

**HITACHI**  
MEDICAL SYSTEMS

HITACHI

BOND MP

EUB-8500

$\Omega$ meg@ | Digital Ultrasound Scanner  
EUB 8500

## BREAKING BOUNDARIES

### **design concept**

To develop our HITACHI EUB-8500, exciting new concepts and existing technologies were reviewed and imported until the state of ultimate perfection was reached. The result is an ultrasound scanner of the latest generation with an architecture allowing the integration of innovative technologies. For each single received signal, a 12 bit A/D conversion performed at the early stage of the processing chain, gives pure native information with a precision unachieved until now. The massive use of multi-parallel processor lines from the latest generation allows a powerful real-time treatment of the acquired data. This unprecedented signal processing capacity provides the basis for the unlimited functionality of the HITACHI EUB-8500 without compromising image quality.

### **product philosophy**

The goal of all ultrasound technologies developed by HITACHI is to guarantee maximum diagnostic confidence for each examination. The integration of new technologies ensures that our users can focus on what is really important and what should be in the center of their attention: the examination itself. Thanks to the modular and evolutive architecture of the HITACHI EUB-8500 platform, all imaging techniques that exist for ultrasound are already, or can easily be, integrated into the system which can be configured and operated according to the individual needs of our users.

### **for expert an research use**

The HITACHI EUB-8500 works with brand new state-of-the art technologies that define the ultimate standard for diagnostic ultrasound imaging. With the HI-VUE technology, the images acquired are characterized by their outstanding spatial and axial resolution as well as by their contrast resolution ensuring that even the slightest differences in the tissue characteristics can be displayed.

The open architecture of the HITACHI EUB-8500 anticipates new technological innovations which have not been realized today allowing the possibility of later integration. This system is prepared for new expanded diagnostic and therapeutic applications.



#### **SONO-MR TECHNOLOGY**



#### **MULTI SPECIALITY DIAGNOSTICS**



#### **USER COMFORT**



#### **OPEN ARCHITECTURE**



## BREAKING BOUNDARIES

### WPI

The Wideband-Pulsed-Inversion imaging technology (WPI) developed by HITACHI enables frequency modulation between the transmission of two phase inverted pulses. Due to this asymmetry, the spectrum of the signal obtained after summation of the two received echoes is largely expanded compared to what can be obtained with the conventional pulse-inversion methods. Thus, the WPI imaging mode allows the achievement of a completely new contrast resolution, as well as an outstanding spatial resolution, with more information for the deeper structures, even when working with high frequency probes.

### HI-COM

Due to the Octave-Reception and the powerful high-speed processing capability of the system, several images taken with different frequencies and from different angles are combined to display compound images in real-time. This HI-COM technique reduces the artifacts, shadows and noise to a minimum. The improvement in spatial and contrast resolution leads to a clearer representation of tissue boundaries and provides greater diagnostic precision.

### HI-RES

By means of complex adaptive mathematical algorithms, the returned echo signal characteristics of adjacent structures are analyzed in real-time. The computing power of the HITACHI EUB-8500 then allows our users to detect uniform tissue structures, to recognize and emphasize transitional zones and to identify and to remove unnecessary noise signals. This unique real-time raw-data analyzing technique, without compromising the frame rate, enables to easily visualize the smallest lesions. Therefore, the diagnostic is not only easier but much more accurate than ever before.

### UCI

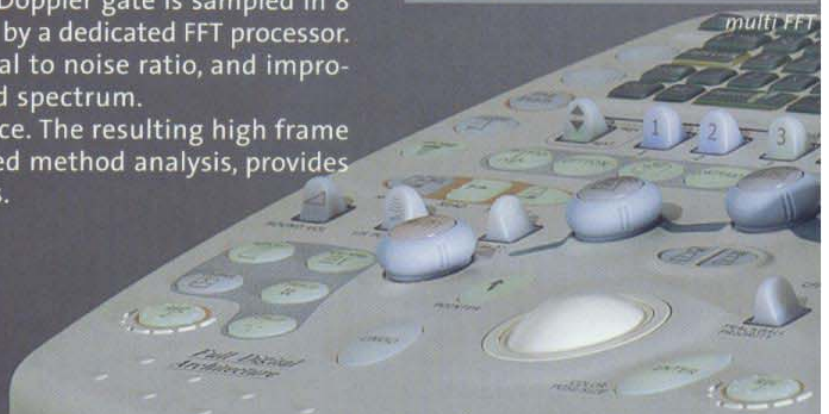
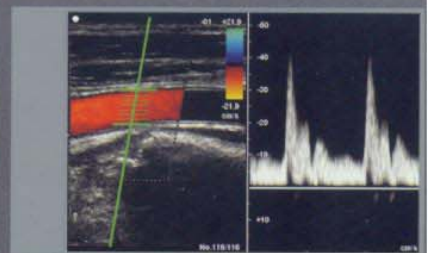
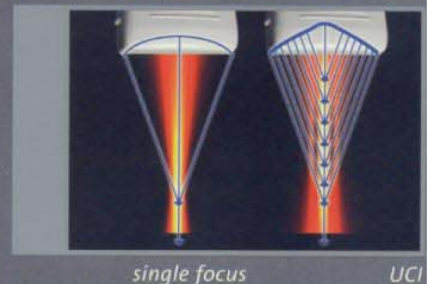
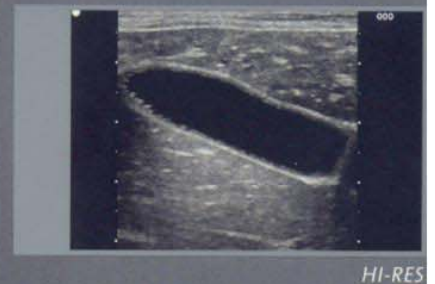
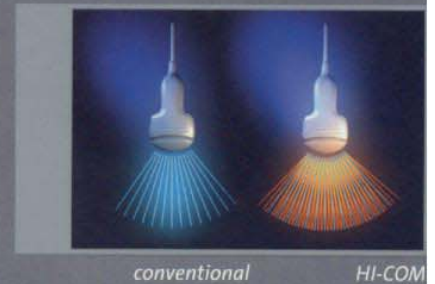
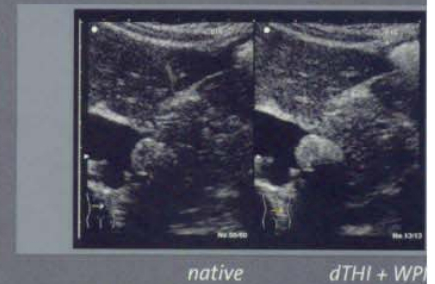
With the Uniform-Confocal-Imaging technique HITACHI introduces a completely new ultrasound beam focalization method. The perfect control of the transmitted signal for each individual probe element allows to generate an aspheric focusing pattern sequence. This means that the ultrasound beam width is uniform all over its propagation depth. Generating a uniform acoustic field, the UCI technique significantly improves the spatial resolution, and widens the enhanced contrast agent area when working in this modality.

### multi FFT & CFM vectorial low flow

The octave reception largely enhances the processing power when in PW or CFM modes.

In PW mode, the signal extracted from the Doppler gate is sampled in 8 sub-gates. Each one of 8 samples is analyzed by a dedicated FFT processor. This method significantly reduces the signal to noise ratio, and improves the contrast resolution of the displayed spectrum.

In CFM mode, 8 lines can be acquired at once. The resulting high frame rate capability, combined with an interleaved method analysis, provides very high sensitivity in detecting low flows.





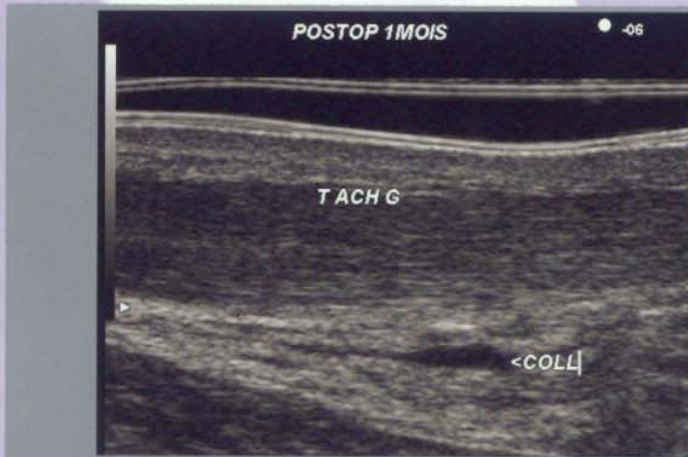
# BREAKING BOUNDARIES



Abdominal (Liver Lesion) C 514 5-2,5 MHz



Intestinal (Duodenum) C524 7,5-3,5 MHz



Musculoskeletal (Tendon) L54M 13-6,5 MHz



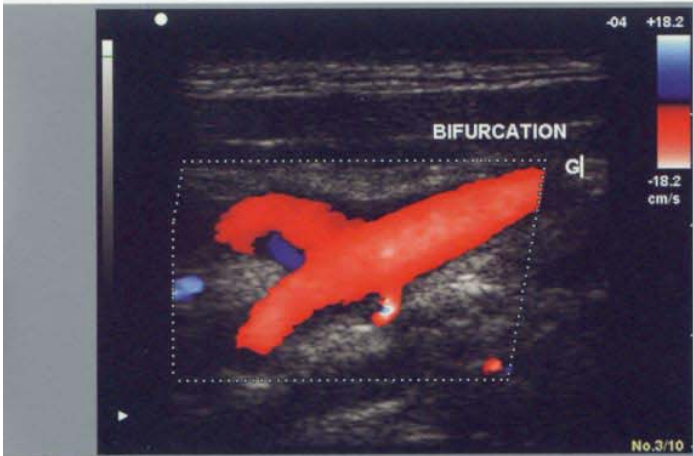
Small Parts (Testis CFM) L53 10-5 MHz



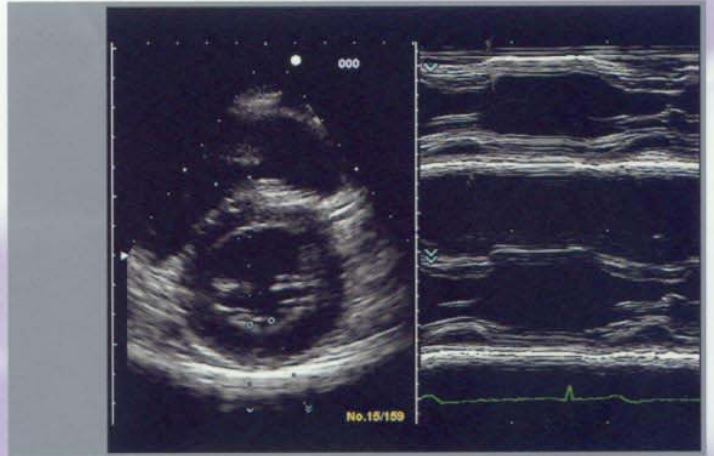
Obstetrics (Fetal Profil) C524 7,5-3,5 MHz



Gynecology (Uterus) V53W 9-5 MHz



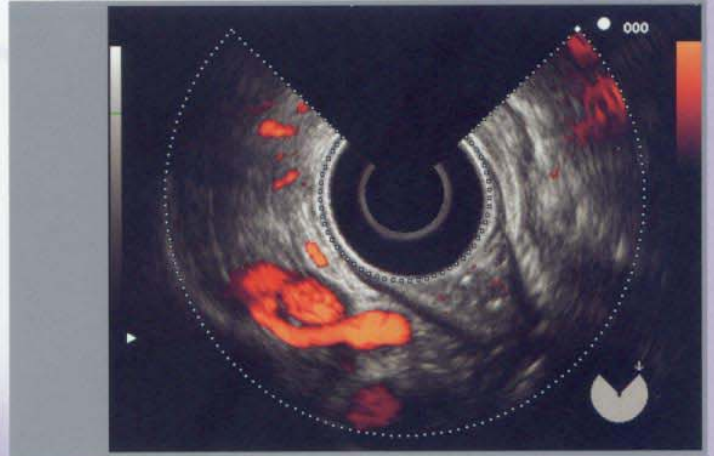
Vascular (Bifurcation CFM) L53S 10-5 MHz



Cardiac (ODM) S 50 4-2 MHz



Pediatrics (Transfontanella) C532 9-5 MHz



Surgery (Rectal CFM) R54 10-5 MHz



Gastro (Esophagus) EG 3630 UR 10-5 MHz



Urology (Prostate) V53W 9-5 MHz

## BREAKING BOUNDARIES

The HITACHI EUB-8500 has the unique capability to provide outstanding performance for a broad range of applications. Full of innovative technologies, but of lightweight, the HITACHI EUB-8500 offers an exceptional mobility, with a compact design. Easy to move, easy to use, the HITACHI EUB-8500 and its powerful processor work together with the physician to guarantee optimal diagnostic confidence for each patient examination.



**live RF**

Optimization of frozen images: B-mode gain, dynamic range, edge enhance, grey maps, and M-mode gain can be adjusted after freezing. This function provides optimized image quality easily.

**personalized user interface**

Apart from the fact that every user should continue to work in his own way, it is sometimes necessary to observe certain conditions. Many keys on the control panel can be programmed according to the specific user needs.

**programmable examination protocols**

Physicians and patients are sensitive to the shorter examination times and the high reliability of the diagnostic obtained with the system. For each imaging mode, all key functions, including innovation technologies are programmable in order to optimize the settings for all the different clinical applications.

**programmable measurements**

In addition to the wide variety standard measurement package, it is easy for the users to define and program their own calculations to improve efficiency of both routine and research examinations.

**real-time analysis**

The real-time measurements use native RF information. Until now automatic tracking and measuring functions in the Doppler-Mode have only been allowed when applied to frozen pictures, but with the HITACHI EUB-8500, it is possible to perform this functions with real-time images, which contributes to shorten examination time.

**mobility**

The extraordinary mobility of the HITACHI-EUB8500 is the result of its light weight, compact housing and also its four directional swivel casters. Therefore, it is very easy to move the system when an examination must be done in the operating room, ICU or at the bed side.

**noise / heat dissipation**

HITACHI uses its technology not only to increase product performance but also to protect the earth environment. The HITACHI EUB-8500 sets new high standards in terms of low energy consumption during operation, minimum heat emission, and very low noise.



## OPEN SYSTEM

The fully open WINDOWS™ operating system with the HITACHI EUB-8500 workflow concept makes each operation or manipulation easier and quicker: high-speed switching between imaging modes, probe selection, application set-up of the system, archiving and retrieving of patient information, as well as direct printing of stored images on common ink-jet or laser printers.

## archiving

Due to the WINDOWS™ based architecture, the HITACHI EUB-8500 can easily store the images on integrated HDD, FDD, MOD (or DVD in option) in various graphic formats (BMP, TIFF, JPEG, AVI, DICOM in option). With the HI-PACS built in patient data and image management, it is very convenient to search and retrieve patient information and images from previous patient studies.

## networking

The HITACHI EUB-8500 offers various methods of communication including direct integration into an Ethernet network as well as implementation for DICOM send, store, print and worklist functions.

## OPTIONS

### wide view

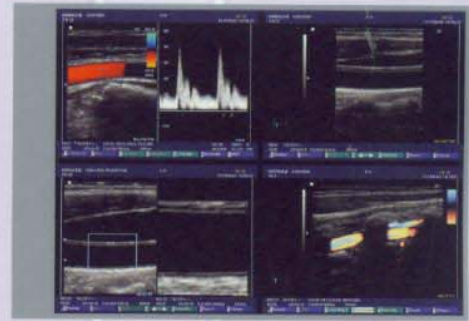
In this mode, high resolution panoramic images up to 60 cm in length are generated in real-time. Large organs and vascular structures can be visualized in their true dimensions and correct anatomical perspective.

### CHI

The dynamic Contrast-Harmonic-Imaging module offers the efficient performance of contrast media examinations. The system does not only include all imaging modes required for Low MI and High MI techniques but already contains the new clinical functions required for the successful performance of advanced contrast agents which are actually under development.

### 3D

The digital 3D reconstructed volume data sets can either be displayed in grey-scale and/or color mode. Through the reconstruction of multiplanar images the user can inspect all virtual scan planes. In addition, sensed type 3D allows the distance measurements on 3D volumes.



Comparison of images and diagnostic findings



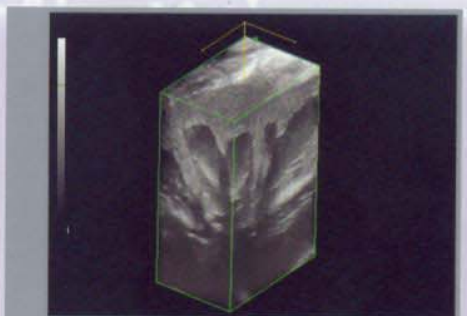
Image/patient data archive



Wide View



CHI



3D

**cardiac**

Advanced technologies like Tissue-Doppler-Imaging and Omni-directional M-mode, Automatic Myocardial Tracking are already integrated in our standard configuration. For a complete cardiac package you can add on the ECG module, the steerable CW-Doppler unit and the CW pencil unit.

**stress echo**

The integrated Stress-Echo module allows the physician to perform advanced cardiac imaging with greater flexibility. The examinations are easy to perform and programmable. The report includes schematic illustrations which help the user to analyze the findings and display them in a comprehensive form.

**TDI**

The highly sensitive Tissue-Doppler-Imaging-Mode (TDI) is able to provide the user with high-resolution images of detected disturbances in cardiac motion. The volume of myocardial wall motions can be visualized in colour mode, regional wall motions can be displayed in spectral Tissue Doppler-Mode.

**FUTURE TECHNOLOGIES\***
**L53L**

HITACHI, leader in probe development introduces the first long linear expert probe for breast and musculoskeletal scanning. This new 256 elements technology allows a 92 mm realtime wide view examination with outstanding image resolution.

**elastography**

With this technique, the HITACHI EUB-8500 expands diagnostic to a high-end ultrasound imaging platform. Colour coding of tissue elasticity in real-time will allow the physician a greater degree of diagnostic confidence.

**4D matrix probe**

For the biggest challenge of digital sonography, HITACHI is developing a convex-convex matrix probe with 12.288 elements. Very high-speed multiplexer generate annular networks to produce real-time volumetric imaging.

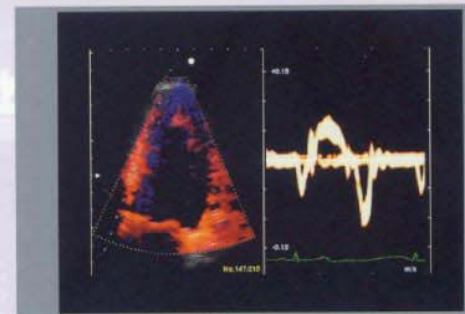
\* works in progress



Cardiac



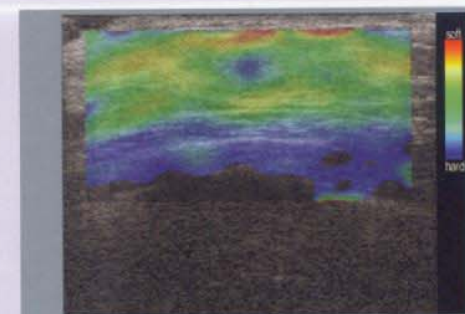
Stress Echo



TDI



L53L



Elastography