공 통 규 격 서

▶ 입찰서는 최소한의 기준사양을 알려드리오니 기준사양에 적합하거나, 그 이상의 규격을 가진 제품을 제시하여 주시기 바랍니다.

HSK No.	세부품명 번호	품 명	수량 (Q'ty)
9022.14		Angiography System_Mono (거치형 디지털식순환기용 엑스선투시 진단장치)	1 sys

A. Features

1. Excellent image quality at the lowest possible dose with New developed 20" Flat Detector.
2. Its 16-bit dynamic flat detector offers 154 micron pixels for higher resolution and a DQE(0) of 77% that provides better image quality, especially for low dose fluoroscopy.
3. To make operation as convenient as possible, New User interface can be positioned on all sides of the patient table.
4. This RIS/CIS DICOM interface option uses DICOM Worklist Management (DICOM WLM) and Modality Performed Procedure Step (DICOM MPPS) standards to enable two-way communication between main system and a local Information System.

B. Consist of ;

1.	Fully balanced ceiling suspended C-arm stand	1 set
2.	Patient Table	1 set
3.	Microprocessor controlled, 100kW high frequency converter generator	1 set
4.	Digital pulsed fluoro	1 set
5.	Digital Acquisition	1 set
6.	X-ray tube assembly	1 set
7.	Image Detection, Dynamic Flat Detector	1 set
8.	Monitor ceiling suspension for LCD monitors	1 set
9.	Large LCD monitor in the exam room	1 set
10.	Geometry Automatic Position Controller	1 set
11.	Viewing station for patient management	1 set
12.	Parallel processing for current and old patient	1 set
13.	Table Side Operation Module	1 set
14.	Dose management	1 set
15.	Advanced Image Processing technique	1 set
16.	Safety system	1 set
17.	ProcedureCards or Equivalent	1 set
18.	Patinent FOV reposition without X-ray	1 set
19.	Storage Capacity extension	1 set
20.	Interventional hardware	1 set
21.	Display solution for control room	1 set
22.	Vascular Quantification Software Package	1 set
23.	Extensive 3D visualization of anatomy of vessels	1 set
24.	Overlaying real-time 2D fluoroscopy images on a 3D reconstruction of the vessel tree	1 set
25.	3D acquisition to visualize vascular structures and to visualize accumulation of contrast medium in tumors in a single automatic step	1 set
26.	Reuse of 3D vascular anatomical information from existing CTA and MRA datasets as a 3D roadmap overlay on a live X-ray image	1 set
27.	Needle guidance package	1 set
28.	Automatic vessel navigation software for TACE case support	1 set
29.	Bolus chasing	1 set
30.	DICOM Interface	1 set
31.	Special Option	1 set
32.	Standard Accessories	1 lot
33.	Local Accessories	1 lot

C. Specifications ;

1. Fully balanced ceiling suspended C-arm stand — 1 set
   1) Depth of C-arm : 90cm or more
   2) Projection angles
      - Angulation (Head end) : 90°/90° or more
      - Rotation (Head end) : 120°/185° or 150°/180°
      - Angulation (Patient left & right side):120°/185° or equivalent
      - Rotation (Patient side) : 90°/90° LAO / RAO or equivalent
   3) SID : 89.5 to 119.5 cm or equivalent
   4) Arm movement can be performed manually and motorized

2. Patient Table — 1 set
   1) Tabletop length : 281.5 cm or more
   2) Tabletop width : 50 cm or more
   3) Table Height : 74 ~ 102 cm or more

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4) Transversal float : 35 cm or more
5) Maximum allowable load weight : 325 kg or more
6) CPR can be performed at any position of table

3. Microprocessor controlled, 100kW high frequency converter generator — 1 set
1) Voltage range : 40 to 125 kV or 50 to 125 kV
2) Maximum current : 1000 mA or equivalent

4. Digital pulsed fluoro — 1 set
1) Pulse rates : 0.5, 1, 2, 3, 4, 6, 7.5, 10, 15, 30 pulses per second or equivalent
2) Grid-switched fluoroscopy

5. Digital Acquisition — 1 set
1) Customized with a virtually unlimited number of acquisition programs
2) Realtime image processing algorithm Xres provides excellent image quality with reduce noise in clinical images

6. X-ray tube assembly — 1 set
1) Type : Spiral groove or liquid bearing
2) 0.4/0.7 or 0.3/0.4/0.7mm focal spot
3) Mechanical built in Grid Switching technical
4) Max. anode cooling rate : 1520 kHU/min or more
5) Max. anode heat storage capacity : 5.2 MHU or more
6) Max. assembly heat storage: 7.3 MHU or more
7) Cooling type : Direct oil cooling or Oil / Water cooling
8) Synchronous rotation of Tube, Detector, Table for heads-up image: Straight View or FlexArm

7. Image Detection, Dynamic Flat Detector — 1 set
1) Max. FOV : 48 cm diagonal or more
2) Detector zoom fields : 48/42/37/31/27/22/19/15 cm diagonal or equivalent
3) Image matrix : 2480 x 1904 pixels at 16 bits depth or more
4) Pixel size : 154 x 154 microns or less
5) Detector bit depth : 16 bits or more
6) 3D image Bit depth : 8 bits or more
7) Nyquist frequency : 3.25 lp/mm or equivalent
8) DQE : 77% at 0 lp/mm or equivalent
9) SID can be controlled motorized and manually

8. Monitor ceiling suspension for LCD monitors — 1 set
1) Allows flexible, freely rotating positioning with an excellent viewing angle
2) Monitors rotate range : 330° or more

9. Large LCD monitor in the exam room — 1 set
1) 55 inch or equivalent, 8 Megapixel color LCD with 3840x2160 native resolution or equivalent
2) Max Brightness : 400 Cd/m2 (typical) or equivalent
3) Viewing angle : 176 deg or equivalent
4) Display information from up to 8 sources simultaneously or equivalent
5) Number of display layout : 12 or rmore
6) Resize and/or enlarge information at any stage during the case
7) Emergency backup display integrated or equivalent

10. Geometry Automatic Position Controller — 1 set
1) Recall stand positions using reference image source
2) Reproducing precise coordinates (height, longitude and latitude)
3) Brings the table back to the original table position stored, without applying additional X-ray dose.

11. Viewing station for patient management — 1 set
1) Power on/off of the system
2) Exam and run cycle
3) Adjustment of contrast, brightness, and edge enhancement
4) Exam, run, and image stepping
5) Run and exam overview
6) Basic review functionality as image invert and digital zoom
7) Go to basic settings

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8) Reset fluoroscopy timer and switch X-ray on/off

12. Parallel processing for current and old patient — 1 set
    - Independent workstation control between control room with exam room

13. Table Side Operation Module — 1 set
    1) Fluoroscopy Flavor selection as defined via clinical Setting
    2) Shutters and wedge positioning
    3) Manual or automatic wedge including position on the last image without radiation
    4) Fluoro Storage to record
    5) Selection of the detector field size
    6) Preferred beam width and Fluoro Grab to store the last fluoro image
    7) Reset of the fluoroscopy buzzer
    8) Real-time substraction and Fluoro Trace subtract
    9) Tabletop float
    10) Table height position
    11) Source Image Distance (SID) selection
    12) Stand positioning
    13) Longitudinal movement of the stand along the ceiling
    14) Stand rotation in an axis perpendicular to the ceiling
    15) Store and recall of two scratch stand positions including SID
    16) Emergency stop button
    17) Accept button of the Automatic Positioning Control
    18) Touchscreen controller for system software

14. Dose management — 1 set
    1) X-ray filteration : 0.2/0.5/1.0 mm Cu. or more
    2) Filter control: Automatic or Manual
       - 0.5mm or more Cu filter should be inserted at 28cm of H2O thickness
    3) Virtual collimation of the shutters and wedges on the last image
       - It eliminate additional X-ray dose during collimation changes
    4) Double shutters and wedge filters
    5) Anatomical filters
    6) Automatic wedge positioning
       - Wedge filters can be positioned automatically according to gantry positions
    7) Total dose information

15. Advanced Image Processing technique — 1 set
    1) Clarity image processing technology
    2) Flexible digital imaging pipeline
    3) Clinical optimized parameters in the entire imaging chain
    4) Automatic Pixel Shift
    5) Motion Compensation
    6) Noise Reduction
    7) Image Enhancement

16. Safety system — 1 set
    - Real time patient sensing auto stop without touch the patient

17. ProcedureCards or equivalent — 1 set
    - With one click you can select exam presets to accelerate and standardize preparation

18. Patinent FOV reposition without X-ray — 1 set
    - Allows you to change the table height, pan, or move the geometry on Last Image Hold (LIH) image without using fluoroscopy

19. Storage Capacity extension — 1 set
    - Storage capacity : 100,000 images per each plane at 1024^2
      25,000 images per each plane at 2048^2

20. Interventional hardware — 1 set
    1) Workstation
    2) Memory : 16GB or more
    3) Optical drive : 16 x DVD+/-RW Drive or equivalent

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4) 19" Color monitor or more

21. Display solution for control room — 1 set
    - Integrated work spot in the Control room to view, control and manipulate all applications within a single view
    - 19" Color Display or more
    - Format Native format 1280 x 1024 or more
    - Calibrated luminance : 400 cd/m2 or more
    - Wide viewing angle Wide viewing angle (approx. 178 degrees)
    - Luminance stability Long term luminance stability through backlight
    - Brightness control Automatic brightness control with backlight sensor

22. Vascular Quantification Software Package — 1 set

23. Extensive 3D visualization of anatomy of vessels — 1 set
    1) Rotation speed : 55°/s or more
    2) Acquisition rate : 60 f/s or more
    3) Image Zoom for 3D image review
    4) Refine 3D Volume for 2nd 3D reconstruction on smaller VOI with better sharpness
    5) Various image rendering
    6) MPR (Multi-Planar Reformatting)
    7) SpineView, CalciView
    8) Automated Vessel Analysis (AVA)
    9) Reconstructive Zooming Technique
    10) Automatic Voxelshift
    11) 3D Follow C-arm
        - 3D images can move automatically with C-arm
    12) 3D APC
        - After moving 3D images, C-arm moved automatically
    13) Volume matrix : 384 x 384 or more

24. Overlaying real-time 2D fluoroscopy images on a 3D reconstruction of the vessel tree — 1 set
    1) Real time fusion with 3D image and live fluoro image
    2) 3D APC
    3) 3D Follow C-arc
    4) 3D roadmapping available on below conditions
        - Change of C-arc angulation/rotation
        - Change of FOV
        - Change of SID
        - Change of table position

25. 3D acquisition to visualize vascular structures and to visualize accumulation of contrast medium in tumors in a single automatic step — 1 set
    1) CT like image acquisition
    2) Various protocol for each study
    3) Acquisition frame rate : 60 fps
    4) Metal artifact reduction
    5) Volume matrix : 384 x 384 or more

26. Reuse of 3D vascular anatomical information from existing CTA and MRA datasets as a 3D roadmap overlay on a live X-ray image — 1 set

27. Needle guidance package — 1 set
    1) Real time needle guidance package
    2) Virtual needle paths are created on an AngioCT dataset or on the prevoius acquired CT or MR or PET/CT dataset

28. Automatic vessel navigation software for TACE case support — 1 set
    1) Automatic Feeder Detection
    2) Manually add and/or remove feeding vessels
    3) Follow Feeder
    4) 3D Landmarks
    5) Live 3D Image Guidance
    6) Storage of the live 2D-3D overlay runs

29. Bolus chasing — 1 set

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30. DICOM Interface — 1 set

1) DICOM Work List Management (WLM)
2) Modality Performed Procedure Step (DICOM MPPS)
3) DICOM SC/XA
4) DICOM SR

31. Special Option : A type or B type — 1 set

[A type]

1) CLEARmax
   - Advanced asymmetric edge enhancement imaging algorithm without extra dose
2) Roadmap Opacity
   - Individual windowing of vessel map and device image
   - Separate adjustment of overlaid image
   - Separate adjustment of device
3) Detector integrated control panel
   - Adjust C-arm movement, angulation, SID and rotation
4) syngo Dyna3D DSA
   - Automated 3D subtracted image for Dual Volume
   - Native, Fill, Subtracted 3D image with 2 rotations in 1 run
5) Tube Emergency Mode
   - Automatic focal spot backup mode
   - Switch to differenct Focal Spot when focal spot failure occurs
   - Continue procedure without having to reboot the system
6) Overlay Reference
   - Full-filled vessel image overlaid on live image for image guidance
   - Change vessel map density for better image quality on live fluoro
   - Seamless integration into workflow and in daily clinical practice
7) Side Position CBCT
   - 200 deg Rotational 3D acquisition at Left / Right Position
   - Acquire equivalent CBCT image quality as when acquired from Head Position
8) CAREfilter
   - Automatic Cu prefiltration for reduction of skin dose
9) Laser guideline for system fast positioning
   - Detector integrated laser crosshair for centered & angled position guide
   - Radiation free C-arm positioning
   - Laser-guided synchronized embolization guidance

[B type]

1) Clarity IQ technology
   - Clarity image processing technology
   - Flexible digital imaging pipeline
   - Motion Compensation
   - Noise Reduction
2) SmartCT Vaso
   - Zoomed in High Resolution CBCT
3) Remote controller, Viewpad
   - Run and image selection, Exam and run cycle, Review speed
   - Run and exam overview, Active exam sub files
   - Flagging exam and run for storage, Digital zoom
   - Storing reference run or image to reference monitors
   - Select reference monitors for review and/or processing of previous run exposures
   - Subtraction and image mask selection
4) Injector coupling function on table side touch screen module
5) FlexVision Pro
   - Enables full and flexible viewing and control at table side of a connected applications
   - Live re-size and single-click image capture
6) Advanced Touch screen module function, Touch Screen Module Pro
   - Enables table side control of applications via tablet-like interface with on screen image display
7) SmartCT Helical
   - Maximize image quality by using a dual-axis rotational acquisition with an optimized trajectory by minimizing artifacts
8) SmartCT Dual phase Cerebral
   - High resolution IV-CBCT protocol for Stroke patient to access clots and collatral by sequentially acquiring CBCT

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32. Standard Accessories — 1 lot
    1) Tabletop mattress
    2) Mattress cover
    3) Lower body radiation protection
    4) Upper body radiation protection
    5) LED Lamp (70,000 Lux)
    6) Arm Holder
    7) Arm rest
    8) Head rest
    9) Infusion bottle holder
    10) Intercom Solution
    11) Examination light
    12) 2nd Controller
    13) 이동형 트롤리
    14) Wireless footswitch
    15) Wired footswitch

33. Local Accessories — 1 lot
    Refer to the addendum

D. Remarks

1. Installation
   Contractor is responsible for installation of this equipment at customer's premise.
2. The warranty for the equipment is three years after inspection. (including all components except those specified as consumables)
3. An inspection of all components must be conducted every two months 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. A copy of the HDD for the recovery of this equipment, or an equivalent solution, must be provided. If provision is not possible, software reinstallation due to failure must be provided free of charge by the supplier until the equipment is decommissioned.
7. 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.
8. 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.
9. 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.)
10. This configuration includes all options provided by the supplier. Any additional or confirmed options before delivery must be included in the final delivery.
11. The "Supplier" must provide training to the operator if the "Purchaser" asks, to ensure the equipment can be used efficiently. The "Supplier "must also cover the cost of maintenance and service training provided by the manufacturer for the Medical Engineering team, which includes basic equipment training and any other relevant training for the equipment in the contract. The training schedule will be set by mutual agreement.
12. The terms for entering into a maintenance contract after the warranty period are as follows:
    1) The contract amount will follow the proposal submitted at the time of the agreement.
    2) The contract amount and conditions are not unilateral and can be reasonably adjusted within the proposed amount based on mutual trust.
    3) The contract conditions include all parts.
13. The "Supplier" must replace the Main System with the latest specifications once within 48 months after the installation of the equipment.
14. All provisions in these Remarks apply equally to all items supplied by local agencies and third-party vendors included in the specifications