

**HITACHI**  
Inspire the Next

*Plateforme Elite*  
Ultrasound Scanner

EUB-5500 HV

Digital Ultrasound Scanner

**HITACHI Medical Systems**  
Technology improves Life

# Innovations guaranteed

## The new HITACHI EUB-5500 HI-Vision

Innovative ideas that form the foundations for our high class systems are initially generated in the thoughts and minds of our engineers. Familiar concepts and existing technologies are continually analysed and perfected to achieve the ultimate solution. The latest therapeutic and diagnostic approaches combined with progressive developments in IT-Technology create the cornerstones for innovative solutions for diagnostic ultrasound imaging. Our customers demand high standards – from us and from our products and as such, we listen and respond to these expectations through development of our latest system, the EUB-5500 HV.

Flexibility and a clinical awareness of current and future medical requirements have allowed us to develop an open system style architecture based on the Windows XP platform driving ultrasound technology to new heights of clinical performance.

### **New technologies**

The open system architecture provides the foundation for the latest, innovative technologies contributing to the excellent clinical performance and usability of the HITACHI EUB-5500 HV.

### **Design and ergonomoy**

With a highly developed ergonomic design, the EUB-5500 HV is user-friendly and ensures intuitive access to all system functions. A compact and light weight design results in a highly mobile system that guarantees excellent manoeuvrability even within the smallest rooms.

### **Open and flexible**

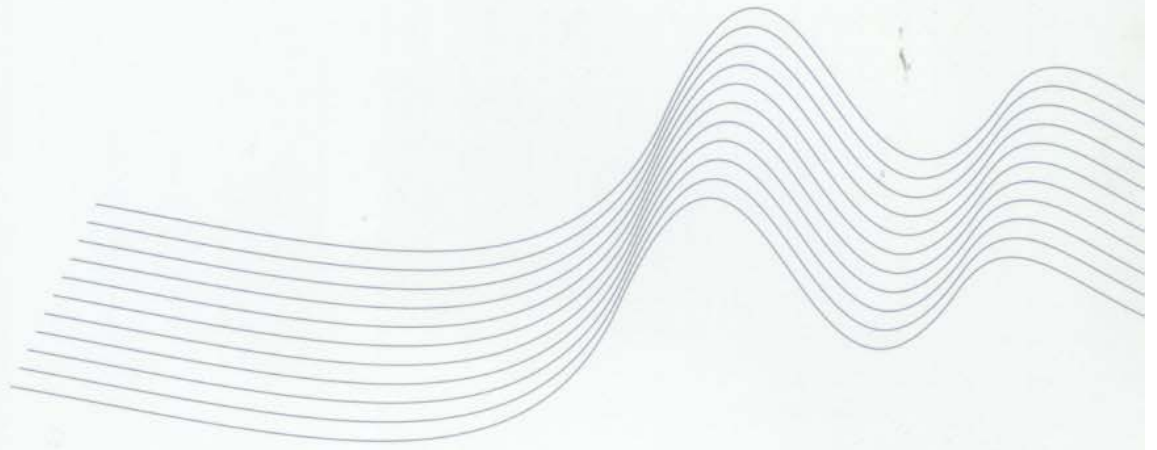
The platform of the HITACHI EUB-5500 HV supports more than 40 different high-performance ultrasound probes enabling an extensive range of applications to be performed within all fields of diagnostic ultrasound.

### **Efficient workflow**

A fully integrated HI-PACS workstation enables images and data acquired during an examination to be processed and stored and ensures direct communication between the EUB-5500 HV and external PACS-systems or hospital networks.







## HI-VISION technology

### The ideal requirement for optimal diagnosis

At the heart of the HITACHI EUB-5500 HV is the latest generation Media-Acceleration-Processor, with 10 thousand million operations per second it is the foundation for a new bench mark in system performance providing outstanding clinical results without compromise. The Windows based architecture allows the HITACHI EUB-5500 HV to adapt and keep pace with emerging ultrasound applications together with upgradeability as required. High-End technology for an attractive price!

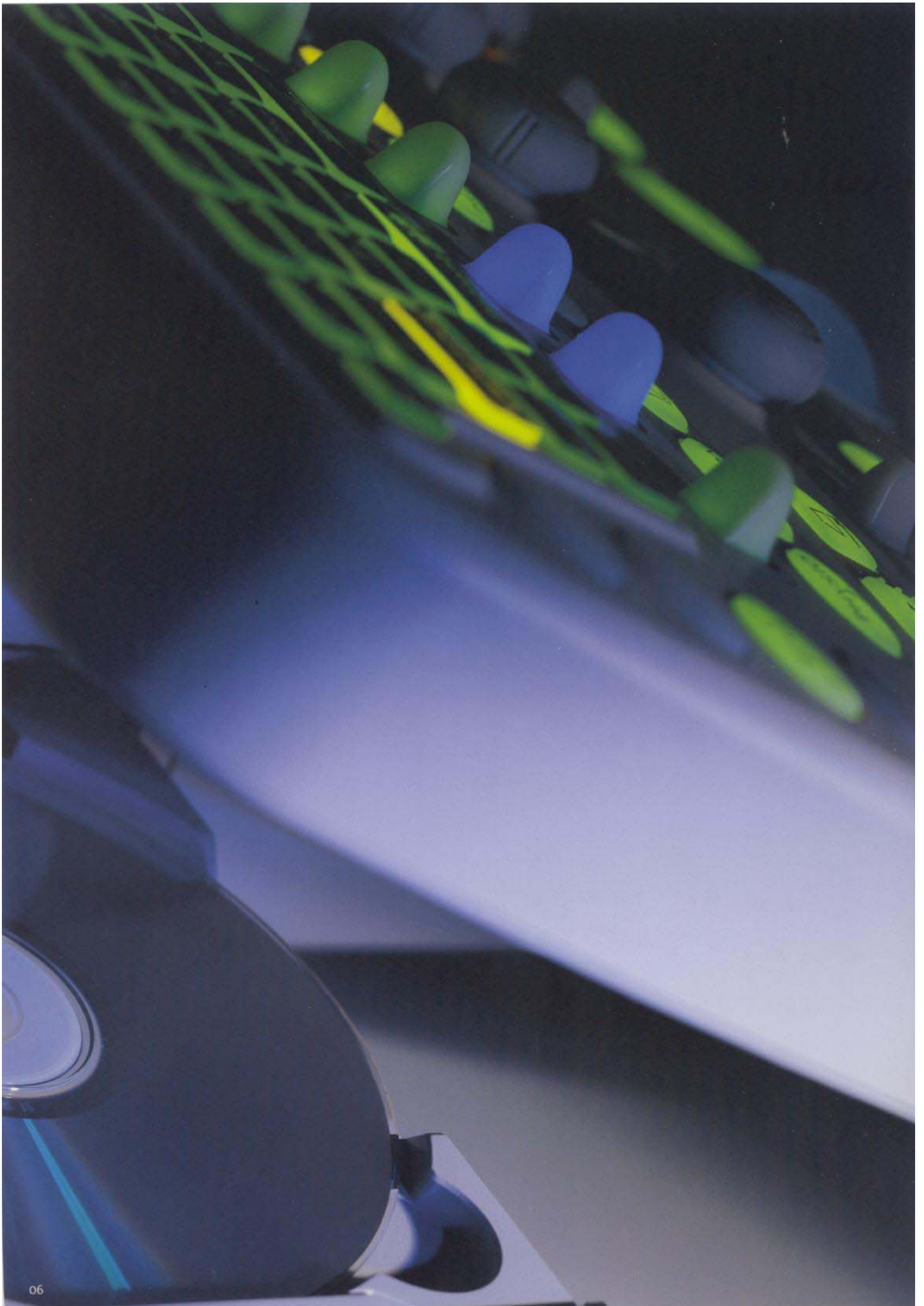
In addition the powerful Media-Acceleration-Processor allows evolution of innovative ultrasound technologies opening up the HITACHI EUB-5500 HV to future possibilities. Furthermore the flexibility of the system paves the way for new applications within diagnostic and therapeutic ultrasound examinations.

The totally digital parallel signal processing technique guarantees outstandingly fast transfer of ultrasound information, with each transducer element connected to a separate multiparallel signal processing channel. Automatic aperture adjustment together with specific acoustic lens material optimizes the transmit and receive focus ensuring outstanding contrast resolution in both near and far field. 12 Bit A/D Conversion produces very precise high frequency digitisation ensuring simultaneous acquisition of time and amplitude information of the raw data signals analysed in realtime.

Diagnostic echo signals are amplified at a very early stage in the signal processing whilst suppressing unwanted noise, resulting in exceptionally sharp images. The digital Wide Band Beamformer of the HITACHI EUB-5500 HV acquires and processes frequencies in the 1.5–20 Mhz range thereby expanding the capabilities within each clinical area ensuring optimum penetration, high image quality and improved contrast resolution resulting in superb diagnostic performance.







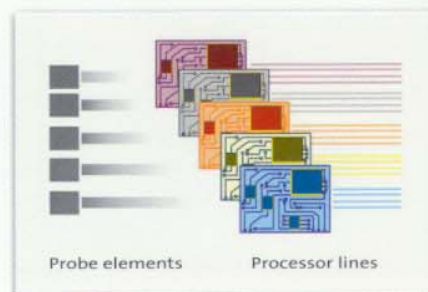
# Key Technologies

## The advantage of HI-VUE Imaging

All ultrasound technologies developed by HITACHI have but one goal: to guarantee maximum diagnostic confidence for each examination. The open platform of the EUB-5500 HV has been designed to incorporate new features as they become available, paving the way for future upgradeability. Our ongoing philosophy is to integrate new technologies for the benefit of both patient and clinician. HITACHI features HI-VUE Imaging™, offering the combination of these characteristics for superb quality performance.

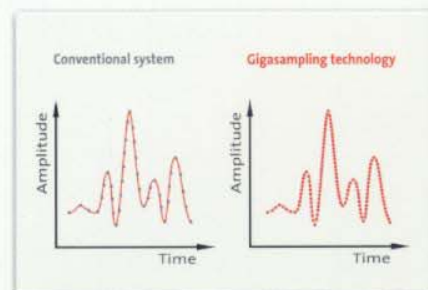
### Parallel-pro architecture

With dual-parallel processor lines, the EUB-5500 HV offers outstanding signal processing capacity ensuring high diagnostic confidence. The new Parallel-pro-architecture and the dynamic beamforming technology for optimal signal acquisition ensure that each transducer element, which can be individually steered according to your needs, possesses its own dual-parallel-working signal processing channel. The end result offers a larger, simultaneous aperture leading to outstanding image quality and extraordinary contrast resolution even at depth.



### Gigasampling-technology

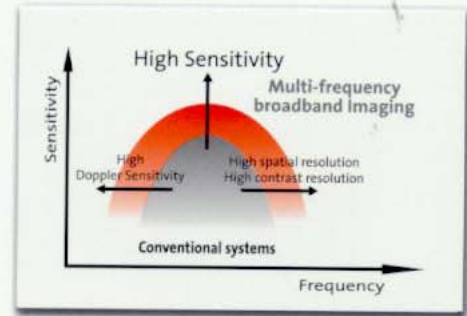
With 12-bit A/D conversion high frequency signals are generated in ultra-fine digitization simultaneously in both amplitude and time, analysing the data in realtime with integrated high speed processors. With revolutionary Parallel-pro-architecture, data throughput is twice that of conventional systems. Unparalleled digital precision is achieved by separating unwanted noise from true diagnostic echo signals.





### Multifrequency-Wideband Imaging

Multifrequency-Wideband Imaging significantly contributes to improved clinical diagnosis for all applications using the EUB-5500 HV. The system supports digital beamformers capable of bandwidths between 1.5 and 25MHz allowing up to five frequency ranges in B-Mode, four frequency ranges in dynamic Tissue Harmonic Imaging (dTHI) and two frequency ranges for Colour and Spectral Doppler Imaging.



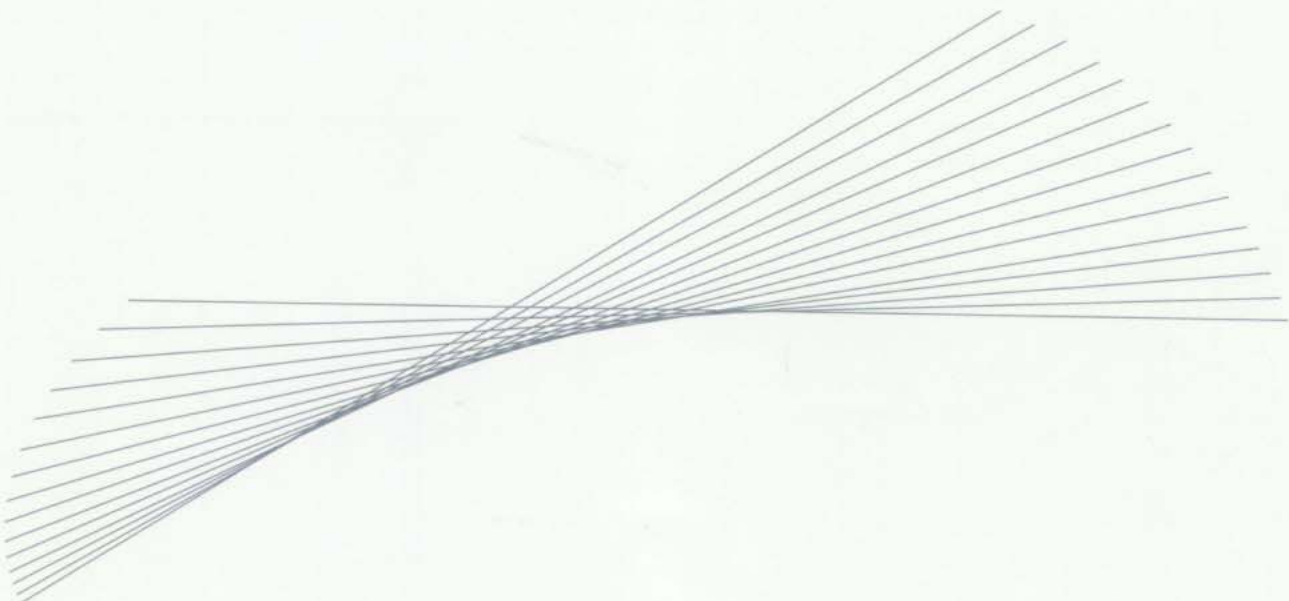
### Wideband-Pulsed-Inversion (wpi)

The EUB-5500 HV also incorporates Wideband-Pulsed-Inversion-Mode (WPI), an additional feature which offers improved lateral and contrast resolution. As with conventional phase inversion, two ultrasound signals with contrary phase positions are transmitted into the body and the returned echoes received and added together. In Wideband-Pulsed-Inversion, the linear echoes of the fundamental frequencies are suppressed whilst the non-linear, harmonic signals of higher frequencies are collected and used for image acquisition. In contrast to conventional phase inversion methods, the Wideband-Pulsed-Inversion-Technique invented by HITACHI allows the modulation of the transmitted frequency ranges between pulses.

This new technology has been specifically developed for dynamic Tissue-Harmonic-Imaging (dTHI) and for examinations requiring the use of contrast agents ie dynamic Contrast-Harmonic-Imaging (dCHI).

The end result offers a significantly improved lateral and contrast resolution whilst the frequency modulation achieves considerably higher sensitivity in deeper structures than with conventional Harmonic-Imaging-Techniques.

Wideband-Pulsed-Inversion can be performed across the range from low frequency probes for cardiac and abdominal applications through to high frequency linear or endocavity probes.





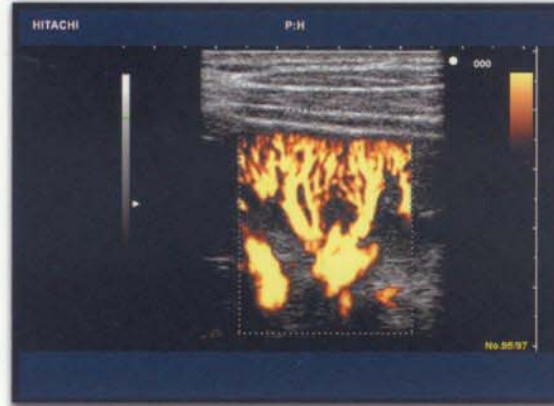
Cardia-Tumor, Electronic Radial Echoendoscope.



Gallbladder, Contrast enhanced by dynamic Tissue-Harmonic-Imaging.



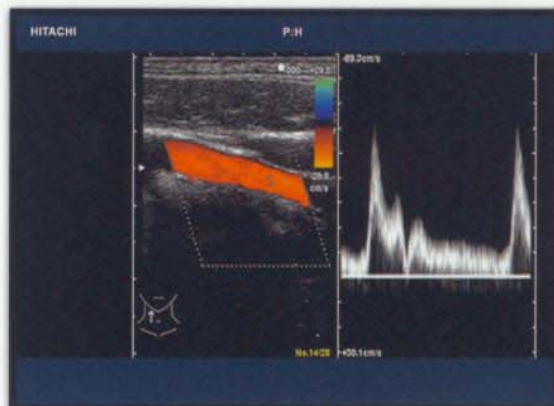
Barrett esophagus, Miniprobe 20 MHz.



Kidney transplant, CFA visualization.



Fetal circulation, 22W in CFI-Mode.



CFI-Image and PW-Doppler of Carotis Comunis.

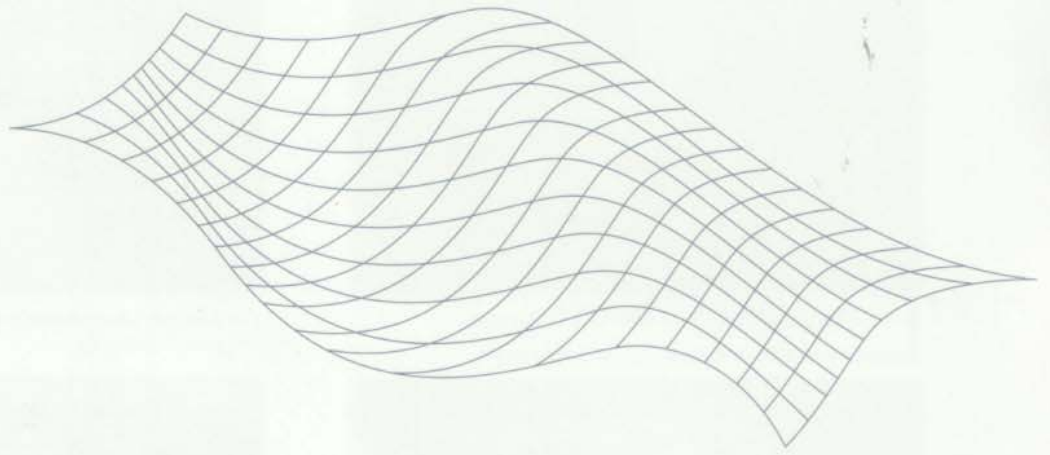


Native dTHI



Native dTHI + WPI





# Future Flexibility

## The foundation for future challenges

Whether for mainstream or specialized examinations HITACHI's top priority has always been for maximum diagnostic confidence.

Therefore the system provides an impressive range of Linear, Phased Array and Convex Wideband Transducers allowing for unparalleled versatility within all applications from abdominal, obstetrics and gynaecology through to vascular and cardiac. Highly specialised probes are also readily connectable to the system to permit laparoscopic, endoscopic, intraluminal, intraoperative, and endo-rectal investigations in addition to an extensive range of endocavity transducers for endovaginal examinations.

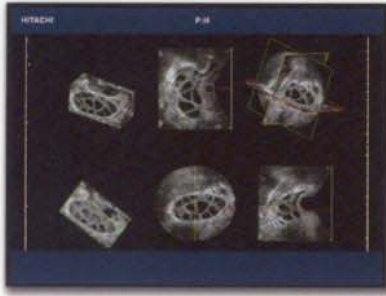
HITACHI ultrasound probes all display multi-frequency Wideband technology thereby enabling dynamic Tissue-Harmonic-Imaging (dTHI), even with high frequency linear and endocavity probes. The images acquired display high spatial and contrast resolution throughout the entire FOV even during difficult patient examinations.

In addition, the flexible open architecture design allows integration of the digital 3D-Module to produce reconstructed data sets with every probe whether B-Mode and/or Colour Mode. Moreover, the 3D-Module permits multi-planar reconstruction, surface rendering, variable 3D-mapping combined with image rotation in realtime – all executed easily and quickly.

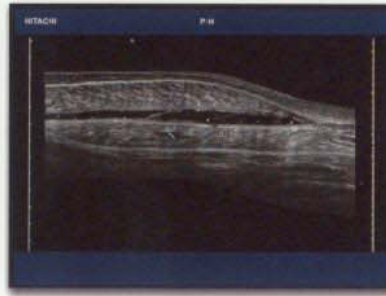
Wide-View-Imaging provides high resolution panoramic images generated in realtime allowing major organs and vessel structure to be visualized completely and accurately in their true anatomical perspective.

Omnidirectional M-Mode (ODM) can be integrated into the system for a broader diagnostic overview in cardiology by independent angulation of the axial M-Mode allowing a correct and accurate M-Mode display in realtime.

The Media Acceleration Processor offers flexible programmability and open platform style, which together, allow integration of future developments into the present system. The HITACHI EUB-5500 HV represents a secure investment today which will keep pace with future developments tomorrow.



3D-Sonography



Wide-View-Imaging



Omnidirectional M-Mode



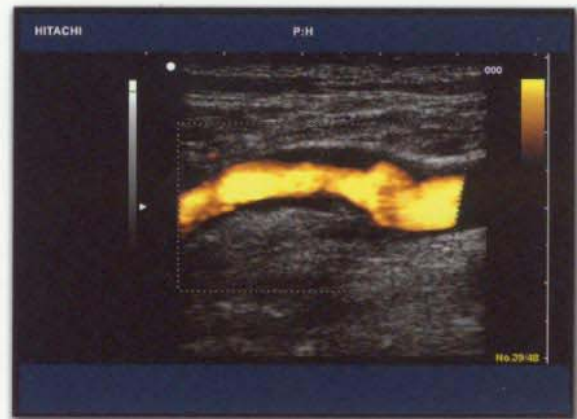
US of the Liver, Curved Array EUP-C514, 5-2 MHz



Urology, Testis, Linear Array EUP-L54, 13-6 MHz



Cardiology, Phased Array EUP-S50, 4-2 MHz



Angiology, Vascular, Linear Array EUP-L53S, 10-5 MHz

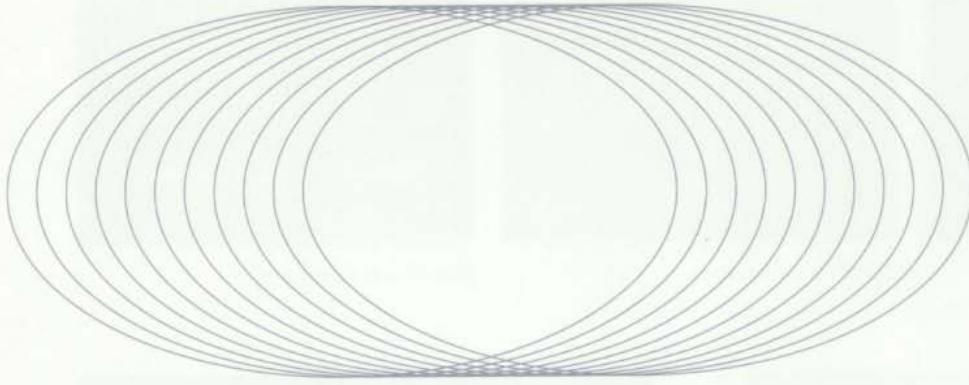


Gynaecology, Endocavity EUP-V53W, 9-5 MHz



Obstetrics, Curved Array EUP-C532, 9-5 MHz





# Workflow-Concept

## Perfect economic efficiency and productivity

Economic efficiency, speed of use and a high level of diagnostic confidence : the building blocks for the workflow-concept of the EUB-5500 HV which ultimately results in a smooth operation before, during and after the examination.

Smooth operation includes the possibility to retrieve data stored in the hospital network through a simple keystroke through to application-specific set-up of the system in realtime for speed and functionality.

A user-friendly control panel, rapid switching between imaging modes, the direct storage of images and digital video clips and the immediate access to stored images all ensure fast, efficient patient throughput with all examination data being accessed directly and easily.

The workflow-concept of the EUB-5500 HV sets new standards for ultimate productivity and efficiency with a sophisticated ergonomic design allowing a user friendly intuitive operation.

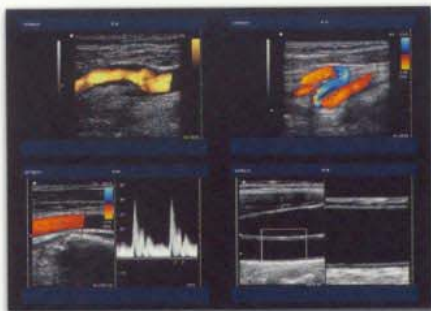
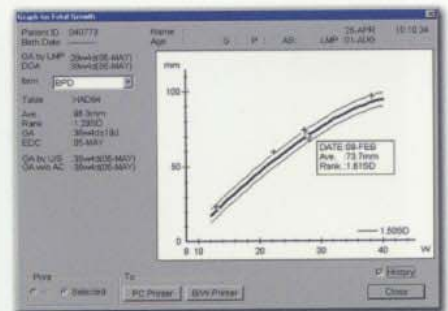


Image overview, Findings comparison



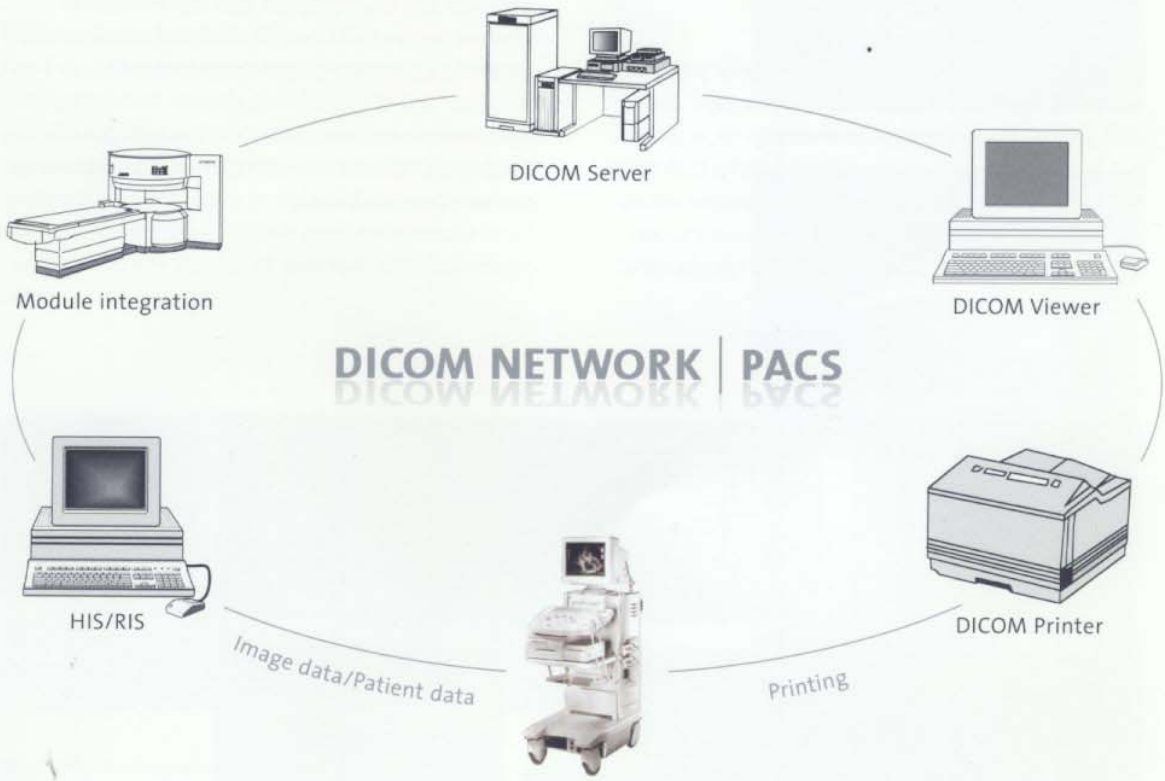
Image and patient database



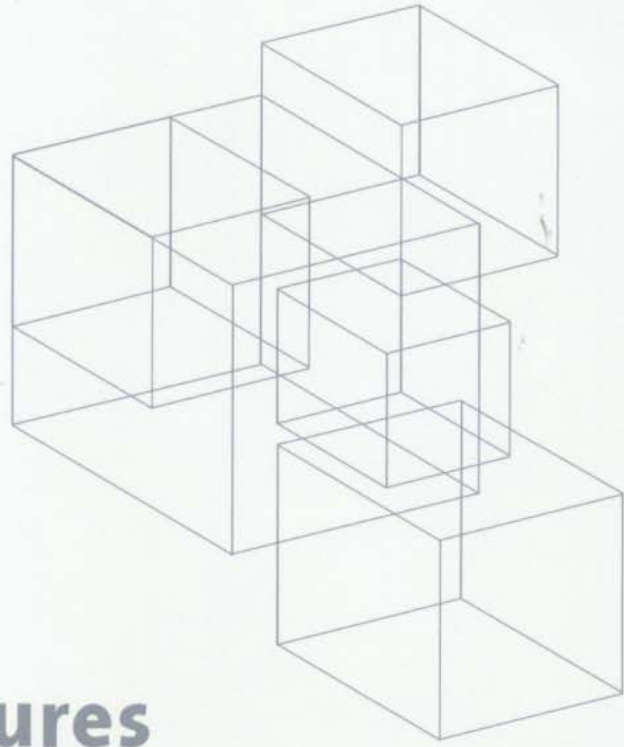
Patient data



An easily accessible USB port enables data to be transferred rapidly and accurately. The ultrasound images or image sequences are simply saved onto a USB stick or similar USB data carrier and can be downloaded with standard graphic programmes.







# Diagnostic Features

## Flexibility equates to Innovation and Compatibility

The HITACHI EUB-5500 HV has been developed in order to address maximum diagnostic safety in each and every application from the routine work load through to highly specialised examinations.

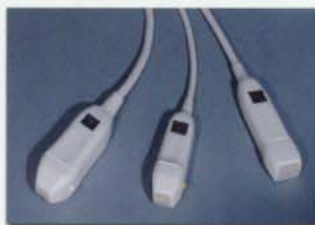
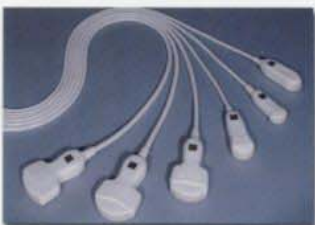
### Maximum probe versatility

More than 40 different high performance probes are available, from high resolution linear arrays, curved and phased array through to endovaginal, endorectal and intraoperative probes. The HITACHI EUB-5500 HV is the system of choice for high resolution intraluminal mini probe technology or endoscopic ultrasound requiring electronic radial and longitudinal echo-endoscopes.

### Multi-frequency 4D module

The optional 4D module is also available for the HITACHI EUB-5500 HV for high resolution 3D images in realtime. Captured 3D volumes can be stored, retrieved and manipulated and represented in different modes including 3D-mapping, transparency rendering and multi-planar reconstruction.

The 4D-Mode ensures automatic quantitative volume imaging and measurements from multiple planes for precise 3D-Volume data.



The HITACHI EUB-5500 HV system architecture ensures integration of all possible clinical ultrasound options and can be customised to each user's requirements.

### Wide-View-Imaging

Wide-View-Imaging provides high resolution panoramic images generated in realtime allowing major organs and vessel structure to be visualized completely and accurately in their true anatomical perspective.

### Cardiology-Imaging

The HITACHI EUB-5500 HV incorporates an extensive cardiology package for total qualitative and quantitative analysis.

### Real-Time Omnidirectional M-Mode (ODM)

Real-Time Omnidirectional M-Mode allows the M-Mode to be extracted from any direction and any degree in realtime.

### Real-Time-Archiving

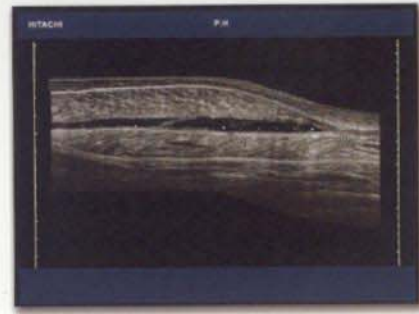
Offers archiving of image-loops in a free time format up to 300 seconds, or R-R triggered Cycle. RTA will provide you with storing Data on a Hard disk and/or on a DVD. You may present your image material on each PC Computer or in oral presentations supported by Presentation Software.

### Tissue-Doppler-Imaging (TDI)

The Tissue-Doppler-Imaging (TDI) technique for the measurement of velocity at any point in the ventricular wall during the cardiac cycle provides information on regional wall motion dynamics with high temporal resolution. Quantitative analysis of the myocardium can be calculated with colour encoded velocity maps and quantitative studies of regional wall movements with spectral Doppler.



The multi-frequency broadband transducer offers a frequency range from 8-2.5 MHz. Lightweight in design, ergonomically appealing with highly flexible cables for fast, fatigue-free scanning.



Wide-View-Imaging



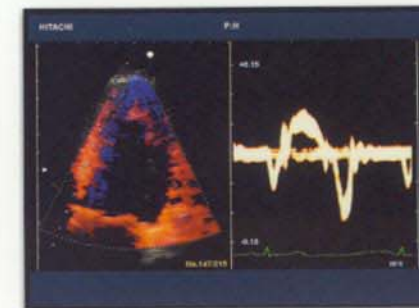
Multi-frequency 4D-Mode



Omnidirectional M-Mode



Vascular-CFA-Imaging



Tissue-Doppler-Imaging