

SHIMADZU

PRODUCT DATA

Mobile X-ray System **MobileDaRt Evolution**
MX7 Version



GENERAL

The MobileDaRt Evolution is a general-purpose mobile digital X-ray system, which can be freely moved throughout a hospital to directly obtain X-ray images of various areas of the body.

This product data may contain references to products these are not available in your country. Please contact us to check the availability of these products in your country.

The TM and ® symbols are omitted in this manual.

FEATURES

- (1) Smooth and Quiet Movement
Power-assist technology allows moving the unit easily and quietly.
- (2) Compact Design
Excellent forward visibility allows freely moving through even tight spaces.
- (3) Easy Positioning
The system can be freely and quickly maneuvered into position using Inch-Mover buttons to move the main body and swiveling the column to move the X-ray tube.
- (4) Immediate Response
A reference image appears on the display in about 2 seconds, allowing on-site image confirmation.
- (5) High Throughput
Improves workflow by eliminating the need to prepare a cassette, develop images, or read CR plates, and using the hospital internal network to send image data to an imager or PACS.
- (6) High Frequency Inverter
Using a high-frequency inverter, with a maximum frequency of 60 kHz, to generate high voltage provides efficient X-ray generation with low-ripple.
- (7) Standard Anatomical Programs
Anatomical programs (APR) are installed as standard, to allow setting radiography parameters easily.
- (8) Cordless System
The built-in battery enables obtaining X-ray images without plugging in the unit.
- (9) Status Indicator Light
The status indicator light illuminates or blinks in response to X-ray exposure or system abnormalities. This allows a visual confirmation of system status.
- (10) Wireless FPD makes handling easier
The wireless FPD makes it easy to maintain the system asepsis in the operating room or infectious diseases ward. The system offers excellent positioning, with no concerns about cables.
- (11) Compact and lightweight
The wireless FPD offers the same dimensions as a 35 x 43 cm CR or film-cassettes, and enable handling similar to the CR or film-cassettes.
- (12) Low dose for patients with high image resolution
High sensitive wireless FPD ensures low dose for patients and scatter radiation to the operator.
- (13) New vibration resistant DR unit
The newly adopted vibration resistant SSD capable of high speed access achieves high level reliability during clinical rounds and a smooth system startup.

- (14) New energy saving collimator with a bright irradiation field
LEDs have been adopted as the light source to indicate the irradiation field. This reduces power consumption while improving brightness levels and durability.
- (15) Built-in 17inch large display is great for viewing images quickly, and fully integrated design is ease-of-clean-up after use.
- (16) Dose Management
Prior to exposure, dose area product (DAP) is estimated based on the exposure parameter setting and exposure area, and estimated value is displayed on the console. After exposure, DAP value is recalculated based on actual exposure parameter and displayed.

CONFIGURATION

- (1) Inverter type high voltage generator
- (2) X-ray tube unit
- (3) Collimator
- (4) Cart
- (5) DR unit
- (6) Flat Panel Detector (FPD)

17 x 17 inch	CXDI-410C Wireless (*5)
	CXDI-401C/G Wireless
14 x 17 inch	CXDI-710C Wireless (*5)
	CXDI-701C/G Wireless
	CXDI-70C Wireless
11 x 14 inch	CXDI-810C Wireless (*5)
	CXDI-801C/G Wireless
	CXDI-80C Wireless

- (7) Battery Charger

OPTION

- (1) Remote controlled exposure switch
- (2) Protective screen (folding)
- (3) Dose area product (DAP) meter mount kit (*1)
- (4) Distance indicator (*2)
- (5) Grid Unit
- (6) Keyless entry
- (7) Wireless LAN
- (8) Luminous hand switch
- (9) Additional hand switch
- (10) Barcode reader
- (11) Grip height adjustment (*3)
- (12) FPD Wired connection kit (*5)
- (13) External monitor interface
- (14) Decoration label
- (15) Second FPD Unit
- (16) FPD Bag (CXDI-70C/80C Wireless only) (*4)
- (17) Scatter Correction

(*1) Physical DAP meter can substitute calculated dose function, when needed.

(*2) Distance indicator and DAP meter are alternative.

(*3) Site installation.

(*4) Not applicable for USA/Canada market.

(*5) Not applicable to ones indicated in (*5).

SPECIFICATIONS

High-Voltage Generator

Item		Specification	
Max. Electric Power		32kW (100kV, 320mA, 20ms / 80kV, 400mA, 20ms)	
Ratings		Tube voltage: 40 - 133 kV Tube current: 50 - 400 mA Maximum power: 32kW (20msec)	
Nominal minimum exposure time		1 msec.	
Maximum Current-Time Product Settings at each mode			
Cassette Radiography *1		Common with large focus and small focus 40 - 90 kV: 320 mAs 91 - 100 kV: 280 mAs 101 - 110 kV: 250 mAs 111 - 120 kV: 220 mAs 121 - 133 kV: 200 mAs	
Digital Radiography *1	Long-term Radiography	Large focus 40 - 65 kV: 320 mAs 66 - 80 kV: 280 mAs 81 - 85 kV: 250 mAs 86 - 100 kV: 220 mAs 101 - 105 kV: 200 mAs 106 - 125 kV: 180 mAs 126 - 133 kV: 140 mAs	Small focus 40 - 65 kV: 320 mAs 66 - 80 kV: 280 mAs 81 - 100 kV: 220 mAs 101 - 125 kV: 180 mAs 126 - 133 kV: 140 mAs
	Short-term Radiography	Large focus 40 - 50 kV: 200 mAs 51 - 60 kV: 160 mAs 61 - 80 kV: 125 mAs 81 - 100 kV: 100 mAs 101 - 125 kV: 80 mAs 126 - 130 kV: 63 mAs 131 - 133 kV: 50 mAs	Small focus 40 - 60 kV: 160 mAs 61 - 80 kV: 125 mAs 81 - 100 kV: 100 mAs 101 - 125 kV: 80 mAs 126 - 130 kV: 63 mAs 131 - 133 kV: 50 mAs
Tube Voltage Setting Range and Display		Setting Range: 40 kV to 133 kV, in 1 kV increments Display: Digital	
Current-Time Product Setting Range and Display		Setting Range: 0.32 – 320 mAs at 12.5% step 0.32, 0.36, 0.40, 0.45, 0.50, 0.56, 0.63, 0.71, 0.80, 0.90, 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320 mAs Display: Digital	
Anatomical Programs		Single FPD Unit: 144 72 for FPD radiography 72 for general radiography Dual FPD Unit: 216 144 for FPD radiography 72 for general radiography	

*1: The various conditions are as follows (conform to IEC-standards):

Tube voltage (within +/-10 %), Tube current (within +/- 20 %)

mAs within +/- (10 % + 0.2 mAs), Time within +/- (10 % + 1 ms)

X-ray Tube Unit

Item		Specification
Model		0.7/1.3U163C-36
Nominal Focal Spot Size		0.7/1.3mm
Target Angle		16 degrees
Nominal Max. Tube Voltage	Radiography	133kV
X-ray Tube Unit (tube and housing)	Max. Heat Content	750kJ (1060kHU)
	Max. Continuous Heat Dissipation Rate	120W (170HU/s)
X-ray Tube (tube only)	Max. Anode Heat Content	210kJ (300kHU)
	Max. Anode Heat Dissipation Rate	800W (1130HU/s)
	Max. Continuous Heat Dissipation Rate	210W (300HU/s)
Surface Temperature on Touchable Surface of X-ray Tube Unit		Maximum 60 degree C (Compliant to IEC60601-2-28)
Mass		12.8kg

Collimator

Item		Specification
Model		R-20C
Field	Shape	Rectangular
	Max. Field	430mm x 430mm at SID 1m
	Min. Field	0mm x 0mm (leaves closed)
Illumination Field	Average Illumination	160lx or more
	Illuminance Ratio	3 or more
	Precision	2% of SID
	Center Indicator	Cross hairs
	Type of Lamp	LED
	Illumination Period	30 seconds max., with automatic off timer
Minimum inherent filtration of entire system		2.5mm Al equivalent @70 kV or higher for both X-ray tube unit and collimator

X-ray Tube Support and Cart

Item	Specification
Driving method	Motorized
Maximum Driving speed	Approx. 5 km/h (depends on floor condition)
Height during transportation (from floor)	Tall column type : Approx.1930mm(76.0 inch)
	Short column type* : Approx.1780mm(70.0 inch)
Focal point height (from floor)	Tall column type : Approx.600 to 2010mm(23.6 to 79.1 inch)
	Short column type* : Approx.600 to 1860mm(23.6 to 73.2 inch)
	High focal point* : Approx.750 to 2010mm(29.5 to 79.1 inch)
Tube support arm	Telescopic arm
Arm length	635 to 1200mm
Column rotation range	+/- 270 degree
Tube rotation around support arm	+/- 180 degree
Tube rotation around tube axis	Forward 90 degree, Backward 20 degree
Rotation of collimator	+/- 110 degree
System width x length	580mm x 1220mm
Total weight	Approx. 460kg (with DR unit)

* Short column type or High focal point may be available upon inquiry. Please contact Shimadzu sales representative.

DR system (MX7c)

Item	Specification
Application	General X-ray radiography
Size of imaging unit	CXDI-410C Wireless: W460 x D460 x H15.7mm CXDI-401C/G Wireless: W460 x D460 x H15.4mm CXDI-710C Wireless: W384 x D460 x H15.7mm CXDI-701C/G Wireless: W384 x D460 x H15mm CXDI-810C Wireless: W307 x D384 x H15.7mm CXDI-801C/G Wireless: W307 x D384 x H15mm CXDI-70C Wireless: W384 x D460 x H15mm CXDI-80C Wireless: W307 x D384 x H15mm
Scintillator	CXDI-410C/401C/710C/701C/810C/801C/70C/80C Wireless: CsI CXDI-401G/701G/801G Wireless: GoS
Pixel Size	125 micron
Effective number of pixels	CXDI-410C/401C/401G Wireless: 3,408 x 3,320 CXDI-710C/701C/701G Wireless: 2,800 x 3,408 CXDI-810C/801C/801G Wireless: 2,192 x 2,800 CXDI-70C/G Wireless: 2,800 x 3,408 CXDI-80C Wireless: 2,192 x 2,800
Effective field of view	CXDI-410C/401C/401G Wireless: 426 x 415mm CXDI-710C/701C/701G Wireless: 350 x 426mm CXDI-810C/801C/801G Wireless: 274 x 350mm CXDI-70C Wireless: 350 x 426mm CXDI-80C Wireless: 274 x 350mm
Dynamic Range	Approx. 4-digit
Gradation	16bit (65,536 gradations)
Weight (Including battery)	CXDI-410C Wireless: 2.8kg CXDI-401C/G Wireless: 3.8kg CXDI-710C Wireless: 2.3kg CXDI-701C/G Wireless: 3.3kg CXDI-810C Wireless: 1.8kg CXDI-801C/G Wireless: 2.3kg CXDI-70C Wireless: 3.4kg CXDI-80C Wireless: 2.2kg
Max. Exposure Time	3,000 msec
Mechanical Strength	CXDI-410/710/810C Wireless Partial load: 100kg, given 40mm diameter Uniform load: 310kg over all surface CXDI-401/701/801C/G Wireless Partial load: 100kg, given 40mm diameter Uniform load: 310kg over all surface CXDI-70/80C Wireless Partial load: 100kg, given 40mm diameter Uniform load: 150kg over all surface
Water Proof	CXDI-410/710/810C Wireless IPX7 CXDI-401C/G Wireless IPX4 CXDI-701/801C/G Wireless N/A CXDI-70/80C Wireless N/A
Built in Memory	CXDI-410/710/810C Wireless 99 frame CXDI-401/701/801C/G Wireless N/A CXDI-70/80C Wireless N/A
Battery Life	CXDI-410/710/810C Wireless Max. 1,000 frame (7sec. interval) Typical 140 frame (100sec interval) CXDI-401/701/801C/G Wireless, 70/80C Wireless Max. 1,200 frame (9sec. interval) Typical 140 frame (100sec interval)

Flat
Panel
Detector
(FPD)

Item		Specification	
Flat Panel Detector (FPD)	Battery Charge Time	CXDI-410/710/810C Wireless Approx. 2.5H by Battery Charger Approx. 2H with wiring Unit CXDI-401/701/801C/G Wireless, 70C/80C Wireless Approx. 3H by Battery Charger Approx. 6H with wiring Unit	
	Wireless Communications	Standard	IEEE 802.11 a/b/g/n
		Frequency band	2.4GHz / 5GHz-
		Security	WPA2-PSK(AES)
Display Unit	Size	17 inch	
	Brightness	500cd/m2	
	Resolution	1,280 x 1,024	
Digital Radiography System	Hard disk	Solid-state drive (SSD) 128GB or equivalent	
	Memory	4GB RAM or equivalent	
	CPU	2.2GHz or equivalent	
	OS	Windows 7 Ultimate 64bit	
	Image Preview	Less than 2seconds	
	Image Processing	Contrast Processing Dynamic Range Compression Noise Reduction Multi-frequency Processing Grid Removable Process Auto Exposure Field Recognition Scatter Correction(option)	
	Image Storage	3,500 images	
	DICOM	Print, Storage, MWM, MPPS, COMMITMENT	

Power Supply

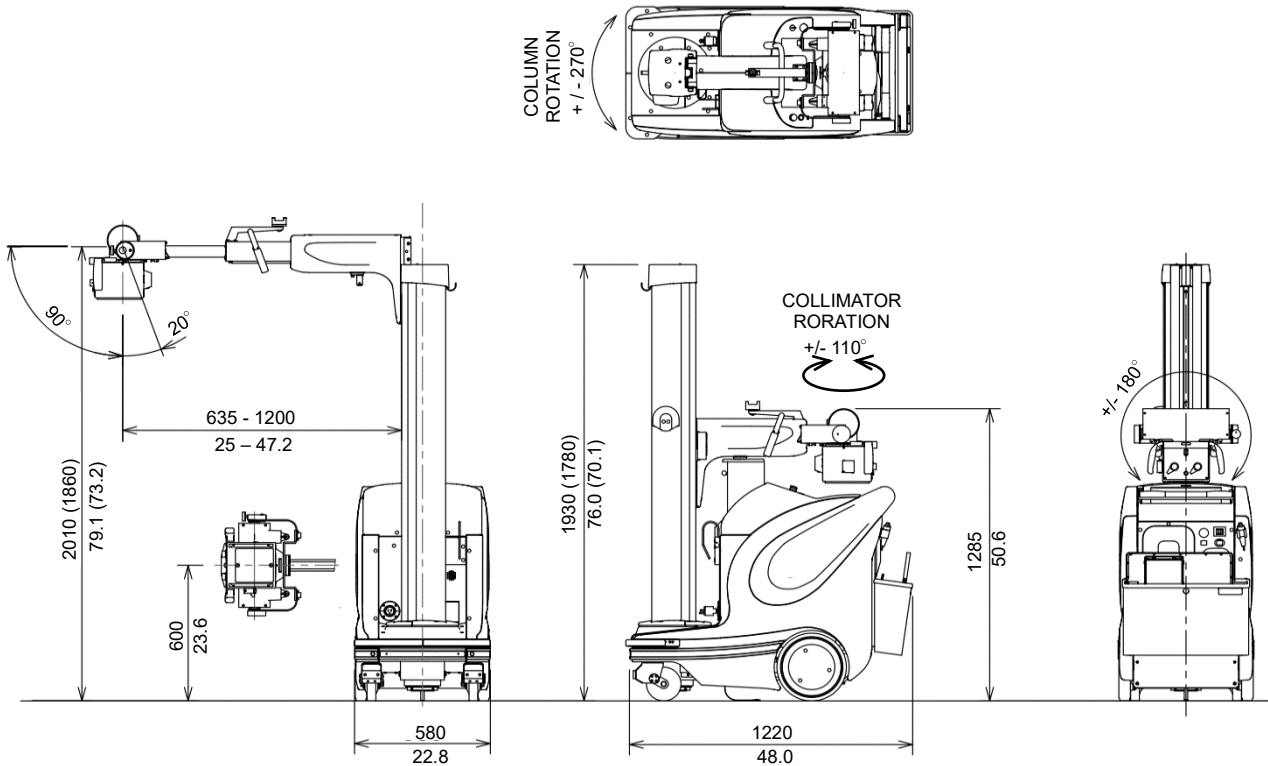
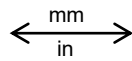
	Item	Specification
When Powered by Battery	Power Supply	Internal battery
	Battery Type	Sealed lead storage battery (12V x 20cells)
When Charging Battery	Supply Voltage	Single-phase 100, 110, 120, 200, 220, 230, 240VAC
	Supply Frequency	50/60Hz
	Power Supply Rating	1 kVA
	Supply Impedance	Single phase 100, 110, 120 VAC: 1.0Ωmax.
		Single phase 200, 220, 230, 240 VAC: 4.0Ωmax.
	Ground Resistance	Ground terminal: 100Ω max.
Additional ground terminal: 100Ω max.		
Power Cable Length	4m	

Operating Environment

Item	Specification
Atmosphere	No explosive or corrosive gases
Ambient Temperature	10 to 30 degrees C
Relative Humidity	35 to 80% (with no condensation)
Atmospheric Pressure	800 to 1060hPa
Environment Luminosity	150 to 500lx

DIMENSIONS

unit:



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Management System
 ISO 9001:2008
 ISO 13485:2003

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Remarks:

- Every value in this catalogue is a standard value, and it may vary a little from the actual at each site.
- The appearances and specifications are subject to change for reasons of improvement without notice
- Certain configurations may not be available pending regulatory clearance. Contact your Shimadzu representative for information on specific configurations.
- Before operating this system, you should first thoroughly review the Instruction Manual.