACY



SC1-6

- Applications: Abdomen, OB/GYN, Fetal Echo, Pediatric Echo, Peripheral Vascular
- Transducer Type: Convex array (Premium*)
- Frequency Bandwidth: 1.0 - 6.0 MHz
- Convex Radius (mm): 60 mm
- FOV: 60°
- Biopsy kit: Available

* note: Premium means single crystal as piezoelectric material.

SVC1-6

- Applications: OB/GYN, Fetal Echo, Abdomen, Pediatric Echo, Peripheral Vascular
- Transducer Type: Volume Convex array (Premium*)
- Frequency Bandwidth: 1.0 - 6.0 MHz
- Convex Radius (mm): 38.6 mm
- FOV: 75°
- Biopsy kit: N/A

* note: Premium means single crystal as piezoelectric material.

C1-6

- Applications: Abdomen, OB/GYN, Fetal Echo, Pediatric Echo, Peripheral Vascular
- Transducer Type: Convex array
- Frequency Bandwidth: 1.0 - 6.0 MHz
- Convex Radius (mm): 60 mm
- FOV: 60°
- Biopsy kit: Available

E3-10

- Applications: OB/GYN, Urology, Prostate
- Transducer Type: Transvaginal
- Frequency Bandwidth: 3.0 - 10.0 MHz
- Convex Radius (mm): 10 mm

- FOV: 150°
- Biopsy kit: Available

L3-12

- Applications: Breast, Thyroid, Musculoskeletal, Peripheral Vascular, Testicle
- Transducer Type: Linear array
- Frequency Bandwidth: 3.0 - 13.0 MHz
- Convex Radius (mm): 40 mm
- FOV: 40°
- Biopsy kit: Available

L3-12H*

- Applications: Breast, Thyroid, Musculoskeletal, Peripheral Vascular, Testicle
- Transducer Type: Linear array
- Frequency Bandwidth: 3.0 - 13.0 MHz
- Convex Radius (mm): 40 mm
- FOV: 40°
- Biopsy kit: Available

(note: H* means high density transducer)

SP1-5

- Applications: Deep Abdomen, Adult Echo, Pediatric Echo, Transcranial
- Transducer Type: Phased array (Premium*)
- Frequency Bandwidth: 1.0 - 5.0 MHz
- FOV: 90°
- Biopsy kit: N/A

* note: Premium means single crystal as piezoelectric material.

**For more information on specification,
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