

Technologically advanced mammographic system, offering the best quality/price ratio.
Lightweight and easy-to-use, facilitating the operator's job.
Excellent diagnostic image quality, similar to the top-of the line models, at a very competitive price.
Possibility to store in the unit's memory, during the installation, the typical calibration curve for the available film processor, in order to obtain constant iconographic results independently of the examined breast intrinsic density.



BMI

The mammographic unit is composed of:

- High frequency x-ray generator:
 - 3.5 kW power 50 kHz ripple
 - 20 ÷ 35 kV (0.5 kV step)
 - 1 ÷ 640 mAs
- X-Ray tube, molybdenum anode, dual focal spot 0.1 and 0.3 mm
- "C"-arm with vertical and rotating movement
- Goniometer for "C"-arm angle of rotation detection
- Fixed focus-film distance 65 cm
- Motor-driven (with friction) and manual compression device with safety release
- Adjustable and displayed selected compression force
- Interactive digital control panel with graphic display showing exposure parameters, for messages to the operator in different languages (to be selected during installation)
- AGD (Average Glandular Dose) measurement
- Serial port for calibration and transfer of last 1300 exposures memory
- Automatic Exposure Control (AEC) device, fitted with triple field solid state detector selectable from control panel, with the following possibilities:
 - fully automatic "ZERO POINT" technique (automatic kV, automatic mAs)
 - semi-automatic "ONE POINT" technique (manual kV, automatic mAs)
 - manual "TWO POINTS" technique (manual kV, manual mAs)
 - 16 film/screen combinations (1 fully programmable with PC) for 768 different exposure techniques
- **DEATA PLUS**, software for advanced Automatic Exposure Control
 - Parameters selected effective Breast Density evaluated by pre-exposure, x-ray pulse ≤ 10 ms
 - Manual density control: 11 steps (0 ± 5) independently programmable from the PC for any available operating technique
 - A.E.C. Self Test Procedure included in control panel functions
 - Alarm messages in several languages (selectable)
 - Last 1300 exposures memory
 - Tube Thermal Unit display and active protection.
 - Technical display for self-test and defective block identification, firmware release
 - Exposure counter and last exposure time/date
 - Statistics function
- Two emergency STOP push-buttons

Standard accessories:

- PMX-2006, 18x24 cm Potter Bucky with carbon fibre grid, provided while two rotating labelling wheels to film marking
- Interchangeable collimation plates:
 - 18x24 cm format
 - \varnothing 14 cm format
- 16x22 cm shifted compression paddle, for 18x24 cm format
- 12x8 cm compression paddle with straight front side
- One pair of compression pedals
- X-ray control push-button with extensible cable
- Device for 1.5x and 2x geometric magnification
- Phantom for complete daily check of the mammographic system



TECHNICAL FEATURES
H.V. GENERATOR

• Line voltage compensation	AUTOMATIC H.V. generator with kV closed loop and line Feed forward compensation
• Inverter Technology	Current fed, Mosfet bridge with output current limit capability and short circuit protection
• Inverter Frequency	25 kHz
• Ripple Frequency/Amplitude	50 kHz < 2%
• Nominal Power	3.5 kW
• kV range	20 / 35 kV
• kV resolution (Man & Auto mode)	0.5 kV
• kV precision	±1%
• kV repeatability	± 0.1%
• kV risetime	≤1.5 ms from 0 to100%
• kV display	XX.X kV (3 digits)
• Anode current max	100 mA
• mAs range	Small focus: 1/200 mAs (from 20 to 30 kV) 1/180 mAs (from 31 to 35 kV) Large focus: 1/640 mAs (from 20 to 30 kV) 1/500 mAs (from 31 to 35 kV)
• mAs values according to R'20 series	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 13, 16, 20, 25, 32, 40, 50, 63, 80, 100, 130, 160, 180, 200, 250, 320, 400, 500, 640
• mAs resolution (Automatic)	0.1 mAs
• mAs display	XXX.X mAs (4 digits)
• Exposure Time	Automatically selected as a function of selected mAs (max. 8 s)
• Safety timer	10 s

**X-RAY TUBE ASSEMBLY
I.A.E. XM12I**

• Anode rotation speed	3000 rpm 50 Hz
• Target material	Molybdenum
• Maximum Anode Heat Content	225 kJ (300 kHU)
• Maximum Anode Cooling rate	500 W
• Maximum X-Ray Tube Assembly Heat Content	320 kJ (440 kHU)
• Housing continuous Heat Dissipation	80 W (108 HU/s)
• Cooling method	free air convection
• Anode Disc Target Angle	12.5°
• Anode Disc Diameter	80 mm
• Power	4800 W large 1150 W small
• Focal spots	2
• Focal spot size according to IEC 336	0.1 small 0.3 large
• X-RAY Window	0.5 mm Beryllium
• Inherent filtration	0.0 mm Al IEC 522/1976
• Fix Filter (standard)	30 µm Molybdenum
• Automatic Filter FILTROMAMM (optional)	30 µm Molybdenum 30 µm Rhodium
• HVL measured at 28kV	>0.3 mm Al equiv.
• Total filtration	>0.5 mm Al

FILTER PROPERTIES

• 30 µm Molybdenum	0.38mm Aleq @ 28 kV, measured with Mo target and no additional filter
• 30 µm Rhodium (optional)	0.62mm Aleq @ 28 kV, measured with Mo target and no additional filter



TECHNICAL FEATURES

<p>TUBE ASSEMBLY THERMAL OVERLOAD PROTECTION</p>	<ul style="list-style-type: none"> • With active temperature sensor under main CPU control 	<p>Upper limit temperature 65° outside tube assembly. HU and °C display available in technical menu.</p>
<p>AUTOMATIC EXPOSURE CONTROL (DEATA PLUS)</p>	<ul style="list-style-type: none"> • Controlled parameters • Auto parameters selection criteria • Auto kV range • Manual density control • Film Screen combinations with Deata plus • Film Screen combinations with Reduced Deata • O.D. linearity over 2 to 6 cm of Plexiglas • Reference O.D. • A.E.C. short time stability measured over 10 exposures taken at 28kV 50mAs • Detector • Detector Positions • Detector saturation protection • Test Phantom • Exposition Break • A.E.C. Self Test Procedure • Average glandular dose measured in ACR method: 4.5 cm phantom of 50% glandular tissue and 50% adipose tissue exposure taken with 28 kV 	<p>Auto kV / Auto mAs (ZERO POINT) Manual kV / Auto mAs (ONE POINT)</p> <p>Selected as a function of effective BREAST DENSITY evaluated by preexposure x-ray pulse $\leq 10\text{msec}$</p> <p>Function of the selected technique (standard-extended-high contrast-low dose), the Anode/Filter coupling and the precise regulation + 0.5/+ 1/+ 1.5kV</p> <p>11steps 0 \pm 5</p> <p>Programmable from PC independently for all the operative techniques available</p> <p>16 film/screen programmable for 768 independent calibration</p> <p>3 film/screen with manual programmable optical density</p> <p>± 0.1 of O.D.</p> <p>Programmable during installation</p> <p><3%</p> <p>PHTM 9000</p> <p>SOLID STATE (9 active sensors)</p> <p>3 Electronically selected positions</p> <p>Effective protection against erratic response due to detector saturation</p> <p>3x2cm + 1cm + 0.5cm of Plexiglas for calibration and daily self test procedure</p> <p>For breast density exceeding max value programmed during calibration with a dose < 1mAs</p> <p>Included in control panel functions</p> <p>< 3mGy</p>
<p>IMAGE QUALITY</p>	<ul style="list-style-type: none"> • Spatial resolution 	<p>Complying with: "European Guidelines for quality assurance in mammography screening", third edition, and with "Recommended specifications" for Quality assurance in mammography of American College of Radiology</p>



TECHNICAL FEATURES

C-ARM	<ul style="list-style-type: none"> • F.F.D. 65 cm • Rotation Manual $\pm 180^\circ$ with disc brake • Vertical movement with respect to Breast support (C-ARM in vertical position) 55cm min to 130 cm max • Patient protection Lexan screen for patient's face protection
COLLIMATOR	<ul style="list-style-type: none"> • Light beam Automatic switch ON when operating compression and electronic timer ≥ 150 lux • Light intensity according to IEC 601-1-3 • Light BEAM collimation accuracy with automatic OUT of FIELD function • Mirror Interchangeable collimation plate for 18x24 cm film size (FFD 65cm) and $\varnothing 14$ cm • Collimation plates
COMPRESSION SYSTEM	<ul style="list-style-type: none"> • Compression Paddle movement Manual or motor driven • Compression Paddles (standard) 16x22 cm shifted, 12x8 cm straight • Compression Paddles (optional) 10x22 cm shifted, 24x30 cm shifted, 10x8 cm shifted, 12x22 cm straight • Maximum free space available between Compression Paddle and image receptor 39.5 cm with shifted Compression Paddles <u>in Magnification Mode</u> (straight compression plate) MAG. X2 = 14cm MAG. X1.5 = 24cm • Compression Thickness Display Displayed in mm • Compression plate release after exposure Selectable from control panel, automatic or manual for 2D biopsy • Compression plate aluminium equiv. Less than 0.2 mm Al (0.135 mm Al\approx30 kV)
MAGNIFICATION	<ul style="list-style-type: none"> • Magnification ratio x1.5 / x2 with potter bucky
POTTER BUCKY	<ul style="list-style-type: none"> • Bucky factor (grid) 1.96 • Ratio 5:1 • Lines/cm 36 • Contrast factor 1.47 • Cassette size 18x24 cm standard 24x30 cm optional • Cassette compatibility All the most wide spread models with window as: Agfa, Dupont, Fuji, Kodak, 3M • Cassette detector switch With alarm in different languages to avoid double exposure or exposure without cassette • Top Cover Carbon fibre • Film marker Integrated with two labels wheels • Test with NORMI Phantom Typical 3.5 balls • Other features Easily interchangeable with other accessories without tools Grid movement synchronized with X-RAY beam • Aluminum equivalence Table: 0.1 mm Al_{eq} (carbon fiber) Table with grid: 0.3 mm Al_{eq} (carbon fiber and grid)



TECHNICAL FEATURES

DOSE CALCULATOR	<ul style="list-style-type: none"> • Calculated dose • Data visualization 	<p>Average Glandular Dose (AGD) mGy on display, label printer and data memory with average dose value on 13 exposition to evaluate released dose</p>
CONTROL CONSOLE	<ul style="list-style-type: none"> • Technology • Display • Alarm messages • Serial port for Film ID Flasher or Dose Label Printer • Calibration and service Serial port • Special features • Statistics funtion 	<p>Microprocessor controlled with unique safety features exceeding IEC 601-1-4-, all functions under active operator control GRAPHIC LCD Display 240x128 dots In several languages selectable Dedicated for film labelling device (200 characters printed on film) or Adhesive Labels with Dose For service laptop with dedicated software Last 1300 exposure memory; Tube Thermal Unit display and active protection. Technical display for self-test and defective block identification, firmware release, exposure counter and last exposure time/date Average dose, amount of exposure for every kV value, amount of exposure in every test technique</p>
FOOT PEDALS	<ul style="list-style-type: none"> • For compression 	<p>One pair</p>
EMERGENCY STOP/SHUTDOWN SWITCHES	<ul style="list-style-type: none"> • Red push-buttons 	<p>On both sides to switch the unit totally off</p>
ENVIRONMENTAL CONDITIONS	<ul style="list-style-type: none"> • Storage and delivery conditions (while packed) • Operating conditions • Protection degree according to standard IEC 529 • Heat dissipated in max load condition of 35 kV 500 mAs (1 shot every 5 minutes) 	<p>temperature -20° C / + 70° C relative humidity 10% / 90% barometric pressure 500 hPa/1060 hPa temperature +10°C / + 40°C relative humidity 30% / 75% barometric pressure 700 hPa/1060 hPa IP 10 264 kCal/h</p>
ENVIRONMENT PROTECTION AND WASTE DISPOSAL	<p>Device contains in some of its parts and subassemblies, solid and liquid substances that must be disposed only by designated companies according to local laws. More specifically, device contains:</p>	<ul style="list-style-type: none"> • Tube assembly Beryllium, lead, glass, dielectric oil (PCB free), other metals and plastic. • H.V. transformer Dielectric oil (PCB free), plastic, copper other metals • Other subassemblies Plastic, other metals, electronic components glass-epoxy printed circuits

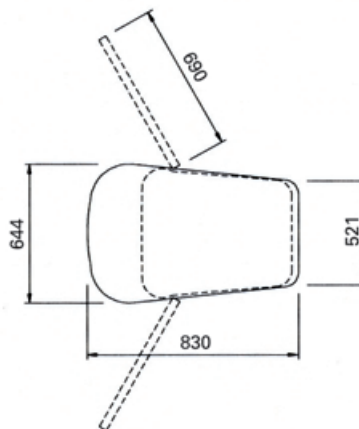
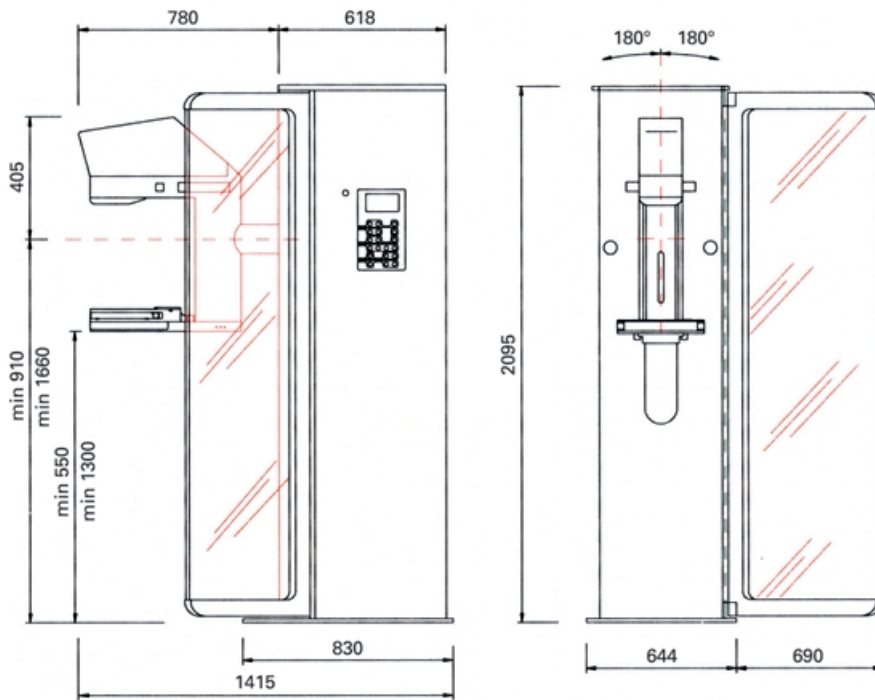
TECHICAL FEATURES

CLASSIFICATION (IEC 601-1)

- Protection against electric shock: Class I, with type B applied parts.
- Protection against harmful ingress of water: IPX0
- Degree of safety in the presence of flammable anesthetics mixture with air or oxygen or nitrous oxide: Not suitable for use in the presence of Flammable Anesthetics Mixture with air or oxygen or nitrous oxide.
- Mode of operation: Continuous operation with intermittent loading.

MAINS CHARACTERISTICS

- Line voltage 220/230/240Vac ±10% 50/60 Hz
- Power 6.6 kVA (0.5 kVA stand-by)
- Current absorption 30 A peak
- Number of phases 1 or 2 configurable
- Connection Permanently installed (IEC 601-1)
- Maximum apparent resistance 0.50 Ω



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