



UNGOOFAARU REGIONAL HOSPITAL
Raa, Ungoofaaruu, Republic of Maldives



TECHNICAL SPECIFICATION FOR MEDICAL EQUIPMENT

Equipment: C ARM UNIT

OBJECTIVE

Objective: A C-Arm Fluoroscopy Unit is a state-of-the-art mobile medical imaging system designed to provide high-resolution, real-time X-ray imaging during diagnostic and surgical procedures. It enables clinicians to visualize anatomical structures, implants, and surgical instruments with precision, thereby enhancing procedural accuracy, patient safety, and clinical decision-making. The system is essential for supporting a wide range of specialties, including orthopaedics, trauma, general surgery, urology, vascular surgery, pain management, gastroenterology, and other image-guided interventions. The equipment is intended to improve workflow efficiency, reduce radiation exposure through advanced imaging technologies, and ensure the delivery of high-quality, safe, and effective patient care.

C-ARM X-RAY UNIT – TECHNICAL SPECIFICATIONS

1. X-Ray Generator

Parameter	Specification
Type	High-frequency digital X-ray generator (solid-state inverter)
Output Power	Typically, 2 kW – 15 kW or higher
Voltage (kV)	40 – 120 kV range
Current (mA)	Fluoroscopy continuous and pulsed modes (approx. 0.1 – 10+ mA continuous, higher in pulse modes)
Pulse Fluoroscopy	Supported with adjustable pulse rates for dose optimization
Housing heat capacity	Housing heat capacity of minimum 700 KHU and cooling rate of more than 12,000 HU/min





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2. X-Ray Tube

Parameter	Specification
Anode Type	Rotating or stationary anode with single or dual focal spots (~0.3 – 0.6 mm)
Anode Heat Capacity	Suitable for continuous clinical use (tens of kHU or more)
Filtration & Collimation	Motorized collimation with beam filtration for dose optimization
Focal spot	Should have dual focal spots
Tube assembly filtration	Tube assembly filtration of 3.0 mm Al or higher

3. Flat Panel Detector

Parameter	Specification
Detector Type	Digital flat panel detector with CsI scintillator and amorphous silicon (a-Si) TFT or CMOS technology
Active Field Size	Approximately 20 × 20 cm to 30 × 30 cm
Pixel Matrix	Minimum ~1024 × 1024
Pixel pitch	Approximately 140 – 210 µm
A/D Conversion	≥16-bit
Spatial Resolution	Approximately 2.4 – 2.5 lp/mm or higher
Frame Rate	Real-time fluoroscopy up to 15 – 30 fps





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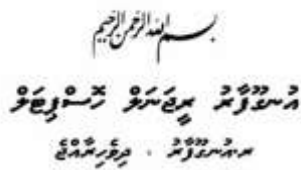
4. Motion & Mechanical

Parameter	Specification
C-Arm Rotation	$\pm 180^\circ$ or greater
Swing / panning movement:	+/- 12 degrees or more
Vertical Travel	Approximately 400 mm or more
Locks for stabilization	Locks for stabilization at desired position
Horizontal Travel	Approximately 200 mm or more
Orbital / Tilt Range	Approximately $90^\circ - 130^\circ$
Source-Detector Distance	Approximately 900 – 1100 mm
C-Arm Free Space / Depth	Approximately 650 – 800 mm

5. Display & Workstation

Parameter	Specification
Live Monitors	- medical-grade flat panel display - screen size of at least 18 inches (preferred 27 inches or larger) - flicker-free design and a minimum resolution of 1280×1024 pixels or higher - shall support both automatic and manual adjustment of brightness and contrast supplied with a mobile trolley equipped with a locking mechanism for secure positioning and mobility.
User Interface	Touchscreen controls for imaging and system settings
Image Storage	Integrated storage with DICOM 3.0 networking and PACS compatibility. Image storage of minimum 10,000 images
Monitor Rotation	Cable free rare side and 180° rotatable monitors.
Movement Adjustments	Vertically and horizontally adjustable monitors for specific needs





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6. Imaging Modes & Software

Parameter	Specification
Fluoroscopy	Continuous and pulsed fluoroscopy with dose modulation
Radiography	Still image radiography using flat panel detector
Image Enhancement	Real-time noise reduction, edge enhancement, zoom, measurement tools
Advanced Features	Road-mapping, DSA, and dose reporting (depending on system)
Image rotation	Image rotation from control panel, Vertical, horizontal reversal
image processing, memory, recording.	The system should have Integrated image processing, memory and recording.
Image Export	Should include USB 3.0 ports for manual export in standard DICOM, TIFF, JPEG or MP4 formats

7. Power & Environment

Parameter	Specification
Power Supply	Standard mains AC (100 – 240 V, 50/60 Hz)
Battery Option	Available in mobile units for limited fluoroscopy
Operating Conditions	Suitable for operating room and clinical environments

8. Safety & Compliance

Parameter	Specification
Radiation Protection	Automatic dose control, collimation, anti-scatter grids
Standards Compliance	IEC / FDA / CE safety and performance standards





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Additional Tender Requirements

Parameter	Specification
Equipment Qualification	Design, installation, operation and performance qualifications required
Calibration	Reports must be traceable to international standards
Warranty	Minimum 3 years warranty
Service Support	CMC / AMC for next five years with spare parts availability
Product Details	Brand, model, rating, description, specifications, price and quantity must be furnished
Documentation	Catalogues and technical write-ups in English (hard and electronic copies)
Performance Data	Performance and efficiency parameters must be provided
Training	Demonstration and comprehensive training for user and biomedical staff
FOC Items	- Lead aprons (0.5mm lead ultralight equivalent)-5 NOS. - Thyroid shields-5 NOS - Gonadal shields-5 NOS

