물품 규격서

- 입찰공고번호: (학)일송학원 관리국 제2020-181호
- 입찰전명: 권역응급의료센터 Ultrasound Scanner 구매
- 수요기관: 한림대학교 춘천성심병원
- 납품장소: 수요기관 회망장소 입고도
- 물품내역 등

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<th>규격 및 사양</th>
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<tr>
<td>1</td>
<td>Ultrasound Scanner</td>
<td>A or B</td>
<td>1</td>
<td>1</td>
<td>검수(합격)일로부터 3년 종료 일 말일까지</td>
<td>SET</td>
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공통사항

1. 장비의 설치와 작동 및 교육은 무상으로 제공한다.
2. 수요기관 담당자 입회 하에 계약상대자는 제품의 설치 테스트 및 시험작동을 실시하여야 한다.
3. 하자담보 책임기간은 물품 검수(합격)완료일로부터 3년 종료 일 말일까지를 기본 원칙으로 하며 계약상대자의 추가 제안에 따라 3년 종료 일 말일까지의 기간을 조과하여 설정할 수 있다.
4. 하자담보 책임기간 중 수요기관의 사정으로 인하여 부서 및 장비의 위치가 불가피하게 이동을 필요로 할 경우 설명 및 설치가 무상으로 이루어진다.
5. 하자담보 책임기간 중 공급된 장비의 부속품이 단종된 경우 수요기관이 인정하는 동등 이상의 장비로 무상교체가 이루어져야 한다.
6. 계약상대자는 어떠한 상황에서야 에프터서비스를 위하여 전문서비스 인력을 제공하여야 하며 에프터서비스를 위하여 교체 부품을 보관하여야 한다.
7. 계약상대자는 장비 납품 시 납품일을 기준하여 제품 제조년월이 6개월 이내인 장비를 납품 하고 납품장비에 해당 제조년월이 명시되어야 한다.
Features
1. High performance diagnostic and guidance traditional users in a variety of clinical settings.
3. Automated tools help reduce the fatigue of repeated and difficult tasks and the tap, pinch, and slide gestures have the familiar feel of contemporary consumer devices.
4. The system shall support the following DICOM 3.0 service classes.

Specifications
1. Basic System Architecture
   : Exclusive, patented, model-based technology provides unsurpassed computational power, ease of imaging, workflow flexibility and product upgrade-ability.
   a. Exceptional image quality is created through the use of CrossXbeam, SRI, Coded techniques and advanced transducers.
   b. Raw-Data is innovative technology that allows a virtual rescan on archived images by applying many of the same scan controls available during the original exam.
   c. Productivity features to make the one of the most productive ultrasound systems.
      - 19” High Resolution LCD monitor / Resolution 1280 x 1024 pixels
      - Operating System – Microsoft® Windows® 10
      - 4 Active Probe Ports
      - Standard Lithium Ion Battery: 4 hour scan time
      - Integrated 60GB hard drive image storage
      - Integrated multiple USB 3.0 port
      - Integrated speakers
      - Export JPEG, WMV(MPEG4), and Dicom file form
      - Configurable cine-loop length (up to 120 sec. or 250MB)

2. Imaging Mode
   - B-mode
   - M-mode
   - Color Flow Mode
   - Extended Field of View
   - Power Doppler Imaging
   - PW Doppler
   - Anatomical M-mode
   - Coded Harmonic Imaging

3. CrossBeam(Xbeam) Imaging
   - Provides 3 angles of spatial compounding
   - Live side by side Display
   - Compatible with SRI-HD, Coded Harmonic Imaging.
4. SRI (Speckle Reduction Imaging)-HD
   - Speckle Reduction Imaging
   - Provide multiple levels of speckle reduction
   - Compatible with Side by Side DualView Display
   - Compatible with all linear, convex, and sector transducers
5. True Access, Raw Data Analysis
   - Complete image flexibility allows stored image optimization and measurements such as
     B-mode, Doppler mode and Anatomical M-mode or Provides for Voice control of scanner
6. Coded Harmonic Imaging (CHI)
   - Enhances near-field resolution for improved small parts imaging as well as far-field
     penetration compared with typical harmonic imaging
7. Anatomical M-mode
   - M-mode cursor can be adjusted at any plane
   - Curved anatomical M-mode – free (curved) drawing of M-mode generated from the cursor
     independent from the axial plane
   - Patented, any plane color M-mode display derived from color Doppler cine loop
8. Automatic Tissue Optimization (ATO)
   - single keystroke optimizes immediately and automatically different gray scale settings
     adjusted for the real time image
9. Automatic Spectrum Optimization (ASO)
   - Optimize B-mode image to improve contrast resolution
   - Auto-spectral optimize – adjustments baseline, PRF (on live image) and angle correction
10. Measurements & Calculations Package
    - Real-time Doppler Auto Measurements / Calculations
    - OB Measurements / Calculations
    - GYN Measurements / Calculation
    - Vascular Measurements / Calculations
    - Urological Calcs
11. Virtual Convex Imaging
    - This technology provides linear transducer detail resolution in a convex field of view.
      Virtual Convex makes exams faster and easier by providing more clinical information.
12. Tissue Velocity Doppler (TVD)
    - Myocardial Doppler imaging with color overlay on tissue image
    - Tissue Doppler data can be acquired in background during regular 2D imaging
    - The velocity of myocardial segments after entire heart cycle can be displayed in one single image
13. DICOM 3.0 Connectivity
    - Supporting DICOM service classes
      a. Verify (SCU/SCP)
      b. Print (SCU)
      c. Store (SCU)
      d. Basic Modality Workist (SCU)
14. Automated VTI (Velocity Time Integral)
   - Calculates cardiac VTI measurements in one step by detecting. Includes a quality indicator to assist the user with image acquisition.

15. Automated B-lines
   - Highlights and counts B-lines in real time and selects the frame with the highest count upon freeze. Includes a quality indicator to assist the user with image acquisition.

16. Automated IVC (Inferior Vena Cava)
   - Measures IVC collapsibility, with respiration and calculates the collapsibility index, which is the ratio between the maximal and minimal diameter of the IVC. Includes a quality indicator to assist the user with image acquisition.

17. Lung diagram tool
   - Allows scanning, one-tap allocation and quick review of images and findings belonging to different lung segments

18. Wide Band Convex Transducer
   Applications: Abdomen, OB/GYN, Urology, Vascular

19. Wide Band Phased Array Transducer
   Applications: Cardiac, Peripheral vascular, Thoracic/Pleural, Interventional Guidance, Vascular access

20. Wide Band Linear with Buttons Transducer
   Applications: Small Organ, Peripheral vascular, Musculoskeletal Conventional, Musculoskeletal Superficial, Thoracic/Pleural

21. Hockeystick Linear Probe Transducer
   Applications: Small Parts, Vascular, Pediatrics, Neonatal

22. Operating & Service Manual

**Consist of (Per 1Set)**

1. Main Unit
2. Imaging Mode
3. CrossBeam(Xbeam) Imaging
4. SRI(Speckle Reduction Imaging)-HD
5. True Access, Raw Data Analysis
6. Coded Harmonic Imaging (CHI)
7. Anatomical M-mode
8. Automatic Tissue Optimization (ATO)
9. Automatic Spectrum Optimization (ASO)
10. Measurements & Calculations Package
11. Virtual Convex Imaging
12. Tissue Velocity Doppler (TVD)
13. DICOM 3.0 Connectivity
14. Automated VTI (Velocity Time Integral)
15. Automated B-lines
16. Automated IVC (Inferior Vena Cava)
<table>
<thead>
<tr>
<th>No.</th>
<th>Item Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Lung diagram tool</td>
<td>1ea</td>
</tr>
<tr>
<td>18</td>
<td>Wide Band Convex Transducer</td>
<td>1ea</td>
</tr>
<tr>
<td></td>
<td>- Frequency Bandwidth: 1.0 - 5.0 MHz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Applications: Abdomen, OB/GYN, Urology, Vascular</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Wide Band Phased Array Transducer</td>
<td>1ea</td>
</tr>
<tr>
<td></td>
<td>- Frequency Bandwidth: 3.0 MHz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Applications: Cardiac, Peripheral vascular, Thoracic /</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pleural, Interventional Guidance, Vascular access</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Wide Band Linear with Buttons Transducer</td>
<td>1ea</td>
</tr>
<tr>
<td></td>
<td>- Frequency Bandwidth: 12.0 MHz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Applications: Small Organ, Peripheral vascular, Musculoskeletal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conventional, Musculoskeletal Superficial, Thoracic/ Pleural</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Hockeystick Linear Probe Transducer</td>
<td>1ea</td>
</tr>
<tr>
<td></td>
<td>- Frequency Bandwidth: 8.0 - 18.0 MHz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Applications: Small Parts, Vascular, Pediatrics, Neonatal</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Operating &amp; Service Manual</td>
<td>each 1ea</td>
</tr>
</tbody>
</table>

**Remarks**

1. Warranty: 검수(합격)일로부터 3년 종료 될일까지
Features

1. Fully digital
2. IQPAC (includes Enhanced Tissue Definition and Angular Compound Imaging)
3. Automatic Mode Adjustment (AMA)
4. Motion Compensated Angular Imaging (MACI)
5. Pulse Inversion Tissue Harmonic Imaging
6. Split screen (Vertical and horizontal)
7. Simultaneous live split-screen imaging
8. User setups
9. Multibeam: 4 in parallel, Quad Beam
10. Copy/Recall system and transducer setup
11. Image Review (cine) for up to 3000 images depending on scanning mode
12. Image Storage: CD, hard disk and USB storage device
13. Hard disk capacity: 500GB
14. Clip browser
15. Clip editor
16. Report function
17. DICOM networking
18. Fully integrated dynamic 3D
19. On-screen timer
20. Edge enhancement
21. Non-linear 2D persist filter
22. User-defined hard keys
23. Matching sliding filters
24. Post-processing
25. Freeze Zoom (or post Zoom)
26. Adjustable monitor and keyboard
27. Supports phased array transducers
28. Coded Excitation
29. Expanded sector (Trapezoid)
30. Real time display of acquired 3D data
31. Auto Doppler
32. Auto Gain

Specifications

1. SCANNING MODES (MAIN)
   - B (B-mode)
   - M (M-mode)
C (Color Flow Mapping: Velocity, Variance And Velocity + Variance)
P (Power Doppler and Directional Power Doppler)
D (D-mode, PW, Pulsed Wave Doppler)
THI (Tissue Harmonic Imaging)
VFI (Vector Flow Imaging)

2. SCANNING MODES (COMBINATION)
   B + M
   B + C
   B + D (PW) (Triplex)
   B + P
   B + C + D (PW) (Triplex)
   B + P + D (PW) (Triplex)

3. SCANNING MODES (SIMULTANEOUS SPLIT)
   B + B
   B + THI
   B + (B + C)
   B + (B + P)

4. TRANSDUCER CENTER FREQUENCY RANGE
   Linear and convex array transducers: 2 – 18MHz
   Phased array transducer: 2 – 4 MHz
   Single-element transducers (option): 5–20 MHz
   360° rotating single-element transducers (option): 5–20MHz
   Volumetric transducer (option): 5–20 MHz

5. FREQUENCY SELECTION
   B-mode: Up to 6 manual and 128 Automatic (Depth dependent)
   THI: Up to 128 Automatic (Depth dependent)
   C-mode: Up to 3 Manual
   D-mode: Up to 3 Automatic

6. DISPLAY
   19” LCD flat screen, portrait

7. IMAGE CHARACTERISTICS
   Ultrasound image: 800 × 780 pixels; 256 gray levels, 4096 colors
   Graphics overlay: 1024 x 1280 pixels; 32-bit true color
   Presentation: Images can be mirrored up/down and left/right

8. SWEEP SPEED
   2 – 14 seconds per screen (1-9 cm/s)
9. SIZE (ZOOM)
   Examination Penetration: Max 28cm
   Examination Penetration: Min 0.5cm
   Works in Freeze and Scanning mode
   Up to 15 zoom levels

10. FRAME RATE
    >600Hz (automatically optimized), depending on the transducer and the scanning mode

11. PREPROCESSING
    TGC: Overall gain, fine gain (TGC)
    System dynamic range: 170 dB
    Gray scale conversion: 20 scales
    Color scale conversion: 8 scales
    Doppler conversion: 8 scales
    B-mode Color Overlay: 32 bit

12. POST PROCESSING
    Gray Scale Selection
    Color Scale Selection
    Noise Reject
    Depth
    Zoom
    Pan
    Gain

13. FOCAL ZONES
    Up to 25 transmit zones depending on transducer
    Up to 8 transmit zones for composite focus
    Continuous receive focusing

    Export Functions:
    Archive to CD, DICOM network (option), network
    Copy to CD, USB-drive, External HDD
    Format: BMP, AVI, html, BK3D

14. IMAGE MARKINGS
    Image scale
    Puncture lines
    Matrices (user-defined)
    Brachy grid

15. IMAGE ANNOTATIONS
    Alphanumeric
    Adjustable annotation arrow
Labels and comments (user-defined libraries)
Bodymarks (user-defined libraries)
Patient and hospital ID’s
Real-time clock showing date and time

16. CINE
- Cine Frames: >3000
- Cine Doppler: >20 min
- Loop Function
- Clip: Up to 8 hours in chapters of max. 5 min

17. COLOR FLOW MAPPING
- CFM Modes: Velocity, Variance, Velocity + Variance
- Sample: Max. 512 points
- Pulse repetition frequency: 0.2 - 12 kHz
- Wall filter: Digital filter. Cutoff frequency 1-10% of PRF
- Detectable speed: 0.1 - 8.6m/sec (0° - 60°)
- Display: 4096 colors; 8 different color scales
- Color Doppler interleave factor: 64 lines

18. STEERABLE DOPPLER
- Angle: up to 40° (+-20°)

19. PULSED WAVE DOPPLER
- Sample volume size: 1 - 20mm
- Units: cm/s or kHz
- Flow inversion: Yes
- Flow offset: Yes
- Pulse repetition frequency: 1 - 15 kHz
- Wall filter: Digital filter, Cutoff frequency 1-20% of PRF
- Detectable speed: 0.1 - 10.8m/sec (0° - 60°)
- Display: B/W or color FFT spectra, 256 levels
- Frequency resolution: Max. 5.2 Hz (PRF = 1kHz)
- Time resolution: Max. 4msec
- Angle correction: 1° steps
- Doppler audio output: max. 1 W

20. POWER DOPPLER - DIRECTIONAL POWER DOPPLER
- Sample: Max. 512 points
- Pulse repetition frequency: 0.2 - 12kHz
- Wall filter: Digital filter
- Display: 256 colors, 11 different color scales

21. MEASUREMENT FACILITIES
- Trackball (point, move, measure)
Pro Packages: Urology, Brachytherapy, Surgery, General (including Vascular), OB/GYN

22. CONNECTION POSSIBILITIES
Transducers: 3 active sockets; 2 for linear and convex array transducers and 1 for 360° and single-element transducers (1202-1 only)
Signal output (1202-1 only): Audio (stereo line level); Video (composite color, S-video), DVI-I (60Hz)
Signal input: Audio (stereo line level)
Image storage: Internal hard disk, DVD+-RW (option) or USB storage device, Digital B&W printer (option), Digital color printer (option)
Communication: Expandable to 8 x USB 2.0 (5 built in), 10/100 Ethernet
DICOM network

23. POWER SUPPLY
Voltage: 100-230V AC
Frequency: 50-60Hz
Power consumption: 300VA total (500 Btu/hr)

24. ENVIRONMENTAL LIMITS
Operation temperature: +10 to 40°C (+50 to 104°F)
Storage temperature: -25 to +60°C (-13 to +140°F)
Operation/ storage humidity: max 85% RH
Operating pressure: 700-1060hPa (normal atmospheric pressure)

25. DISINFECTION
Chemical resistance of console during disinfection:
Wiping with:
- Sodium hypochlorite up to 2% in water
- Chlorhexidine gluconate 5% in water
- Chlorhexidine 1.5% and cetrimide 15% in water
- Chlorhexidine 0.5% in ethanol 70%
- Glutaraldehyde 2% solution
- Ethanol 70% in water
- Isopropanol 70% in water

26. APPROXIMATE DIMENSIONS
Scanner height: 1350 – 1602 mm (adjustable)
Keyboard height: 745 – 1055 mm (adjustable)
Width: 510mm (including wheel base)
Width: 350mm (scanner and keyboard)
Depth: 610mm
Weight: 49kg (excluding transducers and printer)
Weight: 7 kg (scanning unit only)
**Consist of (Per 1Set)**

1. Main Unit  
   1) Color Ultrasound System  
   2) Basic calculation package  
   3) Cardiac calculation package  
   4) MFI software  
   5) Image review software  
   6) Image storage facility  
   7) IQPACTM  
   8) DICOM  
   9) 19" LCD monitor

2. Transducers  
   1) Curved Array transducer (MFI 2-6MHz)  
   2) Small Footprint Cardiac (MFI 2-4MHz)  
   3) Linear Small array transducer (MFI 5-12MHz)

3. B/W Printer  
   1ea

4. Operation/Service manual  
   each 1ea

**Remarks**

1. Warranty: 검수(합격)일로부터 3년 종료 일 발일까지