

**TECHNICAL SPECIFICATIONS FOR HIGH END ULTRASOUND
SYSTEM FOR PHYSICAL MEDICINE AND REHABILITATION (PMR)
DEPARTMENT, RIMS**

1. Description of Function

High resolution grey scale ultrasound for small parts including Musculo-skeletal system.

2. Operational Requirements:

- 2.1 Electronic Phased array with minimum 1000 Electronic independent channels, and desirably 4000 Electronic independent channels. System should be DICOM ready and capable of being interfaced with HIS/RIS/PACS .
- 2.2 Should be field up gradable to next generation system on site. All new software should be upgraded free of cost for at least 3 years .
- 2.3 Frequency compounding or better technology for better resolution and penetration .

3. Technical Specifications

- 3.1 Electronic Phased array with Minimum 1000 Electronic independent channels .
- 3.2 256 grey shades for sharp contrast resolutions .
- 3.3 Harmonic Imaging- System should have Harmonics .
- 3.4 Trapezoidal Image .
- 3.5 Automated Gain control for additional level of flexibility to image quality control .
- 3.6 Real time high frequency 2D for higher resolution and low frequency Doppler for higher sensitivity in all probes .
- 3.7 Frame rate should be 1000 FPS or more .
- 3.8 High-definition acoustic zoom for enlarging sections of 2D images with more acoustic information for greater clarity and detail while maintaining an optimal frame rate .
- 3.9 Monitor should be 15" or more, high-resolution Monitor.
Tilt and Swivel monitor should be able to view in all angles and all light conditions.
- 3.10 Cine loop memory- more than 1000 frames.
 - a. High Frame rate review for better clarity of playback images study in slow motion.
 - b. Quad loop with memory for pre and post image comparison of any procedure.
 - c. Memory- 256 frames or more in quad loop.
 - d. Frame grabber facility for post analysis.
- 3.11 Minimum 4.8 GB optical disc drive / 80 GB hard drive for image storage and retrieval.
(Standard with system)

4. System Configuration Accessories, spares and consumables

- 4.1 Linear probe 5 – 12 MHz – 01
- 4.2 B/W thermal printer of latest model
- 4.3 DVD/CD Recorder with DICOM media transfer

5. Environmental factors

- 5.1 The unit shall be capable of operating continuously in ambient temperature of 30 deg C and relative humidity of 80%.
- 5.2 Pre Requisites should be clearly spelt out in terms of room requirements.

6. Power Supply

- 6.1 Power input to be 220-240VAC, 50Hz fitted with Indian plug
- 6.2 Resettable over current breaker shall be fitted for protection
- 6.3 Suitable Servo controlled Stabilizer/CVT
- 6.4 Online UPS of suitable rating with voltage regulation and spike protection for 30 Minutes back up.

7. Standards, Safety and Training

- 7.1 Should be FDA or CE approved product
- 7.2 Electrical safety conforms to standards for electrical safety IEC-60601 / IS-13450
- 7.3 The product shall comply to IEC 60601-2-37 ed1: Medical Electrical Equipment - Part 2-37: Particular Requirements for the Safety of Ultrasonic Medical Diagnostic and Monitoring Equipment
- 7.4 Type of protection against electric shocks -- Class I Degree of protection against electric shocks for ultrasound probes Type "BF" For ECG electrodes Type 'CF'
- 7.5 Manufacturer/Supplier should have ISO certification for quality standards.

8. Documentation

- 8.1 User manual in English.
- 8.2 Service manual in English.
- 8.3 List of important spare parts and accessories with their part number and costing available in stock with the supplier.

9. Maintenance and Serviceability

- 9.1 Remote Service Network Connectivity .
- 9.2 Optional Service agreement .
- 9.3 Online phone Support .
- 9.4 Clinical application support .