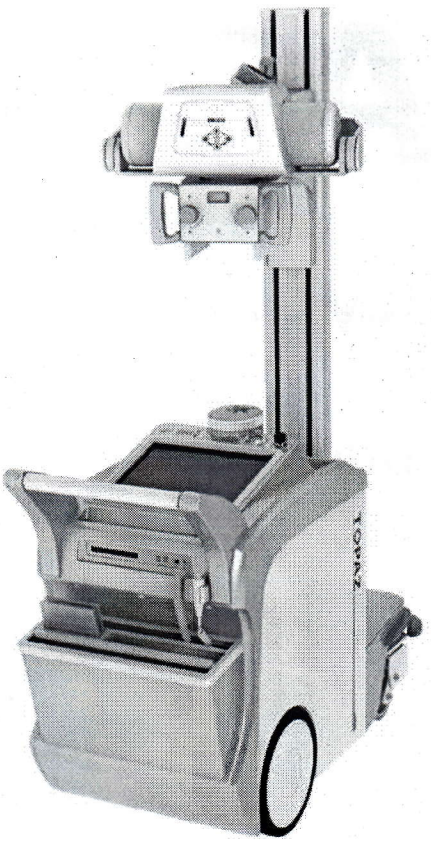
TOPAZ

Mobile DR System

Operation Manual



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D/N: RMD1311-009, Rev.7

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REVISION HISTORY

Revision Number	Date	Description
0	NOV 25, 2013	First Edition
1	MAR 17, 2015	GUI modified, Configuration section added
2	NOV. 02, 2015	Changes of section 1.4, 3 and 4.
3	JAN 28, 2016	Corrections of section 1.3.
4	AUG 24, 2016	Add the Calibration Step of Varian 4336W V4 Detector Add the Service mode
5	JUL 28, 2017	Add Engineer mode 4.4.4, Changes of section 4.4.3 And 4.5.3, Changes SW images
6	MAR 23, 2018	Change of Software Image,
7	NOV 29, 2018	Change the Standard(EMC 4 , Safety 3.1)

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 Operation Manual with the equipment at all times, and review the important information whenever required.

NOTE — Consult Accompanying Documents - As Applicable

TABLE OF CONTENTS

1.3 SPECIFICATIONS

Item		Specification	
		TOPAZ-32D	TOPAZ-40D
X-ray Generator	Nominal Output	32KW	40KW
	mA Range	Max. 400mA	Max. 500mA
	KV Range	40 ~ 125 KV (option: 150KV)	40 ~ 125 KV (option: 150KV)
	mAs Range	0,1 ~ 500mAs	0,1 ~ 500mAs
	Operation Duty Cycle	100kV, 320mA, 100ms / Rest time : 1min	100kV, 400mA, 100ms / Rest time : 1min
	Type	High Frequency	
System Design & Transport	Drive Type	Motor Driven(Rear-wheel drive)	
	Speed of Movement	Max. 5Km/h	
	Movement Brake/ Safety	Deadman type Handle, Front Safety Bumper, Spring Caster	
	Maximum Step Height	50mm	
	Maximum ramp gradient	10 degrees	
	Main power supply	100 ~ 240VAC, 9 – 4 A	
	Cable Length(Mains, retractable)	3m	
	Driving distance after fully charged	30km	
	Inch mover	Max. 50mm/s	
X-Ray Tube Support	Colum rotation range	± 325 degrees	
	Tube axis rotation range	-30 ~ +90 degrees	
	Tube support axis rotation range	± 180 degrees	
	Collimator rotation range	±120 (option ±180) degrees	
	Max./Min. X-ray focal spot height	1,390mm(Option : 1200mm)	
	Max. horizontal extension	560mm	
Option & Accessories	Remote Controller	Ready-Exposure, Lamp On/Off	
	DAP(Dose Area Product) Recording	Thermal Printer	

- 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, IEC60522			
Additional Filtration	1.0mmAl			
Half Value Layer	More than 2.9mmAl eq. at 80kVp			
Leakage Radiation	Less than 100mR/hr			

Tube Model	E7299X	E7876X	E7884X
Manufacturer	CANON	CANON	CANON
Focal Spot Size	0.3/1.0mm	0.6/1.2mm	0.6/1.2mm
Rating(0.1s)	3.7/39kW@60Hz	22/54kW@60Hz	22/54kW@60Hz
Max. Anode HU	150kHU(111kJ)	230kHU(163kJ)	300kHU(210kJ)
Target Angle	12°	12°	12°
Max. kV	150kV	150kV	150kV
Weight	16kg(35.3lbs)	16kg(55.1lbs)	16kg(35.3lbs)
Inherent Filtration	1.3mmAl/75kV	1.3mmAl/75kV	0.9mmAl/75kV
Additional Filtration	1.0mmAl		
Half Value Layer	More than 2.9mmAl eq. at 80kVp		
Leakage Radiation	Less than 100mR/hr		

Tube Model	DXT-10M	DXT-12M
Manufacturer	DRGEM	DRGEM
Focal Spot Size	0.6/1.2mm	0.6/1.2mm
Rating(0.1s)	17/48kW@60Hz	22/54kW@60Hz
Max. Anode HU	150kHU(111kJ)	300kHU(210kJ)
Target Angle	12°	12°
Max. kV	125kV	150kV
Weight	16kg(35.3lbs)	16kg(35.3lbs)
Inherent Filtration	1.0mmAl/75kV	1.0mmAl/75kV
Additional Filtration	1.0mmAl	
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 3.3mmAl. eq.

- DAP meter (Option)

DAP Resolution	0.01 μGym²
Interface	RS485
Active area	115 x 115mm
Dimension	158 x 134.5 x 17mm

- Digital Flat Panel Detector

Manufacturer / Model	VAREX / 4336W V4	
Active Pixel Area / Matrix	14 x 17 inch	
Pixel Pitch	139um	
Limiting Resolution	3.6 lp/mm	
Scintillator	CsI,	DRZ+
Energy Range	40 – 150kVp	
A/D Conversion	16-bits	
Interface	Gigabit Ethernet	
Weight(including Battery)	3.8kg (8.4lbs)	3.6kg (7.9lbs)

- Collimator

Model / Maker	R108/R108F	DXC-RML/DXC-RMH
Manufacturer	RALCO	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	
Inherent Filtration	Min. 2.0mmAl eq.	
Luminosity	Over 160LUX at 100cm SID (Typ. 250LUX)	Over 160LUX at 1cm SID
Light source	Single LED	LED and Halogen
Standard	Tape measure, Rotating flange	Rotating flange with fixing knob
Option	Laser line, Near port moving shutters(Only R108F), Manual rotating filters(Only R108F)	Line laser+shutter, Measure tape Near port moving shutters, Additional filter Mounting flange mechanical detent Accessory guides spring DAP rail
Electrical Rating	20–30VAC, 30VA, 50/60Hz	Halogen type - 24 V DC/AC - 50~60Hz 160VA LED type - 12~45V DC 35VA / 20~30VAC 35VA - 50~60Hz
Dimension / Weight	223(W) x 246(D) x 140(H) mm / 6.6kg(14.6lb)	196(W) x 250(D) x 171(H) mm / 7.1kg(15.6lb)

- Image Workstation

Item	Specification
CPU	Intel(R) Core i3-6100(3.70GHz,3MB Cache) or higher
Memory	4GB (1x4GB) Non-ECC DDR3L 1600MHz SDRAM or higher
Display	Intel® HD Graphics 530 (Integrated HD graphics)
Storage	128 GB x 1 SSD (Samsung) + 500GB x 1 SATA HDD or higher
Maker	DELL International
Touch Monitor	17 inch Color LCD, IR Infrared Ray, Display resolution: 1280 x 1024 pixels

OPERATING ENVIRONMENT

Ambient temperature range	10 to 35 °C (50 to 95 °F)
Relative humidity	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 ENVIRONMENT

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

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.