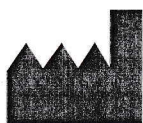
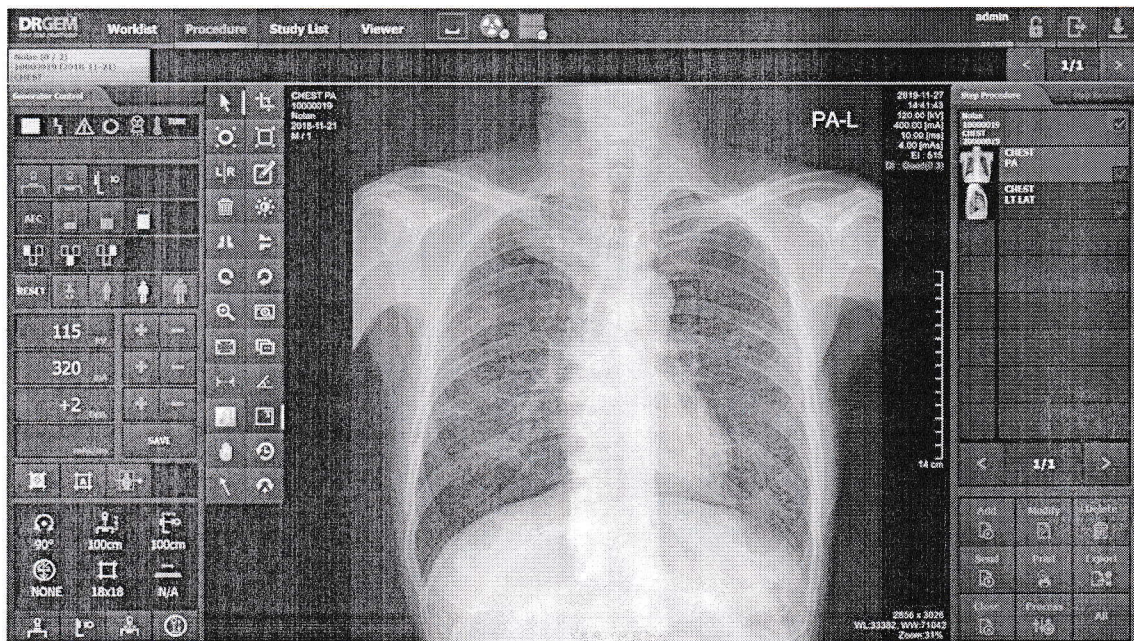


# GXR-SD/CSD/USD

## PREMIUM Series

### Digital Radiography System

# Operation Manual



#### DRGEM Corporation

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## REVISION HISTORY

Revision Number	Date	Description
0	DEC 12, 2014	First Edition
1	DEC 17, 2016	Add Ceiling auto stitching function
2	JUN 20, 2017	Transition of NB (DNV-GL NB# 0434 -> DNV GL NE MKO PRESAFE AS NB#2460),
3	AUG 21, 2017	Add the collimator (DXC-RM) Add the Motorized Type Equipment (TS_FC2, TS_FC4, TS_FC6, WBS-TM, WBS) Add the auto stitching function(TS_FM6, TS,FC6)
4	APR 09, 2018	Add new Graphic User Interface
5	NOV 10, 2018	Change Standard(EMC 4 , Safety 3.1) Add Mano Detector(Mano4343X, Mano434T) Change name of manufacture for Tube. (TOSHIBA -> CANON, VARIAN -> VAREX)
6	MAR 15, 2019	Add the TS_CSP. Add the 1100mm longitudinal Option for PBT-6
7	JUL 19, 2019	Add the Ceiling Rail of Option for TS_FM6 Change of Bucky size for Wall bucky Stand. Add Mano Detector(Mano4343W, Mano4336W) Add Varex Detector(4343RC)
8	DEC 11, 2019	Add Built-in Memory function.
9	APR 16, 2020	Addition of XRPad2, PaxScan4343W, VIVIX-S series Detectors Separate RADMAX SOFTWARE content. Refer to the RADMAX manual(RMD1804-001)
10	APR 27, 2020	Added Worklist Function. Added Mechanical detent (option)
11	MAY 04, 2020	Apply the tube arm detent for TS_FM6, TS_FC6
12	JUL 24, 2020	Change of column rotation assembly for TS_FM6 Change of Table top assembly for Table Add 9 preset function Add cobb's angle function Add tube & line enhancement function

		Add detector built-in charger function Add APR positioning guide function
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## ADVISORY SYMBOLS

The following advisory symbols are used throughout this manual. Their application and meaning are described below.

**WARNING**

Warning symbol is used to indicate a potential hazard for operators and service personnel that can lead to serious injury, death or radiation exposure.

**CAUTION**

Caution symbol is used to indicate a potential hazard for operators and service personnel that can lead to injury or damage of equipment.

**NOTE**

Note symbol is used to indicate important information needed for proper use and correct operation of equipment.

**NOTE**

**Keep this Software Manual with the equipment at all times, and review the important information whenever required.**

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**NOTE**

**Consult Accompanying Documents - As Applicable**

**INDICATIONS for USE STATEMENT:**

The GXR-SD/CSD/USD Series Diagnostic X-Ray System, is a stationary X-ray imaging system, for the purpose of acquiring X-ray images of the desired parts of a patient's anatomy. This device is not intended for mammography or bone density applications.

This device contains expansions of capability and modifications that are applicable to and permitted by FDA guideline "Enforcement Policy for Imaging Systems During the Coronavirus Disease 2019 (COVID-19) Public Health Emergency". Accordingly, user of this device must abide by following

**CAUTION**

U.S. A. Federal law restricts this device to sale by or on the order of a physician.

**CAUTION**

Information provided by the product are adjunctive (supporting) and should not be solely or primarily relied upon to diagnose or treat COVID-19

**CAUTION**

This device is not indicated for the diagnosis of COVID-19 and that in vitro diagnostic testing is currently the only definitive method to diagnose COVID-19.

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## 1. INTRODUCTION

This manual contains the necessary instructions for proper operation of GXR-SD/CSD/USD PREMIUM System. All persons operating this equipment need to have read this manual beforehand. You must have a thorough understanding in the proper use of this product before you make any radiographic exposures.

### 1.1 INTENDED USE & FEATURES

This diagnostic x-ray system is designed to diagnose human body by providing radiographic x-ray image with anatomical structure

This GXR-SD/CSD/USD PREMIUM System “is for use by medical professionals”

To prevent excess radiation exposure to patient and operator from either primary or secondary radiation, this GXR-SD/CSD/USD PREMIUM System must be operated and serviced by trained personnel who are familiar with the safety precautions required.

GXR-SD/CSD/USD PREMIUM System provides state-of-the-art image quality; image processing and user interface; making the system easy to use and reliable while providing high quality digital radiographic images with reduced dose.

GXR-SD/CSD/USD PREMIUM System incorporates the digital flat panel detector technology.

Direct radiography via flat panel detector improves your workflow, exam speed and comfort with efficiency. Digital flat panel detector provides excellent spatial resolution, MTF, DQE and stability based on fine pixel pitch.

Selection of an anatomical study on the imaging software automatically sets up the x-ray generator’s pre-programmed exposure technique setting and post image processing for selected study. Also, high resolution grid supplies excellent image quality.

A high performance imaging workstation and RADMAX software serves you a convenient interface and easy operation. Anatomical view-based digital image processing automatically optimizes and enhances the quality of the captured images. Automatic image storage and print with DICOM 3.0 networking capability increases exam throughput and decreases examination time. Remote diagnosis function enables fast and accurate diagnosis on problems and saves service cost and system downtime.

## **1.2 SAFETY INFORMATION**

The policy of DRGEM Corporation is to manufacture X-ray equipment that meets high standards of performance and reliability. We enforce strict quality control techniques to eliminate the potential for defects and hazards in our products. The intended use of this equipment is to provide an X-ray source for the purpose of acquiring X-ray images of the desired parts of a patient's anatomy. Use of this equipment in any other fashion may lead to serious personal injury. The safety guidelines provided in this section of the manual are intended to educate the operator on all safety issues in order to operate and maintain GXR-SD/CSD/USD PREMIUM System in a safe manner.

### **1.2.1 STATEMENT OF LIABILITY**

To prevent excess radiation exposure to patient and operator from either primary or secondary radiation, this GXR-SD/CSD/USD PREMIUM System must be operated and serviced by trained personnel who are familiar with the safety precautions required. While this GXR-SD/CSD/USD PREMIUM System has been designed for safe operation, improper operation or carelessness may result in serious injury or damage to equipment. The manufacturer or its agents and representatives assume no responsibility for the following:

1. Injury or danger to any person from x-ray exposure.
2. Overexposure due to poor technique selection.
3. Injury or danger from improper use of the function.
4. Problems or hazards resulting from failure to maintain the equipment as specified in the Installation chapter.
5. Equipment which has been tampered with or modified. DRGEM Corporation is not liable for any damage or injury arising from failure to follow the instructions and procedures provided within the manuals or associated informational material, or from user failure to use caution when installing, operating, adjusting, or servicing this equipment. DRGEM Corporation is not liable for damage or injury arising from the use of this product for any other use than that intended by the manufacturer.

1.2.2 SYMBOL DEFINITIONS

The table below defines the meaning of various symbols used on labels on the machine.



Radiation exposure symbol used on operator console. Lights to indicate that an exposure is in progress. This is accompanied by an audible tone from the console.



**WARNING** : This X-ray unit may be dangerous to patient and operator unless safe exposure factors, operating instructions and maintenance schedules are observed



Radiation warning message on console.

Never allow unqualified personnel to operate the X-ray generator.



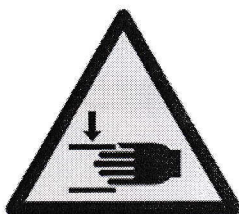
Sitting at the end of tabletop is prohibited.



Consult accompanying documents (Required to consult for Safety)



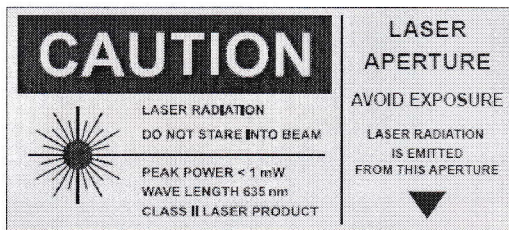
Emergency Stop



Caution for trapping zone of hand



This symbol means that the product and battery should be recycled separately from household waste. When this product reaches its end of life, follow the local laws and regulations of disposal. The improper disposal of waste electronic equipment from the consumer may be subject to fines.



Caution of laser radiation.  
Staring into beam is never allowed.



High voltage symbol used to indicate the presence of high voltage.



Warning symbol used to indicate a potential hazard to operators, service personnel or to the equipment. It indicates a requirement to refer to the accompanying documentation for details.



Protection earth symbol

**L**

Live line among the single phase line powers.

**N**

Neutral line among the single phase line powers.

**L1**

First phase line power among the three phase line powers.

**L2**

Second phase line power among the three phase line powers.

**L3**

Third phase line power among the three phase line powers.

**V~**

Single phase AC voltage

**V3~**

Three phase AC voltage

**V=**

DC voltage

- Digital flat panel detector (iRay)

Model	Mano4343T	Mano4343X	Mano4343W	Mano4336W	
Active Pixel Area / Matrix	17 x 17 inch (3,072 x 3,072)			17 x 14 inch (2,800 x 2,304)	
Pixel Pitch	139um			150um	
Limiting Resolution	3.6 lp/mm			3.3 lp/mm	
Screen	Csl				
Energy Range	40 – 150kVp				
A/D Conversion	16-bits				
MTF	@ 1 lp/mm	70%	75%	71%	75%
	@ 2 lp/mm	45%	50%	44%	49%
	@ 3 lp/mm	26%	30%	26%	29%
DQE	@ 0 lp/mm	65%	56%	65%	63%
	@ 1 lp/mm	47%	40%	47%	48%
	@ 2 lp/mm	35%	30%	35%	37%
Interface	Gigabit Ethernet		Gigabit Ethernet / WiFi(802.11ac)		
Weight	Approx. 4kg(Without Cable)		4.6kg	3.6kg	

- Digital flat panel detector (Fujifilm)

Model	DR-ID1271SE	DR-ID1273SE	DR-ID1272SE	DR-ID1274SE	
Active Pixel Area / Matrix	17 x 14 inch (2,836 x 2,336)		17 x 17 inch (2,836 x 2,832)		
Pixel Pitch	150um				
Limiting Resolution	3.3 lp/mm				
Screen	GOS	Csl	GOS	Csl	
Energy Range	40 – 150kVp				
A/D Conversion	16-bits				
MTF	@ 1 lp/mm	75%	80%	75%	80%
	@ 2 lp/mm	42%	54%	42%	54%
DQE	@ 0 lp/mm	45%	72%	45%	72%
	@ 1 lp/mm	31%	54%	31%	54%
Interface	Gigabit Ethernet		Gigabit Ethernet		
Weight	2.9 kg (6.3 lbs.)		3.7 kg (8.1 lbs.)		

- **Imaging Workstation**

CPU	Intel Core i5-8500 3.2GHz(up to 3.6GHz) 6M or Higher
Memory	4GB (1x4GB) DDR4 2400Mhz or Higher
Display	Intel® HD Graphics 630 or Higher
Storage	256GB SSD, 1TB 7200RPM SATA HDD or Higher
Monitor	23 inch Color LED, Display resolution: 1920 x 1080 pixels (16:9) or Higher
Maker	HP
Weight	Desktop: 9.86 kg (21.73 lbs.), Monitor: 5.8 kg (12.78 lbs.)

- **Imaging Software**

- 1) General Features

- Windows based graphic user interface
- Multi-image display ( 1x1 ~ 4x4 )
- Multi-image selection
- Auto display layout changing function
- X-ray generator control panel
- Unlimited procedure step
- Quick step add feature and image maintenance feature by popup menu
- ROI changing and creation feature
- Maker feature ( support the creation of unlimited number of maker by user )
- Multi-language support
- EXCEL sheet for language support ( only possible on Microsoft Office automation environment )
- DAP meter ( optional )
- Unlimited PACS code ( CPT code )
- Default anatomic program more than 700
- Support DICOM Worklist SCU, DICOM Storage SCU and transfer function
- Support DICOM Multi-transfer function
- High-performance post-processing feature
- Copy & Move Images
- Dose monitoring function
- Built-in memory function
- Grid line suppression function
- Reject analysis function
- 9 preset function
- Cobb's angle function
- Tube & line enhancement function

- Detector built-in charger function
- APR positioning guide function

2) Post processing parameters

- MODULE 1
  - ◆ Edge Enhancement: 0 ~ 50
  - ◆ Contrast Factor : 1 ~ 200
  - ◆ Image Frequency : 0 ~ 20
  - ◆ Image Latitude : -10 ~ 10
  - ◆ Sharpness : 0 ~ 100
  
- MODULE 2
  - ◆ Histogram Optimization : -1.00 ~ 1.00
  - ◆ Skin line Weight : -1.00 ~ 1.00
  - ◆ Latitude Compression : -1.00 ~ 1.00
  - ◆ Contrast Enhancement : -1.00 ~ 1.00
  - ◆ Edge Enhancement : -1.00 ~ 1.00
  - ◆ Noise Suppression : -1.00 ~ 1.00
  
- MODULE 3
  - ◆ Global Brightness : -10.00 ~ 10.00
  - ◆ Global Contrast : -10.00 ~ 10.00
  - ◆ Latitude Compression : -10.00 ~ 10.00
  - ◆ S-Structure Enhancement : -10.00 ~ 10.00
  - ◆ Noise Suppression : -10.00 ~ 10.00

3) Image Maintenance ( All functions are supported by the pop-up menu )

- ROI : Default 8 ROI support / Unlimited support for anatomic projection
- MARK : Unlimited support ( User preset support )
- Horizontal Flip
- Vertical Flip
- Rotate CW
- Rotate CCW
- Inverse (Black or White)
- Text Annotation
- Ruler : Distance tool
- Angle : Angle measurement tool

- Zoom : Image zoom in/out
  - Magnify : Image magnify glass window
  - Pan : Image panning
  - Fit Image : Auto fitting to window size
  - Image Cut : Image crop/cut function
  - Image Copy : Copy of image in the region of interest(ROI)
  - Image Recovery : Recover the original image
  - Image Bright/Contrast control : Supported by right-click mouse
- 4) CD Burning
- DICOMDIR based CDR data generation
  - Support CD/DVD Recording
  - Include internal DICOM Viewer
  - Support multi-study data
- 5) DICOM Features : DICOM PRINT
- DICOM 3.0 compatible
  - Support Print Preview
  - Support Film Orientation : Portrait / Landscape
  - Support Film Size : 8X10 / 10X12 / 10X14 / 11X14 / 14X14 / 14X17 / 24X24 / 24X30 / 25X30
  - Support Film Layout : 1:1 / 1:2 / 2:1 / 2:2 / 3:1 / 1:3 / 3:3 / 4:4
  - Support Real size printing
  - Support image swap in layout
- 6) DICOM Feature : DICOM STORAGE
- DICOM 3.0 compatible
  - Support DX/CR modality ( can be extended for DR and other )
  - Support RDSR(Radiation Dose Structured Report)
  - Support the modification of Transfer Syntax
- 7) DICOM Feature : MPPS
- Support Modality Performed Procedure Step feature
  - Provides only three state : FAILED / IN PROGRESS / COMPLETED
- 8) DICOM Feature : WORKLIST
- Support DICOM Modality Worklist Standard
  - Support DICOM Query/Retrieve



- Support Search Filter ( ID / Name / Access Number )
- Support Import Filter

9) DICOM Feature : STORAGE COMMITMENT

10) DICOM Feature : QUERY/RETRIEVE

11) DICOM Feature : VERIFICATION

12) Overlay Display on image

- Projection description
- Patient Name / Sex / Age
- kV / mA / Time / mAs
- Feed-back mAs / Feed-back Time for AEC
- EI(Exposure Index) / DI(Deviation Index)
- Window Width/Level
- Overlay can be set by user

13) Full-spine Imaging

- Stitches whole spine/long bone images to single image
- Support 2 or 3 images stitching
- Support zoom in/out of all images simultaneously
- Moves single image or all images simultaneously
- Support automatic stitching using 2 point
- Support image clipping
- Automatically remove non-exposure area
- Adjust windows of single or all images simultaneously
- Provide full-spine imaging apparatus

● X-ray Generators

System Model	GXR-32SD	GXR-40SD	GXR-52SD	GXR-68SD	GXR-82SD
Generator Model	GXR-32	GXR-40	GXR-52	GXR-68	GXR-82
Output Rating	32kW	40kW	52kW	68kW	82kW
Line Nominal, Phase	220~230VAC, 1Φ 380/400/480VAC, 3Φ		380/400/480VAC, 3Φ		
Line Frequency	±10% (50/60Hz)				
kV Range/Frequency	40~125kV, 1kV step/30kHz		40~150kV, 1kV step/100kHz		
mA Range	10 to 400mA	10 to 500mA	10 to 640mA	10 to 800mA	10 to 1,000mA
Timer Range	0.001 to 10 sec, 38 steps				
mAs Range	0.1 to 500mAs (Optional up to 1,000mAs)				
Max. Power Output	400mA@80kV 320mA@100kV 250mA@125kV 200mA@150kV(3 Φ)	500mA@80kV 400mA@100kV 320mA@125kV 250mA@150kV(3 Φ)	640mA@81kV 500mA@104kV 400mA@130kV 320mA@150kV	800mA@85kV 640mA@106kV 500mA@136kV 400mA@150kV	1,000mA@82kV 800mA@102kV 640mA@128kV 500mA@150kV
Power Requirement	Minimum 125% of output rating				
Minimum Breaker Rating	75A(220-230Vac, 1Φ) 50A(380Vac, 3Φ) 50A(400Vac, 3Φ) 40A(480Vac, 3Φ)	100A(220-230Vac, 1Φ) 65A(380Vac, 3Φ) 65A(400Vac, 3Φ) 50A(480Vac, 3Φ)	75A(380Vac, 3Φ) 75A(400Vac, 3Φ) 65A(480Vac, 3Φ)	75A(380Vac, 3Φ) 90A(400Vac, 3Φ) 75A(480Vac, 3Φ)	100A(380Vac, 3Φ) 100A(400Vac, 3Φ) 90A(480Vac, 3Φ)
Rotor Supply	Low Speed Dual Speed (Option for 3Φ)		Dual Speed (Option for GXR-52)		
Reproducibility	Coefficient of Variation: kV < 0.005, Time < 0.005, mAs < 0.01				
Accuracy	kV < ±(1%+1kV), mA < ±(3%+1mA), Time < ±(1%+0.5ms), mAs < ±(3%+0.1mAs)				
Linearity	Coefficient of Linearity < 0.01 : CL = (X1-X2)/(X1+X2), where X is mR/mAs				
Anatomical Programs	User programmable max. 1,280 programs with APR utility software				
Technique Selection	4 point display(kV, mA, Time, mAs)				
Image Receptors	2 Bucky + 1 Non-Bucky				
Auxiliary Power Supply	External System Power		230VAC, 1A, 230W (PBT-4)		
			230VAC, 2A, 460W (PBT-6)		
	Magnetic Lock(Brake) Power		110VAC, 1A, 110W		
			28VDC, 6.3A, 176W		
Collimator Lamp Power		24VAC, 6.3A, 150W			
Leakage Radiation	Less than 2mR/hr				
Dimension / Weight	Control Console		336(W) x 47(H) x 232(D) mm / 1.7kg(3.8lbs)		

● Patient Table

1) 4-way Floating tabletop table

Model		PBT-4	
Movement	Tabletop	Longitudinal	1,000(±500)mm
		Transverse(Lateral)	250(±125)mm
	Bucky	Longitudinal	Max.350mm with standard tray 300mm with rotating tray
Tabletop		Inherent Filtration	Laminate : 1.2mmAl at 100kV Carbon : 0.5mmAL at 100kV
		Max. Patient Weight	300kg (660lbs)
		Size	2,200(W) x 818(D) x 45(H) mm 2,000(W) x 818(D) x 45(H) mm 1,800(W) x 818(D) x 45(H) mm
Bucky Type		Oscillating	Fixed
Grid		FD 34~44inch, 103 or 180 lpi, ratio 8~12:1	FD 100cm, 200lpi, ratio 8~12:1 Optional removable grid
Lock(Brake)		EM Lock, beam sensor on/off	
Center indication		Buzzer sound and LED	
Electrical Rating		100~240Vac, 200VA, 50/60Hz	
Dimension / Weight	Laminate	2,200(W) x 818(D) x 660(H) mm / 145.7kg(321.2lbs) 2,000(W) x 818(D) x 660(H) mm / 142.7kg(314.6lbs) 1,800(W) x 818(D) x 660(H) mm / 139.7kg(308lbs)	
	Carbon	2,200(W) x 818(D) x 660(H) mm / 140.3kg(309.3lbs) 2,000(W) x 818(D) x 660(H) mm / 137.9kg(304lbs) 1,800(W) x 818(D) x 660(H) mm / 134.6kg(296.7lbs)	

\* APPLIED PART, Optional Rotating tray

2) Elevating table

Model		PBT-6	
Movement	Tabletop	Longitudinal	1,000(±500)mm Option 1100(±550)mm
		Transverse(Lateral)	250(±125)mm
	Vertical	Travel	285(575~860)mm,, Option 360(500~860)mm,
		Speed	17mm/sec
		Operating	Motorized movement by Foot Switch DC-motor (Linear Actuator)
	Bucky	Longitudinal	Standard application - 550mm with standard tray - 295mm with rotating tray - 290mm with Table Bucky Tracking(Optional)  Option 1100mm longitudinal application - 740mm with standard tray - 690mm with rotating tray - 680mm with Table Bucky Tracking(Optional)
Tabletop		Inherent Filtration	Laminate : 1.2mmAl at 100kV Carbon : 0.5mmAL at 100kV
		Max. Patient Weight	300kg(660lbs)

	Size	Standard application 2,200(W) x 878(D) x 45(H) mm 2,000(W) x 878(D) x 45(H) mm 1,800(W) x 878(D) x 45(H) mm Option 1100mm longitudinal application 2,660(W) x 878(D) x 45(H) mm 2,400(W) x 878(D) x 45(H) mm 2,200(W) x 878(D) x 45(H) mm
Bucky Type	Oscillating	Fixed
Grid	FD 34~44inch, 103 or 180 lpi, ratio 8~12:1	FD 100cm, 200lpi, ratio 8~12:1 Optional removable grid
Lock(Brake)	EM Lock, Foot Switch on/off	
Center indication	Transverse center, height center	
Side Cover	2-story telescopic Cover	
Electrical Rating	100~240VAC, 400VA, 50/60Hz	
Dimension / Weight	Laminate	Standard application 2200(W) x 878(D) x 860(H) mm / 255.2kg(562.6lbs) 2000(W) x 878(D) x 860(H) mm / 252.2kg(556lbs) 1800(W) x 878(D) x 860(H) mm / 248.2kg(547.2lbs) Option 1100mm longitudinal application 2660(W) x 878(D) x 860(H) mm / 310kg(683.4lbs) 2400(W) x 878(D) x 860(H) mm / 306kg(674.6lbs) 2200(W) x 878(D) x 860(H) mm / 303kg(668lbs)
	Carbon	Standard application 2200(W) x 878(D) x 860(H) mm / 249.1kg(549.2lbs) 2000(W) x 878(D) x 860(H) mm / 246.9kg(544.3lbs) 1800(W) x 878(D) x 860(H) mm / 243.6kg(537lbs) Option 1100mm longitudinal application 2660(W) x 878(D) x 860(H) mm / 302.2kg(666.2lbs) 2400(W) x 878(D) x 860(H) mm / 299.2kg(659.6lbs) 2200(W) x 878(D) x 860(H) mm / 296.9kg(654.6lbs)

\* APPLIED PART, Optional Rotating tray

3) Mobile Patient Table

Model	PDT-1
Max. Patient Weight	Max. 200kg (441lbs)
Dimension / Weight	2004(W) x 650(D) X 712(H)mm / 62kg (137lb)

● Wall Bucky stand

Model	WBS(Motorized)	
Cassette stroke	970mm(300mm~1,270mm from floor to focus) 1,120mm(300mm~1,420mm from floor to focus) 1,290mm(300mm~1,590mm from floor to focus) 1,540mm(300mm~1,860mm from floor to focus)	
Bucky Type	Oscillating	Fixed
Grid	FD 40~72inch, 103 or 180lpi, ratio 8~12:1	FD 150cm, 200lpi, ratio 8~12:1 Optional removable grid

## 2) Floor Mounted

Model	TS-FM6(Motorized)	
Tube Rotation Angle	Horizontal axis	±135°
	Vertical axis	±180° (mechanical detents at every 90°)
Tube stroke	Longitudinal	2,100mm (Optional 2,900mm and 3,600mm)
	Lateral	250mm
	Vertical	1,706mm (240~1,946mm from floor to focus)
Vertical Movement	Manual or Motorized(Option) Motorized option supports vertical sync with table and wall stand	
Tube Rotation	Manual or Motorized(Option) Motorized option supports the source tilting type image stitching operation	
Lock(Brake)	EM Lock, Switch on/off	
Balance	Counter Weight	
Column Rotation	±180°, EM lock, Switch on/off	
Tube OP	7 inch Touch screen	
Electrical Rating	100–240VAC, 160VA, 50/60Hz	
Dimension / Weight	2,327(H) x 3,006(D) mm / 266kg(586lbs) Option(Tube Head Motorized Rotation): 2,330(H) x 3,006(D) mm /272kg(599lbs)	

Tube Model	RAD-21	RAD-60	RAD-92
Manufacturer	VAREX	VAREX	VAREX
Focal Spot Size	0.6/1.2mm	0.6/1.2mm	0.6/1.2mm
Rating(0.1s)	36/100kW	40/100kW	40/100kW
Max. Anode HU	300kHU(210kJ)	400kHU(285kJ)	600kHU(444kJ)
Target Angle	12°	12°	12°
Max. kV	150kV	150kV	150kV
Weight	18.9kg(41.7lbs)	18.9kg(41.7lbs)	18.9kg(41.7lbs)
Inherent Filtration	0.7mmAl/75kV	0.7mmAl/75kV	0.7mmAl/75kV
Additional Filtration	0.5mmAl		
Half Value Layer	More than 2.9mmAl eq. at 80kVp		
Leakage Radiation	Less than 100mR/hr		

Tube Model	E7255FX	E7254FX	E7869X
Manufacturer	CANON	CANON	CANON
Focal Spot Size	0.6/1.2mm	0.6/1.2mm	0.6/1.2mm
Rating(0.1s)	40/102kW	40/102kW	40/100kW
Max. Anode HU	300kHU(210kJ)	400kHU(285kJ)	600kHU(444kJ)
Target Angle	12°	12°	12°
Max. kV	150kV	150kV	150kV
Weight	20kg(44.1lbs)	25kg(55.1lbs)	24kg(52.9lbs)
Inherent Filtration	0.8mmAl/75kV	0.8mmAl/75kV	1.1mmAl/75kV
Additional Filtration	0.5mmAl		
Half Value Layer	More than 2.9mmAl eq. at 80kVp		
Leakage Radiation	Less than 100mR/hr		

\* Total filtration including X-ray tube assembly and collimator will be matched by appropriate additional filters to within the range from 2.9 to 3.2mmAl. eq.

## ● Collimator

Model	MCR	DXC-RML, DXC-RMH
Manufacturer	DRGEM	
Control	Manual with 30sec. lamp timer	
Field Shape	Rectangular	
Max. Field Size	More than 43x43cm(17x17inch) at 100cm SID	
Leakage Radiation	Less than 100mR/hr	Less than 40 mR/h
Max. kVp shield	150kV	150kV
Inherent Filtration	1.2mmAl eq.	2mmAl eq.
Luminosity	Over 160LUX at 100cm SID (Typ. 200LUX)	Over 160LUX at 1cm SID
Light source	HLX64642 150W 24V / OSRAM	LED and Halogen
Standard	Rotating flange with fixing knob	
Option	Tape measure	Line laser+shutter, Measure tape Near port moving shutters, Mounting flange mechanical detent Accessory guides spring, Additional filter, DAP rail
Electrical Rating	24Vac, 6.3A, 50/60Hz	Halogen type - 24 V DC/AC - 50~60Hz 160VA LED type - 12~45V DC 35VA / 20~30VAC 35VA - 50~60Hz
Dimension / Weight	185(W) x 213(D) x 180(H) mm / 6.3kg(13.9lb)	196(W) x 250(D) x 171(H) mm 7.1kg(15.6lb)

Model	R108	R302A, R302MLP/A, R302MFMLP/A
Manufacturer	RALCO	
Control	Manual with 30sec. lamp timer	
Field Shape	Rectangular	
Max. Field Size	More than 43x43cm(17x17inch) at 100cm SID	
Leakage Radiation	Less than 100mR/hr	
Max. kVp shield	150kV	150kV
Inherent Filtration	2.0mmAl eq.	2.0mmAl eq.
Luminosity	Over 160LUX at 100cm SID (Typ. 250LUX)	Over 160LUX at 100cm SID (Typ. 200LUX)
Light source	Single LED	HLX64638 100W 24V / OSRAM
Standard	Tape measure, rotating flange	Auto collimation for R302 MLP/A and R302 MFMLP/A Auto filter selection for R 302 MFMLP/A
Option	Line laser, near port shutters	Tape measure, line laser, rotating flange
Electrical Rating	20–30Vac, 30VA, 50/60Hz	24Vac, 6.3A, 50/60Hz
Dimension / Weight	223(W) x 246(D) x 140(H) mm / 6.6kg(14.6lb)	195.5(W) x 237(D) x 206.5(H) mm / 9.4kg(20.7lb)

- **AEC Ion Chamber (Option)**

Model	ICX1162(ICX1192B)	Amplimat 5-Field
Manufacturer	AID	Philips
Field	3 Fields	5 Fields
X-ray Energy Range	40~150kV	40~150kV
Exposure time Range	1ms to 10s	1ms to 6s
Inherent Filtration	0.4 mm Al eq.	0.8 mm Al eq.
Weight	2kg (4.4lb)	1.8kg (4lb)




- **DAP meter (Option)**

DAP Resolution	0.01 $\mu\text{Gym}^2$
Interface	RS485
Active area	115 x 115mm / 146 x 146mm
Display	Optional integrated or separate display (single or dual line)
Dimension	158 x 134.5 x 17mm / 180 x 156 x 17mm

- **Other Options**

- Pedestal console stand
- Patient holder
- Patient hand grips (Tabletop, Wall stand – Overhead, Lateral)
- Cassette holders (Lateral, External Wall Bucky)
- DAP meter with display
- Full-spine imaging software with apparatus
- DC power supply for line powered x-ray generator in case of insufficient line power
- DC brake for low speed starter of x-ray generator
- Radiation protection
  - Wearing(apron, neck guide, glove), movable x-ray protection wall

- **AP (Access Point) for Wireless**

Model	RT-AC68U (AC 1900)
Product Picture	
Manufacturer	ASUS
Standards	IEEE 802.11n, IEEE 802.11ac
Frequency	5GHz / 2.4GHz
Wireless LAN (max.)	1.3Gbps(5GHz)/600Mbps (2.4GHz)
Weight Antennas Type	3 external antennas
AC Power Adapter	19V / 1.75A
Regulatory Compliance	CE, FCC, RoHS, KCC