

SPECIFICATIONS
for
Diagnostic Ultrasound System

ARIETTA 50

ARIETTA 50

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 *¹

- 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*²

It is possible to display a fundamental image and Contrast harmonic image side by side.

*¹ Probe dependent.

*² 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: 1/64λ 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*¹
 - The Maximum magnification is 16 times
 - Write zoom: in real-time
 - Read zoom: in frozen
- Depth range selections*¹:
 - 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*¹: Max. 200deg
- Longitudinal and lateral inversion
- Rotation*¹: By 90 degrees (probe dependent)
- Frame rate (Line density): 3 selections
- Gain*²: 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*²: 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*¹:
 - Max. ±30 degrees, 5 degrees step
- Trapezoidal scan*¹ (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*¹

*¹ Probe dependent

*² Gain and Dynamic range can be changed after freezing

M-mode:

- Sweep method: Moving bar
- Sweep speed*¹:
 - 25.0 , 33.3 , 50.0 , 66.7 , 100.0 , 150.0 , 200.0mm/s
- Gain*¹: B-gain ±30 dB
- Dynamic Range*¹: 23 steps (36~96dB)
- AGC—Suppression of brightness saturation: 16 steps (including relief processing)
- Relief: 4 steps
- FTC: On/Off
- FAM*² (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.).

*¹ Gain, Dynamic Range and sweep speed are changeable after freezing

*² 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*¹
 - TD (Tissue Doppler) PW
 - Reference frequencies*² :
 - 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*³: Up to double velocity
 - Steerable CW Doppler
 - Steered linear scanning*²:
 - Max. ± 30 degrees, 5 degrees step
 - Spectrum inversion*³
 - Angle correction*³:
 - 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*³: 16 steps
 - Black-and-white inversion*³
 - Auto-Optimizer
 - (Optimization of velocity range and baseline shift)
 - Audio output:
 - Built-in loudspeaker: Monaural
 - Doppler Sound ON function
- *¹ Option: SOP-AR50-55
- *² Probe dependent
- *³ 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: ± 127 steps
 - Gradation: ± 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*¹
(RGB[RLE/Normal], JPEG, Monochrome2*²)
AVI: Motion JPEG codec
MPEG4: H.264(MPEG4 Part10 AVC)
MOV
Line (DICOM FUJIFILM Healthcare Corporation private specification)
 - Single-frame (still) image
DICOM*¹ (Palette, RGB [RLE/Normal], JPEG, Monochrome2*²)
TIFF, BMP, JPEG
- *¹ Option: SOP-AR50-10
- *² 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*¹: Max. 16 cardiac cycles (R-R)
Pre ECG*¹: 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*¹: Max. 16 cardiac cycles (R-R)
Pre ECG*¹: 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.

*¹ 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*¹ storage data)
- Writing into main unit HDD, USB memory, USB HDD
- Re-storing to media, transfer
- DICOM moving image transfer*¹

*¹ Option SOP-AR50 -10 is necessary

Measurement data

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

DICOM SR*¹ (OB, cardiology, vascular, abdominal and gynecological measurements) output possible

*¹ 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*¹

- 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*² (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*³ :
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)

*¹ Option: SOP-AR50-10 is necessary.

*² Option: SOP-AR50-10 and SOP-AR50-21 are necessary.

*³ 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, Ellipse 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, UaA, 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.

- 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.

Other Functions

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*¹: 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)
*¹ Option: SOP-AR50-51 (Probe dependent)

Panoramic view*

This function moves the probe in a wide range and 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

- 3 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) × 76.7cm(D) × 131.7 – 156.7cm (H)

Weight

64kg ±10% (main unit only)

System Configuration

| Unit | | | Remarks |
|---|--|------------------|--|
| Category | Name | Model name | |
| System | Diagnostic ultrasound system | ARIETTA 50 | Active Probe ports: 3 |
| 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 | VC35 | 8.0 - 2.0 | 72 | — |
| Obstetrics and Gynecology | VC41V | 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 |
|---------------------------|----------|----------------------------------|----------------------------------|---|
| Trans-rectal | 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 | 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 | Option | | | | |
|-------------------|----------|-----------|---------|-------------------|-----------|----------|---------------------|-------------------------------|-------------------------------|-----------------|---------------------|---------|-----|---------------------------|----------------|--------------|
| | | | | | | | | | | | | CW mode | FAM | Contrast Harmonic Imaging | Panoramic View | Real-time 3D |
| C251 | ✓ | | - | - | - | ✓ | ✓ | ✓ | ✓ | - | - | - | ✓ | - | ✓ | - |
| C253 | ✓ | - | - | - | - | ✓ | ✓ | ✓ | ✓ | - | - | - | ✓ | ✓ | ✓ | - |
| C253A | ✓ | - | - | - | - | ✓ | ✓ | ✓ | ✓ | - | - | - | ✓ | ✓ | ✓ | - |
| C35 | ✓ | - | - | - | - | ✓ | ✓ | ✓ | ✓ | - | - | - | ✓ | - | ✓ | - |
| C421 | - | - | - | - | - | - | ✓ | ✓ | ✓ | - | - | - | ✓ | ✓ | ✓ | - |
| C22P | - | - | - | - | - | - | ✓ | ✓ | ✓ | - | - | - | ✓ | - | - | - |
| C23 | - | - | - | - | - | - | ✓ | - | ✓ | - | - | - | ✓ | ✓ | - | - |
| C23RV | - | - | - | - | - | - | ✓ | - | ✓ | - | - | - | ✓ | ✓ | - | - |
| C25P | - | - | - | - | - | - | ✓ | ✓ | ✓ | - | - | - | ✓ | - | - | - |
| C41V | - | - | - | - | - | - | ✓ | - | ✓ | - | - | - | ✓ | - | - | - |
| C41V1 | - | - | - | - | - | - | ✓ | - | ✓ | - | - | - | ✓ | - | - | - |
| C41B | - | - | - | - | - | - | ✓ | - | ✓ | - | - | - | ✓ | - | - | - |
| C41RP | - | - | - | - | - | - | ✓ | - | - | - | - | - | ✓ | - | - | - |

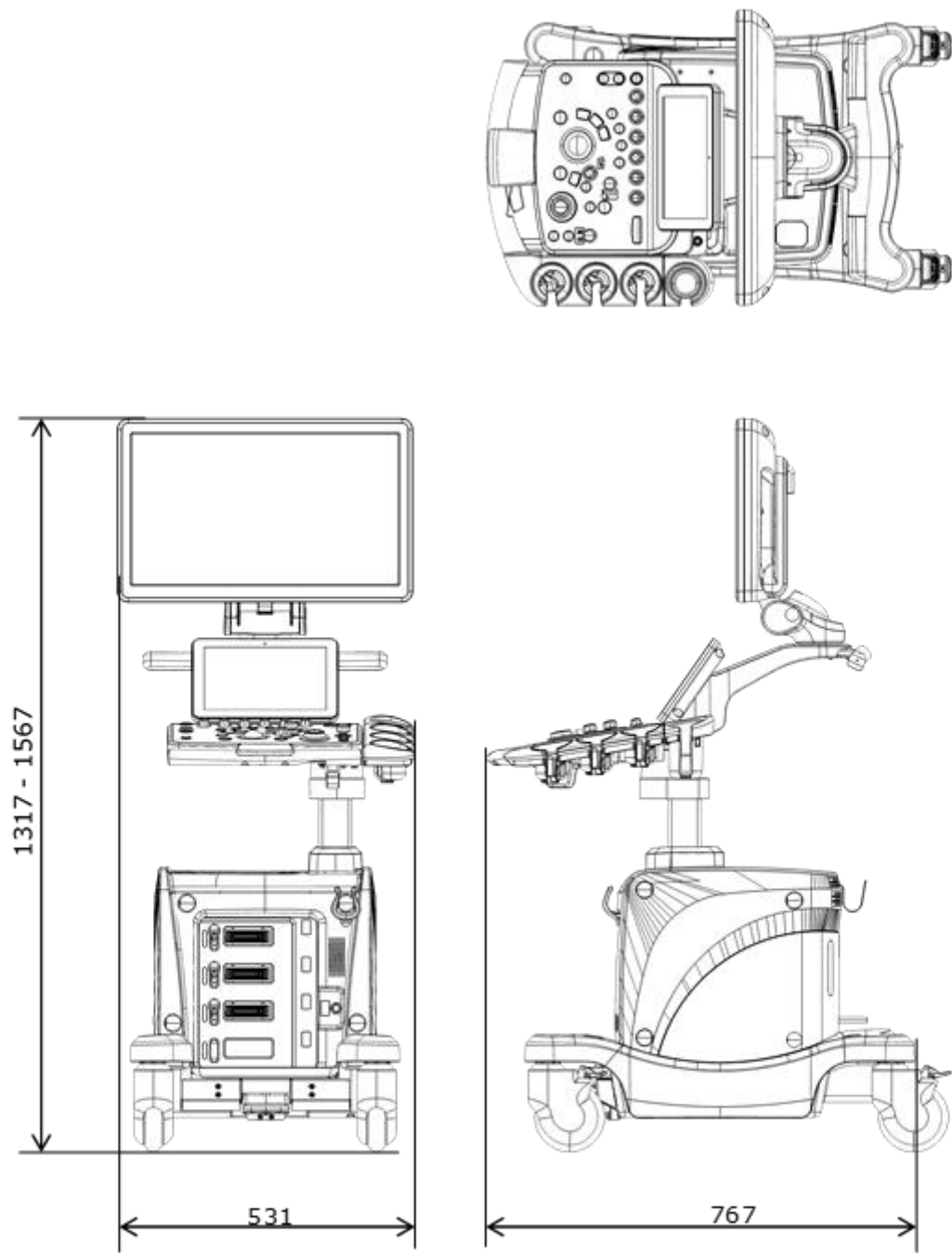
| | | | | | | | | | | | | | | | | |
|--------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CC41R | - | - | - | ✓ | - | - | ✓ | - | - | - | - | - | ✓ | - | - | - |
| C22K | - | - | - | - | - | - | ✓ | - | ✓ | - | - | - | ✓ | - | - | - |
| C42K | - | - | - | - | - | - | ✓ | - | ✓ | - | - | - | ✓ | - | - | - |
| 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 50
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.
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