ESCT-4000
Digital Doppler Ultrasound Imaging System
ADVANCED IMAGING TECHNOLOGY

- **Multi-beam Forming Technology**
  
  This technology can multiply receive and process scanning lines of images from each element, which largely increases the frame rate of images in B mode and PW mode.

- **Adaptive Speckle Reduction Technology**
  
  The technology assists to reduce noise and artifacts, purify tissue shading and edging, improve contrast resolution and identify early tissue/structure lesion.

- **Compound Imaging (Optional)**
  
  The technology helps to ease echo artifacts and improve spatial resolution by scanning the target with multi-direction beamforming.

- **Smart One Key Optimization**
  
  With one button pressed, the system smartly adjusts TGC and B gain in B mode as well as base line.

CLINICAL SOLUTIONS

- **Auto IMT (Intima-Media Thickness) Measurement**
  
  The system can automatically measure the Intima-Media Thickness of carotid artery wall, so as to evaluate cardiovascular diseases such as hypertension diabetes.

- **4D Lite (Optional)**
  
  Volumetric imaging technology covers obstetric 4D fetus imaging and gynecological transvaginal volumetric imaging, which show more accurate and specific images for different clinical demands.

- **Panoscope (Optional)**
  
  The system allows extending wider view for doctors to scan large area tissues with the movement of transducer scanning.

- **SonoAir (Optional)**
  
  The system offers mobile working in hospitals and clinics by displaying on-screen images via iPad, iPhone and wireless PC printer even if the doctor is away from the ultrasound system.
**Appearance**

- Ergonomic appearance
- Swivel keyboard and monitor
- Three active probe connectors
- Six probe holders
- Backlit keyboard, 8 TGC
- 6 user-programmable keys for personal preference (F1 ~ F6)
- 15-inch LCD monitor
- Visual Angle:
  - Left and right side: 160°
  - Up and down: 160°
- Resolution 1024x768
- Control panel is left/right rotatable
- Left and right side: 50°

**Transducer Types**

- Electronic convex probe
- Electronic micro-convex probe
- Electronic linear probe
- Electronic phased array probe
- Electronic transvaginal probe
- 4D convex probe

**Applications**

- Abdomen, Urology, Gynecology,
- Obstetrics (1st Trimester, 2nd and 3rd Trimesters), Fetal echo, Multifetation
- Abdomen (PEN), Urology (PEN)
- Thyroid, Breast, Testes, Peripheral vascular, Orthopedics, Podiatry, Superficial, Musculoskeletal, Small part (PEN),
- Carotid, Vascular (PEN)
- Cardiology, Cardiology (PEN),
- Pediatric Cardiac

**Highlights**

- Speckle Reduction Technology
- Trapezoidal Imaging (linear probe)
- Tissue Harmonic imaging (3 frequency)
- Zoom
- Pulse Wave Doppler(PWD)
- Auto IMT Measurement
- MFI (Inversion THI) (optional)
**Display Modes**
- B mode
- 2B mode
- 4B mode
- B/M mode
- M mode
- Zoom B
- Pulse Wave Doppler (PWD)
- B/PW mode

**Zoom**
- HD Zoom: ×1.0~×9.0
- Full-View Zoom: ×1.0~×8.0
- Full Screen Zoom - The image area fills into whole screen

**Focus**
- Continuous dynamic focusing
- Dynamic apodization
- 1~8 selectable transmit focus
- Acoustic lens focus

**Memory**
- Cine-memory
- B-mode (max.2000 frames)
- M-mode (650 s)
- Hard disk size up to 500 GB
- Imaging formats: BMP, JPG, TIF
- Cine formats: AVI, CIN

**2D mode**
- 8-step TGC slide pots
- Gain: 0~100
- Depth: 1.6~30.8cm
- Frequency: 5 steps
- Dynamic range adjustable: 30~180dB
- Edge enhancement: 0~3
- Persistence: 0~7
- Chroma: 0~8
- Grayscale: 0~23
- Power: 0~100%, -∞ dB ~ 0 dB
- Nanoview: 0~6, step 1
- Smooth: 0 ~ 3
- Steer: -10° ~ +10°
- B rotation: 0° ~ 270°
- Line density: 2 steps
- Scan angle: max 157°

**M mode**
- Gain: 0~100
- Sweep speed: 4 steps
- Maps: 0~23
- Chroma: 0~8

**PW mode**
- Gain: 0~100dB
- D map: 0~23
- Frequency: 3 steps
- Chroma: 0~8
- PRF: 0.25~25KHz
- Basic line: 31 steps adjustable
- Wall filter: 12.5KHz, Max. 50 steps adjustable
- Angle: -80°~+80°
- Sampling volume: 0.5~40.0mm
- Volume: 0~100%
- D Speed: 1~6
- Smooth: 0~3
- Power: -∞ dB ~ 0 dB, 0~100%

**4D Lite mode (optional)**
- 4D map: 31 steps adjustable
- Color: 0~4
- Rotate angle: 0° ~ 270°
- Threshold: 0~100
- Smooth: 0~3
- Brightness: 0~10
- Opacity: 0~255
- Render Rate: Low, Mid, High
- Scan Rate: Low, Mid, High
- Angle: 50%~100%
MEASUREMENT

2D mode (General)
- Distance
- Trace Length
- Ellipse (area)
- Trace (area)
- Angle (general)
- Angle (cross)
- Volume
- Auto IMT (intima-media thickness)
- Histogram
- Ratio

M-mode
- Distance
- Time
- Slope
- Heart Rate

PW mode
- HR (heart rate)
- Velocity
  - PSC (peak systolic velocity)
  - EDV (end diastolic velocity)
  - S/D (systolic/diastolic)
  - RI (resistant index)
  - PG (pressure)
- ACC (acceleration)
- Time
- Manual Trace
  - PSC (peak systolic velocity)
  - EDV (end diastolic velocity)
  - MN (median)
  - ACC (acceleration)
  - S/D (systolic/diastolic)
  - RI (resistant index)
  - PI (pulsatility index)
  - HR (heart rate)
  - PG (pressure)
- Auto Trace
  - PSC (peak systolic velocity)
  - EDV (end diastolic velocity)
  - MN (median)
  - ACC (acceleration)
  - S/D (systolic/diastolic)
  - RI (resistant index)
  - PI (pulsatility index)
  - HR (heart rate)
  - PG (pressure)
- Range Trace
  - PSC (peak systolic velocity)
  - EDV (end diastolic velocity)
  - MN (median)
  - ACC (acceleration)
  - S/D (systolic/diastolic)
  - RI (resistant index)
  - PI (pulsatility index)
  - HR (heart rate)
  - PG (pressure)

CALCULATION

Abdomen
- Liver
  - Long Left Lobe
  - Anteroposterior Left Lobe
  - Angle Left Lobe
  - Obli R Lobe
  - Anteroposterior Right Lobe
  - Angle Right Lobe
  - Portal Vein
  - IVC (Inferior Vena Cava)
  - SMA (Superior Mesenteric Artery)
  - CELA (Celiac trunk)
  - AO (aortaventralis)
- Gallbladder
  - Length
  - Anteroposterior
  - Transverse
  - Wall
  - CBD (Common bile duct)
  - LHD (Left hepatic duct)
  - RHD (Right hepatic duct)
- Pancreas
  - Head
  - Body
  - Tail
  - MPD(Main pancreatic duct)
- Spleen
  - Length
  - Anteroposterior
  - Spleen artery
  - Spleen vein
CALCULATION

Urology
- Kidney
  • Length Left Kidney
  • Anteroposterior Left Kidney
  • Transverse Left Kidney
  • Left Renal Artery
  • Length Right Kidney
  • Anteroposterior Right Kidney
  • Transverse Right Kidney
  • Right Renal Artery
- Ureter
  • Left
  • Right
- Bladder
  • Length
  • Anteroposterior
  • Transverse
  • Volumen
- After the urine bladder
  • Length
  • Anteroposterior
  • Transverse
  • Simpson Residual Urine
- Prostate
  • Volume
  • PSAD (Prostate specific antigen Density)

Gynecology
- Uterus
  • Length
  • Anteroposterior
  • Transverse
  • Endometrium
- Cervix
  • Length
  • Anteroposterior
  • Transverse
- Ovary
  • Length Left
  • Anteroposterior Left
  • Transverse Left
  • Length Right
  • Anteroposterior Right
  • Transverse Right
- Follicle
  • Volume 1
  • Volume 2
  • Volume 3
- Obstetrics (1st Trimester)
  • GS (gestation sac)
  • CRL (crown-rump length)
  • BPD (biparietal diameter)
  • HC (head circumference)
  • AC (abdominal circumference)
  • FL (femur length)
- Obstetrics (2nd and 3rd Trimesters)
  • CRL (crown-rump length)
  • BPD (biparietal diameter)
  • HC (head circumference)
  • AC (abdominal circumference)
  • FL (femur length)
  • Q (amniotic fluid index)
  • OFD (occipitofrontal diameter)
  • TAD (transverse trunk diameter)
  • Placenta
  • APD (Antero-posterior abdominal diameter)
  • HL (humerus length)
  • TL (tibia length)
  • UL (ulna length)
  • RL (radius length)
  • FIBL (fibula length)
  • OOD (outside Orbital distance)
  • LV (Lateral ventricle)
  • HW (Hemisphere width)
  • NT (nuchal translucency)
  • FTA (fetal torso transverse section)
  • CER (cerebellum transverse diameter)
  • Growth charts
  • Biophysical profile
**ESCT-4000**

**CALCULATION**

**Fetal echo**
- AO (aorta)
- LVOT (Left ventricular outflow tract)
- PA (Pulmonary artery)
- RVOT (Right ventricular outflow tract)
- LA (Left atrium)
- RA (Right atrium)

**Pediatric**
- Distance
- Area
- Ellipse (area)
- Trace (area)
- Angle
- Volume
- Ratio

**Thyroid**
- Distance
- Area
- Ellipse (area)
- Trace (area)
- Volume
- Long Left Lobe
- Anteroposterior Left Lobe
- Transverse Left Lobe
- SUPA Left Lobe (Superior artery of Left Lobe)
- INF A Left Lobe (Inferior artery of Left Lobe)
- Long Right Lobe
- Anteroposterior Right Lobe
- Transverse Right Lobe
- SUPA Right Lobe (Superior artery of Right Lobe)
- INF A Right Lobe (Inferior artery of Right Lobe)
- Isthmus
- LCCA (Left common carotid artery)
- RCCA (Right common carotid artery)

**Testes**
- Distance
- Area
- Ellipse (area)
- Trace (area)
- Volume
- Long Left Testis
- Anteroposterior Left T Testis
- Transverse Left T Testis
- Long Left Epididymis
- Anteroposterior Left Epididymis
- Long Right Testis
- Anteroposterior Right Testis
- Transverse Right Testis
- Long Right Epididymis
- Anteroposterior Right Epididymis

**Superficial**
- Distance
- Area
- Ellipse (area)
- Trace (area)
- Volume

**Musculoskeletal**
- Distance
- Area
- Ellipse (area)
- Trace (area)
- Angle
- Volume
**ESCT-4000**

**CALCULATION**

**Peripheral vascular**
- Max V
- Mean V
- RI
- PI
- S/D
- % stenosis area
- % stenosis diameter
- Diameter
  - Left AXIA (Left axillary artery)
  - Left BRAA (Left brachial artery)
  - Left RADA (Left radial artery)
  - Left ULNA (Left ulnar artery)
  - Left FEMA (Left femoral artery)
  - Left POPA (Left popliteal artery)
  - Left DORA (Left dorsal artery)
  - Right AXIA (Right axillary artery)
  - Right BRAA (Right brachial artery)
  - Right RADA (Right radial artery)
  - Right ULNA (Right ulnar artery)
  - Right FEMA (Right femoral artery)
  - Right POPA (Right popliteal artery)
  - Right DORA (Right dorsal artery)
  - Vein

- Intima
  - Left AXIA (Left axillary artery)
  - Left BRAA (Left brachial artery)
  - Left RADA (Left radial artery)
  - Left ULNA (Left ulnar artery)
  - Left FEMA (Left femoral artery)
  - Left POPA (Left popliteal artery)
  - Left DORA (Left dorsal artery)
  - Right AXIA (Right axillary artery)
  - Right BRAA (Right brachial artery)
  - Right RADA (Right radial artery)
  - Right ULNA (Right ulnar artery)
  - Right FEMA (Right femoral artery)
  - Right POPA (Right popliteal artery)
  - Right DORA (Right dorsal artery)
  - Vein

- Intima-media
  - Left AXIA (Left axillary artery)
  - Left BRAA (Left brachial artery)
  - Left RADA (Left radial artery)
  - Left ULNA (Left ulnar artery)
  - Left FEMA (Left femoral artery)
  - Left POPA (Left popliteal artery)
  - Left DORA (Left dorsal artery)
  - Right AXIA (Right axillary artery)
  - Right BRAA (Right brachial artery)
  - Right RADA (Right radial artery)
  - Right ULNA (Right ulnar artery)
  - Right FEMA (Right femoral artery)
  - Right POPA (Right popliteal artery)
  - Right DORA (Right dorsal artery)
  - Vein

- %D Reduce
  - Left AXIA (Left axillary artery)
  - Left BRAA (Left brachial artery)
  - Left RADA (Left radial artery)
  - Left ULNA (Left ulnar artery)
  - Left FEMA (Left femoral artery)
  - Left POPA (Left popliteal artery)
  - Left DORA (Left dorsal artery)
  - Right AXIA (Right axillary artery)
  - Right BRAA (Right brachial artery)
  - Right RADA (Right radial artery)
  - Right ULNA (Right ulnar artery)
  - Right FEMA (Right femoral artery)
  - Right POPA (Right popliteal artery)
  - Right DORA (Right dorsal artery)
  - Vein

- %A Reduce (%Area reduce)
  - Left AXIA (Left axillary artery)
  - Left BRAA (Left brachial artery)
  - Left RADA (Left radial artery)
  - Left ULNA (Left ulnar artery)
  - Left FEMA (Left femoral artery)
  - Left POPA (Left popliteal artery)
  - Left DORA (Left dorsal artery)
  - Right AXIA (Right axillary artery)
  - Right BRAA (Right brachial artery)
  - Right RADA (Right radial artery)
  - Right ULNA (Right ulnar artery)
  - Right FEMA (Right femoral artery)
  - Right POPA (Right popliteal artery)
  - Right DORA (Right dorsal artery)
  - Vein
ESCT-4000

CALCULATION

Orthopedic
- Hip Joint

Carotid
- Diameter
  - Left CCA (Left common carotid artery)
  - Left BIF (Left common carotid artery Bifurcation)
  - Left ICA (Left Internal carotid artery)
  - Left ECA (Left external carotid artery)
  - Right CCA (Right common carotid artery)
  - Right BIF (Right common carotid artery Bifurcation)
  - Right ICA (Right Internal carotid artery)
  - Right ECA (Right external carotid artery)
- Intima
  - Left CCA (Left common carotid artery)
  - Left BIF (Left common carotid artery Bifurcation)
  - Left ICA (Left Internal carotid artery)
  - Left ECA (Left external carotid artery)
  - Right CCA (Right common carotid artery)
  - Right BIF (Right common carotid artery Bifurcation)
  - Right ICA (Right Internal carotid artery)
  - Right ECA (Right external carotid artery)
- %D Reduce (%Diameter reduce)
  - Left CCA (Left common carotid artery)
  - Left BIF (Left common carotid artery Bifurcation)
  - Left ICA (Left Internal carotid artery)
  - Left ECA (Left external carotid artery)
  - Right CCA (Right common carotid artery)
  - Right BIF (Right common carotid artery Bifurcation)
  - Right ICA (Right Internal carotid artery)
  - Right ECA (Right external carotid artery)
- %A Reduce
  - Left CCA (Left common carotid artery)
  - Left BIF (Left common carotid artery Bifurcation)
  - Left ICA (Left Internal carotid artery)
  - Left ECA (Left external carotid artery)
  - Right CCA (Right common carotid artery)
  - Right BIF (Right common carotid artery Bifurcation)
  - Right ICA (Right Internal carotid artery)
  - Right ECA (Right external carotid artery)

Cardiology
- Distance
- Area
- Ellipse (area)
- Trace (area)
- Volume
- EF
- RVAWd (Right ventricular anterior wall diastolic period)
- RVD (Right ventricle diastolic period)
- IVSd (Inter-ventricular septum in diastolic period)
- LVD (Left ventricle in diastolic period)
- LVPWd (Diameter of left ventricle posterior wall in diastolic period)
- RVAWs (Right ventricular anterior wall systolic period)
- RVs (Right ventricular systolic period)
- IVSs (Inter-ventricular septum in systolic period)
- LVPWs (Diameter of left ventricle posterior wall in systolic period)
- RVOT (Right ventricular outflow tract)
- AO (Aorta)
- LA (Left atrium)
- IVC (Inferior vena cava)
- PA (Great artery short axis view)
ESCT-4000

*Physical Features*

**Connectivity**
- Video out port
- S-Video out port
- VGA out port
- 4 USB port
- Network interface
- Foot SW
- Printer control port
- AC power input port

**Dimension**
- Gross dimension:
  - 950 mm X 670 mm X 1170 mm
  - 950 mm X 670 mm X 1200 mm (RoHs)
  - 15-inch LCD monitor: 525mm X 450 mm X 350mm
- Net dimension of main unit:
  - 520mm X 725 mm X (1270~1360) mm

**Weight**
- Gross weight: 80kg incl. LCD
- Net weight: 60kg for main unit

**Power Requirements**
- Voltage: AC 100V to 240V±10%
- Frequency: 50Hz±1Hz; 60Hz±1Hz
- Rated Power: 500VA

**Operation Conditions**
- Ambient temperature: 0°C to +40°C
- Relative humidity: 38% to 85%
- Atmospheric Pressure: 700hPa to 1060hPa
SOFTWARE AND ACCESSORIES

Standard Accessories
- Power Cable
- Potential equalization cable
- Printer control cable
- Fuse
- Dust-proof cover
- System recovery disk
- Operation Manual

Optional Accessories
- B/W video or color video printer
- Biopsy guide for convex or linear probe
- Biopsy guide for transvaginal or transrectal probe
- DICOM 3.0 software
- 3D Imaging Software
- Footswitch
- S-Video cable
ESCT-4000

Applied Standards

Quality Standards
- ISO 9001:2008
- ISO 13485:2003

Conformance Standards
- UL 60601-1
- EN 60601-1 and IEC 60601-1
- EN 60601-1-1 and IEC 60601-1-1
- EN 60601-1-2 and IEC 60601-1-2
- EN 60601-1-4 and IEC 60601-1-4
- EN 60601-1-6 and IEC 60601-1-6
- EN 60601-2-37 and IEC 60601-2-37
- EN 62304 and IEC 62304