DIAGNOSTIC ULTRASOUND SYSTEM

Aplio go

Product Data
No. MPDUS0223EAI

INTRODUCTION

Aplio go is a compact and high-performance diagnostic ultrasound system. Aplio go achieves high sensitivity and high quality by using digital technology in the T/R section, which is the core of a diagnostic ultrasound system. Aplio go features advanced algorithms that run on circuits that incorporate circuit technology, semiconductor technology, and surface-mount technology. Aplio go is designed to support a full range of applications and can be used as a general-purpose system or a specialized system, depending on the installed software.

Full-digital ultrasound beam transmission and reception

Aplio go employs full-digital transmission and reception circuits. The high definition ultrasound beams and data processing technology available with full-digital systems allow high sensitivity and image quality to be achieved simultaneously.

Transducers supporting a wide range of frequencies

Echoes over a wide range of frequencies can be obtained using a single transducer, allowing the optimal sensitivity and quality to be achieved for each region examined. This function permits a single transducer to be utilized for a wide range of applications, greatly improving the throughput and price-to-performance ratio.

Intelligent panel and software

The intelligent panel and software facilitate operation and contribute to a high throughput.

Ergonomics

Aplio go employs a noninterlaced, high-definition, eyefriendly monitor with a comfortable viewing size. The ergonomic design of the system supports comfortable and efficient examinations for operators, physicians, and patients.

Compact Design

Aplio go is compact and can be moved easily.
It is suitable for use in rooms where space is limited.
The compactness of the system contributes to its excellent mobility, which allows it to be used as a portable system.

Operability

System operability is optimized for the overall clinical workflow in hospitals.

SYSTEM MATRIX OF CUS-AGG00

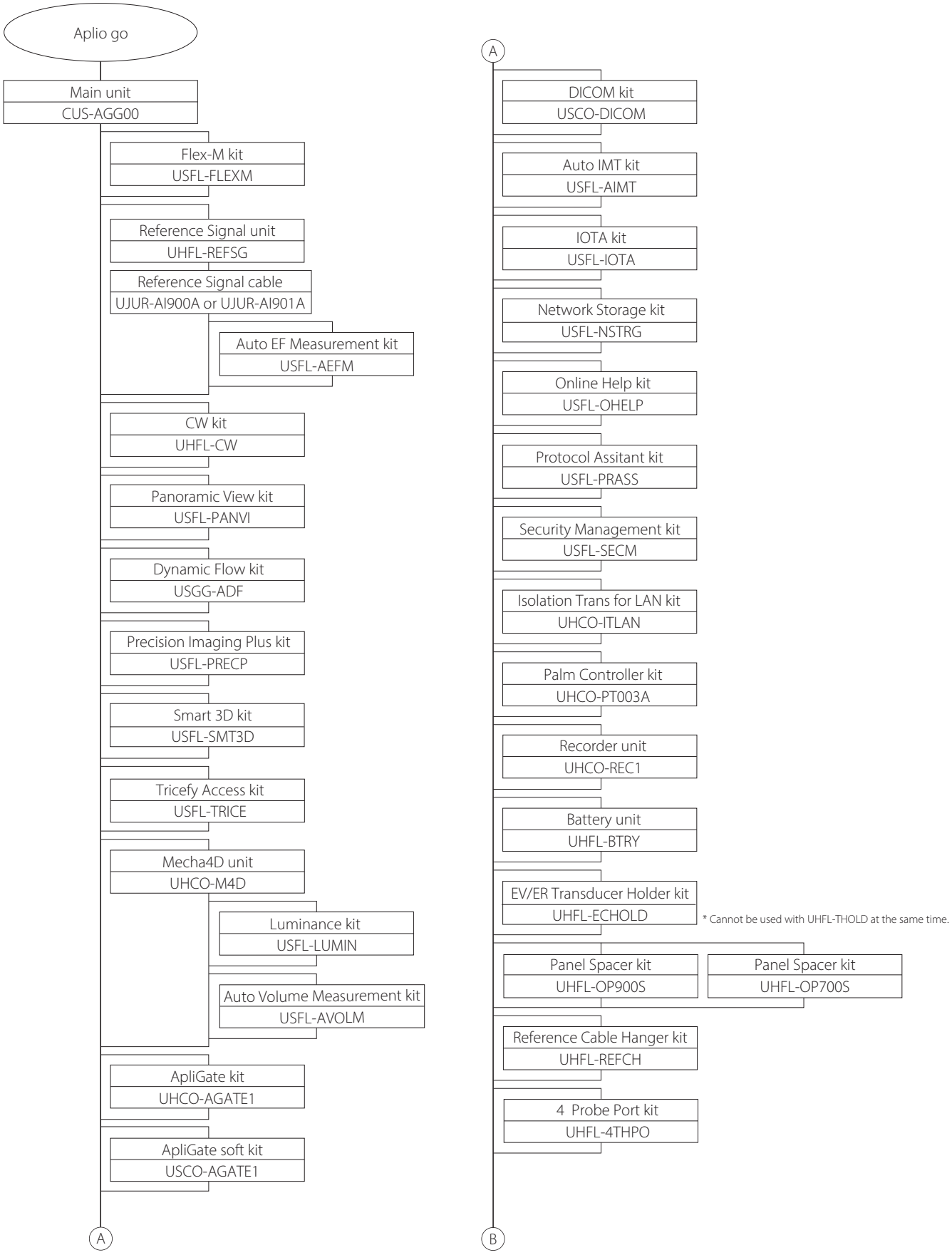
Unit	Model name	Remarks	Applicable Version
Main unit	CUS-AGG00, Aplio go	High-definition 18.5-inch wide screen LCD monitor with LED backlight, ApliPure, ApliPure+, Precision Imaging, CDI (Color Doppler Imaging), Power Doppler (Power Angio), TDI (Tissue Doppler Imaging), TwinView, Quick Scan, D-THI, Keyboard, BEAM.	V1.0 or later

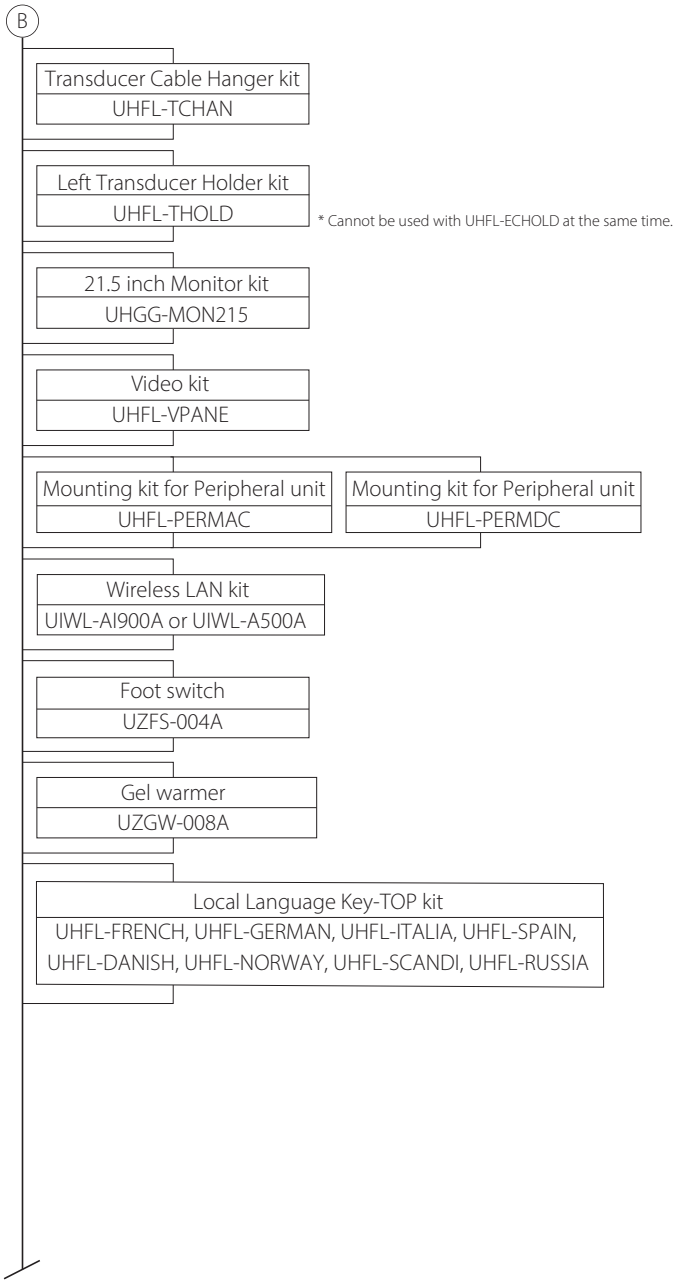
<Options for main unit>

Unit	Model name	Remarks	Applicable Version
Flex-M kit	USFL-FLEXM, USFL-FLEXM/EL	This kit displays an M-mode image for an arbitrarily specified plane on a 2D-mode image.	V1.0 or later
Auto EF Measurement kit	USFL-AEFM, USFL-AEFM/EL	Software to enable Ejection Fraction to be measured automatically (Not available in USA and Canada) (UHFL-REFSG is required)	V1.0 or later
CW kit	UHFL-CW	For cardiovascular examinations, adds Continuous Doppler capability to sector.	V1.0 or later
Reference Signal unit	UHFL-REFSG	Hardware and software kit to display reference signals (ECG waveforms etc.) (UJUR-AI900A or UJUR-AI901A is required.)	V1.0 or later
Reference Signal cable	UJUR-AI900A	For cardiovascular examinations (for regions other than the USA): ECG (Electrocardiogram), Respiration, ECG gating, Heart rate (UHFL-REFSG is required.)	V1.0 or later
	UJUR-AI901A	For cardiovascular examinations (for the USA and Canada): ECG, Respiration, ECG gating, Heart rate. (UHFL-REFSG is required.)	
Panoramic View kit	USFL-PANVI, USFL-PANVI/EL	B/W images can be obtained with a wider field of view by moving the transducer in the lateral direction.	V1.0 or later
Dynamic Flow kit	USGG-ADF, USGG-ADF/EL	Adds ADF (high-resolution flow imaging function) to the system	V1.0 or later
Precision Imaging Plus kit	USFL-PRECP, USFL-PRECP/EL	Reduces artifacts and saturation in high-intensity regions in Precision Imaging mode	V1.0 or later
Smart 3D kit	USFL-SMT3D, USFL-SMT3D/EL	This kit enables free-hand 3D which is available without 4D transducers.	V1.0 or later
Tricefy Access kit	USFL-TRICE, USFL-TRICE/EL	This kit enables to access the Tricefy™ which is a cloud service for clinical images.	V1.0 or later
Luminance kit	USFL-LUMIN, USFL-LUMIN/EL	Image processing technology that makes 3D/4D images of fetuses and anatomical structures appear more realistic. (UHCO-M4D is required.)	V2.0 or later
Auto Volume Measurement kit	USFL-AVOLM, USFL-AVOLM/EL	Used for calculating the volume by extracting the contours for regions with lower brightness in the 3D Volume image acquired in 4D mode. Enables volume measurement, e.g., antral follicle count. (UHCO-M4D is required.)	V2.0 or later
Mecha4D unit	UHCO-M4D	This unit is required for using the 4D transducer.	V2.0 or later
ApliGate kit	UHCO-AGATE1	Video capture unit, HDMI to USB converter (USCO-AGATE1 is required.)	V1.0 or later
ApliGate soft kit	USCO-AGATE1, USCO-AGATE1/EL	ApliGate software (UHCO-AGATE1 is required.)	V1.0 or later
DICOM kit	USCO-DICOM, USCO-DICOM/EL	This kit enables image data transfer with DICOM® supporting Verification, Storage, Print, Storage Commitment, MULTI FRAME (Network Transfer), MWM (Modality Worklist Management), Query/Retrieve, MPPS (Modality Performed Procedure Step), Structured Reporting.	V1.0 or later
Auto IMT kit	USFL-AIMT, USFL-AIMT/EL	The thickness of the intima-media complex of the carotid artery can be measured and displayed. (Not available in USA and Canada)	V1.0 or later
IOTA kit	USFL-IOTA, USFL-IOTA/EL	This kit enables International Ovarian Tumor Analysis. (Only available in CE marking regions and Australia)	V2.0 or later
Network Storage kit	USFL-NSTRG, USFL-NSTRG/EL	This kit enables large capacity RAW data management with NAS (network attached storage) which is commercially available. (NAS itself is not included)	V1.0 or later
Online Help kit	USFL-OHELP, USFL-OHELP/EL	Kit for displaying the operation manual on the viewing monitor	V1.0 or later
Protocol Assistant kit	USFL-PRASS, USFL-PRASS/EL	A sequence of operations is registered, and each operation is executed by single switch operation.	V1.0 or later
Security Management kit	USFL-SECM	This kit provides software for security management of the system.	V1.0 or later
Isolation Trans for LAN kit	UHCO-ITLAN	Isolation trans for the LAN port for remote maintenance. Only for service use.	V1.0 or later

Unit	Model name	Remarks	Applicable Version
Palm Controller kit	UHCO-PT003A	Pointing device, dial on track ball allows easier Gain adjustment without reaching out for another buttons	V1.0 or later
Recorder unit	UHCO-REC1	Video recording device with mounting parts and cables	V1.0 or later
Battery unit	UHFL-BTRY	The system can work around 30 minutes without AC power.	V1.0 or later
EV/ER Transducer Holder kit	UHFL-ECHOLD	EV or ER transducer can be put on the left side of the operation panel. Cannot be used with UHFL-THOLD at the same time.	V1.0 or later
4 Probe Port kit	UHFL-4THPO	Additional ports can be provided by splitting the port-A, for a total of 4 probe ports available. PSC-25LT or PVC-375LT can be connected for the additional ports.	V2.0 or later
Panel Spacer kit	UHFL-OP900S	Support for extending the operation panel up to 900 mm	V1.0 or later
	UHFL-OP700S	Support for extending the operation panel up to 730 mm	V1.0 or later
Reference Cable Hanger kit	UHFL-REFCH	Reference cable can be hooked under the operation panel	V1.0 or later
Transducer Cable Hanger kit	UHFL-TCHAN	Expandable arm for hang transducer cables	V1.0 or later
Left Transducer Holder kit	UHFL-THOLD	Additional transducer on the left side of the operation panel. Cannot be used with UHFL-ECHOLD at the same time.	V1.0 or later
21.5 inch Monitor kit	UHGG-MON215	21.5-inch wide LCD Monitor to replace 18.5-inch LCD Monitor	V2.0 or later
Video kit	UHFL-VPANE	Add some video I/O ports (Composite video, Y/C video) on the rear panel	V1.0 or later
Wireless LAN kit	UIWL-AI900A	This kit enables connection to the DICOM network via wireless LAN. (For Singapore, Russia, Australia, and Turkey.)	V1.0 or later
	UIWL-A500A	This kit used to establish connection to the DICOM network via wireless LAN. Complied with the Radio Law of Japan and applicable laws and regulations of USA, Canada, EU member states, Iceland, Norway, Liechtenstein, and Switzerland.	
Foot switch	UZFS-004A	Switch used for freezing, printing, and some other operations by foot	V1.0 or later
Gel warmer	UZGW-008A	This unit warms the ultrasound gel to a suitable temperature.	V1.0 or later
Mounting kit for Peripheral unit	UHFL-PERMAC	Mounting kit for AC powered B/W printer	V1.0 or later
	UHFL-PERMDC	Mounting kit for DC powered B/W printer	
Local Language Key-TOP kit	UHFL-FRENCH	This kit is intended for changing the key tops of the full keyboard to support specific languages.	V1.0 or later
	UHFL-GERMAN		
	UHFL-ITALIA		
	UHFL-SPAIN		
	UHFL-DANISH		
	UHFL-NORWAY		
	UHFL-SCANDI		
	UHFL-RUSSIA		

BLOCK CHART SYSTEMS




B
Transducer Cable Hanger kit
UHFL-TCHAN
Left Transducer Holder kit
UHFL-THOLD
* Cannot be used with UHFL-ECHOLD at the same time.
21.5 inch Monitor kit
UHGG-MON215
Video kit
UHFL-VPANE
Mounting kit for Peripheral unit
UHFL-PERMAC
Mounting kit for Peripheral unit
UHFL-PERMDC
Wireless LAN kit
UIWL-AI900A or UIWL-A500A
Foot switch
UZFS-004A
Gel warmer
UZGW-008A
Local Language Key-TOP kit
UHFL-FRENCH, UHFL-GERMAN, UHFL-ITALIA, UHFL-SPAIN,
UHFL-DANISH, UHFL-NORWAY, UHFL-SCANDI, UHFL-RUSSIA

TRANSDUCER OPTIONS/OPERATION MODES

						B/W				Color				Pw/Cw			Application				3D/4D				Support	OTHER
Model name	Number of elements	Range	Nominal frequency (MHz)	Display range of frequency (MHz)	Applicable Version	2D	M	Precision Imaging	ApliPure	CDI	Power	ADF*2	TDI	PWD	TDI-PW	CWD*2	Auto IMT*2	Auto EF Measurement*2	IOTA*1, 2	Auto Volume Measurement*1, 2	Smart 3D*2	4D*1, 2	STIC	Luminance*1, 2	BEAM	Panoramic View*2
PVC-375LT	128	c6C1	3.5	1.8~6.0	V1.0 or later	✓	✓	✓	✓	✓	✓	✓	–	✓	–	–	–	–	✓	–	✓	–	–	–	–	✓
PVU-382BT*1	128	6MC1	3.5	1.8~6.0	V2.0 or later	✓	✓	✓	✓	✓	✓	✓	–	✓	–	–	–	–	✓	–	✓	–	–	–	–	✓
PVU-712BTE*1	–	11MC3	7.0	3.3~11.0	V2.0 or later	✓	✓	✓	✓	✓	✓	✓	–	✓	–	–	–	–	✓	–	✓	–	–	–	–	✓
PLC-704LT	128	c11L4	7.0	3.0~11.0	V1.0 or later	✓	✓	✓	✓	✓	✓	✓	–	✓	–	–	✓	–	✓	–	✓	–	–	–	✓	✓
PLC-1004LT	128	c14L5	10.0	4.4~14.0	V1.0 or later	✓	✓	✓	✓	✓	✓	✓	–	✓	–	–	✓	–	✓	–	✓	–	–	–	✓	✓
PLU-1204BT*1	192	18L7	12.0	4.4~18.0	V2.0 or later	✓	✓	✓	✓	✓	✓	✓	–	✓	–	–	✓	–	✓	–	✓	–	–	–	✓	✓
PSC-25LT	64	c5S1	2.5	1.8~4.2	V1.0 or later	✓	✓	✓	–	✓	✓	✓	✓	✓	✓	✓	–	✓	✓	–	–	–	–	–	–	✓
PSU-50BT*1	96	6S3	5.0	2.8~6.2	V2.0 or later	✓	✓	✓	–	✓	✓	✓	✓	✓	✓	✓	–	✓	✓	–	–	–	–	–	–	✓
PVC-781VLT	128	c11C3	7.0	3.6~11.0	V1.0 or later	✓	✓	✓	✓	✓	✓	✓	–	✓	–	–	–	–	✓	–	✓	–	–	–	–	✓
PVU-681MVL*1	192	11CV3	6.0	3.6~11.0	V2.0 or later	✓	✓	✓	✓	✓	✓	✓	–	✓	–	–	–	–	✓	✓	–	✓	–	✓	–	✓
PVU-674MVS*1	–	9CV2	6.0	1.8~7.5	V2.0 or later	✓	✓	✓	✓	✓	✓	✓	–	✓	–	–	–	–	✓	✓	–	✓	✓	✓	–	✓

*1: Available from V2.0
*2: Optional kit is required.

SPECIFICATIONS

System

- Scan methods
  - Linear scan
    (Some transducers can perform oblique scanning.)
  - Sector scan
  - Convex scan
  - Trapezoid scan
- Monitor
  - High-definition 18.5-inch widescreen LCD monitor
    (with LED backlight)
    - Resolution: 1920 × 1080 (Full HD)
    - Viewing angle: 178°
    - Contrast ratio: typ. 1000: 1
    - Response time (ms): typ. 10
    - Luminance (cd/m^2): More than 200
    - Conformance standard: DICOM Part 14
  - High-definition 21.5-inch widescreen LCD monitor
    (with LED backlight)
    (UHGG-MON215 is required.)
    - Resolution: 1920 × 1080 (Full HD)
    - Viewing angle: 178°
    - Contrast ratio: typ. 1200: 1
    - Response time (ms): typ. 22
    - Luminance (cd/m^2): More than 200
    - Conformance standard: DICOM Part 14
- Presets
  - System preset: 1 type
  - Application preset: 20 types

Compatible Peripheral Devices

- Black-and-white digital printer
  - UP-D711MD: DC (12 V to 24 V, SONY)
  - UP-D898MD: AC (100 V to 240 V, SONY)
  - UP-D898DC: DC (SONY)
- Video recorder
  - UHCO-REC1: DC
- USB flash drive
- Barcode reader

2D mode (B mode)

- Viewing Depth
  The viewing depth depends on the transducer used.
  - Convex
    - Maximum depth: 40 cm
  - Linear
    - Maximum depth: 14 cm
  - Sector
    - Maximum depth: 28 cm
- Line density
  - The line density differs depending on the transducer used.
  - The line density can be changed.
- Ultrasound Frame Rate
  - The ultrasound frame rate can be adjusted by using the following in combination.
    - Line density
    - Parallel signal processing
- Scan Angle and Scan Width
  - Adjustment of the field width (scan width, scan angle) is possible.
  - Adjustment of beam steering (scanning position) is possible.
  - Adjustment of linear beam steering is possible.
- PAN/EXPAND
  Real-time PAN/EXPAND
  - Scale enlargement/reduction using the encoder is possible.
  - Movement to the desired section using the trackball is possible.
  - The transmission focus is optimized in steps above.
  - The specified range on an image can be magnified. (Spot Zoom)
- Transmission Focus
  - Transmission conditions: A maximum of 8 steps
- Transmission Frequency
  - Multi frequency: 3 frequencies can be selected from 13 types.
- Reception Conditions
  - Continuous focus
- GAIN
  - The display brightness for 2D can be changed. (Also available when the image is frozen.)
  - The display brightness for 2D and M can be changed simultaneously.
- STC
  - Hardware STC
    - 8-step slide controls (common for 2D and M)
- Acoustic Output
  - Adjustment is possible to 100%.
- Adjusting the 2D Image Quality
  - Dynamic range (Also available when the image is frozen.)
  - Time-smoothing (persistence)
  - Gamma (Also available when the image is frozen.)
  - Auto gain control
  - Frame rate
  - ApliPure
  - Precision
- 2D Map
  - The grayscale pattern can be changed and virtual color setting for the 2D image is possible.
  - Settings can also be changed when the image is frozen.
- 2D Quick Scan
  - The gain and STC can be adjusted automatically.
- THI (Tissue Harmonic Imaging)
  - THI signal processing methods
    - Pulse subtraction method
    - Filtering method
    - Differential method
- Display Orientation
  - Top/bottom reversal is possible.
  - Left/right reversal is possible.
- Image Size
  - The displayed image size can be switched between small and large.

- ApliPure
  - ApliPure
    This function reduces ultrasound wave interference within tissues, which appear as speckle patterns or speckle noise on 2D images.
  - ApliPure+
    This function can display the boundaries between tissues more clearly and reduce speckle noise and acoustic shadows.
- Precision Imaging
  - The image quality level for the Precision Imaging function can be set (standard configuration).
- Precision+ (USFL-PRECP is required.)
  - Saturation in high-intensity regions of tissue structures is reduced, allowing the tissue structures to be displayed in a more natural manner.
- Transducer Element Check
  - Transducer element check result can be displayed. (Only available in the USA.)
- BEAM (Biopsy Enhancement Auto Mode)
  - Display of the needle can be enhanced in the image.
  - The enhancement level can be adjusted.

M mode

- M Transmission Frequency
  - Multi frequency: 5 types (at maximum)
- M Sweep Speed
  - The Sweep Speed can be changed in M mode.
- M Gain
  - M gain can be corrected for 2D gain.
- M Image Processing Parameters
  - M dynamic range
  - M auto gain control
  - M gamma
    (Can be changed even after the image has been frozen.)
- M Map
  - M image virtual color setting is possible. The setting can be changed even after the image has been frozen.
- THI
  - 2D mode and THI mode are linked, and M images can be displayed in THI mode.
    - Pulse subtraction method
    - Filtering method
    - Differential method
- M Mark
  - The M cursor can be displayed on 2D or C images.
  - The M cursor displayed position can be adjusted.
- Flex-M (USFL-FLEXM is required.)
  - Any desired plane can be set on the 2D-mode image and the M-mode image for the set plane can be reconstructed.

Doppler (Spectrum Doppler)

- Doppler Mode
  - PWD (pulsed-wave Doppler)
  - HPRF PWD (can be switched to HPRF mode)
  - CWD (continuous-wave Doppler)
    (UHFL-CW is required.)
- Doppler PRF (Pulse Repetition Frequency)
  - PWD: 0.3 kHz to 52.1 kHz
  - CWD: 1.4 kHz to 52.1 kHz
- Doppler Scan
  - 2D/D simultaneous scan
  - D only scan
- Doppler Sampling Volume
  - The Doppler range gate width can be changed. (Minimum 1.0 mm)
- Doppler Sampling Shift
  - 0 cm to the maximum depth
- Doppler Cursor Mode
  - Operation for the 2D live image is possible with the Doppler sampling volume displayed in it.
- Doppler Filter
  - The Doppler filter cutoff can be changed.
- Doppler Gain
  - The display brightness for Doppler can be changed.
- Doppler Quick Scan
  - The Doppler scale and baseline shift can be adjusted automatically.
- Doppler Frequency Analysis and Image Processing
  - Method: FFT
  - No. of data items: 255 (maximum)
- Indication of Doppler Spectrum Direction
  - Reverse display of the velocity spectrum is possible.
- Doppler Baseline Shift (Zero Shift)
  - The velocity baseline of Doppler images can be shifted.
  - The baseline shift setting can also be adjusted when images that were frozen are displayed.
- Doppler Audio
  - Stereo output (blood flow toward and away from the transducer)
- Doppler Map
  - The brightness conversion table and the virtual color for Doppler images can be set.
- Display of Doppler Scale
  - 2 types (velocity, Doppler shift frequency)
- Doppler Focus
  - Automatically follows the sample position.
- Doppler Angle Mark
  - This mark is displayed for measuring the angle between the direction of the velocity and the direction of the ultrasound beam.
- Doppler Oblique Scan (PWD Steering)
  - Oblique scans are possible using a specific linear transducer.
  - Auto Invert function
- Doppler Multifrequency
  - The PWD transmission frequency can be changed.
- Doppler Sweep Speed
  - The Sweep Speed can be changed in Doppler mode.
- Doppler Display Dynamic Range
  - The display dynamic range of the Doppler image can be changed.
- Doppler Auto Trace
  (measurement performed after freezing the image)

– Measurement of peak velocity and mean velocity is possible.
– The following Doppler waveform trace is possible.
· Trace style: Waveform Peak, Mean, Peak + Mean
· Trace area specified: Forward, Reverse, Full, Auto
· Measurement item: Max, Min, Mean, PI, RI, etc.

Color Doppler

Color Doppler 2D Mode

- Display mode
  – CDI mode
    · Flow velocity
    · Flow velocity/variance
    · Power
  – Power Angio mode
    · Direction display
  – TDI mode
  – TwinView
    · Simultaneous dual-screen display with 2D mode is available.
  – ADF (Dynamic Flow) mode (USGG-ADF is required.)
    · Direction display
- C Map
  – C map can be selected for each color Doppler mode.
  – Changes can also be made when the image is frozen.
- C Scale (Switching the Velocity Range)
  – The velocity range can be changed.
- C Time-Smoothing (Persistence)
  – The result of temporal correlation processing between the previous image and current image can be displayed.
- C Baseline (Zero Shift)
  – The velocity baseline of color Doppler images can be shifted.
  – The baseline shift setting can also be adjusted when images that were frozen or images in the image memory are displayed.
- Reverse C Display
  – Coloring is reversed.
  – Changes can also be made when the image is frozen.
- Black and White/Color Balance
  – By comparing the color Doppler images and B/W images, color weighting to B/W can be set.
  – Changes can also be made when the image is frozen.
- C Gain
  – The display brightness of color Doppler images can be changed.
- C Multifrequency
  – The transmission frequency for color Doppler image acquisition can be changed.
- C Line Density
  – The color Doppler image line density can be changed.
- C ROI (region of interest)
  – Position, size, and steering adjustment is possible for color Doppler ROIs.
- C Transmit Focus
  – Automatically follows the color Doppler ROI position.
- C Filter
  – Color Doppler low-cut filter can be changed.
- Variance Curve
  – The display of the color variance component can be adjusted.
- Color Quick Scan
  The following operations are possible when a linear transducer is used.
  – The position of a color ROI and angle of color steering are adjusted automatically.
  – When PWD sampling volume is displayed, the Doppler gate position, Doppler steering angle, and Doppler angle are adjusted automatically.

Color Doppler M mode

- Display mode
  – M-mode CDI
    · Velocity display
    · Velocity/variance display
    · Power display
  – M-TDI mode
- M Color Doppler Map (CDI MAP)
  – Color Doppler map can be selected for each mode.
- M Color Doppler Velocity Range Selection (C Scale)
  – The velocity range can be selected.
- M Color Doppler Baseline (C Baseline)
  – The zero-velocity line on the M Color Doppler image can be shifted.
  – The baseline shift setting can also be adjusted when images that were frozen are displayed or when the image in the image memory is played back.
- Color Reverse Display
  – The colors can be reversed.
  – Changes can also be made when the image is frozen.
- Black and White/Color Balance
  – Color weighting for B/W images can be set by comparing the M Color Doppler images and B/W images.
  – Changes can also be made when the image is frozen.
- Color Gain
  – The display brightness of the M Color Doppler image can be changed.
- M Color Doppler Multi-Frequency
  – Doppler transmission frequency can be selected in M Color Doppler image acquisition.
- M Color Doppler Filter
  – M Color Doppler low-cut filter can be changed.

Reference Signals

(UHFL-REFSG and UJUR-AI900A, or UHFL-REFSG and UJUR-AI901A are required.)

- Type
  – ECG
    · Lead I is the standard connection.
    · External input is possible.
    · DC IN
    The connected device must comply with IEC 60601-1.
    · Top/bottom inversion is possible.

  · Lead switching
  · Pacemaker
  · INST
- Heart Rate
  – The heart mark blinks in synchronization with the heart beat detected by the ECG.
  – The heart rate is displayed.
- Reference Signal Sweep Speed
  – This changes the reference signal sweep speed.

Other Diagnostic Functions

- Panoramic View (USFL-PANVI is required.)
  – A continuous image can be acquired by moving the transducer horizontally on the body surface.
  – Measurement using Panoramic View can be performed.
- Histogram
  The number of pixels, average gradation, standard deviation, and brightness distribution inside the ROI in the image acquired with 2D mode are displayed.
- Protocol Assistant (USFL-PRASS is required.)
  A series of operations (a protocol) that has been created for the intended examination can be executed automatically. Protocols can be created and edited.
- Smart 3D (USFL-SMT3D is required.)
  3D image can be generated from the 2D image and any input volume shape.
  – The following functions can be used.
    · Volume Color
    · Multi View
    · Volume View
    · Magic Cut
    · OmniView
- Mechanical 4D (UHCO-M4D is required.)
  Three-dimensional image data (volume data) can be generated and displayed by using image data acquired for three-dimensional image reconstruction.
  – The following functions can be used.
    · Volume Color
    · Multi View
    · Magic Cut
    · VolPure
    · Volume View
    · STIC/STIC Color
    · 4D Biopsy
    · Luminance (USFL-LUMIN is required.)
    · OmniView
    · Auto flexible cut line
  – The following measurements can be performed.
    · MPR
    · Multi Auto Volume measurement (USFL-AVOLM is required.)

Display-Related Features

- Display Method
  – Images on the main unit: 60 Hz non-interlaced display
- Monitor Display/Character Display
  – ID area
    · Patient ID
    · Patient name
    · Hospital name
    · Date: Selected from among the formats shown below.
      YYYY/MM/DD MM/DD/YYYY DD/MM/YYYY
      YYYY: Western calendar year
      MM: Month
      DD: Day
    · Time: Selected from among the formats shown below.
      hh:mm:ss: AM (PM)
      hh:mm:ss: 24-hour representation
      hh: Hour
      mm: Minute
      ss: Second
    · Recorder mark
    · Age
    · Sex
    · Heart rate display (heart-shaped mark/heart rate)
    · Name of the Imaging Preset
    · Name of the operator
    · Gestational age
  – Acoustic power display area
    · Acoustic power value (%)
    · TI value
  – Auto data
    · Frame rate
    · Acoustic power index = MI indication
    · Transducer frequency
    · Depth
    · Dynamic range
    · GAIN
    · CDI filter
    · PRF
    · Doppler filter
    · Doppler angle
    · Doppler gate size
  – Thumbnail area
    · Image data acquired during the current examination is displayed.
    · Information from a previous examination of the patient currently being examined is displayed.
  – Information message display area
    · An operation guide and other messages are displayed.
  – Status area
    The following system statuses can be displayed.
    · Battery capacity
    · Network use status
    · NAS connection
    · Used space on SSD
    · Saving dynamic/still image
    · DICOM printer status/peripheral device status
    · USB flash drive status display

  – Multifunction display area
    · Assignment statuses for trackball and surrounding switches and dials
- Annotation
  – Manual input using the keyboard is possible.
  – Auto annotation (previously specified text) is possible.
- Pictograms
  – Body icons and transducer mark
- Biopsy Guide Mark
  – Biopsy guide mark display is possible.
- Language
  The following languages are supported for the display of some screens and keyboard entry.

Supported languages	Screen display	Input by software keyboard	Input by hardware keyboard*
English	✓	✓	✓
English (UK)	✓	✓	✓
German	✓	✓	✓
French	✓	✓	✓
Italian	✓	✓	✓
Spanish	✓	✓	✓
Danish	✓	✓	✓
Dutch	✓	–	–
Norwegian	✓	✓	✓
Swedish	✓	✓	✓
Finnish	✓	✓	✓
Portuguese	✓	–	–
Icelandic	✓	–	–
Russian	✓	✓	✓
Japanese	✓	✓	✓
Chinese	✓	–	–

*: Optional

Measurement Functions

Basic Measurement Functions

- 2D-mode measurements
  – Distance
    · Distance
    · Trace Length
    · Mean-IMT
  – Area
  – Angle
    · Angle
    · Joint
  – Volume
  – Stenosis ratio
    · % Stenosis (Distance)
    · % Stenosis (Area)
- 4D-mode measurements (UHCO-M4D is required.)
  – Distance
    · Distance
    · Trace Length
  – Area
  – Angle
    · Angle
  – Volume
    · Volume
    · Auto Volume Measurement (USFL-AVOLM is required.)
- M-mode measurements
  – Slope
  – Distance
  – Time
  – Heart rate
- PW/CW Doppler measurements
  (UHFL-CW is required for CW mode.)
  – Velocity
  – Acceleration
  – Time
  – Heart rate
  – PI
  – RI
  – S/D
  – Flow volume
  – Doppler trace

Application Measurement Functions

- Cardiac measurements
  – 2D-mode measurements
    · LV (left ventricular function) measurements
    · LA (left atrial volume) measurements
    · AV (aortic valve) measurements
    · MV (mitral valve) measurements
    · PV (pulmonary valve) measurements
    · LV MASS measurements
    · Auto EF measurements (USFL-AEFM is required.)
  – M-mode measurements
    · LV measurements
    · AV measurements
    · MV measurements
  – Doppler measurements
    · Trans-Aortic valve flow measurement
    · Trans-Mitral valve flow measurement
    · Trans-Pulmonary vein flow measurement
    · Trans-Tricuspid valve flow measurement
    · Trans-Pulmonary valve flow measurement
    · Blood flow waveform auto measurements
    · Coronary measurements
    · PISA measurements
  – OB (obstetrics) measurements
    · The data for determining fetal growth based on the measured fetal size is displayed.
    · The list of measured data or a graph of the measured value development (fetal growth conditions) is displayed.
    · Week function (gestational age)
    · Measurement data saving is possible.

  - Anatomy
  - User chart registration
- Vascular measurement
  - CCA (Common Carotid Artery) measurement
  - ECA (External Carotid Artery) measurement
  - ICA (Internal Carotid Artery) measurement
  - Vert A (Vertebral Artery) measurement
  - Subclav A (Subclavian Artery) measurement
  - Auto-IMT measurement (USFL-AIMT is required.)
  - IMT-C10 measurement
- User-registered measurements registration function.
  - Measurement items and calculation items based on the measured values
  - Layout setting on the Worksheet screen
  - Switch layout setting of the touch panel
  - Measurement package DICOM code registration
- Measurement of Stored Image Data
  The following measurements can be performed for the DICOM data (DICOM, with raw data, and without raw data) stored in SSD
  - Basic measurement
  - Application measurement

Report Function

- Worksheet functions
  - The measurement and calculation items can be displayed for each application measurement.
  - Data editing is possible (except for some items).
  - Display of the following values can be set to ON or OFF.
    Mean value, latest value, maximum value, minimum value
  - Trend graphs can be displayed (OB measurement worksheet).
- Report function (On Board Report)
  - Reports can be created on the system.
  - The created reports can be printed.
  - The created reports can be output as PDF files.
  - The report template can be edited.
  - Comment entry is possible.

Cine Memory

- Memory Capacity: 960 MB
- Record/Playback Mode
  - Loop playback is possible.
  - Frame advance playback is possible.
  - Cine playback is possible in Doppler or M mode.
  - Live images can be recorded (Clips).

Recording Function

- Printers (option)
  Black-and-white printer: USB connection
- Recording Device (option)
  Recorder unit: UHCO-REC1
- Electronic Filing
  - USB flash drive
  - Network: DICOM connection
  - NAS (USFL-NSTRG is required.)
    Only NAS that satisfies the following specifications can be used
    - Protocol: SMB2.0 or later
    - LAN port: 1000BASE-T or higher
    - Capacity: 12 TB or less

Security Function

- Security Control
  This system supports a function for recording the user's authorization and access log in order to protect personal information.
  - User authentication
  - Audit Log
  - De-identification (live image/stored image)
- Antivirus
  Whitelist-type software is used for protection against computer viruses.
  - Protection against computer viruses using Windows® functions (standard configuration).
    Security is established using the whitelist-type software that is included in Windows® functions.
  - USFL-SECM (security management kit) (option)
    MEC (McAfee® Embedded Control) is used as the security management software. MEC is security software that employs whitelist protection. This software prevents execution of malware by allowing only executable files that have been registered in a whitelist to start.
- Disk Encryption Function
  The following disk can be encrypted to prevent leakage of personal information.
  - USB flash drive

Maintenance Function

- Remote Maintenance
  - This function makes it possible to remotely control the above systems for maintenance.
- Operation Status Report
  - The system operation status can be checked by a service engineer.
- Transducer Sensitivity Measurement Tool
  - Performance of transducers can be checked by service engineers using the transducer sensitivity measurement tool.

Systematization

- Network
  - Ethernet: 10BASE-T/100BASE-TX/Gigabit Ethernet
  - Network client system
- Wireless Network
  (UIWL-A500A or UIWL-AI900A is required.)
  Wireless network connection is possible with this function.
  - Standard
    - IEEE 802.11 b/g/n 2.4 GHz (UIWL-A500A, UIWL-AI900A)
    - IEEE 802.11 a/n/ac 5 GHz (UIWL-A500A)

  – Security
    · WPA2-PSK [AES]
    · WPA2-Enterprise PEP-MsChap v2 [AES] (conformed)
      For WPA2-Enterprise, authentication is performed based on communication with the authenticated server. Depending on the authenticated server used in combination, authentication may fail. Perform a connection test in advance.
  – Frequency
    · 2.4 GHz to 2.5 GHz CCK/OFDM modulation (UIWL-A500A, UIWL-AI900A)
    · 5 GHz OFDM, 802.11 n MCS0-7, 802.11 ac MCS0-9 code system (UIWL-A500A)
- DICOM Function (USCO-DICOM is required.)
  – DICOM data type
    · US Image (still image)
    · US Multi Frame (dynamic image)
    · SC Image (storage in a separate file)
    · Enhanced US Volume (Volume data image)
    · Structured Report (measurement result information)
  – Server connection
    · Storage (Server/Media)
    · MWM
    · MPPS
  – Storage function
    · Storage Commitment
    · Query/retrieve
  – Standard conformity check function
    · Verification (export/import)
  – Print function
    · DICOM Print
- Image Format to Export
  – Still: BMP/JPEG
  – Movie: WMV9/H.264

Signal I/O

- Transducer Connectors
  – Transducer connectors: 3
- Recording Device Input/Output Signals
  – HDMI
  – Audio output: L, R
- External Video Output Signals
  – Composite video (UHFL-VPANE is required.)
  – S-Video (UHFL-VPANE is required.)
  – HDMI
- Internal USB
  – 2.0 for printer: 2 ch
  – 2.0 for panel: 1 ch
- External USB
  6 USB ports (three on the rear of the main unit, two on the front of the main unit (support of USB 3.0), and one on the side of the operating panel)
- Ethernet
  – 10BASE-T/100BASE-TX/ Gigabit Ethernet: 1 ch (for users)
    1 ch (for service engineers)
    (UHCO is required.)
- SATA
  – For connecting the built-in SSD: supporting 1 SSD
- Footswitch (UZFS-004A is required.)
  – 3-switch footswitch
- Battery Mode (UHFL-BTRY is required.)
  The system can be operated in battery mode if the power supply from the outlet is interrupted due to power failure etc.

Operating Conditions

Power Supply Requirements

- Line voltage
  – Japan: 100 VAC ±10%
  – USA, Canada: 120 VAC ±10%
  – Europe: 220 to 240 VAC ±10%
  – Other 1: 110 to 120 VAC ±10%
  – Other 2: 220 to 240 VAC ±10%
- Line frequency 50/60 Hz ±1 Hz

Power capacity

  – Japan: 700 VA
  – USA, Canada: 700 VA
  – Europe: 700 VA
  – Other 1: 700 VA
  – Other 2: 700 VA

Environmental Conditions

- Operating conditions
  – Ambient temperature: 10°C to 35°C (20°C to 35°C when a 4D transducer is used)
  – Relative humidity: 35% to 80% (no condensation)
  – Atmospheric pressure: 700 hPa to 1060 hPa
- Storage and transportation conditions
  – Ambient temperature: -10°C to 50°C
  – Relative humidity: 30% to 90% (no condensation)
  – Atmospheric pressure: 700 hPa to 1060 hPa

Safety Classification

- According to the type of protection against electric shock
  – CLASS I or Internally Powered Equipment
- According to the degree of protection against electric shock
  – EQUIPMENT WITH TYPE-BF APPLIED PARTS (Transducer, ECG electrodes)
- According to the degree of protection against harmful ingress of water
  – IPX0 (enclosed EQUIPMENT without protection against ingress of water)
  – However, the footswitch is IPX8 and the transducer is IPX7 (excluding the connector part)
- According to the degree of safety of application in the presence of a FLAMMABLE ANESTHETIC MIXTURE WITH AIR or WITH OXYGEN OR NITROUS OXIDE
  – EQUIPMENT not suitable for use in the presence of a FLAMMABLE ANESTHETIC MIXTURE WITH AIR or WITH OXYGEN OR NITROUS OXIDE

- According to the mode of operation: CONTINUOUS OPERATION
- Sterilization method
  - System main unit: Not suitable for sterilization.
  - Transducers: Sterilization methods are specified in the relevant operation manuals.

Conformance Standards

- Canada: Ed. 3.1
  - General: CAN/CSA-C22.2 No. 60601-1: 14
  - Collateral: IEC 60601-1-2: 2014
    CAN/CSA-C22.2 No. 60601-1-6A: 11
  - Particular: IEC 60601-2-37: 2007 + A1: 2015
- EU and other regions requiring compliance with European Regulation (EU) 2017/745 and subsequent amendments
  - General: EN 60601-1: 2006 + A1: 2013 + A2: 2021
  - Collateral: EN 60601-1-2: 2015 + A1: 2021
  - Particular: EN 60601-2-37: 2008 + A1: 2015
- USA: Ed. 3.2
  - General: AAMI ES 60601-1: 2005 + C1: 2009 + A2: 2010 + A1: 2012 + A2: 2021
  - Collateral: IEC 60601-1-2: 2014 + A1: 2020
    IEC 60601-1-6: 2010 + A1: 2013 + A2: 2020
  - Particular: IEC 60601-2-37: 2007 + A1: 2015
- Other regions requiring compliance with IEC 60601-1 Ed. 2
  - General: IEC 60601-1: 1988 + A1: 1991 + A2: 1995
  - Collateral: IEC 60601-1-1: 2000
    IEC 60601-1-2: 2001 + A1: 2004
    IEC 60601-1-4: 1996 + A1: 1999
  - Particular: IEC 60601-2-37: 2001 + A1: 2004 + A2: 2005
- Other regions requiring compliance with IEC 60601-1 Ed. 3
  - General: IEC 60601-1: 2005
  - Collateral: IEC 60601-1-2: 2007
  - Particular: IEC 60601-2-37: 2007
- Other regions requiring compliance with IEC 60601-1 Ed. 3.1
  - General: IEC 60601-1: 2005 + A1: 2012
  - Collateral: IEC 60601-1-2: 2007
  - Particular: IEC 60601-2-37: 2007 + A1: 2015
- Other regions requiring compliance with IEC 60601-1 Ed. 3.2
  - General: IEC 60601-1: 2005 + A1: 2012 + A2: 2020
  - Collateral: IEC 60601-1-2: 2014 + A1: 2020
  - Particular: IEC 60601-2-37: 2007 + A1: 2015

Note: The above standards are applicable to the ultrasound system at the time of purchase. These standards continue to remain applicable even if the system configuration is changed as a result of using options in combination. The standards of the ultrasound system are also applicable to transducers.

DIMENSIONS, MASS, AND POWER CONSUMPTION

Unit	Model name	External dimensions mm (in)			Mass kg (lb) (approx.)	Power consumption (approx.)
		Width	Height	Depth		
Main unit	CUS-AGG00	460 (18.1)	1201 (47.3) to 1371 (54.0)	602 (23.7)	45 (99.2)	164 W
B/W printer	Sony UP-D711MD	140 (5.5)	70 (2.8)	125 (4.9)	1.0 (2.2)	72 VA (printing)
	Sony UP-D898MD	154 (6.1)	88 (3.5)	240 (9.4)	2.6 (5.7)	190 VA (printing)
	Sony UP-D898DC	154 (6.1)	88 (3.5)	165 (6.5)	2.5 (5.5)	98.4 VA (printing)

MASS

Model name	Name of component	Mass [kg] (lb)
System main unit		
CUS-AGG00	Aplio go	45 (99.2)
Options/Accessories for main unit		
USFL-FLEXM	Flex-M kit	0.1 (0.2)
USFL-AEFM	Auto EF Measurement kit	0.1 (0.2)
UHFL-CW	CW kit	0.4 (0.9)
UHFL-REFSG	Reference Signal unit	1.3 (2.9)
UJUR-AI900A	Reference Signal cable	0.3 (0.7)
UJUR-AI901A	Reference Signal cable	0.1 (0.2)
USFL-PANVI	Panoramic View kit	0.1 (0.2)
USGG-ADF	Dynamic Flow kit	0.1 (0.2)
USFL-PRECP	Precision Imaging Plus kit	0.1 (0.2)
USFL-SMT3D	Smart 3D kit	0.1 (0.2)
USFL-TRICE	Tricefy Access kit	0.1 (0.2)
USFL-LUMIN	Luminance kit	0.1 (0.2)
USFL-AVOLM	Auto Volume Measurement kit	0.1 (0.2)
UHCO-M4D	Mecha4D unit	0.6 (1.3)
UHCO-AGATE1	ApliGate kit	0.1 (0.2)
USCO-AGATE1	ApliGate soft kit	0.1 (0.2)
USCO-DICOM	DICOM kit	0.1 (0.2)
USFL-AIMT	Auto IMT kit	0.1 (0.2)
USFL-IOTA	IOTA kit	0.1 (0.2)
USFL-NSTRG	Network Storage kit	0.1 (0.2)
USFL-OHELP	Online Help kit	0.1 (0.2)
USFL-PRASS	Protocol Assistant kit	0.1 (0.2)
USFL-SECM	Security Management kit	0.1 (0.2)
UHCO-ITLAN	Isolation Trans for LAN kit	0.5 (1.1)
UHCO-PT003A	Palm Controller kit	0.2 (0.4)
UHCO-REC1	Recorder unit	0.2 (0.4)
UHFL-4THPO	4 Probe Port kit	4.0 (8.8)
UHFL-BTRY	Battery unit	1.4 (3.1)
UHFL-ECHOLD	EV/ER Transducer Holder kit	1.6 (3.5)

Model name	Name of component	Mass [kg] (lb)
UHFL-OP900S	Panel Spacer kit	0.9 (2.0)
UHFL-OP700S	Panel Spacer kit	0.9 (2.0)
UHFL-REFCH	Reference Cable Hanger kit	0.1 (0.2)
UHFL-TCHAN	Transducer Cable Hanger kit	0.9 (2.0)
UHFL-THOLD	Left Transducer Holder kit	2.5 (5.5)
UHGG-MON215	21.5 inch Monitor kit	6.0 (13.2)
UHFL-VPANE	Video kit	1.2 (2.6)
UIWL-AI900A	Wireless LAN kit	0.5 (1.1)
UIWL-A500A	Wireless LAN kit	0.5 (1.1)
UZFS-004A	Foot switch	0.6 (1.3)
UZGW-008A	Gel warmer	1.0 (2.2)
UHFL-PERMAC	Mounting kit for Peripheral unit	1.1 (2.4)
UHFL-PERMDC	Mounting kit for Peripheral unit	0.6 (1.3)
UHFL-FRENCH	Local Language Key-TOP kit	0.5 (1.1)
UHFL-GERMAN	Local Language Key-TOP kit	0.5 (1.1)
UHFL-ITALIA	Local Language Key-TOP kit	0.5 (1.1)
UHFL-SPAIN	Local Language Key-TOP kit	0.5 (1.1)
UHFL-DANISH	Local Language Key-TOP kit	0.5 (1.1)
UHFL-NORWAY	Local Language Key-TOP kit	0.5 (1.1)
UHFL-SCANDI	Local Language Key-TOP kit	0.5 (1.1)
UHFL-RUSSIA	Local Language Key-TOP kit	0.5 (1.1)
Transducers		
PVC-375LT	Convex array transducer	0.46 (1.0)
PVU-382BT	Convex array transducer	0.4 (0.9)
PVU-712BTE	Convex array transducer	0.63 (1.17)
PLC-704LT	Linear array transducer	0.43 (0.95)
PLC-1004LT	Linear array transducer	0.43 (0.95)
PLU-1204BT	Linear array transducer	0.49 (1.08)
PSC-25LT	Phased array transducer	0.41 (0.9)
PSU-50BT	Phased array transducer	0.4 (0.9)
PVC-781VLT	Convex array transducer	0.63 (1.4)
PVU-681MVL	Endocavitary transducer	0.78 (1.72)
PVU-674MVS	Convex array transducer	1.05 (2.31)

CE 2797

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Please consult with your regulatory department for local approved product specifications and usage.