

H.S.No.	" Specification "	Q'ty
9022 14 1020	Bi plane Interventional X-ray imaging system Azurion 7B2015	1 system

A. Application

1. Angiography is an imaging test that uses X-rays to view patient's blood vessels. This test is used to study narrow, blocked, enlarge, or malformed arteries or veins in many parts of patient's body, including their brain, heart, abdomen, and legs.

B. Features

1. Excellent image quality at the lowest possible dose
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, the Geometry Table Side Operation Module (TSO) can be positioned on all sides of the patient table. TSO Module can be positioned at all sides of the patient table, while retaining intuitive button operation.
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.

C. Configuration

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|--|-------|
| 1. Fully balanced floor mounted Frontal stand | 1 set |
| 2. Ceiling suspended double lateral C-arm | 1 set |
| 3. Patient table | 1 set |
| 4. Microprocessor controlled, 100kW high frequency converter generator | 2set |
| 5. Digital pulsed fluoro | 1 set |
| 6. Digital Acquisition | 1 set |
| 7. Frontal High power Metal tube assembly, MRC-GS 200 + 0407 | 1 set |
| 8. Lateral High power Metal tube assembly, MRC-GS 200+ 0508 | 1 set |
| 9. Frontal Image Detection, Dynamic Flat Detector | 1 set |
| 10. Lateral Image Detection, Dynamic Flat Detector | 1 set |
| 11. Monitor ceiling suspension for LCD monitors | 1 set |
| 12. FlexVision XL - color LCD monitor in the exam room | 1 pkg |
| 13. On-Screen display | 1 set |
| 14. Geometry Automatic Position Controller | 1 set |
| 15. Patient Table Automatic Position Controller | 1 set |
| 16. Viewing station for patient management | 1 set |
| 17. Instant Parallel Working | 1 set |
| 18. Table Side Operation Module | 1 set |
| 19. Touch screen module for system control | 2 set |
| 20. Dose management | 1 set |

21.	Safety system	1 set
22.	ProcedureCards.	1 set
23.	Zero Dose Positioning	1 set
24.	Storage Capacity extension	1 set
25.	Real time digital link	1 set
26.	DICOM Interface	1 set
27.	FD Dual Fluoro Bi	1 set
28.	SMART Mask	1 set
29.	Digital Subtraction Angio	1 set
30.	Clarity IQ technology (Unique)	1 Pkg
31.	SmartCT Angio	1 pkg.
32.	SmartCT Roadmap	1 pkg.
33.	SmartCT Soft Tissue	1 pkg.
34.	SmartCT Vaso (Neuro)	1 pkg.
35.	Real time needle guidance package, XperGuide (Radiology)	1 pkg.
36.	VesselNavigator (Radiology)	1 pkg.
37.	Emboguide software package (Radiology)	1 pkg.
38.	Quantitative Vascular Analysis	1 pkg.
39.	Extention to FlexVision Pro (Unique)	1 set
40.	Touch Screen Module Pro (Unique)	1 set
41.	FlexSpot (Unique)	1 set
42.	Accessories	1 lot
43.	Local accessories	1 lot

D. Specification

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| 1. | Fully balanced floor mounted Frontal stand | 1 set |
| | 1) Rotation range : 120 deg.LAO/185 deg.RAO in head position
90 deg.LAO/90 deg.RAO in side position | |
| | 2) Angulation range : 90 deg. cranial/90 deg. caudal in head position
185 deg. cranial/120 deg. caudal in side position | |
| | 3) SID : 89.5 ~119.5 cm | |
| | 4) Arm movement can be performed manually and motorized. | |
| 2. | Ceiling suspended double lateral C-arm | 1 set |
| | 1) Rotation range : -27 deg. RAO to -115 deg. RAO | |
| | 2) Angulation range : 45 deg. cranial/45 deg. caudal at any rotation angle | |
| | 3) SID : 87.5 ~130.2 cm | |
| | 4) Arm movement can be performed manually and motorized. | |
| | 5) Motorized and manual parking | |
| 3. | Patient table | 1 set |
| | 1) Tabletop length : 319 cm | |
| | 2) Tabletop width : 50 cm | |
| | 3) Motorized tabletop height adjustment : 74 to 102 cm | |
| 4. | Microprocessor controlled, 100kW high frequency converter generator | 2set |
| | 1) Voltage range : 40 to 125 kV | |
| | 2) Maximum current : 1000mA at 100kV | |
| 5. | Digital pulsed fluoro | 1 set |

- 1) Pulse rates : 3.75, 7.5, 15 and 30 pulses per second
- 2) Grid-switched pulsed fluoroscopy

6. 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.

7. Frontal High power Metal tube assembly, MRC-GS 200 + 0407 1 set
 - 1) Type : Spiral groove (No bearing type)
 - 2) 0.4/0.7 mm focal spot, 30/65 kW
 - 3) Grid Switching at pulsed fluoroscopy
 - 4) Max. anode cooling rate : 1750 kHU/min
 - 5) Max. anode heat storage capacity : 6.4 MHU
 - 6) Max. assembly heat storage: 9.4 MHU

8. Lateral High power Metal tube assembly, MRC-GS 200+ 0508 1 set
 - 1) Type : Spiral groove (No bearing type)
 - 2) 0.5/0.8 mm focal spot, 45/85 kW
 - 3) Mechanical built in Grid Switching technical
 - 4) Max. anode cooling rate : 1,750 kHU/min
 - 5) Max. anode heat storage capacity : 6.4 MHU
 - 6) Max. assembly heat storage: 9.4 MHU
 - 7) Anode heat dissipation : 21,000 W
 - 8) Continuous anode heat dissipation : 3,500 W
 - 9) Cooling type : Direct oil cooling

9. Frontal Image Detection, Dynamic Flat Detector 1 set
 - 1) Size of detector housing : frontal 68 cm diagonal including BodyGuard, lateral 57 cm diagonal
 - 2) Max. FOV : 48 cm diagonal
 - 3) Detector zoom fields : 42/37/31/27/23/19/16 cm diagonal
 - 4) Image matrix : 1904 x 2586 0 pixels at 16 bits depth
 - 5) Pixel size : 154 x 154 microns
 - 6) Detector bit depth : 16 bits
 - 7) Nyquist frequency : 3.25 lp/mm
 - 8) DQE : 77% at 0 lp/mm
 - 9) SID can be controlled motorized and manually

10. Lateral Image Detection, Dynamic Flat Detector 1 set
 - Size of detector housing : 42.1 cm x 38.1 cm
 - Max. FOV : 39cm diagonal
 - Detector zoom fields : 38/31/26/23/19/16 cm diagonal
 - Image matrix : 1560 x 1420 pixels at 16 bits depth
 - Pixel size : 184 x 184 microns
 - Detector bit depth : 16 bits
 - Nyquist frequency : 2.72 lp/mm
 - DQE : 70% at 0 lp/mm
 - SID can be controlled motorized and manually

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| 11. Monitor ceiling suspension for LCD monitors
1) Ceiling suspended monitor can be motorized height adjustment
2) Monitors rotate range : 350 degrees | 1 set |
| 12. FlexVision XL - color LCD monitor in the exam room
1) Display information from up to 8 sources simultaneously
2) Resize and/or enlarge information at any stage during the case | 1 pkg |
| 13. On-Screen display
1) X-ray indicator
2) X-ray tube temperature condition
3) Radiographic parameters: kV, mA, ms
4) Rotation and angulation of the stand positions
5) Table height
6) Detector field size display
7) General system messages
8) Selected frame speed
9) Fluoroscopy mode
10) Integrated fluoroscopy time
11) Air Kerma dose (both rate and accumulated X-ray dose)
12) Dose Area Product (both rate and accumulated X-ray dose) | 1 set |
| 14. Geometry Automatic Position Controller
1) Reproducing precise coordinates
2) Recall stand positions using reference image source. | 1 set |
| 15. Patient Table Automatic Position Controller
1) Reproducing precise coordinates (height, longitude and latitude)
2) Brings the table back to the original table position stored, without applying additional X-ray dose. | 1 set |
| 16. Viewing station for patient management
1) Power on/off of the system
2) Exam and run cycle
3) Exam, run, and image stepping
4) Run and exam overview
5) Delete run
6) Basic review functionality as image invert and digital zoom
7) Go to basic settings
8) Reset fluoroscopy timer and switch X-ray on/off.
9) Remote controller | 1 set |
| 17. Instant Parallel Working
1) Allows you to work independently and together in exam room and control room, without interrupting each other
2) Prepare the next patient or report on previous patient | 1 set |
| 18. Table Side Operation Module
1)Pivot Lock
2)Tabletop float | 1 set |

- 3)Tabletop motorized float
 - 4)Table height position
 - 5)Source Image Distance selection
 - 6)Stand positioning
 - 7)Longitudinal movement of the stand along the ceiling
 - 8)Stand rotation in an axis perpendicular to the ceiling
 - 9)Store and recall of 'unlimited' number of stand positions via the touch screen module.
 - 10)Accept button to activate an APC position selected on touch screen module
 - 11)Emergency stop button
 - 12)Geometry reset button, which resets stand and table to a default service configurable
 - 13)starting position
 - 14)Fluoroscopy mode selection as defined via settings
 - 15)Positioning of shutters and wedges without radiation
 - 16)Fluoro storage to record fluoroscopy up to 2000 images
 - 17)Selection of the detector field size
 - 18)Reset of the fluoroscopy buzzer
19. Touch screen module for system control 2 set
 The touch screen module has a touch screen, which can be operated when covered with sterile covers. The touch screen module allows control of (depending on configuration):
 - Interventional Tools,
 - Monitor layout
 - X-Ray settings (Collimation, Projections, Table, Series and Processing)
 20. Dose management 1 set
 - 1) X-ray filtration : 0.2/0.5/1.0 mm Cu.
 - 2) Manual filter control
 - 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) table side and control room in the object
 - 7) Automatic wedge positioning
 - Wedge filters can be positioned automatically according to gantry positions
 - 8) Total dose information
 21. Safety system 1 set
 - 1) Real time patient sensing auto stop without touch the patient
 22. ProcedureCards. 1 set
 With one click you can select exam presets to accelerate and standardize preparation
 Optimize and standardize system set-up from routine to mixed procedures
 Increase the consistency of exams by offering presets

Hospital checklists and/or protocols can be uploaded

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| 23. | Zero Dose Positioning
Allows you to change the table height, pan, or move the geometry on Last Image Hold (LIH) image without using fluoroscopy | 1 set |
| 24. | Storage Capacity extension
1) Storage capacity : 100,000 images per each plane at 1024 ²
50,000 images per each plane at 2048 ² | 1 set |
| 25. | Real time digital link
- Real Time digital image link between the Interventional Hardware and main system
- This dedicated digital link sends raw or processed image data real time during monoplan exposures
to the connected Interventional Hardware station to allow instant results of the applicable reconstruction after the exposure run. | 1 set |
| 26. | DICOM Interface
1) DICOM Work List Management (WLM)
2) Modality Performed Procedure Step (DICOM MPPS)
3) DICOM SC/XA
4) DICOM SR | 1 set |
| 27. | FD Dual Fluoro Bi
An additional fluoro channel in parallel to the standard fluoro channel
View the subtracted fluoroscopy next to the default non subtracted fluoroscopy
View a digitally zoomed fluoroscopy image next to the default fluoroscopy image | 1 set |
| 28. | SMART Mask
Simplifies the roadmapping procedures by overlaying on the live monitor fluoroscopy with a selected reference image.
The reference image can be faded in/out with variable intensity controlled from the viewpad.
SmartMask overlays with Live image being displayed in live monitor | 1 set |
| 29. | Digital Subtraction Angio
1) Vascular DSA acquisition speeds at 1024 matrix : 0.5/1/2/3/6 fps
2) Fluoro Trace
3) Fluoro Subtract
4) Exposure subtract
5) Mask selection
6) Real-time Pixel shift | 1 set |
| 30. | Clarity IQ technology (Unique)
1) Clarity image processing technology
2) Automatic Pixel Shift
3) Motion Compensation | 1 Pkg |

- 4) Noise Reduction
- 5) Image Enhancement

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| 31. SmartCT Angio | 1 pkg. |
| <ul style="list-style-type: none"> 1) 3D-RA (3D Rotational Angiography) provides extensive 3D visualization of anatomy and vessels. 2) Provides 3D imaging in the interventional suite to enhance decision making and guidance 3) Supports accurate assessment of vascular pathologies by providing high-resolution 3D reconstructions of small vessels and lesions 4) Enhances understanding of vascular anatomy for interventional treatment planning and to verify procedural outcome | |
| 32. SmartCT Roadmap | 1 pkg. |
| <ul style="list-style-type: none"> 1) Real time fusion with 3D image and live fluoro image 2) Real time 3D roadmapping | |
| 33. SmartCT Soft Tissue | 1 pkg. |
| <ul style="list-style-type: none"> 1) Allows Cone Beam CT (CBCT) acquisition technique augmented with step-by-step guidance, Advanced 3D visualization and measurement tools all accessible on the touch screen module at table side. 2) Available for brain, thoracic, abdominal, and pelvic imaging to support the treatment of patients with vascular diseases, cancer, or trauma. Furthermore, 3D brain imaging in stroke patients enables the detection of early ischemic changes and identification of bleedings. All protocols can be selected at the tableside via the touch screen module. | |
| 34. SmartCT Vaso (Neuro) | 1 pkg. |
| It is unique interventional tool for ischemic stroke intervention, based on intra-venous contrast injection, which visualizes location, | |
| 35. Real time needle guidance package, XperGuide (Radiology) | 1 pkg. |
| <ul style="list-style-type: none"> 1) Virtual needle paths are created on an XperCT dataset or on the previous acquired CT or MR or PET/CT dataset | |
| 36. VesselNavigator (Radiology) | 1 pkg. |
| <ul style="list-style-type: none"> 1) 3D vascular anatomical information from existing CTA and MRA datasets as a 3D roadmap overlay on a live X-ray image 2) Supports navigation through complex vessel structures, enhancing clinical outcomes 3) Reusing a pre-acquired CTA or MRA reduces the need for contrast enhanced runs | |
| 37. Emboguide software package (Radiology) | 1 pkg. |
| <ul style="list-style-type: none"> 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 | |

7) Table-side control

38.	Quantitative Vascular Analysis	1 pkg.
39.	Extention to FlexVision Pro	1 set
	1) Enables full and flexible viewing and control at table side of all connected applications	
	2) Live re-size and single-click image capture	
40.	Touch Screen Module Pro	1 set
	Enables table side control of applications via tablet-like interface with on screen image display.	
41.	FlexSpot	1 set
	Integrated work spot in the Control room to view, control and manipulate all applications within a single view	
	- Size 27 inch color TFT-LCD display	
	- Format Native format 2560x1440 Quad HD	
	- High Brightness High brightness (max 500 Cd/m2, default 350 Cd/m2)	
	- 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	
42.	Accessories	1 lot
	- Rail accessory clamps	1 ea
	- Mattress	1 ea
	- Arm supports	1 ea
	- Dripstand	1 ea
	- Pan handle	1 ea
	- Table mounted radiation shield	1 ea
	- Intercom	1 ea
	- Examination light	1 ea
	- Foot switch	1 ea
43.	Local accessories	1 lot
	Auto injector (Illumena NEO Ceiling Type)	1 set
	Furniture	1 set
	Infusion pump (TE-LM730)	3 set
	Ultra sound & Mobile scanner (LOGIQ Totus _Compact 5300G)	1 set
	Patient monitor (CM12_PM60))	1 set
	Mobile Protector	1 set
	Apron & Thyroid	3 set
	Live Streaming Recording System	1 set
	NAS server storage	1 set
	판독용 monitor	2 set
	Interior	1 set

E. REMARKS

1. Installation
Contractor is responsible for installation of this equipment at customer's premise.
2. Warranty
Contractor or supplier shall be responsible for free of charge after-service for three years
3. Training
Contractor or supplier should provide local training for operation for 1 week to an operator.

영상의학과 교수: 노지영 (인)

