

# Senographe Crystal

Senographe\* Crystal full field digital mammography system provides optimized breast cancer screening and basic diagnostic capabilities, with advanced ergonomic design for the technologist, exceptional patient comfort and seamless workflow connectivity.

Senographe Crystal offers two options on detector configuration, SFOV or LFOV, allowing customers to choose the optimal detector size that adapts to their specific needs.

With enhanced detector performance, the Senographe Crystal offers enhanced image quality to support diagnostic confidence.

## Ergonomic design for technologists

- Intuitive user interface
- Pre-configurable exam protocols
- One touch access to set C-arm to next angulations pre-set in exam protocol, for quick and easy patient positioning
- Motorized movements for fast and precise operation

## Enhanced patient comfort

- Patient friendly design
- Easy wheelchair access
- Ergonomic integrated bucky

## Outstanding image quality

- Enhanced Detective Quantum Efficiency (DQE)
- 70µm pixel size helps confidently characterize micro-calcifications
- Automatic Exposure Control (AEC) transparently selects all exposure parameters based on breast radiological properties and breast thickness



# Technical Specifications

## Image quality

### Detector DQE

- DQE typical values: 60% at 0.5 lp/mm
- Measurement conditions: W anode track, Rh filter

### Detector

- Detector size:
  - LMAM (aka, LFOV): 23 x 30 cm
  - SMAM (aka, SFOV): 17 x 23 cm
- Pixel size (pitch): 70  $\mu$ m
- Acquisition dynamic range: 14 bits
- Image size (X x Y)
  - LMAM (aka, LFOV): 3290 x 4244 pixels approx. 28 MB per image
  - SMAM (aka, SFOV): 2424 x 3296 pixels approx. 16 MB per image
- Patented needle structure CsI scintillator, single piece construction

### Tube technology

- X-Ray tube type: I.A.E XM1016T
- Anode target materials – Single track: Tungsten (W)
- Two focal spots: 0.1 and 0.3 mm on each target per IEC336
- Target angle: 10°/16° degree
- Maximal high voltage: 49 kV
- Tube current:
  - 80 to 100 mA from 24 to 33 kV on large focal spot
  - 32 to 40 mA from 26 to 33 kV on small focal spot
- Anode size (tracks diameter): 80 mm
- Anode heat storage capacity: 225 kJ (300 kHU)
- Anode heat maximum dissipation: 750 W
- Max casing continuous dissipation: 80 W (6.5 kHU/s) at 40°C
- Permanent filtration: 0.5 mm Beryllium
- Weight: 13 kg
- X-ray tube assembly: self-encased X-ray tube, air-cooled head
- Tube protection: software monitoring of tube load

### Grid/breast support

- Ergonomic breast support for patient comfort and easy cleaning
- Manual installation and removal of the grid and breast support for geometric magnification
- Breast support material: low attenuation carbon fiber composite
- Grid ratio: 3.5:1
- Grid frequency: 41 lines/cm
- Optimized grid motion to help ensure no grid structure is visible in the image
- Detector to breast support edge-to-edge distance  $\leq$  5 mm

## Automatic exposure

### Automatic Exposure Control (AEC)

#### Fully automatic mode

- AEC is a fully automatic exposure system that selects all exposure parameters based on radiological density of the breast and breast thickness for exceptional and consistent image quality: kV, mAs

#### Manual mode

- Manual selection of all parameters: kV and mAs

### Collimator

- Filter: Rhodium: 0.05 mm
- Field of View (FOV) in detector plane, in cm:
  - For standard contact views: 23 x 30 @LFOV, 17 x 23 @SFOV
  - For geometric magnification views (optional): SFOV by default when magnification platform is installed
- Field of View (FOV) selection: manual
- FOV size: selected manually using magnetic lead window plate, based on the paddle or geometric magnification platform used
- Light centering device: a light automatically switches on at compression start or it can be turned on with the collimation lamp switch button located on the keypads on both sides of gantry

### Compression

- Compression modes: Motor driven compression up to 20 daN
- Dual foot-pedals for column height and compression adjustments
- User defined motorized compression force limit: 5 to 20 daN

### Safety features

- Gantry locked when compression force applied

### Positioner

- C-arm with motorized rotation and vertical movement
- Source to image receptor distance: 662 mm
- Floor to image receptor distance: from 63.5 cm to 128.5 cm
- Rotation angle:  $\pm$  180 degrees

### User interface

- Parameters display
  - Tube arm support rotation angle
  - Compressed breast thickness (in mm)
  - Compression force (in daN)
- Ergonomic control console
  - Controls exposure
  - Provides information on system status
  - Gives access to advanced parameters for system set-up
- View name can be edited at any time before the examination is closed



### Acquisition workstation

- Small footprint
- Dose calculated and displayed on the image after every exposure (Average Glandular Dose)
- Dual core Advantech workstation (Intel i3 540 Processor)
  - Memory: 4GB RAM + 0.5 MB L2 cache + 4MB L3 cache
  - Hard disk: 1 internal 1TB disk, 7200 RPM
  - Image storage: 18,000 in SFOV or 10,000 in LFOV
  - Ports: one Ethernet port 10/100/1000Mbps
  - CameraLink video board
- Display (standard)
  - High Resolution Color LCD 2MP monitor
  - 58.8 cm (23")
  - 1920 x 1080 pixels (landscape)
  - Luminance: up to 250 Cd/m<sup>2</sup>
  - High contrast ratio: 1000:1
  - Viewing angle: 160 degrees
  - Weight: 6.8 kg (15lb)
- Image Presentation
  - Post image processing for enhanced local contrast
  - Automatic windowing (window level and window width)
  - Other features: zoom, roaming, inversion, flip, rotation of images, window width and level setting, annotations and measurements

### Connectivity

- DICOM\*\* 3.0 platform:
  - Modality Worklist
  - Storage
  - Basic Grayscale Print
  - Verification
  - DICOM-compliant CD-R Data Interchange

### Quality assurance

- Comprehensive Quality Control program† (†Quality control manual and tool kit: Detector Calibration PMMA Block)
- Data can easily be exported for data tracking

### Radiation shield

- Integrated to the control console (height: 1850 mm)

### High voltage generator

- Generator type: high frequency single-phase power supply
- Power: 5 kW max
- mAs range: 0.1 to 320 mAs (depending on kV)
- kV range: 20 to 35 kV, in 0.5 kV steps
- Generator protection: software monitoring of generator and tube load

### Power supply

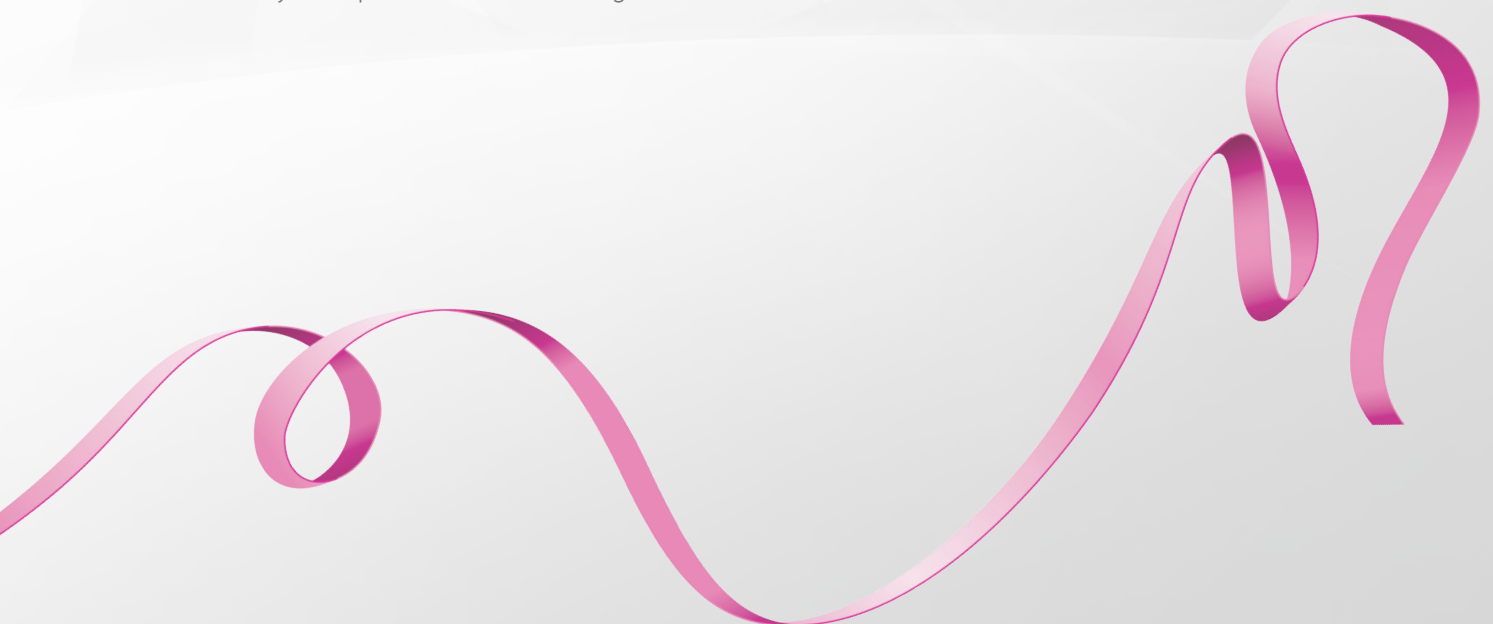
- Input frequency: 50/60Hz
- Input voltage: single-phase 220V to 240V

### Standard configuration

- Motorized gantry
- X-ray tube with rotating W anode
- SFOV or LFOV flat panel detector
- Acquisition workstation
  - DVD-RW
  - LCD display
  - Control console
- Pair of dual foot-pedals
- High-frequency generator
- Face shield
- SFOV or LFOV bucky with grid
- 17 x 23 (for SFOV) or 23 x 30 (for LFOV) contact paddle
- User manual and technical document
- Detector Calibration PMMA Block

### Options

- 1.5 and 1.8 magnification stand
- 12 x 12 magnification paddle
- Magnetic lead window plate for magnification
- Radiation shield



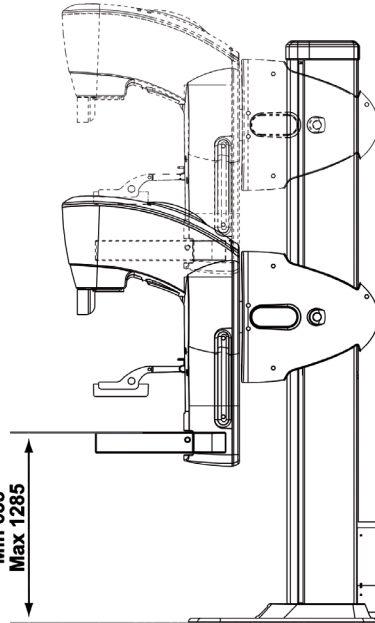
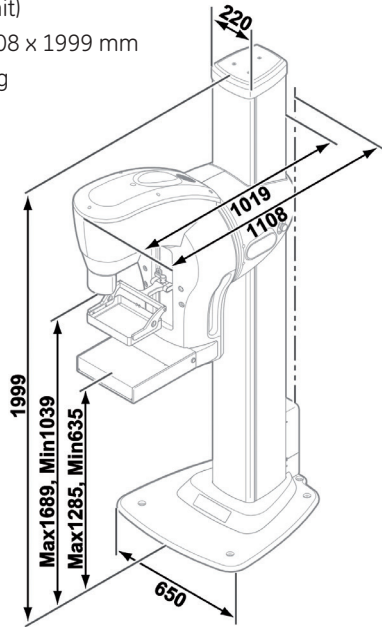
# Physical Specification

The physical specifications of each component are shown as below.

- Components: Gantry and others
- Package box size: 1150 (W) x 2250 (H) x 1400 (D) mm
- Package box weight: 440 kg

## Gantry (Main Unit)

- Size: 650 x 1108 x 1999 mm
- Weight: 250 kg



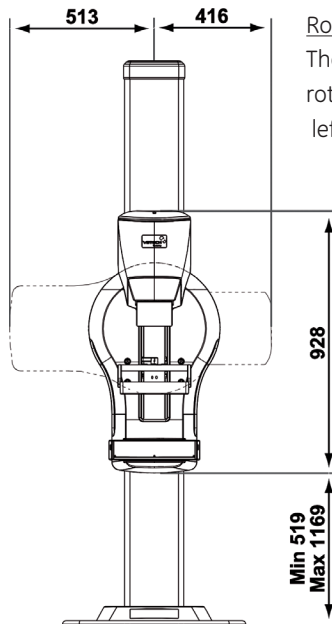
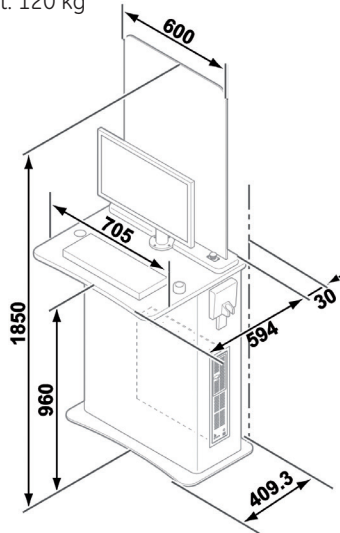
## C-Arm Movement

### Vertical Travel

The entire C-arm assembly can be raised or lowered on the central stand.

## Acquisition Station

- Size: 705 x 624 x 1850 mm
- Weight: 120 kg

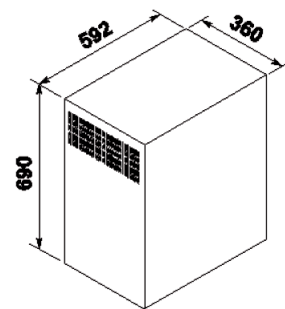


## Rotation

The C-arm can be rotated in either left or right direction.

## High Voltage Generator

- Size : 360 x 592 x 690 mm
- Weight : 81 kg



Data subject to change.

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