

AMULET  
*Innovality*

FUJIFILM DIGITAL MAMMOGRAPHY SYSTEM



The new leader in the AMULET series. Tomosynthesis, 3D mammography and biopsy are all available.



FUJIFILM supports the Pink Ribbon Campaign for early detection of breast cancer

# Lasting smiles for women worldwide

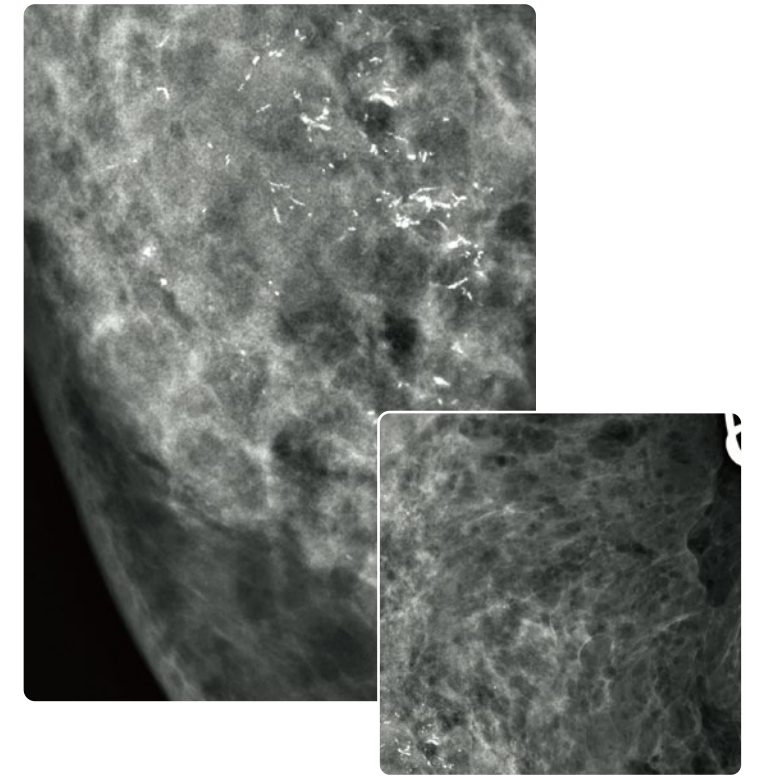
Innovation and quality in mammography

Unique new detector for fast, low dose examinations

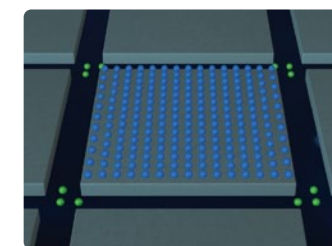


AMULET Innovality- the result of Fujifilm's ongoing "innovation" and commitment to providing top "quality" mammography services. The Innovality utilises Fujifilm's unique a-Se direct conversion flat panel detector (FPD)\* to produce clear images with a low X-ray dose. This system makes use of intelligent AEC (i-AEC) combined with a new image analysis technology to automatically optimize the X-ray dosage for each breast type. AMULET Innovality is a highly advanced mammography system which offers an extremely fast image interval of just 15 seconds. With this new system, Fujifilm furthers the provision of high quality examinations with superior image quality.

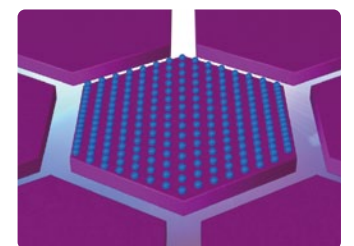
\*Using a HCP (Hexagonal Close Pattern) TFT array.



AMULET Innovality employs a direct-conversion flat panel detector made of Amorphous Selenium (a-Se) which exhibits excellent conversion efficiency in the mammographic X-ray spectrum. The new HCP (Hexagonal Close Pattern) detector efficiently collects electrical signal converted from X-rays to realize both high resolution and low noise. This unique design makes it possible to realize a higher DQE (Detective Quantum Efficiency) than with the square pixel array of conventional TFT panels. With the information collected by the HCP detector, AMULET Innovality creates high definition images with a pixel size of 50 µm; the finest available with a direct-conversion detector.



Conventional square pixel



AMULET Innovality hexagonal pixel

This low-noise and high-speed switching technology allows tomosynthesis exposures with a low X-ray dosage and short acquisition time to be performed. Fast image display is also possible, realizing a smooth mammography workflow from exposure to image display.

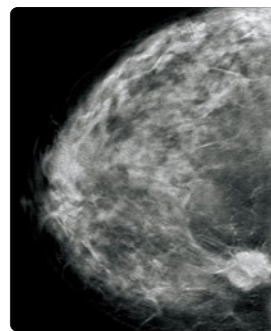
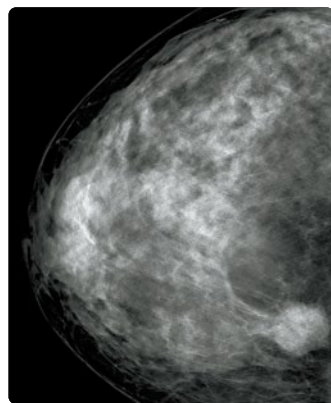
Origin of the name: Origin of the name: With its mammography solutions Fujifilm hopes to be an "Amulet" — always there to protect women's health and allow them to be true to themselves, vibrant and beautiful. The AMULET series aims to provide top-class digital mammography solutions that can be customised to meet every sites needs.

# High quality images for easier diagnosis

## Tomosynthesis: making it possible to observe the internal structure of the breast

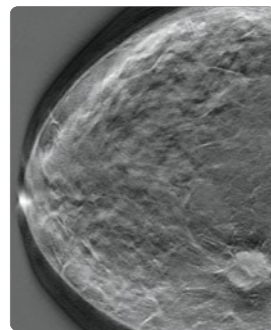
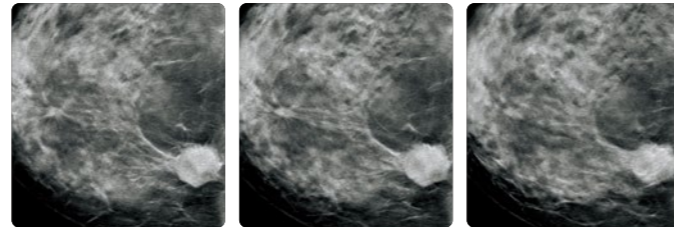


2D mammography image



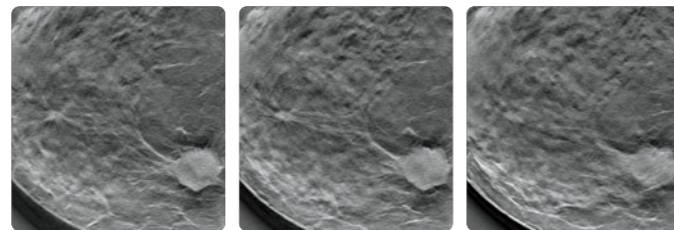
### Image Processing Pattern 1

Enhances spicula and calcifications while keeping maximum contrast for the viewing of masses within the glandular tissue.



### Image Processing Pattern 2

Maximizes the visualization of fine spiculations and calcification.

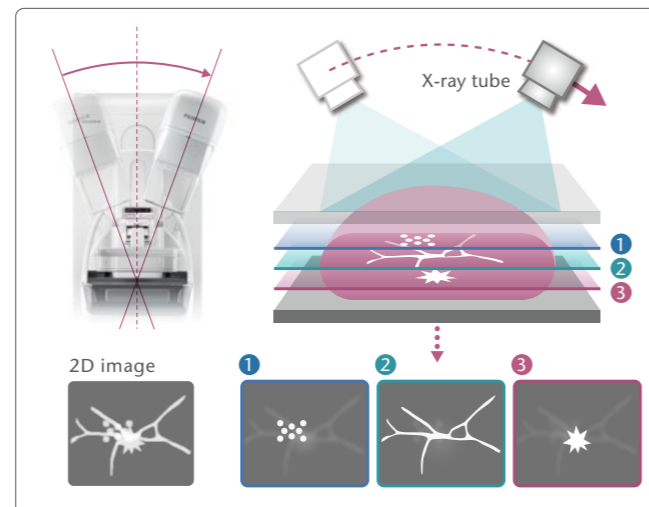


\*Two types of image processing can be selected on AWS.

In breast tomosynthesis, the X-ray tube moves through an arc while acquiring a series of low-dose x-ray images. The images taken from different angles are reconstructed into a range of Tomosynthesis slices where the structure of interest is always in focus.

The reconstructed tomographic images make it easier to identify lesions which might be difficult to visualize in routine mammography because of the presence of overlapping breast structures.

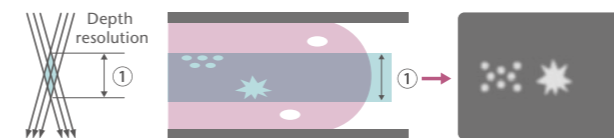
The Tomosynthesis function on AMULET Innovality is suitable for a wide range of uses, offering two modes to cater for various clinical scenarios. Standard (ST) mode combines rapid exposure timing and efficient workflow with a low X-ray dose while High Resolution (HR) mode makes it possible to produce images with an even higher level of detail, allowing the region of interest to be brought into clearer focus.



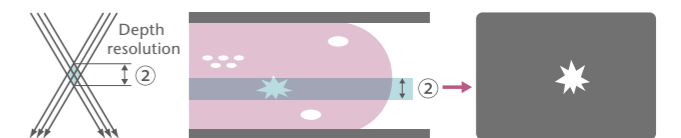
### Two modes suitable for a range of clinical purposes

ST (Standard) mode	HR (High Resolution) mode
<ul style="list-style-type: none"> <li>Acquisition angle: <math>\pm 7.5^\circ</math></li> <li>Pixel size: 150/100 <math>\mu\text{m}</math></li> </ul>	<ul style="list-style-type: none"> <li>Acquisition angle: <math>\pm 20^\circ</math></li> <li>Pixel size: 100/50 <math>\mu\text{m}</math></li> </ul>

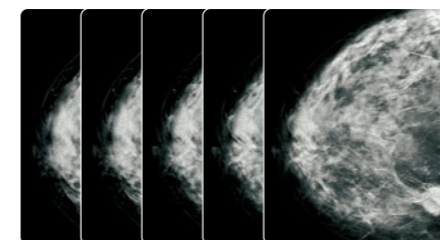
The smaller angular range and fast image acquisition allow Tomosynthesis scans to be quickly performed with a relatively low x-ray dose.



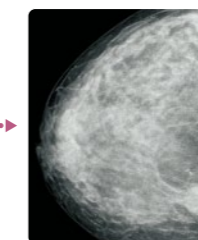
With a larger acquisition angle the depth resolution is improved. This allows the region of interest to be defined more clearly and brought into clearer focus.



### S-View – synthesized 2D image – function is available



Multiple slice images



S-View image

Tomosynthesis by AMULET Innovality automatically produces not only tomograms obtained at 1mm intervals but also a two-dimensional S-View image combining multiple slice images.

With the S-View image showing the overall view added to tomograms offering the views in detail, comprehensive image reading is possible.

### Optimized contrast and low x-ray dose using a Tungsten Target

Image-based Spectrum Conversion\* (ISC) technology can be used to optimize contrast in an image. ISC analyzes images to compensate for variations in contrast due to the density of mammary glands, amount of fat and X-ray spectrum. ISC aims to ensure that images display adequate contrast even with the use of a high energy, low-dose x-ray beam. This technology allows sites that previously exploited the superior contrast of a Molybdenum target to realize the dose advantages offered by the use of Tungsten without having to compromise image contrast.

\*Based on Image analysis the appearance is adjusted to emulate the image quality with the simulated "optimal" spectrum.

## Easy operation and patient comfort — features of the AMULET series

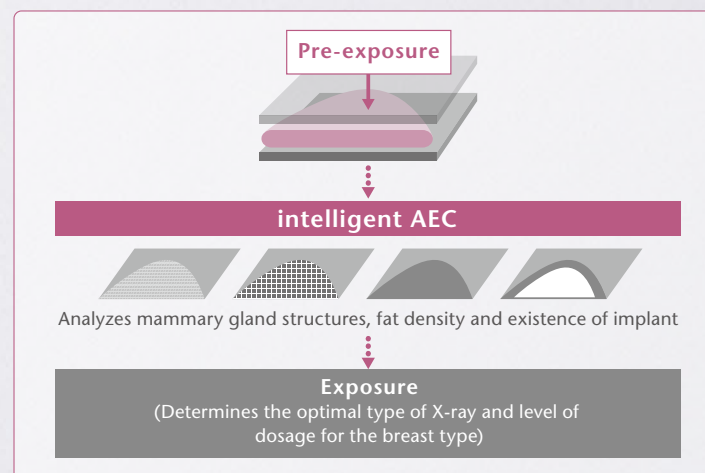


### • Intelligent AEC optimizes the X-ray dose for each breast type

Intelligent AEC has advantages in defining the optimal dose for an examination compared to conventional AEC systems where the sensor position is fixed.

Through the analysis of information obtained from low-dose preshot images, Intelligent AEC makes it possible to consider the mammary gland density (breast type) when defining the x-ray energy and level of dose required.

Able to be used even in the presence of implants; intelligent AEC enables more accurate calculation of exposure parameters than is possible with conventional AEC systems. By allowing the use of automatic exposure for the implanted breast, Intelligent AEC can further enhance examination workflow.



### • Patient information display

The information shown on the display **A** at the base of the exposure unit can be switched between patient information (ID, name, date of birth, etc.) and positioning information (angle of swivel arm, compression force and breast thickness).

Positioning information can also be confirmed on the display **B** on the compression arm.



### • Automatic positioning of radiation field

The radiation field automatically shifts to the ideal place for patient positioning depending on the compression paddle used. For example, with the 18×30 cm compression plate using an 18×24 cm radiation field, the radiation field remains in the center for the CC position, shifting to the upper portion of the detector when the gantry is rotated to a MLO or ML position. It is possible to change the radiation field size after positioning the patient.



## — Attune to every patient's needs —



AMULET Harmony incorporates a range of mammography solutions specifically designed to maintain a harmonious examination environment and foster an atmosphere of trust between mammographers and their patients.

### ◆ Fit Sweet Paddle

This compression paddle fits to the shape of the breast, allowing pressure to be evenly applied while holding the breast securely and ensuring the breast tissue is adequately separated.



### ◆ Mood lighting to ease patient anxiety

Warm indirect lighting is used to illuminate the exposure stand, helping patients to relax and allowing examinations to be performed with minimal stress.

### ◆ Decorative labels provide an adaptable room environment

Five different stand labels are available to add a gentle ambience. Each site can choose a stand appearance that best suits the examination environment, thus relieving patient stress and anxiety.



## Dedicated mammography AWS (Acquisition Workstation)

### Optimal examination workflow

- Integrated X-ray controller allows setting and confirmation of exposure conditions on a single screen.
- Examination screen can be split and switched between 1, 2, or 4 image display.
- Individual images can be immediately output to a PACS, viewer or printer during an examination.
- Density and contrast can be easily adjusted while viewing images.
- Alignment of left and right images can be adjusted both automatically and manually.

### High definition second monitor (3M/5M: Optional)

- A second, high resolution monitor can be added to the AWS making it possible to display previous images recalled from a PACS to ensure the mammographer has access to previous images at all times.
- For Tomosynthesis, reconstructed images can be displayed and subjected to image QC.



AWS

High definition second monitor

## Digital mammography system solution

### Stereotactic Biopsy Unit

The stereotactic biopsy unit allows accurate and reliable biopsy procedures to be performed using high resolution images. By attaching the optional lateral adapter the needle can be inserted not only vertically but also parallel to the exposure table.



### Mammography QC Program

Fujifilm's Mammography QC Program is a dedicated quality control program that can be used on all Fujifilm digital mammography systems. This program monitors system performance to ensure stable image quality is maintained for both screening and diagnosis.

### Digital Mammography Workstation AMULET Bellus

The workstation quickly displays mammographic studies even with a large data size. "Intelligent Temporal Comparison", a rapid display switching function, aids in efficient diagnosis.

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**FUJIFILM**

<http://www.fujifilm.com/products/medical/index.html>

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**Main specifications**

Standard components

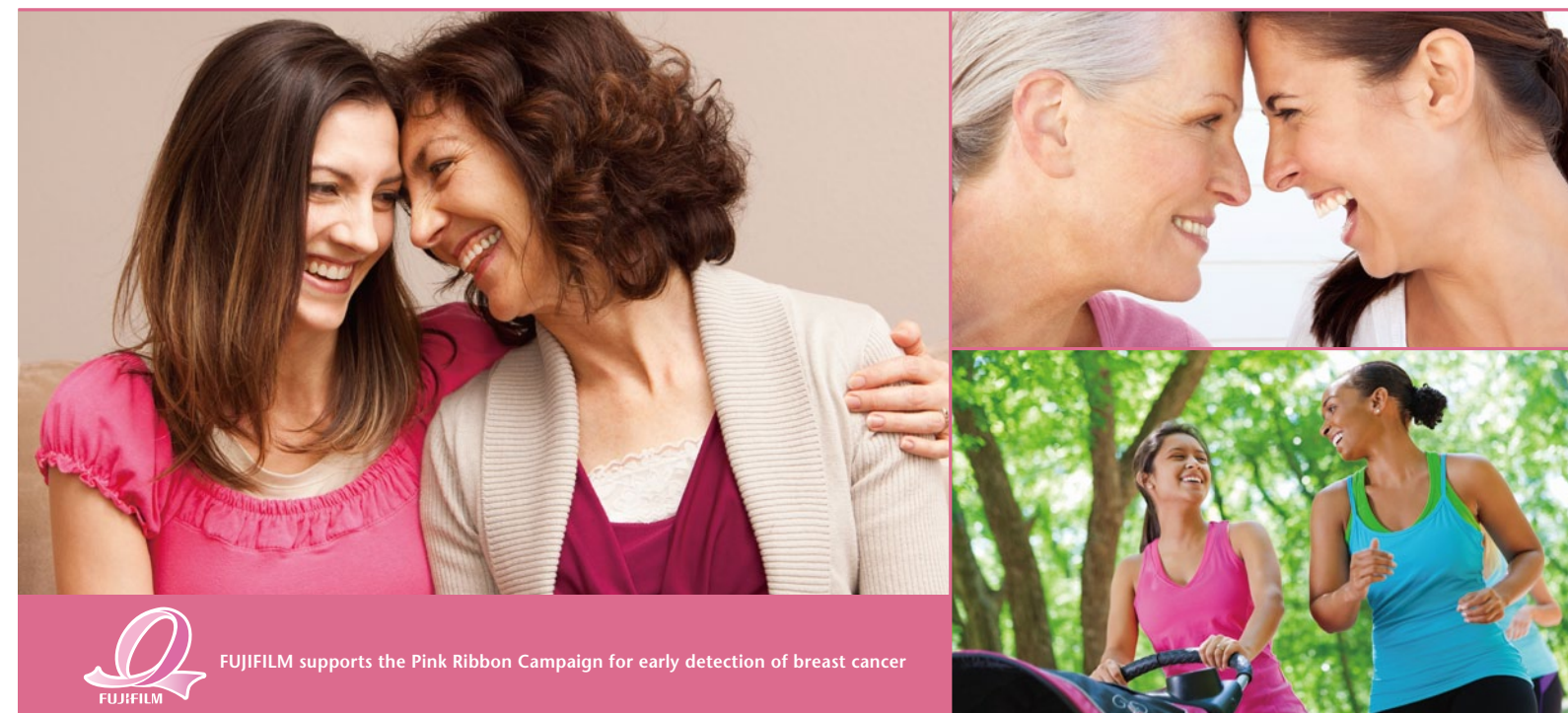
- Exposure stand (FDR3500DRLH): Approx. 624 (W) × 1270 (D) × 1974 (H) mm / Approx. 370kg / AC 200/208/220/230/240V
  - Control cabinet: Approx. 503 (W) × 205 (D) × 530 (H) mm / Approx. 20kg
  - Generator: Approx. 445 (W) × 315 (D) × 825 (H) mm / Approx. 70kg
- AWS (FDR-3000AWS): Approx. 700 (W) × 420 (D) × 1900 (H) mm / Approx. 90kg (including protective shield and operation table) / Main unit: AC 100-240V

The appearance and specifications may be subject to change.



**FUJIFILM Corporation**

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