Commodity Description

분류번호	등급	명 칭	수량	단위
A11110.02	2	이동형 디지털 진단용엑스선촬영장치 (영문명 : Mobile Digital Radiography System)	1	sys

A. FEATURES

1. This system is a mobile digital radiography system for bedside examinations in wards, intensive care units, emergency rooms and operating rooms.
2. This system is equipped with a motorized power-assisted drive and a collapsible column to allow safe transport through corridors, doorways and elevators.
3. This system provides wireless flat panel detectors with a cesium iodide scintillator to maintain diagnostic image quality at a reduced radiation dose.
4. This system provides an integrated operation console for image acquisition, processing, review and DICOM transfer, and supports both battery-powered and AC line operation.
5. This system provides an automatic collimator to automatically adjust the radiation field size according to the examination protocol.
6. This system provides radiation dose management functions including dose area product display and radiation dose structured report transfer.

B. SPECIFICATIONS

1. Mobile Main Unit 1 Set

1) Drive type : Motorized power assist
2) Grade climbing ability(degree) : 7 degrees or more
3) Column type : Collapsible
4) Tube rotation, arm axis(degree) : ±180 degrees or equivalent
5) Anti-collision bumper and sensor : Front and side
6) Emergency stop device : Included

[A]

7) Total weight including detector(kg) : 349kg
8) Overall dimensions, width x length(mm) : 555 x 1,258mm
9) Height in parking(folded) position(mm) : 1,396mm
10) SID range from floor(mm) : 550 ~ 2,030mm
11) Tube arm horizontal reach(mm) : 1,355mm
12) Column rotation(degree) : ±315 degrees
13) Tube rotation, tube axis(degree) : -30 ~ +90 degrees
14) Maximum travel speed(km/h) : 5.6km/h

[B]

7) Total weight including detector(kg) : 558kg
8) Overall dimensions, width x length(mm) : 583 x 1,260mm
9) Height in parking(folded) position(mm) : 1,390mm
10) SID range from floor(mm) : 724 ~ 2,058mm
11) Tube arm horizontal reach(mm) : 1,340mm
12) Column rotation(degree) : ±270 degrees
13) Tube rotation, tube axis(degree) : -20 ~ +90 degrees
14) Maximum travel speed(km/h) : 5.8km/h

2. High Frequency Generator 1 Set

1) Maximum output power(kW) : 32kW or more
2) Maximum tube voltage(kVp) : 150kVp or more
3) Minimum tube voltage(kVp) : 40kVp or less
4) Anatomical programmed radiography(APR) : Included

[A]

5) Maximum tube current(mA) : 500mA
6) mAs range(mAs) : 0.1 ~ 500mAs
7) Inverter frequency(kHz) : 30 / 50kHz

[B]

5) Maximum tube current(mA) : 400mA
6) mAs range(mAs) : 0.1 ~ 320mAs
7) Inverter frequency(kHz) : 200kHz

3. X-Ray Tube Unit

1) Type : each vendor unique specification
2) Anode heat storage capacity(kHU) : 300kHU or more (equivalent value acceptable)
3) Focal spot size(mm) - Small : 0.6mm or less (equivalent value acceptable)
4) Focal spot size(mm) - Large : 1.2mm or less (equivalent value acceptable)

4. Collimator 1 Set

1) Lamp type : LED or equivalent
2) Maximum field size at SID 100cm(cm) : 43 x 43cm or more
3) Main unit control panel built in tube head : Included
4) Measuring tape or laser distance indicator : Included

[A]

5) Field adjustment : Manual / Automatic
6) Added filtration : 0.1 / 0.2 / 0.3mmCu, automatic switching

[B]

5) Field adjustment : Automatic
6) Added filtration : 0.1 / 0.2mmCu in combination with aluminum filtration

5. Wireless Flat Panel Detector (14 x 17 inch) 1 EA

1) Scintillator : Cesium Iodide(CsI) or equivalent
2) Effective imaging area(cm) : 35 x 42cm or more for the 14 x 17 inch detector
   25 x 30cm or more for the 10 x 12 inch detector
3) Ingress protection rating(IP) : IP57 or more
4) AED, auto exposure detection : Supported
5) Drop test report : Shall be submitted for each detector
6) Detector battery : 2 EA or more for each detector

[A]

7) Type : Wireless
8) Matrix size(pixel) : 3,040 x 2,466 pixel
9) Pixel pitch(㎛) : 140㎛
10) Limiting spatial resolution(lp/mm) : 3.57 lp/mm
11) Weight including battery(kg) : 2.0kg
12) Housing material : Aluminum and carbon fiber
13) Battery performance per full charge : 500 images / 4 hours

[B]

7) Type : Wireless and wired
8) Matrix size(pixel) : 2,520 x 3,032 pixel
9) Pixel pitch(㎛) : 139㎛
10) Limiting spatial resolution(lp/mm) : 3.6 lp/mm
11) Weight including battery(kg) : 2.36kg / 2.13kg (witiout battery)
12) Housing material : Carbon fiber
13) Battery performance per full charge : 250 images / 6 hours

6. Wireless Flat Panel Detector (10 x 12 inch) 1 EA

[A]

1) Matrix size(pixel) : 2,536 x 2,024 pixel
2) Pixel pitch(㎛) : each vendor unique specification

[B]

1) Matrix size(pixel) : 2,560 x 3,072 pixel
2) Pixel pitch(㎛) : 98㎛

7. Power and Battery System 1 Set

1) AC line(plug-in) operation : Supported
2) System battery warranty(year) : 3 years or more

[A]

3) System battery type : Lithium-ion
4) System battery capacity : 316.8V, 12Ah
5) Performance per full charge : 500 exposures / travel distance 50km
6) Charging time(hour) : 3 hours
7) Charging power source : AC 200 ~ 240V single phase

[B]

3) System battery type : Sealed lead-acid(SLA)
4) System battery capacity : 12Ah
5) Performance per full charge : 200 exposures / travel distance 5.6km
6) Charging time(hour) : 3.7 hours
7) Charging power source : AC 200 ~ 240V single phase

8. Operation Console & Computer System 1 Set

1) Installation type : Integrated with main unit
2) Patient information input by worklist and manual entry : Supported

[A]

3) Main monitor : 21.5 inch
4) Auxiliary monitor on tube arm : 7 inch
5) CPU : Intel Core i3
6) Memory : 16GByte RAM
7) Storage device : SSD 1TByte
8) Operating system : Windows 11
9) Image preview time / cycle time(sec) : 2sec / 4sec
10) Image storage capacity in main unit : 14,000 images

[B]

3) Main monitor : 19 inch, touch screen
4) Auxiliary monitor on tube arm : 8.4 inch, touch screen
5) CPU : Intel Core i5
6) Memory : 16GByte RAM
7) Storage device : SSD 500GByte
8) Operating system : Windows 10
9) Image preview time / cycle time(sec) : 4sec / 20sec
10) Image storage capacity in main unit : 15,000 images

9.	**Network & DICOM**		
	1) DICOM 3.0 : Storage, Storage Commitment, Modality Worklist, MPPS, Query/Retrieve, Print	1	Set
	2) Wireless standard : IEEE 802.11n or more		
	3) Wireless security : WPA2-Enterprise or equivalent		
	4) PACS and EMR interface with the hospital system : Included at supplier's expense		
10.	**Image Processing Software (or equivalent)**	1	Set
	1) Grid-less(virtual grid) processing software		
	2) Multi-frequency processing and contrast enhancement		
	3) Noise reduction and low dose optimization		
	4) Automatic image rotation and orientation detection		
	5) Automatic collimation border detection and masking		
11.	**Dose Management**		
	1) DAP, dose area product display : Included	1	Set
	2) RDSR, radiation dose structured report DICOM transfer : Supported		
	3) Exposure index display in accordance with IEC 62494-1 or equivalent		
	4) Dose record retrieval and export function : Included		
12.	**Accessories**	1	Lot
	1) Hand switch, wired or wireless	2	EA
	2) Barcode scanner	1	EA
	3) Detector charging and storage dock	1	Set
	4) Spare detector battery	2	EA
	5) Grid and grid holder	1	Set
	6) Protective cover for detector	2	EA
	7) Apron hanger	1	Set
	8) Operating manual	1	EA
	9) Service manual (회로도 포함)	1	EA

C. CONFIGURATIONS

1. Mobile Main Unit
2. High Frequency Generator
3. X-Ray Tube Unit
4. Collimator
5. Wireless Flat Panel Detector (14 x 17 inch)
6. Wireless Flat Panel Detector (10 x 12 inch)
7. Power and Battery System
8. Operation Console & Computer System
9. Network & DICOM
10. Image Processing Software
11. Dose Management
12. Accessories
13. Service Manual

D. REMARKS

1. Supplier or contractor should be responsible for installation of this equipment.
2. The warranty for the equipment is three years after inspection (including all components except those specified as consumables).

3. An annual inspection of all components must be conducted at least once a year until the equipment is decommissioned, and the results must be submitted in writing to the medical engineering team.
4. The warranty period for parts supplied for a fee after the warranty period ends will be one year.
5. Before the end of the warranty period, a full inspection of the equipment must be carried out, and any defective parts and components must be restored to normal condition. The battery must be replaced regardless of its condition.
6. Service passwords, hardware keys, and other encryption systems necessary for using and maintaining the equipment must be provided. If encryption systems cannot be provided, technical support must be offered free of charge at any time.
7. All service activities, including preventive maintenance, must be reported to the medical engineering team before work, and confirmation from the medical engineering team must be obtained after work. Any service that is not confirmed by the proper procedures will be considered invalid.
8. The service manual must include circuit diagrams and information necessary for post-maintenance. If not submitted, the warranty period will be extended by one year. (If the circuit diagram is not included, alternative A/S information recognized by the medical engineering team must be provided.)
9. This configuration includes all options available from the supplier. Any additional or confirmed options before delivery must be included in the final delivery.
10. Maintenance training must be provided to the medical engineering team personnel at the supplier's expense, covering the following : Theory + Practical Training (The training location and schedule will be mutually agreed upon.)
11. The supplier shall provide training necessary for the operation of the supplied equipment.