

**SPECIFICATIONS**  
for  
**Diagnostic Ultrasound System**

**ARIETTA 50LE**

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## Scanning Method

- Electronic Convex
- Electronic Linear  
(Steered linear scanning and **Trapezoidal** scan are Possible.\*)
- Electronic Phased Array Sector

\* Probe dependent

## Operating Modes \*

- **B-mode**(Fundamental, FmT, WbT)
- **M-mode**(Fundamental, FmT, WbT)
- D : Spectral Doppler mode (**PW, HPRF-PW**), **CW**
- **Color Flow mode**
- **Power Doppler mode (Directional Power Doppler)**
- **eFlow mode (Directional eFlow)**
- TDI(Tissue Doppler Imaging)

\* Probe dependent

## Image Display Modes \*<sup>1</sup>

- **B** : gray-scale imaging
- **Dual B** (Right/Left or Up/down)
- **Quad B**
- **M**
- **B and M**
- D : Spectral Doppler mode (PW, HPRF-PW), CW
- **B and D**
- B (Color Flow)
- B (Power Doppler)
- B (eFlow)
- **Dual B** (Color Flow) (Right/Left or Up/down)
- **Quad B** (Color Flow)
- **Dual B** (Power Doppler) (Right/Left or Up/down)
- Quad B (Power Doppler)
- Dual B (eFlow) (Right/Left or Up/down)
- Quad B (eFlow)
- M (Color Flow)
- M (Power Doppler)
- M (eFlow)
- B (Color flow) and M (Color flow)
- B (Power Doppler) and M (Power Doppler)
- B (eFlow) and M (eFlow)
- B (Color flow) and D
- B (Power Doppler) and D
- B (eFlow) and D
- **TDI** (Tissue Doppler Imaging)
- B(Color Flow) and D simultaneous real-time display (Triplex mode)
- B(Power Doppler) and D simultaneous real-time display (Triplex mode)

- B(eFlow) and D simultaneous real-time display (Triplex mode)
- B and B(Color Flow) simultaneous real-time display (Dual Flow)
- B and B(Power Doppler) simultaneous real-time display (Dual CF)
- B and B(eFlow) simultaneous real-time display (Dual Flow)
- Dynamic Slow-motion Display :  
It is possible to display a real-time image and a slow-motion image side by side.  
Dual B  
Dual B(Color flow)  
Dual B (Power Doppler)  
Dual B(eFlow)
- Real-time Biplane  
Using a biplane probe, the real-time images of two cross-sections can be displayed
- Monitor mode\*<sup>2</sup>  
It is possible to display a fundamental image and Contrast harmonic image side by side.

\*<sup>1</sup> Probe dependent.

\*<sup>2</sup> Option: SOP-AR50-44

## Beamformer

Multi processing **high-speed digital beam former**  
14-bit A/D converter (16384 gray levels)  
Sampling rate: Equivalent to 320 MHz  
Delay precision: 1/64 $\lambda$  at minimum in both transmission and reception  
Ultrasound Frequency: 1.0-18.0\* MHz  
\* Maximum reception frequency can be achieved under below conditions.  
Probe: L64, Freq.: High, Freq.Info.: Receive\_

## Tissue Harmonic Imaging

Filter-method **Tissue Harmonic Imaging**(FmT) \*  
Wideband Tissue Harmonic Imaging(WbT) \*  
\* Probe dependent

## Tissue Adaptive Technology

Sound Speed adjustment : 26 Step  
1400 through 1650m/s(10m/s step)

## Focusing

Lateral direction

Transmission: Multi-stage transmission focus of up to 3 stages out of **8 stages**

Reception: Pixel Focus

Slice direction

Acoustic lens

## Beam signal processing

Dynamic apodization

## System Dynamic Range

272 dB

## System Processing Channels

274,432 Channels

## Frame rate

Max. 882 frames/s \*

\* It is a measured value with the setting assuming the maximum value. This value may be exceeded depending on the conditions.

## User Interface

Home button

Software switch by touch panel

## Home Screen

- New Patient, Scan Condition, History and so on can be selected.

## Scan Condition Screen

- Any preset is appropriate to patient and region by body diagram and body type can be called up.

## History Screen

- Displayed as small thumbnail images and same condition can be applied by selected image.

## B-mode

- Display Gray Scale: **256 levels**
- Scanning area: 100% to 25%
- **Zoom**\*<sup>1</sup>
  - The Maximum magnification is 16 times
  - Write zoom: in real-time
  - Read zoom: in frozen
- Depth range selections\*<sup>1</sup>:  
**1.0**/1.5/2.0/2.5/3.0/3.5/4.0/4.5/5.0 and 1 cm step increment from 5.0 to 30.0 and 35, **40.0** cm
- Scanning Angle\*<sup>1</sup> : Max. 200deg
- **Longitudinal and lateral inversion**
- Rotation\*<sup>1</sup>: By 90 degrees (probe dependent)
- Frame rate (Line density): 3 selections
- Gain\*<sup>2</sup>: 10 to 90 dB
- TGC (Time gain compensation): 8 steps
  - Software TGC
  - Reset function
- LGC(lateral gain control):
  - 4 selections (Sector Probe only)
- Dynamic range\*<sup>2</sup>: 23 steps ( 36-96 dB)
- AGC: 16 steps
  - Suppression of brightness saturation and
  - Edge Enhancement
- Relief: 4 steps
- FTC: On/Off
- Persistence: 16 steps

- Smoothing: 16 steps (off,1 through 15)
- Gamma curve
  - Curve: 5 kinds
  - Rejection: 64 steps
- Gray map: 5 kinds
- Auto-optimizer: B gain, TGC
- Compound Imaging (possible by selected linear and convex probes)
  - Max. ±30degrees, 5degrees Step
- B Steer function\*<sup>1</sup> :
  - Max. ±30 degrees, 5 degrees step
- Trapezoidal scan\*<sup>1</sup> (possible by selected linear probes)
  - Max. ±30 degrees, 5 degrees step
- Adaptive Image Processing (AIP)
- Silky Image Processing (SIP)
  - Smooth images can be displayed with the combination of **border emphasis and noise removal** processing
- **Needle Emphasis**\*<sup>1</sup>

\*<sup>1</sup> Probe dependent

\*<sup>2</sup> Gain and Dynamic range can be changed after freezing

## M-mode:

- Sweep method: Moving bar
- Sweep speed\*<sup>1</sup>:  
25.0 , 33.3 , 50.0 , 66.7 , 100.0 , 150.0 , 200.0mm/s
- Gain\*<sup>1</sup>: B-gain ±30 dB
- Dynamic Range\*<sup>1</sup>: 23 steps (36~96dB)
- AGC—Suppression of brightness saturation: 16 steps (including relief processing)
- Relief: 4 steps
- FTC: On/Off
- FAM\*<sup>2</sup> (Free Angular M-mode)
  - Up to 3 M-mode cursors can be set
  - omni-directionally at any position on a B-mode image.
  - It is possible to reconstruct M-mode images from line-data B-mode images stored in the System (Available after freezing.).

\*<sup>1</sup> Gain, Dynamic Range and sweep speed are changeable after freezing

\*<sup>2</sup> Option: SOP-AR50-5

## Spectral Doppler:

- Display: Power spectrum
- Frequency analysis system : FFT System
- Real-time Doppler Auto Trace
- Doppler methods:
  - PW (Pulsed Wave) Doppler
  - HPRF (High Pulse Repetition Frequency) PW Doppler
  - CW (Continuous Wave) Doppler\*<sup>1</sup>**
  - TD (Tissue Doppler) PW
- Reference frequencies\*<sup>2</sup> :
  - PW: 2.10, 2.50, 3.08, 3.64, 4.00, 5.00, 5.71, 6.67, 8.00 MHz
  - CW: 2.00 MHz
- Pulse Repetition Frequency:
  - PW: 0.32 to 19.84 kHz
- Analysis rate:
  - CW: 1.3 to 41.67 kHz
- Max. velocity range:
  - PW: -7.97 to 0 or 0 to +7.97 m/s (1.82 MHz reference freq., 0 degree, with base line shift)
  - CW: -15.9 to 0 or 0 to +15.9 m/sec (2.0 MHz reference freq., 0 degree, with base line shift)
- Base line shift\*<sup>3</sup>: Up to double velocity
- Steerable CW Doppler
- Steered linear scanning\*<sup>2</sup>:
  - Max. ±30 degrees, 5 degrees step
- Spectrum inversion\*<sup>3</sup>
- **Angle correction\*<sup>3</sup>:**
  - Up to ±80 degrees**, presetable
- Automated angle correction in Color Flow mode
- Sample volume size for PW Doppler: 0.5 – 20 mm
- Wall motion filter:
  - Manual: 50, 100, 200, 400, 800 or 1600 Hz,
  - Auto: Varies in 12 steps
- Doppler gain: 0 - 50 dB
- Dynamic Range\*<sup>3</sup>: 16 steps
- Black-and-white inversion\*<sup>3</sup>
- **Auto-Optimizer**
  - (Optimization of velocity range and baseline shift)
- Audio output:
  - Built-in loudspeaker: Monaural
- Doppler Sound ON function

\*<sup>1</sup> **Option: SOP-AR50-55**

\*<sup>2</sup> Probe dependent

\*<sup>3</sup> Base line shift, Spectrum inversion, Angle correction, Dynamic range adjustment, and Black-and-white inversion are possible after freezing.

## Color Doppler Imaging

- Display patterns:
  - Velocity, Velocity + variance, Variance, Power Doppler, Directional Power Doppler, eFlow, Directional eFlow, **TDI (Tissue Doppler Imaging), TDI Power**

### Color Flow Mode

- Gradation : ±127 levels
- Variance : 16 levels
- Reference frequencies\*:
  - 1.82, 2.10, 2.50, 3.08, 3.64, 4.00, 5.00, 6.67, 8.00MHz
- Pulse repetition frequency : 0.55 – 9.92 kHz
- Packet Size : 3steps
- Color area size: Variable from 100 % to 15 % continuously
- Steered linear scanning\*
  - Max. ±30 degrees, 5 degrees step
- Max. Velocity range : -4.0 to 0 or 0 to +4.0m/s (at 1.82 MHz reference frequency, with baseline shifted)
- Line density : 9 steps
- Color Gain : 0 to 32dB (128 steps)
- Image Select: 3 selections (Resolution, Standard, Penetration)
- Smoothing: 16 steps
- Wall filter: 6 steps (Color flow) , 8 steps (eFlow)
- Persistence: 16 steps
- Wall Motion Reduction: 16 steps
- Color coding (Editable with color coding editor)
  - Abdomen : 5 kinds
  - Vascular : 5 kinds
  - Cardiology : 5 kinds
  - User : 5 kinds

### Power Doppler

- Gradation : 128 levels
  - (Directional Power Doppler : ±127 levels)
- Color coding: 5 kinds
- Non-display of B/W image: Possible
- Smoothing: 16 steps\_

### High Resolution Power Doppler(eFlow) Mode

- Gradation: 128 levels
- Pulse repetition frequency: 0.55 - 9.92 kHz
- Color coding: 5 kinds
- Non-display of B/W image: Possible
- Smoothing: 16 steps\_

### Directional Power Doppler, Directional eFlow: Available

- Reference frequency\*: 1.82, 2.10, 2.50, 3.08, 3.64,

4.00,5.00, 6.67, 8.00MHz

- Pulse repetition frequency: 0.55 - 9.92 kHz
  - Maximum velocity range:
    - 4.0 to 0, or 0 to +4.0 m/sec
    - (at 1.82 MHz reference frequency, with baseline shifted)
  - Color base line shift:  $\pm 127$  steps
  - Gradation:  $\pm 127$  levels
  - Color Polarity: Normal, Invert
- TDI (Tissue Doppler Imaging)\*
- Switching between Color flow Doppler and tissue Doppler during examination is available
- \* Probe dependent

### Instruction Manual Display

- Instruction Manual can be displayed by PDF viewer on equipment.

### Cine Memory

Cine search and loop display

#### Capacity

B mode: Max. 12412 frames

Scroll in M or D mode: 10 seconds

Note: The number of storable images in a loop depends on probe type, scanning angle and other conditions.

### Data Management

#### Image data format

- Multiple-frame (moving) image DICOM\*<sup>1</sup>  
(RGB[RLE/Normal], JPEG, Monochrome2\*<sup>2</sup>)  
AVI: Motion JPEG codec  
MPEG4: H.264(MPEG4 Part10 AVC)  
MOV  
Line (DICOM FUJIFILM Healthcare Corporation private specification)
  - Single-frame (still) image  
DICOM\*<sup>1</sup> (Palette, RGB [RLE/Normal], JPEG, Monochrome2\*<sup>2</sup>)  
TIFF, BMP, JPEG
- \*<sup>1</sup> Option: SOP-AR50-10
- \*<sup>2</sup> Compatible with Monochrome2 only when transferring to a server

#### Image acquisition mode

- Real-time multi-frame image acquisition  
Post TIME: Max. 16 seconds  
Pre TIME: Max. 16 seconds  
Post ECG\*<sup>1</sup>: Max. 16 cardiac cycles (R-R)  
Pre ECG\*<sup>1</sup>: Max. 16 cardiac cycles (R-R)  
Manual:

Line data: Up to the capacity of the Cine Memory

Image data (128 lines/frame, 60 Hz):

Standard: Max. 16 seconds

- Real-time Video Clip(AVI, 30Hz)  
Post TIME: Max. 16 seconds  
Pre TIME: Max. 16 seconds  
Post ECG\*<sup>1</sup>: Max. 16 cardiac cycles (R-R)  
Pre ECG\*<sup>1</sup>: Max. 16 cardiac cycles (R-R)  
Manual: Max. 180 seconds
- Cine loop high-speed data transfer (Line, Image)  
It is possible to selectively store data of arbitrary section in the Cine Memory.
- Simultaneous output to multiple media  
It is possible to output still image data to multiple of storage media at the touch of a button.

\*<sup>1</sup> Option: PEU-ARIETTA50B is necessary

#### Image data management tool

Image viewer

- Thumbnail display of stored images (1-36 images)
- Check mark is put on a transferred image.  
Image zoom, rotation, inversion
- 1:1 replay (main unit HDD or DICOM\*<sup>1</sup> storage data)
- Writing into main unit HDD, USB memory, USB HDD
- Re-storing to media, transfer
- DICOM moving image transfer\*<sup>1</sup>

\*<sup>1</sup> Option SOP-AR50 -10 is necessary

#### Measurement data

It is possible to store measurement data in the main unit HDD.

DICOM SR\*<sup>1</sup> (OB, cardiology, vascular, abdominal and gynecological measurements) output possible

\*<sup>1</sup> Option: SOP-AR50-10 and SOP-AR50-21 are necessary

#### Patient data

Displayed information\*

Patient information: ID (up to 64 characters), Name (up to 64 characters), Sex, Age, BSA, BMI, GA, Cycle Day, PSA

Study information\*

Procedure ID, Accession, Study ID, Study Description, Referring physician, Reporting Phys, Sonographer

\* Conforms to DICOM 3.0 standard

### Data storage media

- Main unit HDD  
Capacity: Approx.500 GB
- USB memory\*  
(USB memory port is standard.)
- USB HDD\*, CD-R\*, DVD-RAM\*

\* Media is not included in the standard components of this system

### DICOM network communication\*<sup>1</sup>

- Conformity to DICOM service class:  
Ultrasound image storage SCU  
Ultrasound multi-image storage SCU  
Storage media FSC/FSR  
Print management SCU  
Modality worklist management SCU  
MPPS (Modality performed procedure step) SCU  
Storage commitment SCU  
SR SCU\*<sup>2</sup> (OB, cardiology, vascular, abdominal and gynecological measurements)  
(For details, please refer to the DICOM Conformance Statement issued by FUJIFILM Healthcare Corporation)
- **Storage: Possible to send patient information directly to DICOM file server**
- Work list management: Retrieval of patient and reservation information from hospital information system (HIS)  
NOTE: The HIS needs to be compatible with DICOM standard supplement 10. The HIS network and the DICOM network need to be linked.
- DICOM Q/R\*<sup>3</sup> :  
Retrieve modalities are US and Line.  
Query keys are ID, Name, Date, Accession # and Modality. After retrieve can review by Review Function.
- Router setting: possible
- IHE (Integrated Healthcare Enterprise)  
SWF (Scheduled Workflow)  
PDI (Portable Data for Imaging)  
ED (Evidence Documents in Radiology/Cardiology domain)  
Echocardiography Workflow  
CT (Consistent Time)

\*<sup>1</sup> Option: SOP-AR50-10 is necessary.

\*<sup>2</sup> Option: SOP-AR50-10 and SOP-AR50-21 are necessary.

\*<sup>3</sup> Option: SOP-AR50-10 and SOP-AR50-59 are necessary.

### Security measures

- User authentication function is available. 3 Types of user authority can be set.
- It is possible to set whether password is required or not at the start of operation.
- Audit logs  
Accesses related to user management and patient data are recorded as audit log data  
Handling of these logs is limited to users with level 1 access.
- Teaching file can be made.
- McAfee Embedded Control3 software\*  
\* Option: SOP-AR50-128

## Measurement and Analysis

- General measurements  
Available to show measurement results up to ten channels simultaneously.

### On B-mode image

Distance (Dist, Dist-Trace)  
Area and Circumference (Trace, Ellipse, Circle)  
Volume (Area-length, Elipse and Caliper, 3 Caliper, Ellipse)  
– Area-length can trace automatically the boundary region based on 3 points.  
Index (general purpose)  
Histogram, Angle, **Hip joint angle**

### On M-mode image

Velocity  
Length (amplitude)  
Time interval  
Heart rate  
Index (general purpose)

### On spectral Doppler

Velocity, Acceleration (or deceleration),  
Mean flow velocity, Pressure gradient  
RI: Resistance index,  
PI: Pulsatility index  
Pressure half time  
Heart rate  
Dop. Caliper measurement  
Index (general purpose)  
Time interval  
Stenotic flow measurement  
Regurgitant flow measurement  
D. Trace\_

### On B/D mode

Blood Flow volume  
SV/CO

### On B(Flow) mode

Blood Flow volume \*  
\* Option: SOP-AR50-7 is necessary.

### Others

Guide message  
User's calculation

- **Abdominal measurements**

#### B mode

Gall bladder Common bile duct  
Liver  
Pancreas  
Kidney  
Spleen  
SOL (Space Occupying Lesion)  
Vessel diameter (aorta, portal vein)  
Stenotic rate (diameter, area)

#### Doppler mode

Abdominal aortic flow  
Blood Flow of blood vessels in Liver  
Portal vein flow  
Gut tract membrane aorta blood velocity  
Blood Flow volume  
Shunt flow

#### B/D mode

Flow volume

- **Urological measurements & calculations**

Prostate volume: PSA volume, PRS Slice volume  
Bladder volume  
Seminal vesicle Testicle  
volume Renal volume  
Cortical thickness  
Adrenal gland measurement Renal  
pelvis measurement  
Renal artery Doppler measurements (pulsatility  
index, resistance index)

- **Small parts measurements & calculations**

#### B mode

##### **Lesion (Breast)**

D/W ratio  
NT distance Thyroid  
volume Isthmus  
Thickness

#### Doppler mode

##### **Breast Doppler flow**

Thyroid Doppler flow

- **Gynecological measurements & calculations**

Uterus measurements  
Endometrial thickness  
Cervical measurements  
Ovary measurements  
Follicular measurements (Volume measurement by  
3-axis measurement is possible.)  
Urinary bladder measurements

Uterine artery, Ovarian artery measurements

- **Obstetrical measurements & calculations**

Gestational age, Fetal weight

Fetal Doppler measurements

Fetal cardiac function measurements Placenta,  
Fetus cardiac (MCA, UmA, UtA, OVA, PLI,D-Ao)

Amniotic fluid index (AFI,AFP,AFV)

Cervical length

Supports multiple pregnancy

Growth analysis function

(display of past  
measurement data)

Automated NT measurement \*

\* Option: SOP-AR50-42

- **Cardiac analysis**

B mode

LV Volume measurements

Area-length, Simpson (Disc),BP Ellipse,  
Modified Simpson, Bullet, Pombo,  
Teichholz, Gibson

- Area-length can trace automatically the  
heart cavity based on 3 points.

Valve area measurements (AVA, MVA)

LA/AO

Ratio

Right ventricle measurements

LV myocardial mass

IVC (inferior vena cava) measurement

Left/right atrium volume

M mode

Pombo, Teichholz, Gibson

Mitral valve measurements

LA/Ao measurements

Tricuspid valve measurements

Pulmonary valve measurements

IVC (inferior vena cava) measurement

CRT measurement (Asynchrony evaluation)

Doppler mode

LVOT (left ventricle outflow tract) flow

RVOT (right ventricle outflow tract) flow

Trans-mitral flow

Regurgitant flow (AR, PR, MR, TR)

Stenotic flow (AS, PS, MS, TS)

Portal vein flow

CRT measurement (Asynchrony evaluation)

Color flow mode

PISA measurement

TDI

**TDI PW MA**

Time to Onset measurement

Time to Peak measurement

Mid wall FS

- **Vascular analysis**

Carotid artery:

CCA (common carotid artery)

ICA (internal carotid artery)

ECA (external carotid artery)

BIFUR (Bifurcation of carotid artery)

VERT (Vertebral artery)

% Stenosis area

% Stenosis diameter

IMT (Intima-media thickness)

Automated IMT Measurement\*

\* Option: SOP-AR50-38

Measurements of arteries and venous in extremities:

Lower extremity artery flow

Lower extremity venous flow

Upper extremity artery flow

Upper extremity venous flow

Transcranial Doppler measurements

- **Others**

It is possible select caliper mark size and dotted line  
pattern.

Font size of measure result: 3 kinds

User's calculation

30 equations can be set for each application

User-assignable terms: 60 words possible

- **Report Functions**

Abdominal measurements report

Urological report

Small parts measurement report (Breast, thyroid)

Gynecological report

Obstetrical report

Cardiac function report

Vascular report

IMT (Intima-Media Thickness) report

It is possible to recall past measurement reports.

Examination data history can be plotted on the  
report.

Output of measurement values in CSV file is  
possible.

Measurement values to server by DICOM SR\* is  
possible.

\* Option: SOP-AR50-10 and SOP-AR50-21 are necessary.

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- **Physiological Signal Display\***

Displayed information: **ECG**

ECG synchronized display: Available for one phase

Display position: Continuously variable (both in B and M modes)

Sweep speed : 7 steps in conjunction with Seep Image

\* Option: PEU-ARIETTA50B are necessary.

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## Other Functions

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### **CHI** (Contrast Harmonic Imaging)\*

Contrast agent generates abundant second harmonics when disrupted, which eases detection by Harmonic Echo. Setting for low-pressure type contrast agent is also incorporated.

- **Wide-band Contrast Harmonic Imaging (WbC)**

The wideband pulse inversion method enables retrieval of echoes from the ultrasound contrast agent across a broad spectrum and display them in CHI mode at a high level of sensitivity.

- **Tissue Reduction Contrast Harmonic Imaging (TrC)**

The Amplitude Modulation method makes it possible to reduce signals from tissue to get clearer CHI mode images.

- **Monitor mode**

In the Monitor mode, images are available with a low sound pressure during the intermission of high sound pressure transmission.

- **Motion-compensated Accumulation Imaging**

It is possible to display running of fine blood vessels by accumulating contrast echo information.

- **Flash**

This mode sends high acoustic pressure transmissions at set intervals to destroy the ultrasound contrast agent.

- **Frame Rate Limit**

Function of limiting Frame Rate not to break bubbles.

\* Option: SOP-AR50-44 (Probe dependent)

### **Automated IMT Measurement\***

It is possible to automatically extract max IMT, min IMT, mean IMT and SD by simply setting ROI (region of interest) on a long-axis view of the vessel. In addition, the thicknesses at 3 points, i.e., the point at max IMT, and the points at 1cm on the right and left of the max IMT, can be automatically detected and averaged.

\* Option: SOP-AR50-38

### **Automated NT Measurement\***

It is possible to automatically extract the nuchal translucency thickness (NT) by simply setting ROI (region of interest). In addition, thicknesses at max NT, Mean NT can be automatically calculated.

\* Option: SOP-AR50-42

### **FAM\*** (Free Angular M-mode)

Up to 3 M-mode cursors can be set omni-directionally at any position on a B-mode image.

It is possible to reconstruct M-mode images from line-data B-mode images stored in the SSD (Available after freezing.).

\* Option: SOP-AR50-5

### **Flow Profile Measurement\***

\* Option: SOP-AR50-7

### **Real-time 3D (4D)\***

- **Method for acquiring volume data**

**4D:** Sets the data acquisition range (3D ROI) and the 3D display range (Clipping Box), and displays the image in 4D.

**HI DEF 3D:** Acquires volume data in B mode, and displays a high-resolution 3D image.

- **Rendering mode**

**Surface Sharp:** Displays the surface of a 3D image.

**Surf. Smooth:** Displays the surface of a 3D image more smoothly than "Surface Sharp".

**MIP:** Displays an MIP (maximum intensity projection: the maximum echo intensity based on the view) image as a 3D image.

**X-ray:** Displays an X-ray (average echo data based on the view) image as a 3D image.

**Lighted:** Displays a 3D image that is depicted as if the surface is reflected by light.

**4Dshading\*<sup>1</sup>:** Displays a shaded graphic 3D image like an endoscope image.

- **Displaying mode for 3D images**

**3D/4D:** Displays a tomographic image and a 3D image.

- **Moving and Rotating for volume data**

It is possible to move the data horizontally or vertically and move a 3D image backward or forward in the view direction.

It is possible to rotate around the X, Y, and Z axis.

- **3D image adjustment**

**Inversion Mode** (Inverting the display of the brightness)  
**Signal level:** Opacity Control, Lower Threshold, Placenta Rejection

- **Printing magnified 3D images**

\* Option: **EU-9203 and SOP-AR50-4** (Probe dependent)

\*<sup>1</sup> Option: SOP-AR50-51 (Probe dependent)

### **Panoramic view\***

This function moves the probe in a wide range and

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displays images in panorama.

\* Option: **SOP-AR50-1**

**Screen display when the lithotripter is also used\***

Stone positioning function -crosshair- is displayed on the screen.

Only the C22K probe is supported.

\* Option: SOP-AR50-153

**McAfee Embedded Control 3 software\***

\* Option: SOP-AR50-128

## General Specification

### Acoustic Power

- 0 to 100%, continuously changeable

### Preset Function

- 59 separate programs for specific clinical applications and/or users
- User programmable and/or factory default settings
- Factory default settings: 44 kinds
- Preset contents storable in USB memory

### Characters and graphic displays

- Character input area:  
ID, name, age, sex, retained text
- Automatic Annotation Labeling:  
120 words or more (User registration is possible.)
- Body mark: 69 kinds  
Movement of displayed position: Possible  
Fetal body mark: Rotatable L and R display

### Active Probe Ports

#### 4 ports

Independent probe connectable\*

\* Option: SOP-AR50-55 and JB-308 are necessary.

### Menu control

- 10.1-inch color TFT LCD touch panel

### Viewing monitor

- 21.5 inch LCD display  
Resolution: Full HD(1920 × 1080)
- Tilt and swivel are possible.
- Height adjustment and swivel together with operation panel

### Input / Output signal

#### Data Input/Output

- USB2.0: 3 ports (Main unit)  
USB memory stick can be connected

#### Digital Video Input/Output

- HDMI: 2 ports (Input1, Output1)
- DVI-D: 2 ports (Input1, Output1)

#### Analog Video Input/Output

- S VIDEO (Y/C): 2 ports (Input/Output)

#### Network

- LAN (Wi-Fi available)  
Ethernet: 1 port  
BASE/T or 100 BASE/TX, (automatically switched)

#### Others

- Audio (L/R): 2 channels (Input1, Output1)
- Footswitch: 1 port

### Safety Regulation

- IEC 60601-1 Ed.3.1: 2012, Class I, Type BF

### Environmental Requirements

#### Operation

- Temperature: +10 to +40 degrees C
- Relative Humidity: 30 to 75% (non condensing)
- Atmospheric pressure: 700 to 1060 hPa
- Altitude: Max. 3000m or less

#### In Storage/transportation

- Temperature: -10 to +50 degrees C
- Relative Humidity: 10 to 90% (non condensing)
- Atmospheric pressure: 700 to 1060 hPa

### Power Requirement

- Voltage : 100 to 120V/ 200 to 240V  
Frequency : 50 or 60 Hz  
Max. 470 VA
- Battery driving time\*  
120 minutes (first time use, 25 degrees C environment, B mode scanning)  
Battery driving time (battery capacity) may reduce depending on the charge-discharge repetition and environment.  
\* Option: EU-6065

### Dimensions

53.1cm ±10% (W) × 79.7cm(D) × 128.0 – 164.7cm (H)

### Weight

69kg ±10% (main unit only)

## System Configuration

Unit			Remarks
Category	Name	Model name	
System	Diagnostic ultrasound system	ARIETTA 50LE	With Flexible monitor arm Active Probe ports: 4
Peripheral Interface / Connection Kit / mounting rack	B/W digital printer (SONY)	UP-X898MD	PM-AR50-H001 and MP-FX-AR50-20 are necessary.
	B/W digital printer (MITSUBISHI)	P95DW	PM-AR50-H001 and MP-FX-AR50-20 are necessary.
	B/W digital printer (MITSUBISHI)	P95DE	PM-AR50-H001 and MP-FX-AR50-20 are necessary.
	Color digital printer (SONY)	UP-D25MD	PM-AR65-H002, EU-6060B, MP-FX-AR50-30 and MP-FX-ALB-31 are necessary.
	Color digital printer (MITSUBISHI)	CP30DW	PM-AR65-H002, EU-6060B, MP-FX-AR50-30 and MP-FX-ALB-32 are necessary.
	Medical video recorder	HVO-500MD/FHD *1	PM-AR50-H004*1, EU-6060B, MP-FX-AR50-30 are MP-FX-ALB-33 are necessary.
	Medical video recorder	HVO-550MD/FHD *1	PM-AR50-H004*1, EU-6060B, MP-FX-AR50-30 are MP-FX-ALB-33 are necessary.
	AC Outlet Expansion	EU-6060B	This is required when connecting color digital printer or video recorder.
	B/W printer connection kit	PM-AR50-H001	
	Color printer connection kit	PM-AR65-H002	
	Medical video recorder connection kit	PM-AR50-H004	
	Mounting rack of BW printer	MP-FX-AR50-20	
	Peripheral mounting rack	MP-FX-AR50-30	This is required when connecting color digital printer or video recorder.
	Mounting rack of Color printer(for SONY)	MP-FX-ALB-31	
	Mounting rack of Color printer(for MITSUBISHI)	MP-FX-ALB-32	
	Mounting rack of Digital Video	MP-FX-ALB-33	
	Peripheral expansion rack	MP-FX-ALB-34	This is required when simultaneously mounting UP-D25MD and video recorder.
	Peripheral expansion rack	MP-FX-ALB-35	This is required when simultaneously mounting CP30DW and video recorder.
	Hardware Option	Physiological Signal Display Unit	PEU-ARIETTA50B
Doppler Probe JBBOX		JB-308	This is required when connecting UST-2265-2.

	Battery unit	EU-6065	
	Servo unit*	EU-9203	Required for Real-time 3D
	Jelly Warmer	JW-3000U	In order to incorporate this in the system, EU-6063 and MP-FX-AR50-5 are necessary. In addition, MP-FX-AVA-2B-R or MP-FX-AVA-2B-L and MP-FX-AR50-2 are also necessary.
	Jelly Warmer Unit	EU-6063	
	Probe Holder Left Side Mounting Kit	MP-FX-AR50-2 *2	
	Jelly Warmer power mounting Kit	MP-FX-AR50-5	
	Jelly Warmer Right Side Mounting Kit	MP-FX-AVA-2B-R	
	Jelly Warmer Left Side Mounting Kit	MP-FX-AVA-2B-L	
	3-points Footswitch	MP-2819	
	1-point Footswitch	MP-2345B	
	Friction Kit	MP-FX-AR50-4	Depending on the combination of these options (*2), one MP-FX-AR50-4 is required.
	Small Tray	MP-FX-ALB-21	
	Storage Tray	MP-FX-AR50-3 *2	
	Side Hook	MP-HA-AR50-1	
	Flexible Hook	MP-HA-ALB-2	It is impossible to simultaneously mount this and MP-HA-ALB-3.
	Flexible Hunger	MP-HA-ALB-3	It is impossible to simultaneously mount this and MP-HA-ALB-2.
	Keyboard Tray	MP-FX-ALB-6B *2	Keyboard is required separately. Recommendation the medical grade item.
	Small Probe Holder(RS)	MP-PH-AR70-2U	
	Small Probe Holder(LS)	MP-PH-AR70-4U	
	Large Probe Holder(LS)	MP-PH-AR70-5U	
	Large Probe Holder(RS)	MP-PH-AR70-6U	
	Adapter for large probe holder(for thin and long probes)	MP-PHAD-AR70-1U	
	Adapter for large probe holder	MP-PH-ADAPTER-5BU	
	Endo-cavity Probe holder kit	MP-PH-AVA-11B	MP-FX-AR50-2 is necessary.
Software Option	FAM software	SOP-AR50-5	
	DICOM network communication software	SOP-AR50-10	

DICOM Structured Report software	SOP-AR50-21	SOP-AR50-10 is necessary.
DICOM Query/Retrieve software	SOP-AR50-59	SOP-AR50-10 is necessary.
Flow Profile measurement software	SOP-AR50-7	
Auto IMT measurement software	SOP-AR50-38	
Auto NT measurement software	SOP-AR50-42	
Contrast Harmonic Imaging software	SOP-AR50-44	
CW software	SOP-AR50-55	
Real-time 3D software*	SOP-AR50-4	EU-9203 is necessary.
4Dshading software*	SOP-AR50-51	SOP-AR50-4 is necessary.
Panoramic View software	SOP-AR50-1	
Shockwave device support software	SOP-AR50-153	
McAfee Embedded Control 3 software	SOP-AR50-128	

\*1 PM-AR50-H004 is available for the following video recorders.

HVO-500MD/FHD with SN:114857~

HVO-550MD/FHD with SN:11071~

\*2 One MP-FX-AR50-4 is required when combining these options as follows:

MP-FX-AR50-2 and MP-FX-AR50-3 or MP-FX-ALB-6B

## OPTIONAL PROBES

### Electronic convex sector probes

Application (description)	Model	Frequency Range (MHz)	Scanning angle (degrees)	Optional accessories
Abdominal	C251	5.0 - 1.0	70	CIVCO Bracket(for puncture) 644-082*1 *2/644-083*1 *2
Abdominal	C253	5.0 - 1.0	70	CIVCO Bracket(for puncture) 644-082*1 *2/644-083*1 *2
Abdominal	C253A	5.0 - 1.0	70	CIVCO Bracket(for puncture) 644-082*1 *2/644-083*1 *2
Abdominal	C35	8.0 - 2.0	70	CIVCO Bracket(for puncture) 644-082*1 *2/644-083*1 *2
Abdominal	C421	12.0 - 3.0	85	CIVCO Bracket(for puncture) 644-098*1, *2/644-099*1, *2 Waterproof case WP-001
Abdominal	C22P	6.0 - 1.0	74	Needle Guide Bracket EZU-PA7C2*1 Puncture Adapter MP-2824
Abdominal	C23	6.0 - 1.0	70	CIVCO Bracket(for puncture) 644-096*1, *2/644-095*1, *2 644-094*1 Waterproof case WP-001
Abdominal	C23RV	6.0 - 1.0	70	CIVCO Bracket(for puncture) 644-096*1, *2/644-095*1, *2 644-094*1 Waterproof case WP-001
Abdominal	C25P *3	5.0 - 1.0	70	Biopsy Attachment EZU-PA7B1-1 EZU-PA7B1-2 EZU-PA7B1-3 EZU-PA7B1-4 EZU-PA7B1-C
Trans-vaginal Trans-rectal	C41V	8.0 - 4.0	200	Sterile Puncture Adapter EZU-PA5V
Trans-vaginal Trans-rectal	C41V1	10.0 - 2.0	200	Sterile Puncture Adapter EZU-PA7V
Trans-vaginal Trans-rectal	C41B	10.0 - 2.0	200	Puncture Guide Tube MP-2445 Waterproof case WP-001 Rubber Boot RB-945BP-NS
Trans-rectal	C41RP	9.0 - 2.0	180	Puncture Guide Tube MP-2452 Waterproof case WP-001 Rubber Boot RB-665P-NS
Intra-operative	C22K	6.0 - 1.0	82	Puncture Adapter MP-2781 MP-2781-5 MP-2781-25 CIVCO Bracket(for puncture) 614-108*1 *2/614-109*1 *2

Intra-operative	C42K	10.0 - 4.0	65	Puncture Adapter MP-2458 CIVCO Bracket(for puncture) 644-068*1 *2/644-100*1 *2
Intra-operative	C42T *	10.0 - 3.0	65	Waterproof case WP-001

\* Not available for USA

### Electronic linear probes

Application (description)	Model	Frequency Range (MHz)	Scanning width (mm)	Optional accessories
Small Organ	L34	7.0 - 3.0	38	Coupler Attachment(for puncture) EZU-PA3C1H CIVCO Bracket(for puncture) 644-079*1, *2/644-080*1, *2
Peripheral Vessel	L442	12.0 - 2.0	38	Coupler Attachment(for puncture) EZU-PA7L1
Small Organ	L55	13.0 - 5.0	50	Needle Guide Bracket EZU-PA7L2*1
Small Organ	L64	18.0 - 5.0	38	Needle Guide Bracket EZU-PA7L3*1 Acoustic Coupler SF-001 Acoustic Coupler Attachment EZU-TEATC2
Intra-operative	L43K	12.0 - 2.0	26	Waterproof case WP-001
Intra-operative	L44K	14.0 - 2.0	42	Waterproof case WP-001
Intra-operative	L51K	15.0 - 3.0	13	Waterproof case WP-001
Intra-operative	L53K	15.0 - 3.0	25	Waterproof case WP-001
Intra-operative	L44LA *	13.0 - 2.0	36	—

\* Not available for USA

### Electronic phased array sector probes

Application (description)	Model	Frequency Range (MHz)	Scanning angle (degrees)	Optional accessories
Cardiac Adult	S11	5.0 - 1.0	90	—
Cardiac Pediatric	S31	9.0 - 2.0	90	—
Intra-operative	S31KP *	8.0 - 3.0	90	Puncture Adapter MP-2450 (standard) Waterproof case WP-001

\* Not available for USA

### 4D probes

Application (description)	Model	Frequency Range (MHz)	Scanning angle (degrees)	Optional accessories
Obstetrics and Gynecology	<b>VC35</b>	8.0 - 2.0	72	—
Obstetrics and Gynecology	<b>VC41V</b>	8.0 - 2.0	145	—

## Independent CW Doppler probe\*

\* Option: JB-308 and SOP-AR50-55 are necessary.

Application (description)	Model	Frequency Range (MHz)	Optional accessories
Cardiac Adult	UST-2265-2	2.0	–

## Biplane probe

Application (description)	Model	Frequency Range (MHz)	Scanning angle Scanning width	Optional accessories
<b>Trans-rectal</b>	CC41R	8.0 - 4.0	100 deg./ 120 deg.	Sterile Puncture Adapter EZU-PA5V Puncture Guide Fixture EZU-PA3U Waterproof case WP-001
Trans-rectal	C41L47RP	CV: 8.0 - 4.0 LN: 10.0 - 5.0	CV: 200 deg. LN: 64 mm	Puncture Guide Fixture EZU-PA3U
Trans-rectal	CL4416R1	CV: 10.0 - 2.0 LN: 14.0 - 2.0	CV: 180 deg. LN: 63 mm	Puncture Guide Fixture BA-001 Rubber Boot RB-945BP-NS Waterproof case WP-001

\*1 Needle Guide Replacement Kit 610-608\*2 etc.(CIVCO) is necessary.

\*2 CIVCO products are manufactured and sold by CIVCO Medical. It does not suggest that CIVCO products describe in this specification are commercially available in all countries and regions.

\*3 One of Biopsy Attachment is necessary.

## Probes and available functions

Function  Probe												Option				
	Compound	Trapezoid	B steer	Real-time Biplane	OMNI Mode	TDI mode	Puncture Guide line	Tissue Harmonic Imaging (FmT)	Tissue Harmonic Imaging (WbT)	Needle Emphasis	Brachy Grid Display	CW mode	FAM	Contrast Harmonic Imaging	Panoramic View	Real-time 3D
C251	✓		-	-	-	✓	✓	✓	✓	-	-	-	✓	-	✓	-
C253	✓	-	-	-	-	✓	✓	✓	✓	-	-	-	✓	✓	✓	-
C253A	✓	-	-	-	-	✓	✓	✓	✓	-	-	-	✓	✓	✓	-
C35	✓	-	-	-	-	✓	✓	✓	✓	-	-	-	✓	-	✓	-
C421	-	-	-	-	-	-	✓	✓	✓	-	-	-	✓	✓	✓	-
C22P	-	-	-	-	-	-	✓	✓	✓	-	-	-	✓	-	-	-
C23	-	-	-	-	-	-	✓	-	✓	-	-	-	✓	✓	-	-
C23RV	-	-	-	-	-	-	✓	-	✓	-	-	-	✓	✓	-	-
C25P	-	-	-	-	-	-	✓	✓	✓	-	-	-	✓	-	-	-
C41V	-	-	-	-	-	-	✓	-	✓	-	-	-	✓	-	-	-
C41V1	-	-	-	-	-	-	✓	-	✓	-	-	-	✓	-	-	-
C41B	-	-	-	-	-	-	✓	-	✓	-	-	-	✓	-	-	-
C41RP	-	-	-	-	-	-	✓	-	-	-	-	-	✓	-	-	-

CC41R	-	-	-	✓	-	-	✓	-	-	-	-	-	✓	-	-	-
C22K	-	-	-	-	-	-	✓	-	✓	-	-	-	✓	-	-	-
C42K	-	-	-	-	-	-	✓	-	✓	-	-	-	✓	-	-	-
C42T *	-	-	-	-	-	-	-	-	✓	-	-	-	✓	✓	-	-
L34	✓	✓	✓	-	-	-	✓	-	✓	✓	-	-	✓	-	✓	-
L442	✓	✓	✓	-	-	-	✓	-	✓	✓	-	-	✓	-	✓	-
L55	✓	✓	✓	-	-	-	✓	-	✓	✓	-	-	✓	-	✓	-
L64	✓	✓	✓	-	-	-	✓	-	✓	✓	-	-	✓	-	✓	-
L43K	✓	✓	✓	-	-	-	-	-	✓	-	-	-	✓	✓	-	-
L44K	✓	✓	✓	-	-	-	-	-	✓	-	-	-	✓	✓	-	-
L51K	✓	✓	✓	-	-	-	-	-	✓	-	-	-	✓	-	-	-
L53K	✓	✓	✓	-	-	-	-	-	✓	-	-	-	✓	-	-	-
L44LA *	✓	✓	✓	-	-	-	-	-	✓	-	-	-	✓	✓	-	-
S11	-	-	-	-	-	✓	-	✓	-	-	-	✓	✓	-	-	-
S31	-	-	-	-	-	✓	-	✓	-	-	-	✓	✓	-	-	-
S31KP *	-	-	-	-	-	-	✓	-	-	-	-	-	✓	-	-	-
VC35	✓	-	-	-	-	✓	-	✓	✓	-	-	-	✓	-	-	✓
VC41V	-	-	-	-	✓	-	-	✓	✓	-	-	-	✓	-	-	✓
C41L47RP(CV)	-	-	-	-	-	-	-	-	-	-	✓	-	✓	-	-	-
C41L47RP(LN)	-	✓	✓	-	-	-	✓	-	-	-	-	-	✓	-	-	-
CL4416R1(CV)	-	-	-	-	-	-	-	-	-	-	✓	-	✓	-	-	-
CL4416R1(LN)	✓	✓	✓	-	-	-	✓	-	-	-	-	-	✓	-	-	-
UST-2265-2	-	-	-	-	-	-	-	-	-	-	-	-	✓	-	-	-

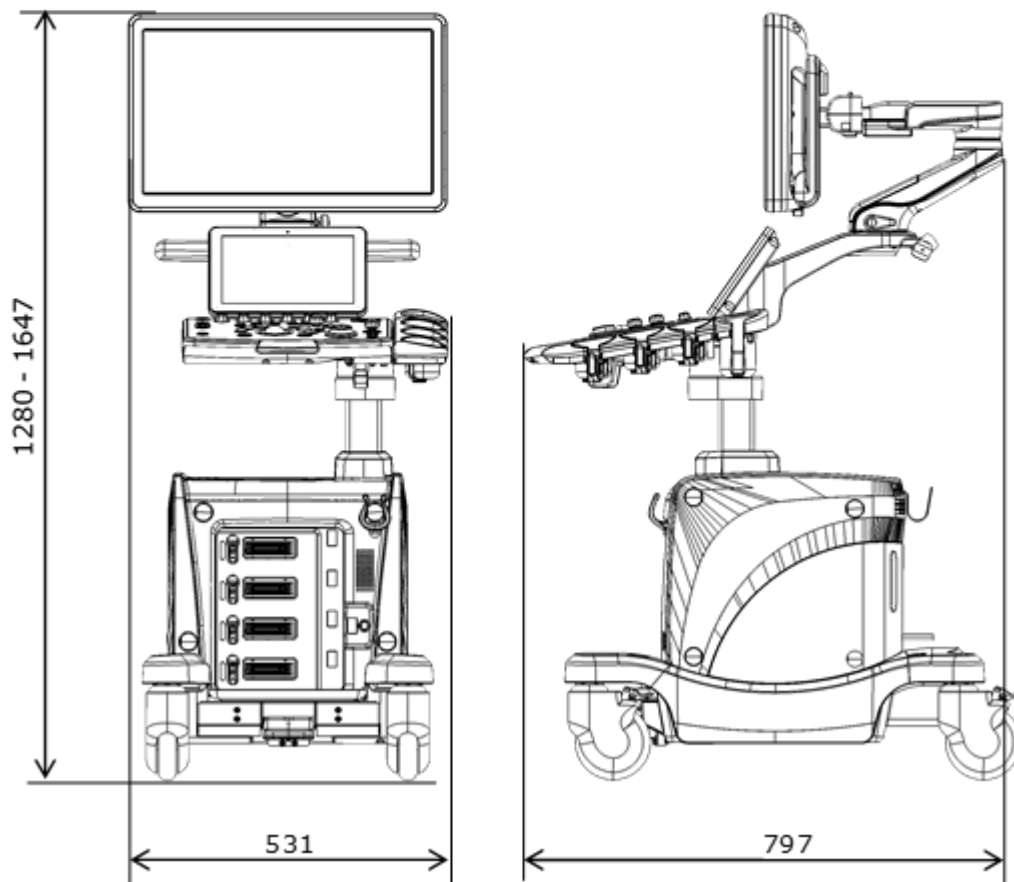
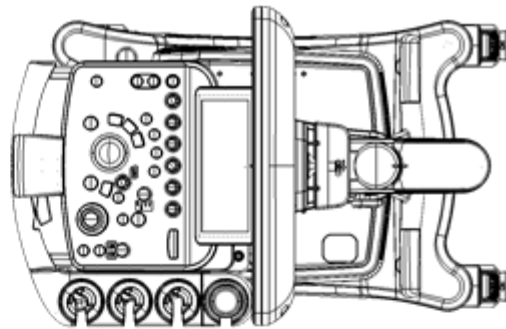
\* Not available for USA

## Appearance and Dimension

ARIETTA 50LE

External appearance: Standard configuration

(Unit:mm)



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- The specifications are subject to change without notice.
  - The standard components and optional items differ depending on the country.  
Not all products are marketed in all countries.  
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