SHIMADZU

PRODUCT DATA

Digital
Radiographic
Mobile X-ray
System

MobileDaRt Evolution

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.

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 3 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.

SPECIFICATIONS OF MAIN UNIT

(1) Rating
- Maximum tube voltage: 133 kV
- Maximum tube current: 400 mA
- Maximum power: 32 kW (20 msec)
- Nominal power: 16 kW (0.1 sec.)

(2) Power supply
batteries: 12 V × 20 pcs

(3) Adjustment of tube voltage 40 to 133 kV in increment of 1 kV

(4) Setting of mAs
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

(5) Maximum mAs for each kV

a) In case of General radiography
Large focus
40 to 90 kV: 320 mAs
91 to 100 kV: 280 mAs
101 to 110 kV: 250 mAs
111 to 120 kV: 220 mAs
121 to 133 kV: 200 mAs
Small focus
40 to 90 kV: 320 mAs
91 to 100 kV: 280 mAs
101 to 110 kV: 250 mAs
111 to 120 kV: 220 mAs
121 to 133 kV: 200 mAs

b) In case of FPD device radiography
Large focus
40 to 50 kV: 200 mAs
51 to 60 kV: 160 mAs
61 to 80 kV: 125 mAs
81 to 100 kV: 100 mAs
101 to 125 kV: 80 mAs
126 to 130 kV: 63 mAs
131 to 133 kV: 50 mAs
Small focus
40 to 60 kV: 160 mAs
61 to 80 kV: 125 mAs
81 to 100 kV: 100 mAs
101 to 125 kV: 80 mAs
126 to 130 kV: 63 mAs
131 to 133 kV: 50 mAs

Long exposure time mode
Large focus
40 to 65 kV: 320 mAs
66 to 80 kV: 280 mAs
81 to 85 kV: 250 mAs
86 to 100 kV: 220 mAs
101 to 105 kV: 200 mAs
106 to 125 kV: 180 mAs
126 to 133 kV: 140 mAs

Long exposure time mode
Small focus
40 to 65 kV: 320 mAs
66 to 80 kV: 280 mAs
81 to 100 kV: 220 mAs
101 to 125 kV: 180 mAs
126 to 133 kV: 140 mAs

(6) Minimum exposure time: 1msec.

(7) Anatomical program:
Single FPD Unit:
Total 144,
72 for FPD radiography
72 for general radiography
Dual FPD Unit:
Total 216,
144 for FPD radiography
72 for general radiography

(8) X-ray tube focal spot
Large focus: 1.3 mm
Small focus: 0.7 mm

(9) Max. size of X-ray field:
43 cm × 43 cm (SID 1m)

(10) Minimum inherent filtration
X-ray tube assembly:
Equivalent to 1.5 mmAl, measured at 70 kV
Collimator:
Equivalent to 1.0 mmAl, measured at 70 kV

(11) Drive
Drive speed:
Forward & Backward :
Approx. 5 km/h(Max.)
Grade ability : Maximum 7 degree

(12) This unit is not explosion-proof type.

SPECIFICATIONS OF X-RAY TUBE ASSEMBLY

(1) Nominal X-ray tube voltage: 133 kV

(2) Nominal focal spot
Large focus: 1.3 mm
Small focus: 0.7 mm

(3) Max. X-ray tube anode heat content : 300 kHU (210 kJ)

(4) Max. X-ray tube anode heat dissipation rate: 1130 HU/s (800 W)

(5) Max. X-ray tube continuous heat dissipation: 300 HU/s (210 W)

(6) Max. X-ray tube assembly heat content: 1060 kHU (750 kJ)

(7) Max. X-ray tube assembly continuous heat dissipation: 170 HU/S (120 W)

(8) Nominal anode input power
20 msec. 0.1 msec.
Large focus: 36.4 kW 30.5 kW
Small focus: 19.9 kW 16.8 kW

(9) Max. filament voltage: 15 V

(10) Max. filament current *1: 5.6 A

(11) Target material:
Rhenium-tungsten faced on molybdenum

(12) Target angle: 16degrees

(13) Focal track diameter: 58mm

(14) Anode rotation:
Direction of anode rotation is counter-clockwise as viewed from cathode side.
RPM is 70 Hz: 3800 rpm (min-1) or more.

(15) Inherent filtration:
Min. 1.5 mm Al at 70 kV

(16) X-ray protection *2:
Less than 0.87 mGy (2.58×10^{-5} C/kg) in an hour at distance of 1 m from focus.

(17) Min. ambient temperature: -10°C

(18) Weight: Approx. 13 kg

Remarks:

*1 This is max. value which can be used at the time of adjustment of tube current.

*2 Conditions of detection for the leakage radiation are
(1) Max. used tube input 125 kV, 120 W continuously.
(2) Repeated radiographic loading to keep the average load to be 100 W (141 HU/s) at the max. voltage.

SPECIFICATIONS OF DR unit

(1) Effective field of view
CXDI-50G, 50C, 55G or 55C: 35 × 43 cm
CXDI-60G or 60C: 23 × 28 cm

(2) Effective number of pixels
CXDI-50G, 50C, 55G or 55C: 2,208 × 2,688
CXDI-60G or 60C: 1,464 × 1,776

(3) Pixel pitch: 160 μm

(4) Resolution: 3.1 lp/mm

(5) Dynamic range:
About 4-digit level

(6) Gray scale: 12 bits
(4,096 gradations)

(7) Max. exposure time: 3000msec

(8) Size of imaging unit
CXDI-50G or 50C:
491(W) × 477(H) × 23(D) mm
CXDI-55G or 55C:
480(W) × 481(H) × 15(D) mm
CXDI-60G or 60C:
344(W) × 380(H) × 22.5(D) mm

(9) Weight (except Grid)
CXDI-50G or 50C: 4.8 kg
CXDI-55G or 55C: 3.4 kg
(Except cable)
CXDI-60G or 60C: 2.5 kg
(Except cable)

(10) Display size: 15 inch

CONFIGURATION

(1) Inverter type high voltage generator

(2) X-ray tube unit
0.7/1.3U163C-36

(3) Collimator
R-20C

(4) Cart

(5) DR unit
CXDI-50G, CXDI-50C,
CXDI-55G, CXDI-55C,
CXDI-60G or CXDI-60C

OPTION

(1) Remote controller

(2) Protective screen(folding)

(3) Dose area product meter

(4) Grid unit

(5) Keyless entry

(6) Dose calculator unit

(7) Distance indicator

(8) Changing the grip bar height

(9) Luminous hand switch

(10) Additional hand switch

(11) Wireless LAN

(12) Second FPD unit

(13) FPD Bag(*)

(*)Not applicable for USA/Canada market

CUSTOM SPECIFICATION

High focal point (Short column type only): Lift focal point up by 150 mm (focal point height: 750 to 2010 mm.)

*Custom specification cannot be changed to normal edition after delivery.

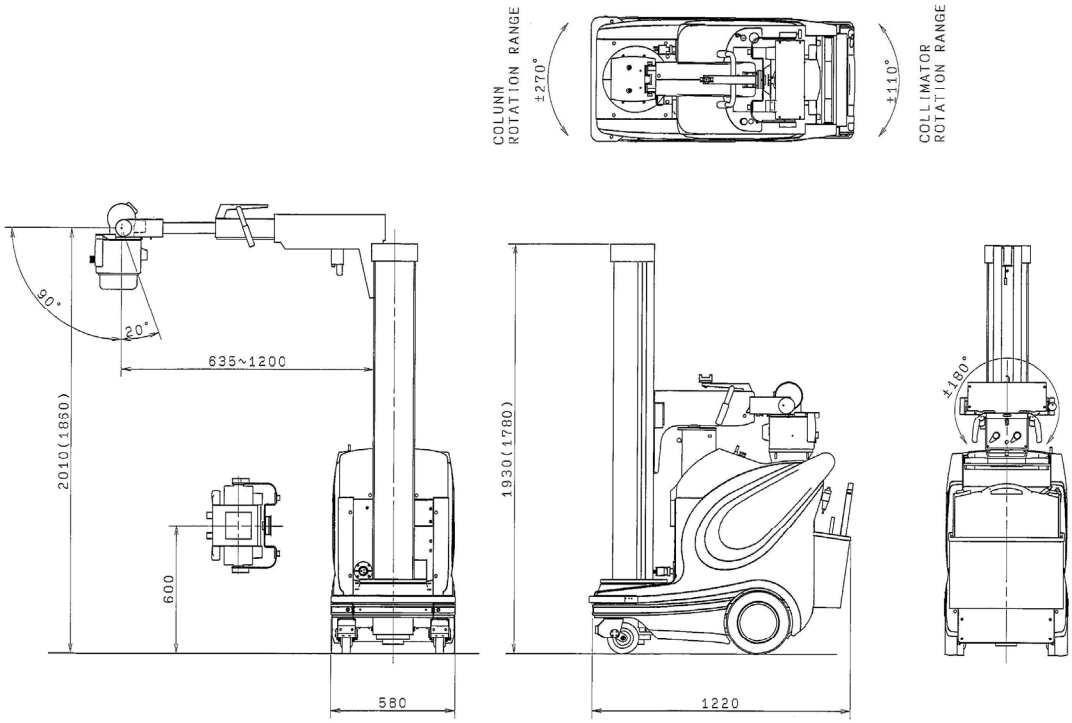
POWER REQUIREMENTS FOR BATTERY CHARGE

- Rating: 1 kVA
- Type: Single phase, AC
- Frequency: 50/60 Hz
- Standard voltage: 100, 110, 120, 200, 220, 230, 240 V
- Impedance
  Single phase 100, 110, 120 VAC: 1.0 Ω max.
  Shingle phase 200, 220, 230, 240 VAC: 4.0 Ω max.
- Ground resistance
  Ground terminal: 100 Ω max.
  Additional ground terminal: 100 Ω max.
- Fluctuation of voltage: ±10 % from standard voltage
- Power cable length: 4 m

DIMENSIONS AND WEIGHT

Height during transportation	Tall column type： Approx.1930 mm(76.0 inch) from floor
	Short column type： Approx.1780 mm(70.0 inch) from floor
Focal point height	Tall column type： Approx.600 to 2010 mm(23.6 to 79.1 inch) from floor
	Short column type： Approx.600 to 1860 mm(23.6 to 73.2 inch) from floor High focal point： Approx.750 to 2010 mm(29.5 to 79.1 inch) from floor
Arm length	635 to 1200 mm
Column rotation range	±270°
Tube rotation around support arm	±180°
Tube rotation around tube axis	Forward 90°, Backward 20°
Rotation of collimator	±110°
Total weight	Approx. 420 kg (with DR unit)

DIMENSIONS unit : mm



Remarks
* Every value in this Product Data Sheet 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.

SHIMADZU

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