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GXR-SD/CSD/USD

DIGITAL RADIOGRAPHY SYSTEM

Operation Manual

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D/N: RMD1311-005, Rev.27

CE 2460

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REVISION HISTORY

Revision Number	Date	Description
0	NOV 04, 2013	First Edition (New release by combining operation manuals of GXR-S/CS/US, GXR-CS and GXR-US)
1	MAR 25, 2015	Add GXR-C52S
2	JUL 29, 2015	Add TS-CSA
3	JUN 20, 2017	Transition of NB (DNV-GL NB# 0434 -> DNV GL NE MKO PRESAFE AS NB#2460),
4	AUG 21, 2017	Add the collimator (DXC-RM)
5	NOV 10, 2018	Change Standard(EMC 4 , Safety 3.1) Add Tube Stand(TS_CSE) Change name of manufacture for Tube. (TOSHIBA -> CANON, VARIAN -> VAREX)
6	JUL 19, 2019	Add the Ceiling Rail of Option for TS_FM6 Change of Bucky size for Wall bucky Stand.
7	APR 27, 2020	Added Worklist Function. Added Mechanical detent (option)
8	MAY 04, 2020	Apply the tube arm detent for TS_FM6, TS_FC6
9	JUN 25, 2020	Added Handlebar 2 (option)
10	JUL 24, 2020	Change of column rotation assembly for TS_FM6 Change of Table top assembly for Table
11	NOV 6, 2020	The contents of documents for GXR-S,CS,US(RMD1311-005,Rev.10) GXR-S,CS,US Premium (RMD1412-003,Rev.10) GXR-SD,CSD,USD (RMD1311-001,Rev.13) and GXR-SD,CSD,USD Premium (RMD1412-002,Rev.14) are integrated into this document.
12	NOV 20, 2020	Changed section 1.6 for SPECIFICATIONS
13	DEC 24, 2020	Add Membrane design for Arm center detent option Added Hip measurement function Added Auto Stitching function to manual type Added Mano Detector Power off function Grouped image tools

		Changed section 1.6 for SPECIFICATIONS Added section 1.7 APPLICABLE STANDARDS 1) ME Equipment classification Added section 7. MAINTENANCE
14	JAN 29, 2021	Add the Touch Console
15	MAR 30, 2021	Changed section 1.6 Changed section 6.8.3
16	APR 30, 2021	Mars1417X , Mars1717X detector added
17	MAY 31, 2021	Add STITCHING STAND Deleted the ICX1162(ICX1192B) (AEC Ion Chamber)
18	JUN 23, 2021	Add the WSR bucky Tray for PBT-4, PBT-6, WBS, WBS-TM Add the WBS Manual Plus
19	JUN 28, 2021	Change Of Representative Identification Label
20	AUG 27, 2021	Change Desktop Specifications Change Monitor Specifications
21	SEP 24, 2021	Add the Vertical UP/DOWN Hand switch option Changed section 1.2.2 SYMBOL DEFINITIONS, 1.2.10 SAFETY WARNING LABELS Changed section 1.6 SPECIFICATIONS Changed section 6.9.3 WALL BUCKY STAND (WBS-TA) Change of specification form Add to add two programmable positions about P3, P4. Add to show Pop-up if the detent button is pushed when the detent is non-installed. Change about Pop-up Notice on Auto Position Change Remote Control Membrane
22	DEC 02, 2021	Changed from RADMAX version 1.01 to version 1.02 Changed overall GUI for touch environment Add Image Processing Module4 Add the **Imaging Workstation** Add the Dark Skin GUI Add the DICOM TLS
23	DEC 16, 2021	Changed WBS Manual Plus specifications Changed Electrical Rating of R302A, R302MLP/A, R302MFMLP/A

24	JAN 28, 2022	Change of cassette tray handle image Add 230 lpi Grid
25	FEB 25, 2022	Add the SCP(SERVICE CLASS PROVIDER) Changed section 1.6 for SPECIFICATIONS Change form Change of Application Standard Luna1012X detector added Detach GXR-S/CS/US Manual (RMD2202-001)
26	MAR 11, 2022	Add of Live streaming camera
27	APR 28, 2022	Add the Audit Trail Add the Patient movement alarm Lumen 2530W, 4336W, 4343W detector added

ABOUT THESE INSTRUCTIONS FOR USE

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

"Bold"	Is used for Product's Name.
<Italic>	Is used for references and for table or figure titles.
'Button'	Is used for Button's Name.
●	Indicates a list item.
*	Indicates additional explanations.
1. 1) a. i .	Indicates steps within operating sequences.

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.

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NOTE
Keep this Software Manual with the equipment at all times, and review the important information whenever required. Consult Accompanying Documents - As Applicable

TABLE OF CONTENTS

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1. SYSTEM OVERVIEW

1.1 PRODUCT FEATURES

"GXR-SD/CSD/USD" system provides excellent performance and stable operation while state-of-the-art image quality and providing high quality digital radiographic images with reduced dose.

The ***"GXR"***, "***GXR-C"***, ***"GXR-U"*** Series high frequency X-ray generator features excellent accuracy, reproducibility and long-term stability.

Automatic Calibration function of the generator will minimize calibration time and set correct calibration value.
Also the control console of ***"GXR"***, ***"GXR-C"***, ***"GXR-U"*** series offers graphic waveform and data of x-ray exposure.
So, it is not needed to perform the manual calibration procedure with measurement equipment.
Naturally, the generator supports Automatic, Semi-auto and Manual Calibration functions.

Adaptable calibration function keeps up long-term stability and accuracy by trimming calibration data whenever x-ray exposed.

The "***GXR-C***" Series high frequency X-ray generator features excellent accuracy, reproducibility and long-term stability with capacitor assisted general line power supply.
Only 3kVA line power capacity is enough for x-ray generation up to 40kW, and "***GXR-C***" series provides minimum 100mAs output at maximum output rating without mA sliding down.
Also, maximum interval for full charging is 10 seconds after maximum output x-ray generation.

Only 900VA line power capacity is enough for the battery charging, and ***"GXR-U"*** series provides same output rating and performances of line-powered generators.

Remote Diagnosis Software can make report about information of system, user, service and error by transfer report to manufacturer via internet. So this function enables fast and accurate diagnosis on problems and saves service cost and system downtime.

The APR (Anatomical Programming) and the optional AEC (Automatic Exposure Control) features give you controlled exposure factors, automatically optimized for the radiological study selected.

"GXR-SD/CSD/USD" 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" 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.

- Excellent Performance and Stability
- Real-time monitoring self-diagnosis function and Error code display
- Overload & HU protection and error message display
- Automatic calibration without measurement equipment.
- Adaptable calibration keeps up accuracy through long-term usage
- Smaller, lighter and convenient modular design and user-friendly system configuration
- Constant dose output due to kV and mA regulation during exposures.
- Time and mA / mAs selections are based on R'10 rule of ISO 497.
- Remote diagnosis software for system diagnosis via internet.
- Easy parameter setting and Firmware upgrade
- System diagnosis, Error log and Statistical data display
- Only maximum 3kVA voltage line power is required for operation (Only to GXR-C)
- Maximum charging interval after maximum x-ray output : 10 seconds (Only to GXR-C)
- Only maximum 0.9kVA free-voltage line power is required for charging (Only to GXR-U)
- Sectionalized power part enables uninterruptible operation regardless of line power status (Only to GXR-U)
- Maximum charging time : 6 hours for GXR-U32, 8 hours for GXR-U40 (Only to GXR-U)

NOTE
The following section contains important information. Please read and understand this material before continuing.

1.2 SPECIFICATIONS

The hardware specified for use with the ***"GXR-SD/CSD/USD"*** System has been selected, tested, and verified by DRGEM Corporation to meet the intended applications. All specified hardware meets applicable regulatory agency requirements for those countries where it is offered for sale with respect to its intended applications.

WARNING
Do not operate this system except in accordance with information included in this section, and any additional information provided by the manufacturer and / or competent safety authorities.

1.2.1 DETECTOR

- **Digital flat panel detector (VAREX)**

Model		PaxScan4343R v3		PaxScan4343RC	
Active Pixel Area / Matrix		17 x 17 inch (3,052 x 3,052)		17 x 17 inch (3,052 x 3,052)	
Pixel Pitch		139um			
Limiting Resolution		3.6 lp/mm			
Screen		DRZ+	CsI	DRZ+	CsI
Energy Range		40 – 150kVp			
A/D Conversion		16-bits			
MTF	@ 1 lp/mm	54%	56%	54%	56%
	@ 2 lp/mm	23%	27%	23%	27%
	@ 3 lp/mm	9%	14%	9%	14%
DQE	@ 0 lp/mm	38%	78%	38%	78%
	@ 1 lp/mm	27%	55%	27%	55%
	@ 2 lp/mm	16%	42%	16%	42%
	@ 3 lp/mm	7%	28%	7%	28%
Interface		Gigabit Ethernet		Gigabit Ethernet	
Weight		6.1 kg (13.4 lbs.)	6.2 kg (13.6 lbs.)	3.5 kg (7.7 lbs.)	3.76 kg (8.2 lbs.)

Model		PaxScan4336W v4		PaxScan4343W		
Active Pixel Area / Matrix		17 x 14 inch 3,052 x 2,456	17 x 14 inch 3,032 x 2,436	17 x 17 inch 3,062 x 3,062	17 x 17 inch 3,052 x 3,052	
Pixel Pitch		139um				
Limiting Resolution		3.6 lp/mm				
Screen		DRZ+	CsI	DRZ+	Standard CsI	Premium CsI
Energy Range		40 – 150kVp				
A/D Conversion		16-bits				
MTF	@ 1 lp/mm	56%	57%	56%	61%	57%
	@ 2 lp/mm	24%	28%	24%	32%	28%
	@ 3 lp/mm	12%	16%	10%	17%	14%
DQE	@ 0 lp/mm	39%	78%	39%	64%	79%
	@ 1 lp/mm	28%	58%	28%	54%	63%
	@ 2 lp/mm	18%	42%	18%	42%	48%
	@ 3 lp/mm	8%	24%	9%	29%	33%
Interface		WiFi(802.11 a/g/n/ac)		WiFi(802.11 n/ac)		
Weight		2.9 kg (6.3 lbs.)	3.0 kg (6.6 lbs.)	3.1 kg (6.8 lbs.)	3.3 kg (7.3 lbs.)	

Model		XRpad2 3025 HWC-M	XRpad2 4336 HWC-M	XRpad2 4343 HWC-M
Active Pixel Area / Matrix		12 x 10 inch (3,004 x 2,508)	17 x 14 inch (4,288 x 3,524)	17 x 17 inch (4,288 x 4,288)
Pixel Pitch		100um		
Limiting Resolution		5 cy/mm		
Screen		CsI,		
Energy Range		40 – 150kVp		
A/D Conversion		16-bits		
MTF	@ 1 lp/mm	70%	70%	70%
	@ 2 lp/mm	40%	40%	40%
	@ 4 lp/mm	15%	15%	15%
DQE	@ 0 lp/mm	75%	75%	75%
	@ 1 lp/mm	60%	60%	60%
	@ 3 lp/mm	40%	40%	40%
Interface		Ethernet / WIFI(802.11n)		
Weight		1.8kg (4.0 lbs.)	3.2kg (7.0 lbs.)	3.8kg (8.4 lbs.)

Model		LUMEN2530W		LUMEN4336W		LUMEN4343W	
Active Pixel Area / Matrix		12 x 10 inch (2,264 x 1,860)		17 x 14 inch (3,032 x 2,436)		17 x 17 inch (3,032 x 3,032)	
Pixel Pitch		131 um		139 um			
Limiting Resolution		3.8 cy/mm		3.6 cy/mm			
Screen		DRZ+	CsI(Std/Pre)	DRZ+	CsI(Std/Pre)	DRZ+,	CsI(Std/Pre)
Energy Range		40 – 150kVp					
A/D Conversion		16-bits					
MTF	@ 1 lp/mm	57%	63%/59%	57%	63%/59%	57%	63%/59%
	@ 2 lp/mm	24%	34%/29%	24%	34%/29%	24%	34%/29%
	@ 4 lp/mm	6%	12%/9%	6%	12%/9%	6%	12%/9%
DQE	@ 0 lp/mm	38%	65%/75%	38%	65%/75%	38%	65%/75%
	@ 1 lp/mm	28%	52%/57%	28%	52%/57%	28%	52%/57%
	@ 3 lp/mm	9%	28%/32%	9%	28%/32%	9%	28%/32%
Interface		Ethernet / WIFI(802.11 n/ac)					
Weight		1.56kg (3.4 lbs.)		2.8kg (6.2 lbs.)		3.2kg (7.1 lbs.)	

- **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		CsI			
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) (8.8lbs)		4.6kg (10.1lbs.)	3.6kg (7.9lbs.)

Model		Mars1417X	Mars1717X	Luna1012X
Active Pixel Area / Matrix		14 x 17 inch (3,500 x 4,300)	17 x 17 inch (4,267 x 4,267)	10 x 12 inch (2,505 x 3,152)
Pixel Pitch		100um		
Limiting Resolution		4.3 lp/mm		
Screen		CsI		
Energy Range		40 – 150kVp		
A/D Conversion		16-bits		
MTF	@ 1 lp/mm	65%		60%
	@ 2 lp/mm	35%		30%
	@ 3 lp/mm	19%		14%
DQE	@ 0 lp/mm	68%		60%
	@ 1 lp/mm	54%		43%
	@ 2 lp/mm	38%		27%
Interface		Gigabit Ethernet / WiFi(802.11ac)		
Weight		3.0kg (6.6 lbs.)	3.4kg (7.5 lbs.)	2.2kg (4.9 lbs.)

NOTE

Depending on the country, there are detectors that cannot be installed and used. Please refer to the table below.

Nation	List of detectors that cannot be installed
Brazil	PaxScan4343W, XRpad2 series (XRpad2 3025 HWC-M, XRpad2 4336 HWC-M, XRpad2 4343 HWC-M), Mano series (Mano4343W, Mano4336W), Luna1012X

NOTE

Luna1012X detector is not applied CE, FDA and NRTL (CSA mark) Certificate.

1.2.2 WORKSTATION

CPU	Intel Core i5-10500 3.2GHz(up to 4.5GHz) or higher
Memory	8GB (1x8GB) DDR4 2400Mhz or higher
Display	Intel® HD Graphics 630 or Higher
Storage	256GB SSD, 1TB 7200RPM SATA HDD
Monitor	23 inch Color LED or Higher, Display resolution: 1920 x 1080 pixels (16:9)
Maker	Desktop: HP

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

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

1.2.3 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	220~230V~, 380/400/480V3~		380/400/480V3~		
Line Voltage Range	±10% (Frequency: 50/60Hz)				
kV Range	40~125kV, 1kV step 40~150kV for 3 phase line power		40~150kV, 1kV step		
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)				
AEC Shortest Irradiation Time	1ms				
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 (Option: LSS Brake, Dual Speed for 3Φ)		Low Speed (Option: LSS Brake, Dual Speed)	Dual Speed	
Technique Selection	4 point display(kV, mA, Time, mAs): kV/mAs, kV/mA/Time, kV/AEC option				
Image Receptors	2 Bucky + 1 Non-Bucky				
Auxiliary Power Supply	External System Power		230VAC, 1A, 230W (PBT-4) 230VAC, 2A, 460W (PBT-6)		
			110VAC, 1A, 110W		
	Magnetic Lock(Brake) Power		28VDC, 6.3A, 176W		
	Collimator Lamp Power		24VAC, 6.3A, 150W		
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				
Dimension / Weight	650(W) x 655(H) x 405(D) mm / 100kg(220lbs)				

* #: It can be combined with TS-CSP.

System Model	**GXR-C32SD**	**GXR-C40SD**	**GXR-C52SD#**
Generator Model	**GXR-C32**	**GXR-C40**	**GXR-C52**
Power Rating	32kW	40kW	52kW
Line Nominal, Phase	110-120, 220-230V~		
Line Voltage Range	±10% (Frequency: 50*/60Hz), * : Outside North America		
kV Range	40~125kV, 1kV step (Optional 40~150kV)		
mA Range	10 to 400mA	10 to 500mA	10 to 640mA
Timer Range	0.001 to 10 sec, 38 steps		
mAs Range	0.1 to 500mAs		
AEC Shortest Irradiation Time	1ms		
Max. Power Output	400mA@80kV 320mA@100kV 250mA@125kV 200mA@150kV(optional)	500mA@80kV 400mA@100kV 320mA@125kV 250mA@150kV(optional)	640mA@81kV, 500mA@104kV, 400mA@130kV 320mA@150kV(optional)
Rotor Supply	Low Speed		
Technique Selection	point display(kV, mA, Time, mAs): kV/mAs, kV/mA/Time, kV/AEC option		
Image Receptors	2 Bucky + 1 Non-Bucky		
Auxiliary Power Supply	External System Power	230VAC, 1A, 230W (PBT-4) 230VAC, 2A, 460W (PBT-6)	
		110VAC, 1A, 110W	
	Magnetic Lock Power	28VDC, 6.3A, 176W	
	Collimator Lamp Power	24VAC, 6.3A, 150W	
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		
Dimension / Weight	628(W) x 978(H) x 460(D) mm / 146kg(321lbs)		

* #: It can be combined with TS-CSP.

System Model	**GXR-U32SD**	**GXR-U40SD**
Generator model	**GXR-U32**	**GXR-U40**
Power Rating	32kW	40kW
Line Nominal, Phase	100-240V~	
Line Voltage Range	±10% (Frequency: 50/60Hz)	
kV Range	40~125Kv(optional 150kV), 1kV step	
mA Range	10 to 400mA	10 to 500mA
Timer Range	0.001 to 10 sec, 38 steps	
mAs Range	0.1 to 500mAs(Optional up to 1,000mAs)	
AEC Shortest Irradiation Time	1ms	
Max. Power Output	400mA@80kV 320mA@100kV 250mA@125kV Optional 200mA@150kV	500mA@80kV 400mA@100kV 320mA@125kV Optional 250mA@150kV
Power Requirement	900VA	
Rotor Supply	Low Speed (Optional LSS Brake)	
Technique Selection	4 point display(kV, mA, Time, mAs): kV/mAs, kV/mA/Time, kV/AEC option	
Image Receptors	2 Bucky + 1 Non-Bucky	
Auxiliary Power Supply	External System Power	230VAC, 1A, 230W (PBT-4) 230VAC, 2A, 460W (PBT-6)
		110VAC, 1A, 110W
	Magnetic Lock Power	28VDC, 6.3A, 176W
	Collimator Lamp Power	24VAC, 6.3A, 150W
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	
Dimension / Weight	628(W) x 1075(H) x 460(D) mm / 203kg (448lbs)	628(W) x 1187(H) x 460(D) mm / 243kg (536lbs)

* #: It can be combined with TS-CSP.

1.2.4 TABLE

<table>
<tr><td colspan="2">Model</td><td colspan="5">PBT-6</td></tr>
<tr><td rowspan="11">Movement</td><td rowspan="7">Tabletop</td><td rowspan="7">Longitudinal</td><td></td><td>Stroke</td><td>Tabletop Size(W)</td></tr>
<tr><td rowspan="3">Standard</td><td>1,000(±500)mm ± 10mm</td><td>Tabletop 2,200mm</td></tr>
<tr><td>800(±400)mm ± 10mm</td><td>Tabletop 2,000mm</td></tr>
<tr><td>600(±300)mm ± 10mm</td><td>Tabletop 1,800mm</td></tr>
<tr><td rowspan="3">Extended#
(Option)</td><td>1100(±550)mm ± 10mm</td><td>Tabletop 2,660mm</td></tr>
<tr><td>840(±420)mm ± 10mm</td><td>Tabletop 2,400mm</td></tr>
<tr><td>640(±320)mm ± 10mm</td><td>Tabletop 2,200mm</td></tr>
<tr><td colspan="2">Transverse (Lateral)</td><td colspan="2">250(±125)mm ± 5mm</td></tr>
<tr><td rowspan="4">Vertical</td><td rowspan="2">Travel</td><td>Standard</td><td colspan="2">285(575~860)mm ± 5mm</td></tr>
<tr><td>Extended#
(Option)</td><td colspan="2">300(560~860)mm ± 5mm</td></tr>
<tr><td colspan="2">Speed</td><td colspan="2">17mm/sec ± 15%</td></tr>
<tr><td colspan="2">Operating</td><td colspan="2">Motorized movement by Foot Switch
DC-motor (Linear Actuator)</td></tr>
<tr><td rowspan="4">Bucky</td><td rowspan="2">Standard</td><td>Mechanical</td><td colspan="2">-350mm ± 10mm with standard tray
-295mm ± 10mm with rotating tray</td></tr>
<tr><td>Table
Tracking</td><td colspan="2">-340mm ± 10mm with standard tray
-290mm ± 10mm with rotating tray</td></tr>
<tr><td rowspan="2">Extended#
(Option)</td><td>Mechanical</td><td colspan="2">-740mm ± 10mm with standard tray
-690mm ± 10mm with rotating tray</td></tr>
<tr><td>Table
Tracking</td><td colspan="2">-730mm ± 10mm with standard tray
-680mm ± 10mm with rotating tray</td></tr>
<tr><td colspan="2" rowspan="4">Tabletop</td><td colspan="2">Inherent Filtration</td><td colspan="2">Laminate : 1.2mmAl at 100kV
Carbon(Option) : 0.5mmAL at 100kV</td></tr>
<tr><td colspan="2">Max. Patient Weight</td><td colspan="2">300kg(660lbs)</td></tr>
<tr><td rowspan="2">Size</td><td>Standard</td><td colspan="2">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</td></tr>
<tr><td>Extended#
(Option)</td><td colspan="2">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</td></tr>
<tr><td colspan="2">Bucky Type</td><td colspan="2">Oscillating
(Optional built in charger)</td><td>Fixed
(Optional built in charger)</td></tr>
<tr><td colspan="2">Grid</td><td colspan="2">FD 34~44inch, 103 lpi
ratio 8~12:1</td><td>FD 100cm, 200lpi, 215lpi, 230 lpi,
ratio 8~12:1
(Optional removable grid)</td></tr>
<tr><td colspan="2">Lock(Brake)</td><td colspan="3">EM Lock, Foot Switch on/off</td></tr>
<tr><td colspan="2">Center indication</td><td colspan="3">Transverse center, height center</td></tr>
<tr><td colspan="2">Side Cover</td><td colspan="3">2-story telescopic Cover</td></tr>
<tr><td colspan="2">Electrical Rating</td><td colspan="3">100–240VAC, 400VA, 50/60Hz</td></tr>
</table>

Dimension / Weight	Standard	Laminate	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)
		Carbon	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)
	Extended # (Option)	Laminate	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	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

* #: It can only be combined with TS-CSP.

Model		PBT-4		
Movement	Tabletop	Longitudinal	Stroke	Tabletop Size(W)
			1,000(±500)mm ± 10mm	Tabletop 2,200mm
			800(±400)mm ± 10mm	Tabletop 2,000mm
			600(±300)mm ± 10mm	Tabletop 1,800mm
		Transverse (Lateral)	250(±125)mm ± 5mm	
	Bucky	Longitudinal	350mm ± 10mm with standard tray 295mm ± 10mm with rotating tray	
Tabletop		Inherent Filtration	Laminate : 1.2mmAl at 100kV Carbon(Option) : 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 (Optional built in charger)	Fixed (Optional built in charger)	
Grid		FD 34~44inch, 103 lpi ratio 8~12:1	FD 100cm, 200lpi, 215lpi, 230 lpi, ratio 8~12:1 (Optional removable grid)	
Lock(Brake)		EM Lock, beam sensor on/off		
Center indication		Transverse 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

* PBT-4 cannot be combined with TS-CSP.

Model	PBT-1
Max. Patient Weight	Max. 215kg (474lbs)
Grid	Focal distance 100cm, 103 lpi, ratio 10:1
Inherent Filtration	1.2mmAl at 100kV
Electrical Rating	DC 24V/ 64VA
Caster	Max height 172 mm / Max work load 90 kg (198lb)
Bucky Type	Spring Oscillating
Dimension / Weight	2005(W) x 662(D) x 700(H) mm / 75kg(165lbs)

* APPLIED PART

* PBT-1 cannot be combined with TS-CSP.

Model	PDT-1
Max. Patient Weight	Max. 200kg (441lbs)
Inherent Filtration	1.2mmAl at 100kV
Dimension / Weight	2004(W) x 650(D) X 712(H)mm / 62kg (137lb)

* APPLIED PART

* PDT-1 cannot be combined with TS-CSP.

1.2.5 WALL BUCKY STAND

Model	WBS(Manual)		
Stroke	Vertical	1,070mm (300~1,370mm from floor to Bucky center) ± 10mm 1,220mm (300~1,520mm from floor to Bucky center) ± 10mm 1,390mm (300~1,690mm from floor to Bucky center) ± 10mm 1,640mm (300~1,940mm from floor to Bucky center) ± 10mm	
Vertical Movement	Manual		
Bucky type	Oscillating (Optional built in charger)		Fixed (Optional built in charger)
Grid	FD 40~72inch, 103 lpi, ratio 8~12:1		FD 130,150,180cm, 200, 215lpi, 230 lpi, ratio 8~12:1 (Optional removable grid)
Inherent Filtration	0.5mmAl at 100kV		
Lock(Brake)	EM Lock, Switch on/off		
Vertical Balance	Counter Weight		
Electrical Rating	24VDC, 1A		
Dimension / Weight	1,599(H) x 659(W) x 465(D) mm / 110kg(242lbs) 1,749(H) x 659W) x 465(D) mm / 113kg(249lbs) 1,919(H) x 659(W) x 465(D) mm / 116kg(255lbs) 2,169(H) x 659(W) x 465(D) mm / 120kg(264lbs)		

* APPLIED PART, Optional Rotating tray

* WBS(Manual) cannot be combined with TS-CSP.

Model	WBS-TM(Manual)		
Cassette Stroke	Vertical	1,492mm (286~1,778mm from floor to Bucky center) ± 10mm	
	Tilted 90˚	1,500mm (658~2,158mm from floor to Bucky surface) ± 10mm	
Vertical Movement	Manual		
Bucky type	Oscillating (Optional built in charger)	Fixed (Optional built in charger)	
Grid	FD 40~72inch, 103 lpi, ratio 8~12:1	FD 130,150,180cm, 200, 215lpi, 230 lpi, ratio 8~12:1 (Optional removable grid)	
Tilting Angle	-30 ~ 90˚		
Tilting Movement	Manual		
Withstanding load (at tilting angle 90°)	20kgf at the point 150mm from the side.		
Inherent Filtration	0.5mmAl at 100kV		
Lock(Brake)	EM Lock, Switch on/off by foot switch(Vertical movement, Tilting)		
Balance	Vertical	Counter Weight	
	Tilting	Spring	
Electrical Rating	24VDC, 2.5A		
Dimension/Weight	2,169(H) x 718(W) x 732(D) mm / 187kg(412lbs)		

* APPLIED PART, Optional Rotating tray

* WBS-TM(Manual) cannot be combined with TS-CSP.

Model	WBS(Manual Plus)	
Cassette stroke	1,220mm (300~1,520mm from floor to Bucky center) ± 10mm 1,390mm (300~1,690mm from floor to Bucky center) ± 10mm 1,640mm (300~1,940mm from floor to Bucky center) ± 10mm	
Vertical Movement	Manual	
Bucky type	Oscillating (Optional built in charger)	Fixed (Optional built in charger)
Grid	FD 40~72inch, 103 lpi, ratio 8~12:1	FD 130,150,180cm, 200, 215lpi, 230 lpi, ratio 8~12:1 (Optional removable grid)
Inherent Filtration	0.5mmAl at 100kV	
Lock(Brake)	EM Lock, Switch on/off	
Balance	Counter Weight	
Electrical Rating	100-240VAC, 160VA, 50/60Hz	
Dimension / Weight	1,749(H) x 659W) x 465(D) mm / 113kg(249lbs) 1,919(H) x 659(W) x 465(D) mm / 116kg(255lbs) 2,169(H) x 659(W) x 465(D) mm / 120kg(264lbs)	

* APPLIED PART, Optional Rotating tray

* WBS(Manual Plus) cannot be combined with TS-CSP.

Model	WBS(Motorized)		
Cassette stroke	Vertical	970mm (300~1,270mm from floor to Bucky center) ± 10mm 1,120mm (300~1,420mm from floor to Bucky center) ± 10mm 1,290mm (300~1,590mm from floor to Bucky center) ± 10mm 1,540mm (300~1,840mm from floor to Bucky center) ± 10mm	
Vertical movement	Manual and Motorized movement		
Bucky type	Oscillating (Optional built in charger)	Fixed (Optional built in charger)	
Grid	FD 40~72inch, 103 lpi, ratio 8~12:1	FD 130,150,180cm, 200, 215lpi, 230 lpi, ratio 8~12:1 (Optional removable grid)	
Inherent Filtration	0.5mmAl at 100kV		
Lock(Brake)	EM Lock, Switch on/off		
Balance	Counter Weight		
Electrical Rating	100-240VAC, 160VA, 50/60Hz		
Vertical Speed	6.2 cm/s ± 15% (Normal up), 5.6cm/s ± 15% (Normal down)		
Dimension / Weight	1,614(H) x 659(W) x 549(D) mm / 126kg(277lbs) 1,764(H) x 659(W) x 549(D) mm / 130kg(286lbs) 1,934(H) x 659(W) x 549(D) mm / 132kg(291lbs) 2,184(H) x 659(W) x 549(D) mm / 135kg(297lbs)		

* APPLIED PART, Optional Rotating tray

* WBS(Motorized) cannot be combined with TS-CSP.

Model	WBS-TM(Motorized)		
Cassette Stroke	Vertical	1,492mm (286~1,778mm from floor to Bucky center) ± 10mm	
	Tilted 90˚	1,517mm (645~2,162mm from floor to Bucky surface) ± 10mm	
Vertical movement	Manual and Motorized		
Bucky type	Oscillating (Optional built in charger)		Fixed (Optional built in charger)
Grid	FD 40~72inch, 103 lpi, ratio 8~12:1		FD 130,150,180cm, 200, 215lpi, 230 lpi, ratio 8~12:1 (Optional removable grid)
Tilting Angle	-30 ~ 90˚		
Tilting Movement	Manual		
Withstanding load (at tilting angle 90°)	20kgf at the point 150mm from the side.		
Inherent Filtration	0.5mmAl at 100kV		
Lock(Brake)	EM Lock, Switch on/off by foot switch(Vertical movement, Tilting)		
Balance	Vertical	Counter Weight	
	Tilting	Spring	
Electrical Rating	100-240VAC, 160VA, 50/60Hz		
Vertical Speed	6.2 cm/s ± 15% (Normal up), 5.6cm/s ± 15% (Normal down)		
Dimension/ Weight	2,184(H) x 824(W) x 831(D) mm / 218kg(480lbs)		

* APPLIED PART, Optional Rotating tray

* WBS-TM(Motorized) cannot be combined with TS-CSP.

Model	WBS-TA(Motor type)		
Cassette stroke	Vertical	1,526mm (326~1,852mm from floor to Bucky center) ± 10mm	
	Tilted 90˚	1,526mm (440~1,966mm from floor to Bucky surface) ± 10mm	
Vertical Movement	Manual and Motorized		
Bucky type	Oscillating (Optional built in charger)		Fixed (Optional built in charger)
Grid	FD 40~72inch, 103 lpi, ratio 8~12:1		FD 130,150,180cm, 200, 215lpi, 230 lpi, ratio 8~12:1 (Optional removable grid)
Tilting Angle	-30˚ ~ 90˚		
Tilting Movement	Motorized		
Inherent Filtration	0.5mmAl at 100kV		
Lock(Brake)	EM Lock, Switch on/off		
Balance	Counter Weight		
Electrical Rating	100–240VAC, 200VA, 50/60Hz		
Vertical Speed	Normal	6.2 cm/s ± 15% (Up), 5.6cm/s ± 15% (Down)	
	Fast	12.1cm/s ± 15% (Up), 11.8cm/s ± 15% (Down)	
Tilting Speed	Tilting up	11.3˚/s	
	Tilting down	11.7˚/s	
Dimension / Weight	2,184(H) x 659(W) x 990(D) mm / 195kg(430lbs)		

* APPLIED PART, Optional Rotating tray

* WBS-TA(Motorized) cannot be combined with TS-CSP.

Model	WBS-TA(Actuator type)#	
Cassette stroke	Vertical	1,526mm (283~1,809mm from floor to Bucky center)±10mm
	Tilted 90˚	1,526mm (450~1,976mm from floor to Bucky surface)±10mm
Vertical movement	Manual and Motorized	
Bucky type	Oscillating (Optional built in charger)	Fixed (Optional built in charger)
Grid	FD 40~72inch, 103 lpi, ratio 8~12:1	FD 130,150,180cm, 200, 215lpi, 230 lpi, ratio 8~12:1 (Optional removable grid)
Tilting range	-20˚ ~ 90˚	
Tilting Movement	Motorized	
Inherent Filtration	0.5mmAl at 100kV	
Lock(Brake)	EM Lock, Switch on/off	
Balance	Counter Weight	
Electrical Rating	100–240VAC, 200VA, 50/60Hz	
Vertical Speed	Normal	6.2 cm/s ± 15% (Up), 5.6cm/s ± 15% (Down)
	Fast	12.1cm/s ± 15% (Up), 11.8cm/s ± 15% (Down)
Tilting Speed	0˚ ~ 90˚	8.2˚/s
	-20˚ ~ 0˚	5.1˚/s
Dimension / Weight	2,184(H) x 659(W) x 893(D) mm / 186kg(410lbs)	

* APPLIED PART, Optional Rotating tray

* #: It can be combined with TS-CSP.

1.2.6 TUBE STAND (WITH TUBE & COLLIMATOR)

- **Tube Stand**

Model	TS-FM6(Motorized)	
Tube Rotation Angle	Horizontal axis	±135°
	Vertical axis	±180° (mechanical detents at every 90°)
Tube stroke	Longitudinal	2,100mm ± 10mm (Optional 2,900mm and 3,600mm) ± 10mm
	Lateral	250mm ± 5mm
	Vertical	1,526mm (420~1,946mm from floor to focus) ± 10mm
Vertical Movement	Manual and Motorized Optional vertical synchronization with wall stand and table	
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	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(W) x 1,458(D) mm / 255kg(562lbs) 2,327(H) x 3,806(W) x 1,458(D) mm / 268kg(591lbs) 2,327(H) x 4,506(W) x 1,458(D) mm / 278kg(613lbs) Option(Tube Head Motorized Rotation): 2,327(H) x 3,006(W) x 1,458(D) mm / 265kg(584lbs) 2,327(H) x 3,806(W) x 1,458(D) mm / 278kg(613lbs) 2,327(H) x 4,506(W) x 1,458(D) mm / 288kg(635lbs)	

Model	TS-FC6 (Motorized)	
Tube Rotation Angle	±135°	
Tube stroke	Longitudinal	2,500mm ± 10mm
	Lateral	250mm ± 5mm
	Vertical	1,330mm (430~1,760mm from floor to focus) ± 10mm Optional 1,580mm (430~2,010mm from floor to focus) ± 10mm
Vertical Movement	Manual and Motorized Optional vertical synchronization with wall stand and table	
Lock(Brake)	EM Lock, Switch on/off	
Balance	Counter Weight	
Column Rotation	90° step, Foot Lock	
Options	Line laser, Column rotation by electrical release	
Electrical Rating	100~240VAC, 160VA, 50/60Hz	
Dimension / Weight	2,070(H) x 3600(W) x 1,458(D) mm / 220kg(485lbs) 2,320(H) x 3600(W) x 1,458(D) mm / 227kg(500lbs)	

Model	TS-FC4 (Motorized)	
Tube Rotation Angle	±135°	
Tube stroke	Longitudinal	2,536mm ± 10mm
	Lateral	N/A
	Vertical	1,410mm (420~1,830mm from floor to focus) ± 10mm Optional 1,660mm (420~2,080mm from floor to focus) ± 10mm
Vertical Movement	Manual and Motorized Optional vertical synchronization with wall stand and table	
Lock(Brake)	EM Lock, Switch on/off	
Balance	Counter Weight	
Electrical Rating	100~240VAC, 160VA, 50/60Hz	
Dimension / Weight	2,048(H) x 3,600(W) x 830(D)mm / 190kg(419lbs) 2,298(H) x 3,600(W) x 830(D)mm / 200kg(441lbs)	

Model	TS-FC2 (Motorized)	
Tube Direction	Right-angle or Straight	
Tube Rotation Angle	N/A	
Tube stroke	Longitudinal	N/A
	Lateral	N/A
	Vertical	1,080mm(324mm~1,404mm from floor to focus) ± 10mm 1,230mm(324mm~1,554mm from floor to focus) ± 10mm 1,400mm(324mm~1,724mm from floor to focus) ± 10mm 1,650mm(324mm~1,974mm from floor to focus) ± 10mm
Vertical Movement	Motorized Optional vertical synchronization with wall stand	
Lock(Brake)	EM Lock, Switch on/off	
Balance	Counter Weight	
Electrical Rating	100~240VAC, 160VA, 50/60Hz	
Dimension / Weight	1) Right-angle type: 1,614(H) x 659 (W) x 770(D) mm / 162kg(357lbs) Straight type: 1,614(H) x 659 (W) x 859(D) mm / 162kg(357lbs) 2) Right-angle type: 1,764(H) x 659 (W) x 770(D) mm / 165kg(363lbs) Straight type: 1,764(H) x 659 (W) x 859(D) mm / 165kg(363lbs) 3) Right-angle type: 1,934(H) x 659(W) x 770(D) mm / 168kg(370lbs) Straight type: 1,934(H) x 659(W) x 859(D) mm / 168kg(370lbs) 4) Right-angle type: 2,184(H) x 659(W) x 770(D) mm / 171kg(377lbs) Straight type: 2,184(H) x 659(W) x 859(D) mm / 171kg(377lbs)	

Model	TS-FM6	
Tube Rotation Angle	±135°	
Tube stroke	Longitudinal	2,200mm ± 10mm (Optional 3,000mm and 3,700mm) ± 10mm
	Lateral	220mm ± 5mm (Optional 250mm) ± 5mm
	Vertical	1,330mm (440~1,770mm from floor to focus) ± 10mm Optional 1,580mm (440~2,020mm from floor to focus) ± 10mm
Lock(Brake)	EM Lock, Switch on/off	
Balance	Counter Weight	
Column Rotation	90° step, Foot Lock	
Options	Line laser, Column rotation by electrical release	
Electrical Rating	24VDC, 3A	
Dimension / Weight	2,067(H) x 3,006(W) x 1,388(D) mm / 217kg(478lbs) 2,067(H) x 3,006(W) x 1,418(D) mm / 217kg(478lbs) 2,067(H) x 3,806(W) x 1,388(D) mm / 230kg(507lbs) 2,067(H) x 3,806(W) x 1,418(D) mm / 230kg(507lbs) 2,067(H) x 4,506(W) x 1,388(D) mm / 240kg(529lbs) 2,067(H) x 4,506(W) x 1,418(D) mm / 240kg(529lbs) 2,317(H) x 3,006(W) x 1,388(D) mm / 225kg(496lbs) 2,317(H) x 3,006(W) x 1,418(D) mm / 225kg(496lbs) 2,317(H) x 3,806(W) x 1,388(D) mm / 238kg(525lbs) 2,317(H) x 3,806(W) x 1,418(D) mm / 238kg(525lbs) 2,317(H) x 4,506(W) x 1,388(D) mm / 248kg(547lbs) 2,317(H) x 4,506(W) x 1,418(D) mm / 248kg(547lbs)	

Model	TS-FC6	
Tube Rotation Angle	±135°	
Tube stroke	Longitudinal	2,000mm ± 10mm (Optional 2,500mm) ± 10mm
	Lateral	220mm± 5mm (Optional 250mm) ± 5mm
	Vertical	1,330mm (430~1,760mm from floor to focus) ± 10mm Optional 1,580mm (430~2,010mm from floor to focus) ± 10mm
Lock(Brake)	EM Lock, Switch on/off	
Balance	Counter Weight	
Column Rotation	90° step, Foot Lock	
Options	Line laser, Column rotation by electrical release	
Electrical Rating	24VDC, 3A	
Dimension / Weight	2,056(H) x 3,080(W) x 1,388(D) mm / 182kg(401lbs) 2,056(H) x 3,080(W) x 1,418(D) mm / 182kg(401lbs) 2,056(H) x 3,600(W) x 1,388(D) mm / 186kg(410lbs) 2,056(H) x 3,600(W) x 1,418(D) mm / 186kg(410lbs) 2,306(H) x 3,080(W) x 1,388(D) mm / 190kg(419lbs) 2,306(H) x 3,080(W) x 1,418(D) mm / 190kg(419lbs) 2,306(H) x 3,600(W) x 1,388(D) mm / 194kg(428lbs) 2,306(H) x 3,600(W) x 1,418(D) mm / 194kg(428lbs)	

Model	TS-FC4	
Tube Rotation Angle	±135°	
Tube stroke	Longitudinal	2,000mm ± 10mm (Option: 2,536mm ± 10mm)
	Lateral	N/A
	Vertical	1,410mm (420~1,830mm from floor to focus) ± 10mm Optional 1,660mm (420~2,080mm from floor to focus) ± 10mm
Lock(Brake)	EM Lock, Switch on/off	
Balance	Counter Weight	
Column Rotation	N/A	
Options	Line laser	
Electrical Rating	24VDC, 3A	
Dimension / Weight	2,048(H) x 3,040(W) x 778(D) mm / 187kg(412lbs) 2,298(H) x 3,040(W) x778(D) mm / 195kg(430lbs) 2,048(H) x 3,600(W) x 778(D) mm / 191kg(421lbs) 2,298(H) x 3,600(W) x778(D) mm / 199kg(439lbs)	

Model	TS-FC2	
Tube Rotation Angle	±135°	
Tube stroke	Longitudinal	N/A
	Lateral	N/A
	Vertical	1,243mm (294mm~1,537mm from floor to focus) ± 10mm 1,413mm (294mm~1,707mm from floor to focus) ± 10mm 1,663mm (294mm~1,957mm from floor to focus) ± 10mm
Lock(Brake)	EM Lock, Switch on/off	
Balance	Counter Weight	
Column Rotation	N/A	
Options	Line laser	
Electrical Rating	24VDC, 3A	
Dimension / Weight	1,749(H) x 659(W) x 790(D) mm / 145kg(320lbs) 1,919(H) x 659(W) x 790(D) mm / 150kg(331lbs) 2,169(H) x 659(W) x 790(D) mm / 158kg(348lbs)	

Model	TS-CSA	
Tube Rotation Angle	Horizontal axis	±180° (LCD display)
	Vertical axis	±180° (mechanical detents at every 90°)
Tube stroke (with 3x4m rails - Transverse x Longitudinal)	Longitudinal	3,280mm(with 4m rail), 4,280mm(with 5m rail) ± 10mm
	Lateral	2,200mm(with 3m rail), 3,200mm(with 4m rail) ± 10mm
	Vertical	1,500mm or 1,600mm ± 10mm (1,500mm is possible up to the weight of E7252X plus R108)
Lock(Brake)	EM Lock, Switch on/off	
Balance	Spring	
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	
Option	Auto Collimation, Mechanical detent function	
SID Indication	7inch Touch Screen LCD with control buttons	
Electrical Rating	220–230VAC, 200VA, 50/60Hz	
Dimension	2,866(H) x 3,022(D) x 4,010(W) mm when vertical direction is fully extended with 1,600mm stroke and 3x4m rails	
Weight	Main body(Vertical movement Manual): 160kg(353lbs) Main body(Vertical movement Motorized): 170kg(375lbs) except tube and collimator Rails: 115kg(254lbs, 3x4m rails)	

Model	TS-CSP	
Tube Rotation Angle	Horizontal axis	±180° (LCD display)
	Vertical axis	±180° (mechanical detents at every 90°)
Tube stroke (with 3x4m rails - Transverse x Longitudinal)	Longitudinal	3,280mm ± 10mm
	Lateral	2,200mm ± 10mm
	Vertical	1,600mm ± 10mm
Lock(Brake)	EM Lock, Switch on/off	
Balance	Spring	
Operation	Manual and Vertical Motorized Vertical synchronization with Wall stand and Table for motorized stand	
Indication / Control	7inch Touch Screen LCD with control buttons	
Electrical Rating	220-230V~, 500VA, 50/60Hz	
Dimension	2,849(H)x3,182(D)x4,214(W) mm when vertical direction is fully extended with 1,600mm stroke and 3x4m rails	
Weight	Main body: 175kg(386lbs) except tube, Rails: 122kg(269lbs, 3x4m rails)	

Model	TS-CSE	
Tube Rotation Angle	Horizontal axis	±180°
	Vertical axis	±180° (mechanical detents at every 90°)
Tube stroke with 3x4m rails	Longitudinal	3,280mm ± 10mm
	Transverse	2,200mm ± 10mm
	Vertical	1,500mm ± 10mm
Lock(Brake)	EM Lock, Switch on/off	
Vertical Balance	Spring	
Vertical Movement	Manual	
Tube Rotation	Manual	
SID Indication	LED lamp and 7-Segment display	
Electrical Rating	100-240Vac, 150VA, 50/60Hz	
Dimension	2,688(H) x 3,022(D) mm x 4,010(W) mm when vertical direction is extended with 1,500mm stroke and 3x4m rails	
Weight	Main body: 135kg(298lbs) except tube, Rails: 100kg(220lbs)	

- **X-ray Tube**

Tube Model	E7239X	DXT-8M	E7242X	DXT-11M
Manufacturer	CANON	DRGEM	CANON	DRGEM
Focal Spot Size	1.0/2.0mm	1.0/2.0mm	0.6/1.5mm	0.6/1.5mm
Rating(0.1s)	22.5/47kW@60Hz	22.5/47kW@60Hz	18/50kW@60Hz	18/50kW@60Hz
Max. Anode HU	140kHU(100kJ)	140kHU(100kJ)	200kHU(142kJ)	200kHU(142kJ)
Target Angle	16°	16°	14°	14°
Max. kV	125kV	125kV	125kV	125kV
Weight	16kg(35.3lbs)	16kg(35.3lbs)	16kg(35.3lbs)	16kg(35.3lbs)
Inherent Filtration	0.9mmAl/75kV	1.0mmAl/75kV	0.9mmAl/75kV	1.0mmAl/75kV
Half Value Layer	More than 2.9mmAl eq. at 80kVp			
Leakage Radiation	Less than 100mR/hr			

Tube Model	E7843X	DXT-10M	E7876X
Manufacturer	CANON	DRGEM	CANON
Focal Spot Size	0.6/1.2mm	0.6/1.2mm	0.6/1.2mm
Rating(0.1s)	22/50kW@60Hz	17/48kW@60Hz	22/54kW@60Hz
Max. Anode HU	150kHU(111kJ)	150kHU(111kJ)	230kHU(163kJ)
Target Angle	12°	12°	12°
Max. kV	150kV	125kV	150kV
Weight	16kg(35.3lbs)	16kg(35.3lbs)	16kg(35.3lbs)
Inherent Filtration	1.3mmAl/75kV	1.0mmAl/75kV	1.3mmAl/75kV
Half Value Layer	More than 2.9mmAl eq. at 80kVp		
Leakage Radiation	Less than 100mR/hr		

Tube Model	E7884X#	DXT-12M#	E7252X#
Manufacturer	CANON	DRGEM	CANON
Focal Spot Size	0.6/1.2mm	0.6/1.2mm	0.6/1.2mm
Rating(0.1s)	22/54kW@60Hz	22/54kW@60Hz	27/75kW
Max. Anode HU	300kHU(210kJ)	300kHU(210kJ)	300kHU(210kJ)
Target Angle	12°	12°	12°
Max. kV	150kV	150kV	150kV
Weight	16kg(35.3lbs)	16kg(35.3lbs)	18kg(39.7lbs)
Inherent Filtration	0.9mmAl/75kV	1.0mmAl/75kV	0.9mmAl/75kV
Half Value Layer	More than 2.9mmAl eq. at 80kVp		
Leakage Radiation	Less than 100mR/hr		

Tube Model	DXT-14U#	RAD-14#	DXT-15U *#
Manufacturer	DRGEM	VAREX	DRGEM
Focal Spot Size	0.6/1.2mm	0.6/1.2mm	0.6/1.2mm
Rating(0.1s)	27/75kW	32/77kW	32/77kW
Max. Anode HU	300kHU(210kJ)	300kHU(210kJ)	300kHU(210kJ)
Target Angle	12°	12°	12°
Max. kV	150kV	150kV	150kV
Weight	18kg(39.7lbs)	16.4kg(36.2lbs)	16.4kg(36.2lbs)
Inherent Filtration	1.0mmAl/75kV	0.6mmAl/75kV	0.7mmAl/75kV
Additional Filtration		0.5mmAl	0.5mmAl
Half Value Layer	More than 2.9mmAl eq. at 80kVp		
Leakage Radiation	Less than 100mR/hr		

* Including VAREX RAD-14 Insert.

* #: It can be combined with TS-CSP.

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	0.5mmAl	
Half Value Layer	More than 2.9mmAl eq. at 80kVp		
Leakage Radiation	Less than 100mR/hr		

* #: It can be combined with TS-CSP.

NOTE
Total filtration including X-ray tube assembly and collimator will be matched by appropriate additional filters to within the range from 2.9 to 3.3mmAl. eq.

NOTE
If the target angle of the applied tube is 12°, the field size (43cm X 43cm) cannot be realized by SID 100cm when combined with a collimator. To use the field size (43cm X 43cm), please use SID 105cm or 110cm.

- **Collimator**

Model	DXC-RML
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 40 mR/h
Max. kVp shield	150kV
Inherent Filtration	2mmAl eq.
Luminosity	Over 160LUX at 100cm SID
Light source	LED
Standard	Rotating flange with fixing knob
Option	Line laser+shutter, Measure tape Near port moving shutters, Mounting flange mechanical detent Accessory guides spring, Additional filter, DAP rail
Electrical Rating	LED lamp type 12~45V DC 35VA / 20~30VAC 35VA - 50~60Hz
Dimension / Weight	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 or LED (Option)
Standard	Tape measure, rotating flange	Auto collimation for R302 MLP/A and R 302 MFMLP/A Auto filter selection for R 302 MFMLP/A
Option	Line laser, near port shutters	Tape measure, line laser, rotating flange LED Type
Electrical Rating	20–30Vac, 30VA, 50/60Hz	Halogen type: 24Vac, 6.5A, 50/60Hz LED Type(Option): 24Vac, 2A, 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)

* #: It can be combined with TS-CSP.

1.2.7 OPTION & ACCESSORIES

- **Option**

- AEC Ion Chamber

Model	9890-000-70006 (Amplimat 5-Field)
Manufacturer	Philips
Field	5 Fields (Using 3 Fields)
X-ray Energy Range	40~150kV
Exposure time Range	1ms to 6s
Accuracy	< 5 mV
Inherent Filtration	0.8 mm Al eq.
Weight	1.8kg (4lb)

- Stitching Stand

Model	STITCHING STAND
Dimension / Weight	927.6(W) x 945.9(D) X 2064.7(H)mm / 47.1kg (103.8lb)

- Live stream camera

Model	HU205
Manufacturer	HUENTEK
Display resolution	1920×1080
Max. Image Transfer Rate	30FPS @ FHD
Electrical Rating	5VDC, 210mA

* Only DXC collimator can use a Live Stream Camera.

NOTE
Live stream camera images are used only for reference.

- Pedestal console stand
- Patient Compression Belt
- Patient hand grips (Tabletop, Wall stand – Overhead, Lateral)
- Cassette holders (Lateral, External Wall Bucky)
- Full-spine imaging software
- DC brake for low speed starter of x-ray generator
- Stitching Stand
- Radiation protection
  - ■ Wearing(apron, neck guide, glove), movable x-ray protection wall

- Vertical Up/Down foot switch or hand switch for operation room (Only WBS(Motorized), WBS-TM(Motorized) and WBS-TA)
- Emergency Stop Switch for operation room
- Table Bucky Tracking (Mechanical)
  - Upgrade table bucky tracking for TS-FM6
- Dual Speed Starter (DSS)
  - Up-grade DSS for the dual speed rotating tube under the 3 phase(32/40/52KW)
- LSS Brake for Low speed rotor supply
- Fail- safe switch
- Mechanical detent for TS-CSA
- Ceiling rail for TS-FM6 (3.0m, 3.8m, 4.5m rails)
- Rail length for TS-CSA (transverse x longitudinal: 3x5m, 4x4m, 4x5m)
- Floor rail of TS-FM6 (3.8m, 4.5m) (recommend for WBS-TM or WBS-TA)
- Cable chain for TS-FM6 (3.0m, 3.8m, 4.5m rails)
- Cable chain for TS-CSA (3x4m, 3x5m, 4x4m, 4x5m)
- Extend HV cable length for TS-CSA

From	To
8m	10m, 15m, 18m, 20m, 25m
10m	15m, 18m, 20m, 25m
15m	18m, 20m, 25m
18m	20m, 25m
20m	25m

- Extend HV cable length for TS-FM6

From	To
8m	10m, 15m
10m	18m

- Remote controller for WBS-TA
- LED light upgrade from Hallogen lamp for R302MFMLP/A
- Built-in laser of R302 Series collimators
- Rotating flange of R302 Series collimators
- Right side drawer tray for WBS/WBS-TM/WBS-TA

- **Accessory**

- DAP (Dose Area Product) meter

Model	120-131HS (RS485)
Manufacturer	IBA
DAP Resolution	0.01 μGym²
Interface	RS485
Active area	115 x 115mm / 146 x 146mm
Display	Integrated or separate display (single or dual line)
Dimension	158 x 134.5 x 17mm / 180 x 156 x 17mm
Inherent Filtration	0.5 mm Al
Power input	12 – 29 VDC,100mA
Measurement Uncertainty	±25%

- Detachable High Resolution Grid

Model	Grid 1000
Manufacturer	JPI
Focal distance	100, 130, 150, 180cm
Line number	103 lpi, 200 lpi, 215 lpi, 230 lpi
Reason	8:1 ~ 12:1

- DAP (Dose Area Product) meter with display
  - Upgrade DAP kit, Stand-alone Display type
  - Upgrade DAP kit, for DR system
- Detachable High Resolution Grid and Holder

WARNING
Maximum force of Overhead grip is 10kgf.

WARNING
Bucky tilting and Auto positioning is not available with Overhead grip.

1.2.8 SOFTWARE FIRMWARE INFORMATION

- **Software Version**

1) RADMAX

Software/Firmware	Version	Description
RADMAX	1.02	RADMAX is the main software provides top level graphics user interface on whole system control and imaging process. RADMAX consists of System Control Module, Imaging Module, DICOM Module, Database Module, System Diagnosis Module and Display Module.

2) X-ray Generators

Software/Firmware	Version	Description
GXR SDK	1.06	GXR SDK is the software provides user interface on generator control. GXR SDK consists of generator control Module and Display Module.
GXR Remote Diagnosis	1.03	GXR Remote Diagnosis is the software provides remote diagnosis function through Membrane Console and Touch Console
GXR HT Control Board(GXR)	1.5a	GXR HT Control Board at x-ray generator controls whole x-ray generation process by the control of System Control Module in GXR SDK. This module controls x-ray parameters such as kV, mA and exposure time, and controls the filament and rotor driving and detector interfacing.
GXR DSS Board (GXR)	1.00	GXR DSS board at x-ray generator controls starter operation which drives tube's anode rotation by the control of GXR DSS board at x-ray generator.

3) GXR-C X-ray Generators

Software/Firmware	Version	Description
GXR SDK	1.06	GXR SDK is the software provides user interface on generator control. GXR SDK consists of generator control Module and Display Module.
GXR Remote Diagnosis	1.03	GXR Remote Diagnosis is the software provides remote diagnosis function through Membrane Console and Touch Console
GXR HT Control Board(GXR-C)	1.2a	GXR HT Control Board at x-ray generator controls whole x-ray generation process by the control of System Control Module in GXR SDK. This module controls x-ray parameters such as kV, mA and exposure time, and controls the filament and rotor driving and detector interfacing.
GXR Capacitor Monitor Board (GXR-C)	1.00	Capacitor monitor board is a board that measures the voltage of the capacitor module and provides danger and warning signals to HT control board and GXR charger board.
GXR Charger board (GXR-C)	1.00	GXR Charger board is X-ray generator charges the capacitor modules in the power stack of the generator to save the energy for X-ray exposure. This module detects voltage and current of capacitor modules to protect capacitor modules.

4) GXR-U X-ray Generators

Software/Firmware	Version	Description
GXR SDK	1.06	GXR SDK is the software provides user interface on generator control. GXR SDK consists of generator control Module and Display Module.
GXR Remote Diagnosis	1.03	GXR Remote Diagnosis is the software provides remote diagnosis function through Membrane Console and Touch Console
GXR HT Control Board(GXR-U)	1.6a	GXR HT Control Board at x-ray generator controls whole x-ray generation process by the control of System Control Module in GXR SDK. This module controls x-ray parameters such as kV, mA and exposure time, and controls the filament and rotor driving and detector interfacing.
GXR Inverter board (GXR-U)	1.01	GXR Charger board is X-ray generator charges the capacitor modules in the power stack of the generator to save the energy for X-ray exposure. This module detects voltage and current of capacitor modules to protect capacitor modules.

5) Patient Table

Software/Firmware	Version	Description
PBT-6 auto control	1.00	PBT-6 auto control at integrated control board controls the Tabletop table and Vertical movement of patient table.
Auto tracking	1.00	Module for motorized or manual tracking rail movement control of Auto tracking.
PBT-4 auto control	1.00	PBT-4 auto control at integrated control board controls the Tabletop table.

6) Wall Bucky stand Manual

Software/Firmware	Version	Description
PBT-4 Control Board	1.00	PBT-4 Control Board at integrated control board in Wall Bucky Stand controls the each lock

7) Wall Bucky stand Motorized

Software/Firmware	Version	Description
WBS MOTORIZED CONTROL BOARD	1.00	WBS MOTORIZED CONTROL BOARD at integrated control board in Wall Bucky Stand controls the each lock and DC Motors.
WBS PANEL BOARD	1.00	WBS PANEL BOARD at integrated control board in Wall Bucky Stand controls the each switch and Display the information of Vertical movement and Tilting Angles.
COMMUNICATION BOARD	1.00	COMMUNICATION BOARD at integrated control board in Wall Bucky Stand controls the communication of GXR, PC interface module and Tube stand.

8) Tube stand Manual

Software/Firmware	Version	Description
Tube Stand Control Board	1.00	Tube stand board controls the position of the tube.

9) Tube stand Motorized

Software/Firmware	Version	Description
Tube Stand Control Board	1.00	Tube Stand Control Board is motorized radiographic stand controls the motorized radiographic stand, controls the motorized x-ray collimator by the control THU or RADMAX.
LS210 Board	1.00	LS210 Board is system status display and collimator control signal transfer to Tube Stand Control Board and x-ray control signal transfer to generator.
OP Switch Control Board	1.00	OP Switch Control Board is switch signal transfer to Tube Stand Control Board and receive remote control signal.
Angle Board (Stitch system option)	1.00	Angle Board uses Tube Rotation signal received from OP Switch board to rotate the tube in CW or CCW direction.

10) TS-CSP

Software/Firmware	Version	Description
Ceiling main control	1.00	Ceiling main control at integrated control board in the TS-CSP measures the angle of TS-CSP OP control
TS-CSP OP control	1.00	TS-CSP OP control at integrated control board displays the information of conventional stand, generator and image.
TS-CSP Switch control	1.00	TS-CSP Switch control at integrated control board control the lock switch and measures the angle of tube head.
TS-CSP Sensor Board	1.00	Control to the sensor station for preventing the collision.
TS-CSP Head Unit	1.00	TS-CSP Head Unit is displayed for system's information that SID, Tube angle, Detector state etc.

11) TS-CSA

Software/Firmware	Version	Description
Ceiling main control	1.00	Ceiling main control at integrated control board in the TS-CSA measures the angle of TS-CSA OP control
TS-CSA OP control	1.00	TS-CSA OP control at integrated control board displays the information of conventional stand, generator and image.
TS-CSA Switch control	1.00	TS-CSA Switch control at integrated control board control the lock switch and measures the angle of tube head.
TS-CSA Head Unit	1.00	TS-CSA Head Unit is displayed for system's information that SID, Tube angle, Detector state etc.

12) TS-CSE

Software/Firmware	Version	Description
TS-CSE Main Board	1.00	Ceiling main control at integrated control board in the TS-CSE measures the angle of TS-CSE OP control
TS-CSE Display Board	1.00	TS-CSE Display Board transmits the switch status to the Main Board and displays the Vertical height information.

1.3 ENVIRONMENT OF USE

OPERATING ENVIRONMENT

Ambient temperature range	10 °C to 35°C (50 °F to 95 °F)
Relative humidity range	30% to 75%, non-condensing
Atmospheric pressure range	700 hPa to 1060 hPa
Altitude Limit	This product is rated to operate at an altitude ≤3000m

TRANSPORT AND STORAGE

Ambient temperature range	-10 °C to 70 °C (14 °F to 158 °F).
Relative humidity range	10% to 90%, non-condensing.
Atmospheric pressure range	500 hPa to 1060 hPa