

RESTRICTED

ANX D TO  
DGDP TENDER NUMBER 216.07.474.24  
DATED: 13 JANUARY 2025

**TECHNICAL SPECIFICATION OF 1000-1200 mA/150 KV X-RAY MACHINE WITH STANDARD ACCESSORIES, QUANTITY-01, (DP-5)**

Ser no	Description	Technical specification	To be filled up by Principal/ Manufacturer
(a)	(b)	(c)	(d)
1.	<b>General Specification:</b> General specifications are as under :		
	a. Nomenclature	<b>1000-1200mA/150KV X-Ray Machine with Standard Accessories, PVMS- 210004, Qty-01</b>	
	b. Brand	To be mentioned.	
	c. Model	To be mentioned. <b>Model should be latest.</b>	
	d. Name of Manufacture with Complete Address	To be mentioned.	
	e. Name of Principal with Complete Address	To be mentioned.	
	f. Name of Local Agent with Complete Address	To be mentioned.	
	g. Year of Production	Not before the calendar year of contract.	
	h. Country of Origin & Manufacturer	<b>Group - A</b> (Bangladesh, Australia, Austria, Belgium, Brazil, Canada, Denmark, Finland, France, Germany, Indonesia, Ireland, Italy, Japan, Luxemburg, Netherlands, Norway, Singapore, South Korea, Spain, Sweden, Switzerland, Turkey, UK and USA)	
	j. Port of shipment	Same country of manufacture for Main System. Other Items/ Equipment / Accessories and Local supplied item to be mentioned specifically.	
2.	<b>Function/Capability:</b> To be mentioned.		
3.	<b>Features/Facilities:</b> Following technical specifications/features/facilities are to be available.		
	a. Microprocessor controlled 1000 - 1200 mA double tube digital Floor mount I.I. Fluoroscopy cum Floor mount FPD based Radiography X-ray system having high frequency X-ray generator with power output of 80 kW (Maximum).		
	b. The system should have flexibility in configuration for routine fluoroscopy examinations (gastrointestinal, urological studies etc.) to various radiography (orthopedic etc.) examinations.		
	c. The system will have facility of remote (Control Room) and local (Examination Room) table side control.		
	d. Reduction of X-ray dose should be incorporated with Pulsed Fluoroscopy function (3.75/7.5/15 fps) & Removable grid.		
	e. First X-ray tube collimator should be equipped with dosimeter.		
4	<b>Technical Specification:</b>		
	<b>a. High Voltage X-ray Generator:</b>		
	(1) Type: Inverter control		
	(2) Output: 80 kW maximum		
	(3) Frequency: 50kHz or more		
	(4) Fluoroscopy: Equipped with Pulsed fluoroscopy, Image brightness stabilizer, Automatic exposure setting		
	(5) Radiography voltage range: 40 -150 KV in steps		
	(6) Radiography mA: 1200 mA at 60 KV ,1000 mA at 80 KV, 800 mA at 100 KV		
	(7) Radiographic mA setting range: 10 mA to 1000 mA in steps		
	(8) Radiography time setting range: 1.0 ms to 10 sec in steps		
	(9) Fluoroscopy voltage range: 50-125 KV, auto adjustable		
	(10) Fluoroscopy mA range: 0.3 mA to 4.0 mA, auto adjustable		
	(11) Continuous Fluoroscopy time: Minimum 10 mins		



**RESTRICTED**

Ser no	Description	Technical specification	To be filled up by Principal/Manufacturer
	<b>b. X-Ray diagnostic table: Floor mounted Fluoroscopy Table</b>		
	<b>(1) Table</b>		
	(a)	Type of table: Over table type	
	(b)	Table height: Fixed	
	(c)	Table tilting angle: - 30° (Trendelenburg) to + 90° (upright)	
	(d)	Table tilting safety: Equipped with soft start/stop	
	(e)	Table tilting speed: 6°/sec at maximum	
	(f)	Lateral slide of tabletop: 220 mm or more (motor-driven) with 30 mm/sec or more speed	
	(g)	Dimension of tabletop: Larger than 210 x 65cm	
	(h)	SID: 110cm, 150cm	
	(i)	Patient coverage: Longer than 133cm	
	(k)	Patient load: More than 150kg	
	(l)	Table side control: Imaging unit, Tilting tabletop, Lateral slide of tabletop	
	(m)	Compression cone: More than 80N	
	<b>(2) Grid</b>		
	(a)	Removable for low dose & pediatric application	
	(b)	Ratio: 10:1	
	(c)	Density: 40 lines/cm or better	
	(d)	Focusing distance: 110cm to 120cm	
	<b>(3) Collimator</b>		
	(a)	Method of adjusting exposure field: Automatic	
	(b)	Beam hardening filter equipped with Cu0.1mm, Cu0.2mm, Cu0.3mm	
	<b>(4) Operation in examination room</b>		
	(a)	Local console: Must be available	
	<b>(5) Monitor in Control Room</b>		
	(b)	Size: 19 inches or more	
	(c)	Resolution: 1280 pixels × 1024 pixels or more	
	(d)	Brightness: 700 cd/m <sup>2</sup> or better	
	(e)	Type: LCD / LED / TFT	
	<b>(6) Installation</b>		
	(a)	Minimum necessary installation space	Less than 350x230cm
	(b)	Minimum necessary height of ceiling	Less than 255cm
	<b>(7) Accessories - Handgrips, compression band, foot rest, barium cup holder.</b>		
	<b>c. Imaging Unit: Longitudinal movement: 800 mm or more (Motor-driven) with safety for tilting angle, Soft start/stop feature and 50 mm/sec speed</b>		
	<b>d. X-ray Tube (both Fluoroscopy &amp; Radiography)</b>		
	(1)	Type: Rotating Anode	
	(2)	Material: Rhenium-Tungsten faced Molybdenum	
	(3)	Target Angle: 12 deg	
	(4)	Anode Heat Content: 400kHU (280kJ) or more	
	(5)	Anode Heat Dissipation: 1600W (2250HU/s)	
	(6)	Anode Rotation: 2700 rpm at 50Hz or more	
	(7)	Focus size: 0.6/1.2	
	(8)	Tube rotation: Available (90deg. and 180deg.)	
	<b>e. Digital Imaging System for Fluoroscopy:</b>		
	(1)	I.I. Size: 12 inch or more	
	(2)	CCD camera: 1 million pixels or more, 1024×1024 matrix or more	
	(3)	Acquisition bit: 12bits or more, 4096 graduations or more	
	(4)	Continuous fluoroscopy rate: 30 fps or more	
	(5)	Pulse fluoroscopy 15/7.5/3.75 fps	
	(6)	SPOT acquisition Single	



RESTRICTED

Ser no	Description	Technical specification	To be filled up by Principal/Manufacturer
	(7) SERIAL acquisition 3fps max		
	(8) Image Processing: Graduation processing, Brightness/contrast, Black and white inversion, AWC (Auto White balance Control)		
	(9) Gamma: 3 types (Radiography), 2 types (Fluoroscopy)		
	(10) H/V Inversion: Direction Inversion Vertical/Horizontal		
	(11) Noise reduction: Recursive filter		
	(12) Edge reinforcement: 3 x3 Template filter		
	(13) Zoom: x4 Zoom & Scroll (PAN)		
	(14) Multi display 4-ON-1, 16-ON-1 format		
	(15) Annotation Displays a figure or text on the image.		
	(16) Measurement Processing: Measuring distance/angle on the image.		
	(17) CPU: 3.2 GHz or more		
	(18) Memory: 4096 MB or more		
	(19) OS Windows 10 Professional 32 bit or latest registered version		
	(20) Input: Mouse, keyboard		
	(21) HDD capacity: 1 TB or more		
	(22) No. of saved images 15,000 frames or more		
	(23) Media archive: Available (CD-R, DVD-R, DVD-RAM) in DICOM format		
	(24) Media archive with DICOM viewer		
	(25) Network: DICOM print, DICOM storage		
f.	<b>Local Console feature in Examination Room:</b>		
	(1) Local Console with various control, selection & exposure function		
	(2) Both Foot & Hand Switch		
g.	<b>Monitor in Examination Room:</b>		
	(1) Size: 19 inches or more		
	(2) Resolution: 1280 pixels x 1024 pixels or more		
	(3) Brightness: 700 cd/m2 or more		
	(4) Type: LCD / LED / TFT		
	(5) Examination Room Monitor Stand		
h.	<b>Floor Mount Radiography System:</b>		
	(1) Type: Floor Mount		
	(2) Longitudinal Movement :Minimum 2500mm		
	(3) Transverse Movement :Minimum 250mm		
	(4) Vertical X-ray Tube Stroke : 400-1950mm		
	(5) X-ray Tube Rotation on Horizontal Axis : +/-180deg		
j.	<b>Universal Bucky Stand:</b> Reciprocating bucky device with moving & removable gird.		
	(1) Type: Counter balanced floor-wall mounted stand.		
	(2) Height Adjustment: Bucky upper edge to floor distance, 70cm-200cm or wider		
	(3) Vertical movement: 1,500mm or wider with electromagnetic lock		
	(4) Cassette / FPD tray: Smallest film size is or less than 16.5cmx 21.5cm and largest		
	(5) is or more than 35cm x 43cm (6.5 x 8.5, 8 x 10, 10 x 12, 11 x 14, 14 x 14, 14 x 17 inch)		
	(6) Grid (Removable): Ratio 12:1, 40 lines/cm, Fo=170 cm Al.		
	(7) Grid removal function for pediatric use		
k.	<b>Flat panel detector for Radiography (two units):</b>		
	(1) Wired flat panel detector		
	(2) Scintillator: GOS (Gd2O2S, Gadolinium)		
	(3) Pixel Pitch: 150micron or smaller		
	(4) Pixels: 2,300 x2,880 pixels or more		
	(5) Image field size, 14x17 portable FPD for flexible workflow		
	(6) Thickness : To be mentioned.		
	(7) Weight- To be mentioned.		
	(8) ISS (Irradiation Side Sampling) technology		
	(9) Load Max. 90kg or more		



**RESTRICTED**

Ser no	Description	Technical specification	To be filled up by Principal/Manufacturer					
	(10) Image Acquisition and Processing:							
	(a) Grayscale: 16bit/pixel or more							
	(b) Image Preview: 5 seconds or faster							
	(c) Minimum cycle time, 9 seconds or faster							
	<b>i. Digital Imaging Workstation for Radiography:</b>							
	(1) High Resolution Digital Imaging System and display with DICOM							
	(2) Computer System: 3.0 GHz or more							
	(3) Image storage capacity: HDD 500GB or more							
	(4) Monitor: 17" or bigger size diagnostic grade color LCD monitor							
	(5) OS Windows 10 Professional 62bit or latest registered version							
	(6) Network Connection							
	(7) Instant Image on the Monitor: 3s preview, 6s complete image							
	(8) Software: Patient registration, ability to select, retrieve, view, archive, print and transmit images.							
	(9) Imaging processing function:							
	(10) Adjustment: Window Level width adjustment. Edge Enhancement, Image Free Rotation (CW/CCW with 90° step). Electronic L/R Marker. Image Annotation							
	(11) Multi Layout Print: Yes							
	(12) DICOM Features: Send & Print							
	(13) Fully DICOM compatibility for future connection to DICOM network.							
	<b>m. Dry Laser/Digital Imager:</b>							
	(1) Recording Method: Laser exposure System							
	(2) Applicable Film sizes: 35x43 cm (14"x17"), 26x36cm(10"x14"), 20x25cm (8"x10")							
	(3) Film Loading: Daylight Film loading							
	(4) Processing Capacity: Min. 70 films/hour 35 x 43cm (14"x17")							
	(5) Grayscale resolution: 14 bits or more							
	(6) Pixel size: 100/50 micron (Selectable for all film size)							
	(7) Input Channel: One network channel (Built-in DICOM Print Server)							
	(8) Density Adjustment: Automatic & manual both film Density Calibration (Barcode activated)							
	(9) Film Tray: 03 Tray Active							
5.	<b>Standard accessories:</b>							
	a. Lead glass: 600mm x 900mm, 1.5mmpb equivalent or more							
	b. Lead apron: 02 nos							
	c. Online UPS: Online UPS with 15 minutes back up at full load for FPD & Workstation							
	d. 2 Ton AC: 1 Nos for the examination room, and 1 Ton AC: 1 No for console & electronics room.							
	e. Lead sheet as per measurement of X-Ray room door.							
	f. Equipment table: 01 No							
	g. Operators chair: 02 Nos							
	h. Voltage stabilizer for X-ray Generator: 01 No							
6.	Power Supply	Input voltage 380 to 480 VAC ± 10%, 50 Hz						
7.	<b>Complete BOQ/BOM.</b> All Foreign & Local supplied items to be listed separately for full range of operation of the equipment as per following table:							
	<b>Ser</b>	<b>Name of item</b>	<b>Qty</b>	<b>Brand</b>	<b>Model</b>	<b>Country of Origin</b>	<b>Country of Manufacturer</b>	<b>Remarks</b>
8.	<b>Foreign Training</b>							
	a.	Operational Training		Not required				
	b.	Repair/Maintenance		Not required				
9.	<b>Local Training</b>							
	a.	Operational Training		02x Operator (For each unit) for 01 week.				
	b.	Repair/Maintenance Training		06 x EM Tech for 02 weeks.				



**RESTRICTED**

Ser no	Description	Technical specification	To be filled up by Principal/Manufacturer
10.	Warranty	05 (Five) years from the date of issuance of Inspection Note (I/Note).	
11.	After sales service	10 (Ten) years from the date of installation	
12.	Certificate of quality	FDA/CE/JIS Certificate must be submitted with offer.	
12.	Books and Publication	Following books and publication will be supplied in English along with the stores free of cost (As per requirement of EME Dte).	
		a. Owners/ Operators Manual in English (Book type): 01 x Hard copy original (Book type) for each equipment and 01x CD/DVD (Soft copy) to be provided with the supply of the equipment.	
		b. Workshop/ Repair Manual in English (Book type): (1) 06 x Hard copies original (Book type) and 01x CD/DVD (Soft copy) to be provided with supply of the equipment. (2) Online workshop/repair software to be mentioned. (3) 03 copies (01 x Original and 02 x photocopies) operation and maintenance manual of all components and accessories to be supplied with main equipment.	
		c. 100% Updated Master Spare Parts Catalogue in English (Book type): 06 x Hard copies original (Book type) and 01x CD/DVD (soft copy) to be provided with supply of the equipment.	
		d. Complete and Updated Master Spare Parts Price Catalogue/ list in English (Book Type): 01 x Hard copy original (Book type) and 01x CD/DVD (soft copy) to be provided with the supply of the equipment.	
14.	Other feature/items not listed above but required for full range of operation of the offered equipment to be mentioned and to be supplied with main equipment.		

