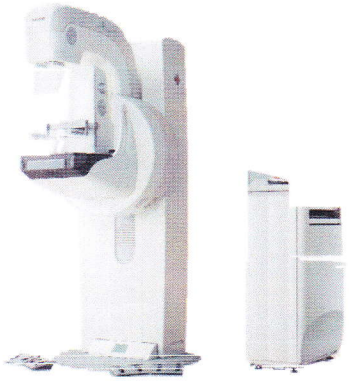
# FUJIFILM MEDICAL SYSTEMS

Aspire HD

*Product Data*



## Aspire HD PLUS

***The Evolution of Fujifilm's Complete Full-Field Digital Mammography Technology: More Diagnostic Confidence, Lower Dose***

### Application:

The Aspire HD PLUS is a full field digital mammography system (FFDM) for routine and stereotactic biopsy exams. It is designed with a focus on patient comfort, lower doses, high throughput and ease of use, all of which are vital for effective women's healthcare. The system's increased diagnostic accuracy is the result of an advanced imaging detector and patented optical technology.

Aspire HD PLUS uses a direct conversion X-ray sensor with excellent conversion efficiency. The panel uses our proprietary, patented Optical Switching technology instead of thin film transistors (TFTs) to directly read the signal more efficiently. This allows a pixel size of just 50µm, resulting in enhanced visualization of breast tissue and greater detail of breast abnormalities. It also permits shorter inter-exposure times of about 15 seconds.

The integrated gantry and positioning system allows smooth, comfortable positioning, which effectively minimizes patient discomfort and simplifies accurate exam completion. Patients experience a more comfortable, shorter examination with reduced radiation dosage, technologists benefit from faster, simpler exam completion, and radiologists receive more detailed

Features include selectable dose levels (low, medium, high), 32 photocells (exclusive to Aspire), Dynamic Visualization technology (DV) and Full Range Processing for superior sampling of the entire breast, better visualization between dense and fatty tissue, greater IQ with each exposure, increased workflow, and greater diagnostic confidence.

### Aspire HD PLUS Features:

- Mammographic Gantry with motorized positioning
- Selectable dose levels: low, medium, high
- Ergonomic design and comfortable patient positioning
- Acquisition Workstation with control desk; displays include exposure parameters and patient information.
- Dual-Layer Amorphous Selenium Detector
- X-Ray Tube assembly
- 24x30cm compression plate-high edge
- 18x24cm compression plate-high edge
- Automatic Exposure Control: 32 AEC cells automatically detect and optimize for varying densities throughout the
- Three exposure modes: automatic, semi-automatic, manual
- Two foot switches: compression/decompression and c-arm up/down movement for gentle precise positioning.
- Automatic decompression: gently releases the compression after the X-ray exposure
- Patient arm rests and built-in chest wall pad provide patient comfort and stability during exams
- Synapse Breast Imaging Diagnostic Workstation provides a total system solution utilizing connection with our advanced diagnostic viewer systems and other optional accessories (optional).

### Exclusive Detector Design Features:

*Aspire HD PLUS's 50µm pixel size* is one of the highest spatial resolution direct capture digital x-ray detectors available today, with the nearest competitive systems at 70µm and 100µm. By achieving both 50µm with a lower noise circuitry design, Aspire HD PLUS can improve visualization of micro-calcifications and tumors in greater detail to simplify accurate

*Amorphous Selenium* (aSe) provides the most direct conversion of x-ray to digital acquisition possible due to its inherent imaging characteristics. As x-rays penetrate Selenium they are instantly converted to electrical charges. This is in contrast to conventional detectors, which instead feature a scintillator layer that first converts x-rays to light and then coverts the resulting light to electrical charges through photoelectric thin film transistor (TFT) circuits.

*Dual Layers of selenium* enable the Aspire HD PLUS to take the inherent direct capture efficiencies of selenium to the next level. The top, thicker layer maximizes absorption of the x-rays for higher efficiency at lower doses; the bottom layer excites and sharpens the flow of resulting charges to the readout electrodes for higher detail with lower noise. Combined, these elements result in high image quality with lower noise, even at very low doses.

*Direct Optical Switching* (DOS) is a Fujifilm exclusive. Combined with the dual layer a-Se design, it eliminates conventional (TFTs) thin film transistor circuits, and instead utilizes the energized potential charges of directly stimulated top and bottom detector electrodes. This enables a sharper, more direct path of x-ray photons to their corresponding pixel electrodes, achieving a significant reduction of image spread or blur. This design also results in fill factor to nearly 100%. These higher efficiency electronics also significantly lower circuitry temperatures for maximum reliability and extended detector life. Exceptional engineering advancements, coupled with Fujifilm's renowned Image Intelligence™ processing expertise, work in harmony with a high fill factor to produce one of the highest resolutions available with one of the most dose efficient detectors available. Fujifilm's new Aspire HD PLUS Full-Field Digital Mammography system may effectively reduce patient dose by as much as 20 to 30%, compared to film screen and CR (computed radiography).

| X-RAY TUBE/GENERATOR SPECIFICATION | TUNSGTEN (w) | MOLYBDENUM (Mo) |
|---|---|---|
| | | |
| **Tube Voltage Range:** | 23-35 kVp; 1KVp step increment | |
| mAs Setting @ 25 kVp | 2 mAs to 560 mAs | 2 mAs to 450 mAs |
| **Exposure Modes:** | Automatic, Semi-automatic, or Manual | |
| Focus | Small Focus: 0.1mm & Large FS: 0.3mm | |
| Generator Current | Small FS34 mA @ 25 kVp | |
| | Large Focus 188 mA @ 25 kVp | |
| Nominal Power:25-35 kVp | 0.85 kW Small Focus | 0.70 kW Small Focus |
| | 4.50 kW Large Focus | 3.73 kW Large Focus |
| **Filter** | Rhodium | Rhodium or Molybdenum |
| Anode Angle | 20 degrees | |
| Anode Heat Storage Capacity | 120,000 J (162,000 HU) | |
| Max. Heat Dissipation rate of Anode | 30,000J/Min. (40,500 HU/Min.) | |
| **Tube Assembly** | | |
| Heat Storage Capacity | 1,100,000 J (1,500,000 HU) | |
| Max. Continuous Heat Dissipation of Tube Assembly | Ambient Temperature : 68˚F-86˚F | |
| Radiation Leakage | <0.7mGy/h (@ 50kVp/300W at a distance | |
| Total Filtration of Tube Assembly | 1 mm Be (=0.02 mm Al) | |
| **Power Conditions** | | |
| Gantry & Generator | 2.8 kVa, Breaker: 35A | |
| | Single Phase Voltage AC 208V-240V ±10% (50 Hz/60Hz), 0.6A | |
| **Environmental Conditions** | | |
| Operating | 68˚F-86˚F | |
| | Humidity: 30%-75% RH (no condensation) | |
| Non-Operating | 59˚F-95˚F | |
| | Humidity: 10%-80% RH (no condensation) | |

Aspire HD

Full Field Digital Mammography

# *Product Data*

**Standard Components:**

*Image Detector (built-in)*

- 24cmx30cm Dual Layer Amorphous Selenium (a-Se)
- Image Field Size: 24x30cm = 56MB
- 50µm pixel pitch; 14 bit
- Pixels 24 cm x 30 cm: 4728 x 5928
- X-Ray Transfer method: Direct Conversion Source object distance: 0.67" (17mm)
- Calibration: Automatic daily — Approx. 20-30 minutes
- Detector Readiness: Cold Start, less than 30 minutes Warm Start, less than 5 minutes

*Aspire HD PLUS*
*Gantry*
*(Mammographic Stand)*

- C-Arm Assembly Vertical Travel: 27.17" to 59.06" (69cm to 150cm)
- Rotation: +190° ~~-190°
- SID: 25.60" (65cm)
- Compression modes: Auto Compression: 0N -200N (Newton's)
- Manual Compression: Zero N-200N
- Magnification Factor: 1.8x
- Grid: Ratio 6:1 Fiber (41 lines/cm)
- Filtration: Exposure Table: 0.10mmAl Magnification Stand: 0.15mm Al Detector inner cover: 0.01mm Al

**Line Voltage Connection:**

*Safety Mechanisms*

- Emergency shut-down button--three places (right & left side of the stand, control pad)
- Emergency de-compression switch—three places (right & left foot pedal, control pad)

*Ergonomic Design*

- Grip handle providing patient stability
- Positioning pads for patient comfort
- Face Guard protects face from the direct X-ray
- Exposure Stand Panels displays: C-Arm angle; compression data & Patient's Name or ID
- Compression/decompression Foot Switch (Automatic release after X-ray exposure)

**Acquisition Workstation (AWS):**

- Display Time: 24x30 cm compressed /10 seconds 18x24 cm compressed /8 seconds
- Exposure interval: 15 seconds
- Exposures/hour: 60 exp/hour (28 kVp & 100mAs)
- Display Time: 8-10 seconds

*Standard image processing*

- Gradient Processing (GP)
- Exposure Data Recognizer (EDR)
- Multi-objective Frequency Processing (MFP)
- Blackening Processing
- PC main unit: CPU, Core 2 Duo E7400/2.8GHz; Optiplex XE Core & Desktop Memory, 8GB (RAM) HDD, S-ATA 500 GB
- High Resolution LCD monitor: LCD, EIZO RADIFORCE RX 211 21.3 inch LCD
- Operating System: Windows 7 Environmental Conditions (AWS): 59°F-95°F (Operating)

*Optional accessories*

- QC Kit & One Shot Phantom Compression Paddle, low edge, 24x30cm
- Compression Paddle, low edge, 18x24cm
- Biopsy paddle (perforated)
- Rectangle Spot compression paddle, 9x9cm
- Compression paddle for axilla view, 8x20cm
- Compression paddle for magnification, 16x20cm
- Magnification stand (1.8x)
- Wall rack for paddle storage
- Storage rack
- Flex Paddle 18x24cm
- Flex Paddle 24x20cm

*Connectable Devices*

- Image Recorder: DRYPIX 4000; DRYPIX 5000, 7000
- DMS (Via network I/F)
- Synapse Server: Mammography viewer (10 bit prior to image processing, 14 bit after image processing
- JPEG lossless compression/Uncompressed)
- Aspire Synapse WS
- Operating: 32°F to98°F; Humidity—under 80% RH;
- Atmosphere pressure: 700-1060Pa

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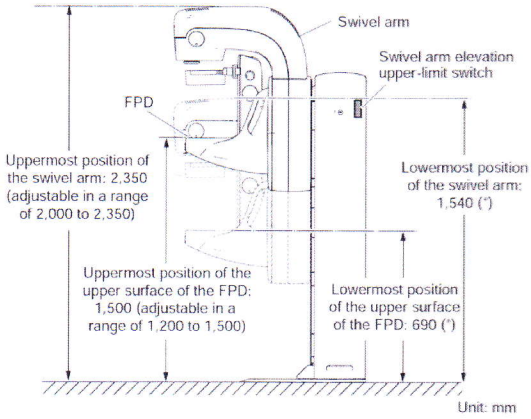
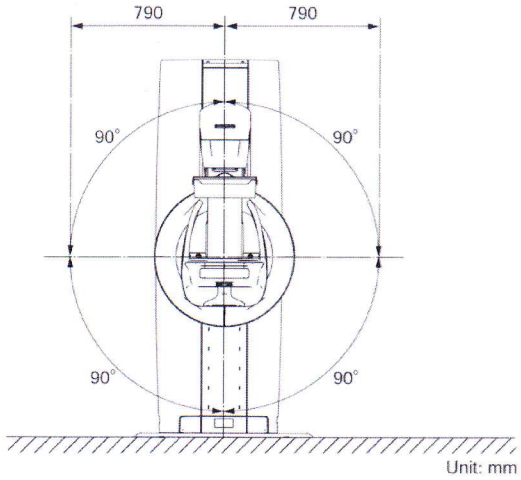
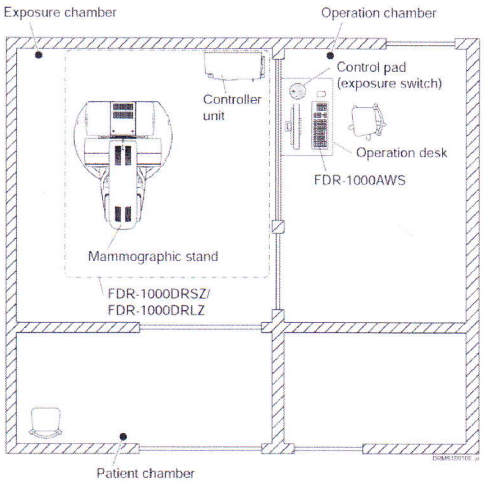
## External Dimensions and Weight:

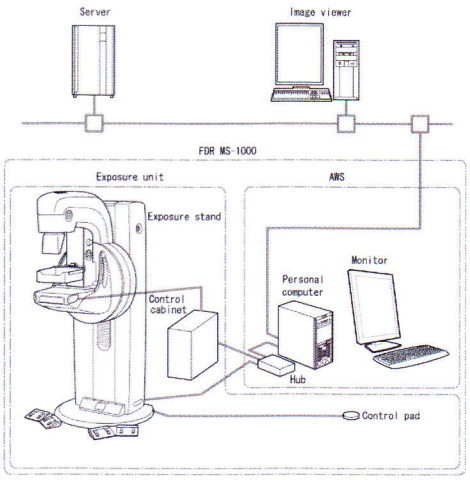
| Dimensions & Weight | Width (cm) | Depth(cm) | Height(cm) | Weight (kg) |
|---|---|---|---|---|
| Gantry | 39"(100) | 47"(120) | 79"(198) | 838lb(380) |
| Electronic Cabinet | 12"(30) | 22"(55) | 30"(75) | 99lb(99) |
| AWS-Main Unit | 7"(20) | 17"(47) | 17"(45) | 35lb(16) |
| AWS -LCD Monitor | 18"(47) | 8"(21) | 18"(47) | 21lb(10) |
| Operator's Desk | 28"(70) | 16"(40) | 40"(101) | na |
| Op Desk w/Radiation Shield | 28"(70) | 16"(40) | 75"(190) | 209lb(95) |

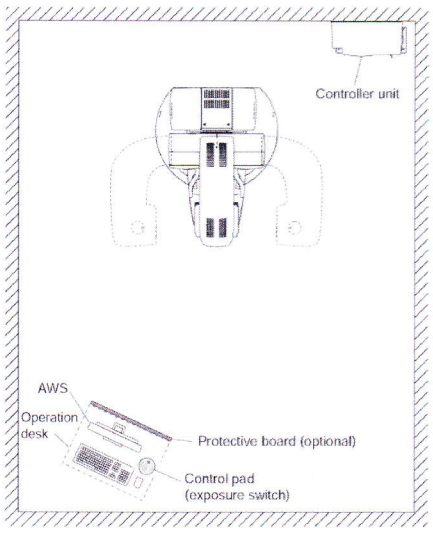
## Installation Space Requirements




Specifications subject to change without notice

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