

**HITACHI**

HITACHI

**Electronic Ultrasound Scanner**

**EUB-405**



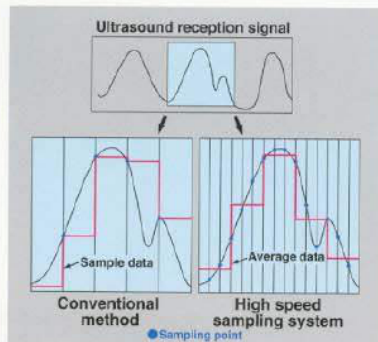


## Uncompromised Image Quality

Regardless of size, the EUB-405 PLUS incorporates the most advanced imaging technologies such as fast sampling digital processing, dynamic focusing with variable aperture, and high density probe designs.

### High speed sampling

The advanced digital scan converter incorporates high speed sampling to produce more accurate gray scale images.



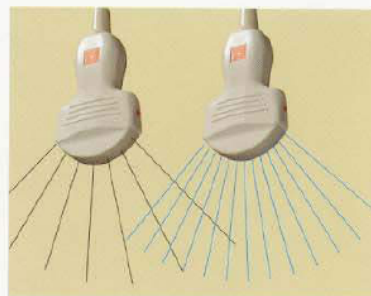
### Image processing functions

Image processing functions such as dynamic range, edge enhancement, scan correlation, and post-processing can be stored in the preset memory.



### Double density scan mode

The scan line resolution can be doubled (from 192 to 384 lines max.) by half-pitch imaging techniques when the highest resolution images are required, or in a "fast frame rate mode" for rapidly moving structures.



Fast Frame Rate Mode Double Density Mode



## High Performance, Incomparable Image Quality & User Friendly....

The EUB-405 PLUS now utilizes the best technology of our proven console systems. Users can now access a level of performance that provides high resolution and high contrast imaging, multi-frequency technology with low impedance probes, and measurement software to support a wide variety of clinical examinations. In addition, a new option permits any two probes to be connected to the unit and selected by one keyboard stroke. This superior ultrasound system has been designed to be very user friendly so it can be used for many diagnostic purposes.

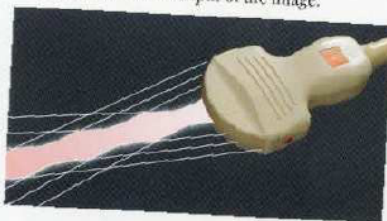
### 9" monitor at 13kg

A practical size, easy-to-view monitor is integrated into the design for optimal high resolution scanning and split screen modes. For all this size, it weighs only about 13 kg.



### Dynamic focus

Hitachi's advanced dynamic receiving focus with variable aperture and user controlled four step transmit focus provide unparalleled image clarity throughout the entire depth of the image.



### High resolution probes

Exceptionally clear and detailed images are produced from a wide variety of high density probes (192 channel max.). These advanced probes are designed for, and can be shared with Hitachi's premium color systems.



# Exceptional features

Many features, available only on expensive units, are standard on the EUB-405 PLUS: multi-frequency probes, electronic image steering, a remote control, and soft-key annotation software.

## Multi-frequency probes

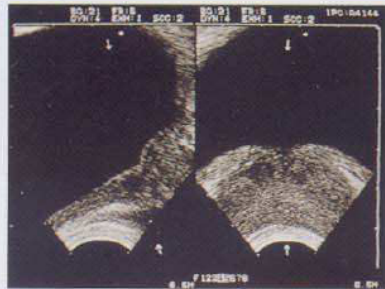
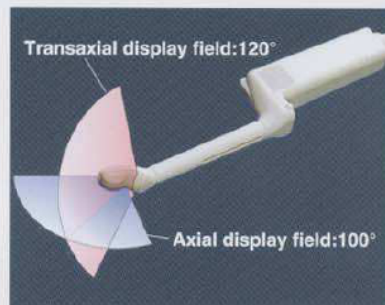
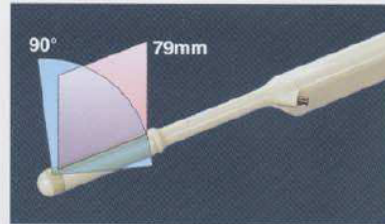
When deeper penetration, or finer depiction in the near field is required, you can set scanning frequency in three: low, standard, or high.

	low	standard	high
3.5MHz probe	--	3.5MHz	5.0MHz
5.0MHz probe	3.5MHz	5.0MHz	6.5MHz
7.5MHz probe	5.0MHz	7.5MHz	10MHz
10MHz probe	7.5MHz	10MHz	--



## Biplane imaging function

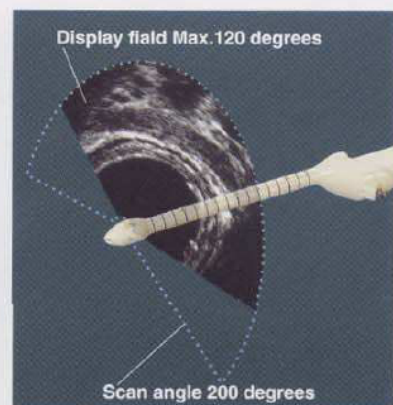
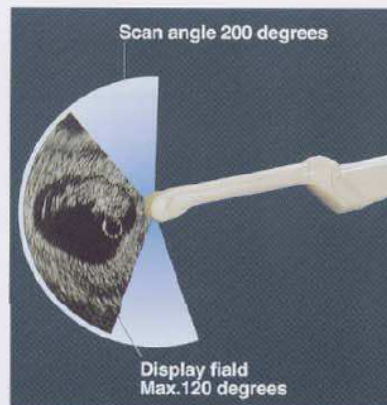
Biplane display technique is really useful in cross-sectional images of prostate and other organs by observing both the axial and transaxial images with one probe.



## Steering function

Two types of endo-cavity probe, arranging 200 degree wide 10R convex head in axial and transaxial, are provided: EUP-V53W transvaginal probe and EUP-R53W transrectal probe.

The 120 degree sector on the 200 degree probe image can be electronically steered. This reduces the need to reposition the probe, improves patient comfort, and provides better orientation.





**Digital image recording in flash memory card**

Not only frozen images but also continuous images stored in the cine memory can be transferred into the flash memory card as an auxiliary recording. 20 images maximum can be stored in a flash memory card and played back for measurement as well.



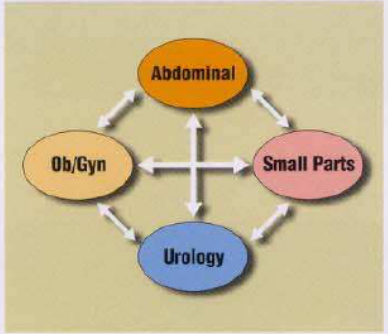
**Image memory**

Two images can be kept in memory and displayed side by side or individually. The memory can also store the split screen B/M mode display.



**Preset function**

All the panel controls and imaging parameters can be memorized in 4 preset, user defined memories. As an example, at the touch of soft-key, the EUB-405 PLUS can be instantly changed from standard abdominal imaging to ideal settings for three others shown in the right.



**Annotation function**

A soft-key annotation system provides a quick way to label images. Single key choices automatically display on the screen the most commonly used words for many types of exams.



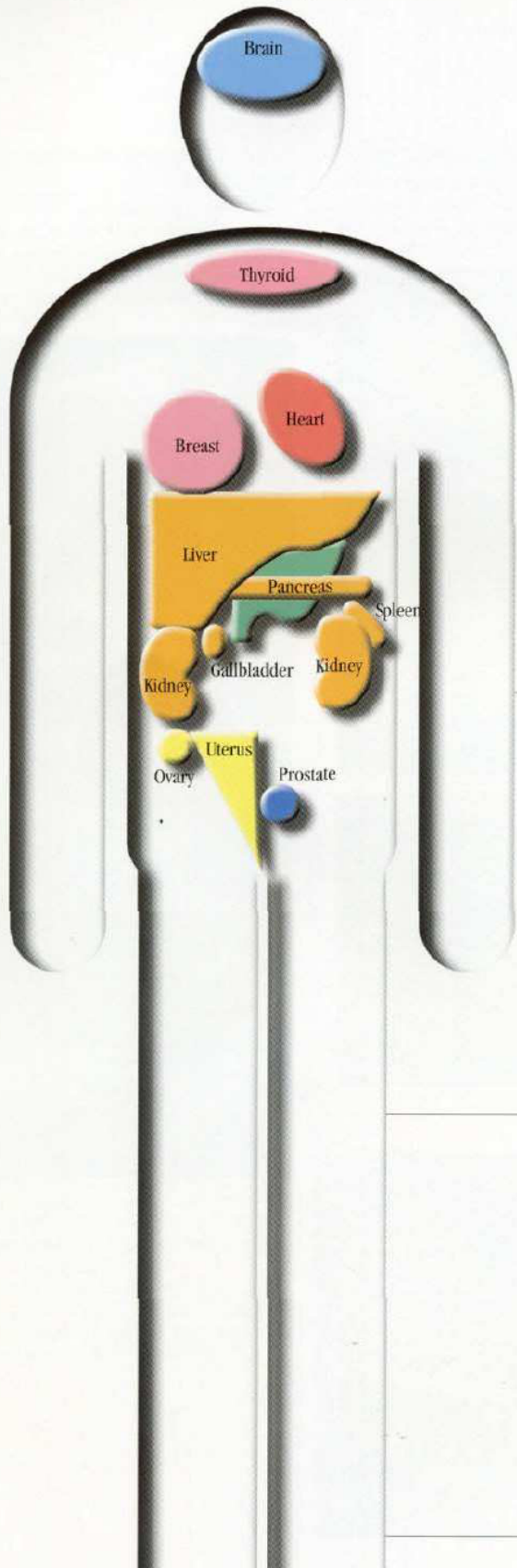
**Captures even momentary motion**

- Continually records to memory the preceding 32 image frames, so even momentary motions won't be overlooked. Just freeze the image you want to examine and use the trackball for easy review.
- In the 2.5-sec. mode, 80 seconds worth of M-mode images can be stored, allowing you to concentrate on acquiring optimal images for review later. Measurement is also possible.

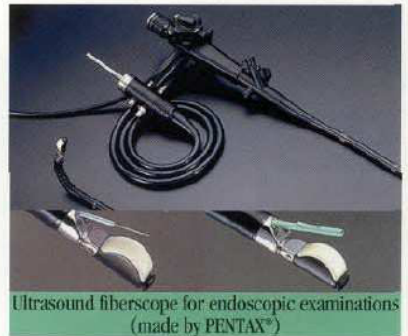


# A wide variety of probes for most clinical applications

A full range of high resolution probes provides many options such as frequency, scanning foot-print, or single/biplane probe designs. Each probe is designed to insure optimal imaging and patient comfort for each clinical application.



10 MHz Linear probe



Ultrasound fiberscope for endoscopic examinations  
(made by PENTAX®)



General purpose finger tip probe



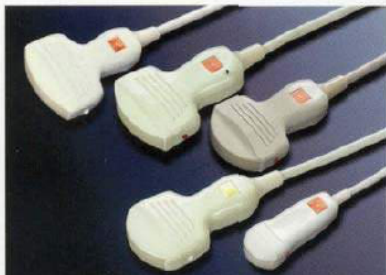
5.0 MHz 10R convex probe



7.5 MHz linear probe



3.5 MHz small convex probe



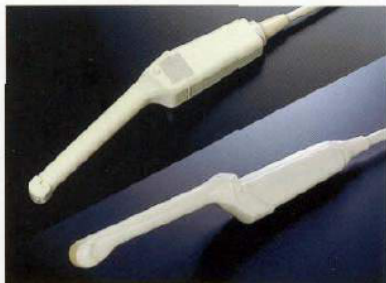
3.5 and 5.0 MHz convex probe



3.5 and 5.0 MHz linear probe



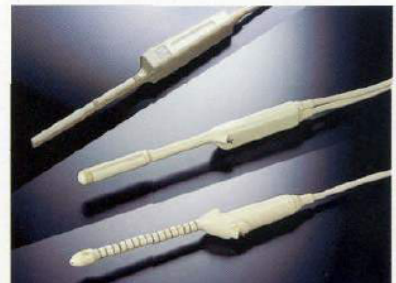
Biopsy and intraoperative probe



Transvaginal probe



Transrectal biplane probe



Transrectal probe

# Easy-to-operate control panel

A simplified control panel with 30% fewer keys is made possible by integrating functional keys into the design. These function keys provide easy access to functions without pages of menus or an intimidating control panel. The EUB-405 PLUS also features a remote control that allows the operator access to panel controls even from a distance.

● **Function keys**  
Direct access to control functions without menus

● **Alpha-numeric keyboard**  
ID, user comments, and annotation displays

● **Trackball**  
Easy measurement, annotation, and data entry

● **Preset key**  
User-defined imaging parameters in memory for each exam type

● **Probe key**  
Change over from one probe port to another, when EZU-PF61 is mounted.

● **Multi-memory control**  
Image card is operated from the control panel

● **Print key**  
Panel key for recording images on a printer



● **Gain control**  
Easy operation by simplified gain controls

● **Freeze key**  
Accurate freeze function by a large, well positioned key



**Remote control**  
During difficult examinations all panel and image control functions can be performed by using the remote control. This ensures that the controls are always nearby.

# Rich variety of measurement function

## Fully equipped with basic measurement functions

The basic measurement functions such as distance, circumference, area, volume, angle, etc., are provided for easy operation and various applications. Volume measurement using ellipse method is suitable for thyroid examination.



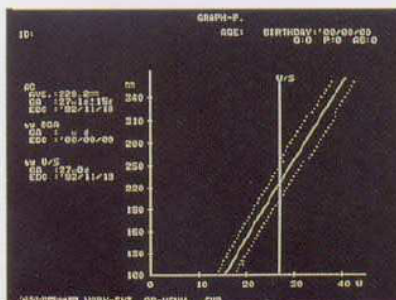
## Angle measurement of hip-joint dislocation

Angle measurement is useful for diagnosing dislocation of the hip-joint in a new born baby. Severity of hip-joint dislocation is determined by two angles: Bony roof angle and cartilage roof angle. The angle measurement function automatically determines angles  $\alpha$  and  $\beta$  by the input at the measurement points.



## Obstetrics measurement function

A sophisticated obstetrical report function displays the fetal measurement data, fetal weight, fetal and maternal anatomy, ratios, and clinical history. Standard growth curves and previous exam data are graphically represented. Simple key operation makes this obstetrical report page very easy to use. Tables and equations for report are built in for simple set up and also programmable for customer's specific necessity.



## Urology measurement function

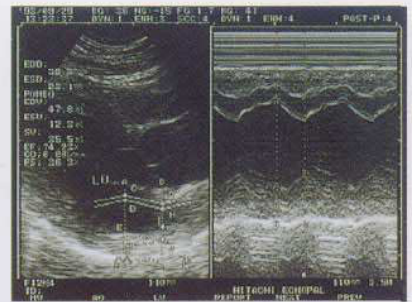
Calculation function which predicts hypertrophic volume and antigen concentration from volume measurement of bladder, prostate and the like in urology is built in for simple set up and programmable for customer's specific necessity. Urology measurement report function and edit function are provided.



MEASUREMENTS		
DATE	UNIT	RESULT
1. BLAD	CM	27.0
2. PROST	CM	21.0
3. UTRIC	CM	21.0
4. VESIC	CM	21.0
5. UTRIC	CM	21.0
6. VESIC	CM	21.0
7. UTRIC	CM	21.0
8. VESIC	CM	21.0
9. UTRIC	CM	21.0
10. VESIC	CM	21.0

## Cardiac measurement

Three types of cardiac measurement in M-mode are prepared: mitral valve measurement (MV), aorta valve measurement (AO) and left ventricle measurement (LV), and also report function which displays results of these measurements in a lump is available.



# Various options for extensive use

## **Remote controller EZU-RH1**

Scanning controls, freeze function, and image recording can be done by remote control. The remote insures that the control keys are always nearby even during difficult exams or in crowded space



## **Mobile cart EZU-D405B**

EUB-405 PLUS main unit and video printer can be mounted.



## **Multi-memory unit : EZU-MM10 and Memory card : EZU-MM9-S1**

As an auxillary memory, up to 20 images can be stored in the flash memory card and called back into the main unit.



## **2nd probe port EZU-PE61**

By adding the 2nd probe port on the EUB-405 PLUS, two probes can be connected and switched electronically.



## **Cine-memory unit EZU-MM12**

Preceding 32 image frames are continuously recorded and played back frame by frame.

## **External interface EZU-PR1**

RS-232C communication port to connect to external computer or parallel printer.

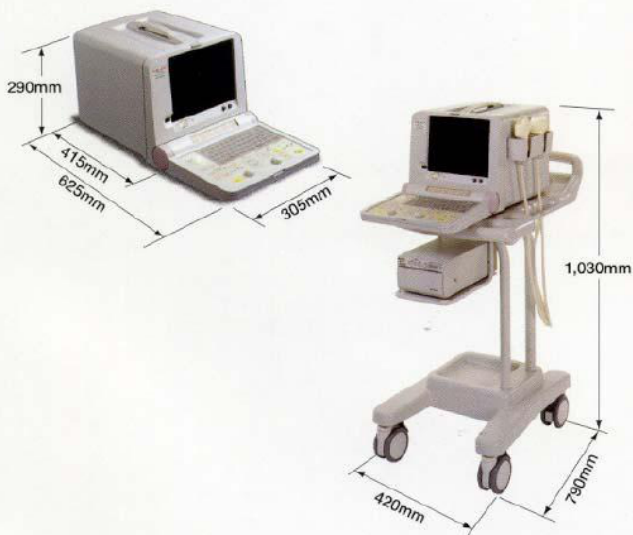
## Basic composition

Main unit (built-in 9" monitor) ..... 1  
 Accessories (ultrasonic jelly, cables).....1 set

## Specifications

<b>Scan system</b>	Convex and linear
<b>Display mode</b>	B, B/B, M, B/M
<b>B-mode</b>	Focusing system: 4 steps electronic focusing for transmission Dynamic focussing for reception Display depth: 4 steps selectable for 3.5/10 MHz probes 5 steps selectable for 5.0/6.5/7.5 MHz probes Orientation: Top-bottom and right-left inversion Display width: 2 steps selectable Probe steering: 5° step (for EUP-V53W, R53W)
<b>M-mode</b>	Display method: Scroll Sweep speed: 1.25, 2.5, 5, 10 sec/screen
<b>Measurement function</b>	B-mode: Distance, area, circumference, volume, angle, gestational weeks, fetal weight M-mode: Distance, time, speed
<b>Preset function</b>	Max. 4 sets programmable
<b>Computer output</b>	RS-232C communication port to connect to printer or computer
<b>Power requirements</b>	AC 100 ~ 120V/220 ~ 240V ± 10%, 50/60Hz
<b>Power consumption</b>	Less than 180VA (standard composition)
<b>Physical dimensions</b>	305(W) × 415(D) × 290(H)mm
<b>Weight</b>	Approx. 13 kg

## Physical dimensions



## High resolution probes series

<b>EUP-C318T</b>	Convex, 3.5MHz, 76R
<b>EUP-C516</b>	Convex, 3.5MHz, 60R**
<b>EUP-C314G</b>	Convex, 3.5MHz, 40R**
<b>EUP-C312T</b>	Convex, 3.5MHz, 20R
<b>EUP-C511</b>	Convex, 3.5MHz, 10R**
<b>EUP-C524</b>	Convex, 5.0MHz, 40R
<b>EUP-C321T</b>	Convex, 5.0MHz, 10R
<b>EUP-L31</b>	Linear, 3.5MHz, 100mm
<b>EUP-L32</b>	Linear, 5.0MHz, 79mm
<b>EUP-F334</b>	Finger tip, convex, 7.5MHz, 40R
<b>EUP-F331</b>	Finger top, convex, 6.5MHz, 10R
<b>EUP-V33</b>	Transvaginal, convex, 6.5MHz, 10R
<b>EUP-V53W</b>	Transvaginal, convex, 6.5MHz, 10R, steerable
<b>EUP-CC331</b>	Transrectal, convex/convex, biplane, 6.5/6.5MHz*
<b>EUP-U33</b>	Transrectal, linear, 7.5MHz
<b>EUP-U533</b>	Transrectal, linear/convex, biplane, 7.5/6.5MHz*
<b>EUP-R53W</b>	Transrectal, convex, 6.5MHz, 10R, steerable
<b>EUP-B31</b>	Biopsy, linear, 3.5MHz
<b>EUP-B314</b>	Biopsy, convex, 3.5MHz, 40R
<b>EUP-O32T</b>	Intraoperative, linear, 5.0MHz
<b>EUP-O33J</b>	Intraoperative, linear, 7.5MHz
<b>EUP-L53</b>	Linear, 7.5MHz, 64mm**
<b>EUP-L53S</b>	Linear, 7.5MHz, 38mm**
<b>EUP-L34T</b>	Linear, 10MHz, 38mm**
<b>FG-34UX</b>	PENTAX®, ultrasound upper G.I. fiberscope, convex, 7.5MHz, 10R, slim type
<b>FG-38UX</b>	PENTAX®, ultrasound upper G.I. fiberscope, convex, 7.5MHz, 10R, with large channel
<b>EZU-PA31</b>	Biopsy attachment for EUP-C511, C321T
<b>EZU-PA32</b>	Biopsy attachment for EUP-C312T
<b>EZU-PA34T</b>	Biopsy attachment for EUP-C314G
<b>EZU-PA5V</b>	Sterile puncture attachment for EUP-V33, V33W, CC331 (disposable)
<b>EZU-PA3U</b>	Biopsy attachment for EUP-U33, U533, CC331
<b>EZU-PA30</b>	Biopsy attachment for EUP-O32T, O33J
<b>EZU-PA3F4</b>	Snap-on finger tip guide for EUP-F334
<b>EZU-PA3C1</b>	Oblique stand-off for EUP-L53S, L34T
<b>EZU-PA3C1H</b>	Oblique stand-off with biopsy hole for EUP-L53S, L34T
<b>EZU-PA3C2</b>	Parallel stand-off for EUP-L53S
<b>EZU-PA3C4</b>	Parallel stand-off for EUP-L53S
<b>EZU-WL2</b>	Water bag attachment for EUP-L53

\*2nd probe port EZU-PE6 is required for biplane imaging.  
 \*\*Multi-frequency probes