

**Hitachi Medical Corporation**

Akihabara UDX, 4-14-1  
Soto-Kanda  
Chiyoda-ku  
Tokyo, 101-0021, Japan  
Phone +81 3 3526 8410  
Fax +81 3 3526 8409

**Hitachi Medical Systems America, Inc.**

1959 Summit Commerce Park  
Twinsburg, Ohio 44087, USA  
Phone +1 330 425 1313  
Fax +1 330 425 1410

**Hitachi Medical Systems (Beijing) Corporation**

Rm.609 Winterless Centre B-area,  
No1 Xi-Da-Wang Road,  
Chaoyang District,  
Beijing, P.R.China 100026  
Phone +86 10 6538 8881

**Hitachi Medical Systems (S) Pte Ltd**

7 Tampines Grande Hitachi Square #04-01  
Singapore 528736  
Phone +65 6602 0110  
Fax +65 6602 0111

**Hitachi Medical Systems Europe Holding AG**

Sumpfstrasse 13  
CH-6300 Zug  
Phone +41 41 748 63 33  
Fax +41 41 748 63 32

**Export Division**

- Ultrasound  
Phone +41 41 748 63 47  
Fax +41 41 748 63 32
- MR/CT  
Phone +41 41 748 63 49  
Fax +41 41 748 63 32

**Hitachi Aloka Medical Ltd.**

6-22-1, Mure, Mitaka  
Tokyo 181-8622, Japan  
Phone +81 422 45-6049  
Fax +81 422 45-4058

**Hitachi Aloka Medical Ltd.**

10 Fairfield Boulevard  
Wallingford, Connecticut 06492, USA  
Phone +1 203 269 5088

**Hitachi Aloka Medical Ltd.**

South, 6th Floor, No. 456 Fute  
North Road, Waigaoqiao  
Shanghai, China  
Phone +86 21 5866 5820

**Hitachi Aloka Medical Ltd.**

1 Maritime Square #10-32/32A  
Harbour Front Centre  
099253 Singapore  
Phone +65 6271 1960

**Hitachi Medical Systems GmbH**

**Technology Academy**  
Wanheimer Strasse 59  
D-40472 Düsseldorf  
Phone +49 211 1665 10  
Fax +49 211 1665 169

**Hitachi Medical Systems GmbH**

Otto-von-Guericke-Ring 3  
D-65205 Wiesbaden  
Phone +49 6122 7036 0  
Fax +49 6122 7036 10

**Hitachi Medical Systems GesmbH**

IZ NÖ-Süd, Strasse 2a, Objekt M39/II  
A-2351 Wiener Neudorf  
Phone +43 2236 677 750  
Fax +43 2236 677 75049

**Hitachi Medical Systems Kft.**

Damjanich u. 11-15  
Ligetváros Irodaház I. em. 102  
H-1071 Budapest  
Phone +36 1 478 0090  
Fax +36 1 478 0091

**Hitachi Medical Systems BV**

Edisonstraat 1a  
NL-2811 EM Reeuwijk  
Phone +31 182 39 77 77  
Fax +31 182 39 77 79

**Hitachi Medical Systems N.V./S.A.**

Mechelen Noord II  
Wayenborgstraat 8  
B-2800 Mechelen  
Phone +32 15 20 22 55  
Fax +32 15 20 01 92

**Hitachi Medical Systems UK Ltd**

1 Davy Close  
Park Farm Industrial Estate  
Wellingborough  
Northamptonshire NN8 6XX UK  
Phone +44 844 800 4294  
Fax +44 1933 4058 59

**Hitachi Medical Systems S.A.S.**

18 avenue du Québec  
BP 356  
Villebon-sur-Yvette  
F-91959 Courtaboeuf Cedex  
Phone +33 1 69 86 12 34  
Fax +33 1 69 86 18 82

**Hitachi Medical Systems S.p.A.**

Via Edison 6  
I-20090 Assago MI  
Phone +39 02 97166  
Fax +39 02 97166127

**Hitachi Medical Systems S.L.**

Edif. Alfa III – Local 144  
C/Isabel Colbrand 10-12  
E-28050 Madrid  
Phone +34 91 358 93 50  
Fax +34 91 358 96 03

Plus representations in various European countries.

Hitachi Medical Corporation Medical System Operations Group, Kashiwa, is certified as complying with the International Standard of System Quality Assurance (ISO 9001), Medical Device Special Requirements (ISO 13485).



Hitachi Medical Corporation Medical System Operations Group, Kashiwa, has been certified to ISO 14001 (Environmental Management Systems).



The legal manufacturer of PENTAX ultrasound endoscopes is Hoya Corporation, Tokyo, Japan. They are distributed by Hitachi Medical Systems Europe Holding AG, Zug, Switzerland and its subsidiaries in assigned geographical areas in Europe.

Specifications and physical appearance may be changed without prior notice in order to improve performance. Some features described are optional. Please read instruction manual to ensure correct operation of the equipment.



This brochure is printed on biodegradable FSC®-certified paper produced from responsible forestry. FSC® stands for "Forest Stewardship Council".

# HI VISION Avius®

A high performance ultrasound platform inspired by experience



Update HV Avius 2013 | e | 06.2013 | a+w



Inspired by  
experience.

## HI VISION Avius®

A high performance ultrasound platform  
inspired by experience

Inspired by experience, the HI VISION Avius® is an ultrasound platform that is small in stature but big in performance. With the same performance reliability and attractive system design of the new HI VISION ultrasound platform range – you will find the HI VISION Avius® hard to resist.

Our new system architecture, incorporating the latest broadband beamforming technology and ultra high-speed signal processing capability, will inspire you with confidence to put the HI VISION Avius® at the heart of your diagnostic and interventional therapeutic ultrasound practice. Trust us and try it!



Hitachi Medical Systems Europe is the European headquarters of Hitachi Medical Corporation and Hitachi Aloka Medical Ltd whose corporate head offices are located in Tokyo, Japan; two companies renowned for technological innovation. Our broad experience and expertise in ultrasound imaging makes us a recognized leader in this field, meeting the latest design and quality standards, combined with outstanding image quality and advanced clinical applications.



## Graphical User Interface

A graphical user interface incorporated into the LCD viewing monitor maximises the size of the displayed image, whilst ensuring efficient adjustment of parameters. 'Smart Tabs' hide the examination management menus and toolbars, including a full system operating manual, but give the operator quick access when required. In a similar way, the thumbnail image gallery displaying current or stored images for easy comparison can be hidden, leaving a full width image display for maximum diagnostic capability.

## Intelligent Data Management

Intelligent data management and transfer functions are controlled by versatile filing software that allows you to store, retrieve and review patient examination data with minimal effort. Comprehensive search and display options provide efficient review and transfer of examination data to external media such as USB memory devices (multiple ports), USB hard disk drives, DVD-R or DVD-RAM in DICOM, BMP, TIFF or AVI format. The ability to mask patient identification on transfer ensures compliance with data protection protocols and assures patient confidentiality when using images for research, training and education.



The patient filing window offers easy access to stored data for review and image transfer

## HI VISION Avius® – Advanced Product Features

In today's busy healthcare environment we know what a difference user-friendly equipment can make to your daily workload. You asked for a system that is easy to use and improves workflow – we have given you a simple elegant operator console and put efficient imaging parameter control at your fingertips.

### New Console Design

With a dedicated, fold-away alpha numeric keyboard and direct adjustment of the imaging parameters intuitively grouped on the large digital LCD viewing monitor, the operator console design allows easy access to key mode changes and options without clutter. Customisable keys for the most commonly used functions such as print, store, probe and application change, further simplify workflow.



# HI VISION Avius® – HI VISION Imaging

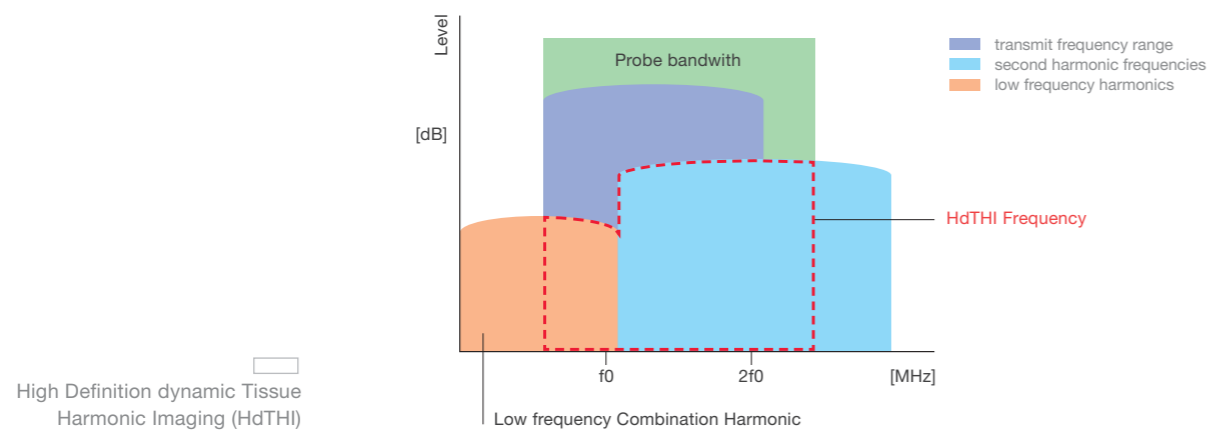
The art of effective imaging – HI VISION imaging capability offers customised scanning parameters combined with high-speed image processing to facilitate efficient & accurate diagnoses. Proven innovative technologies confer superior penetration, temporal, spatial and contrast resolution giving high quality images for every patient every time.

## Patient Scanning Selector (PSS)

Detailed adjustment of all imaging parameters is essential to optimise diagnostic capability for each anatomical area and for each individual patient. The Patient Scanning Selector (PSS) gives flexibility within a chosen clinical application to customise, save and later recall examination specific combinations of imaging parameters at the touch of a button.

## Advanced Imaging Technology

Ultra high-speed image processing on the HI VISION Avius® platform enhances the performance of established image quality improvement technologies such as HI Rez+ (tissue adaptive filtering), HdTHI (High Definition dynamic Tissue Harmonic Imaging) and HI Com (frequency and spatial compounding). Flexible pitch scanning using a new proprietary ASIC gives the operator more control over frame rate and line density resulting in faster frame rates and maintained high quality B-mode imaging even in Colour Doppler and Elastography (HI-RTE) modes.



## Patient Dependent Correction (PDC)

The HI VISION Avius® platform recognises that patients are not all the same – Patient Dependent Correction (PDC) allows you to make adjustments to the assumed speed of sound in soft tissue for every individual, resulting in improved spatial and contrast resolution to give high quality images in all patients all of the time.

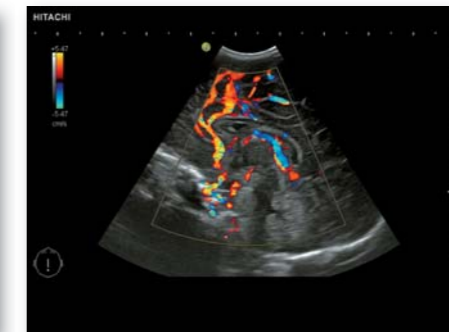
## New Image Formats – Imaging outside the Box

Examinations of superficial structures using high frequency linear array transducers are transformed using a new trapezoid display format to 'image outside the box' – expanded field of view for B-mode and Colour Doppler imaging, and a steering B-mode option to optimise beam-to-vessel angle to enhance anatomical and vascular displays. High resolution zoom (HI Zoom) and image magnification (Pan Zoom) functions are available at the touch of a button for optimisation of line density and frozen image size adjustment, respectively.



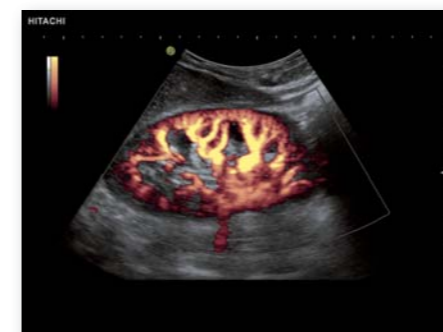
HI VISION imaging confers superb contrast resolution to differentiate the small liver haemangioma and enhance the outline of the dilated pelvis of the right kidney

High definition Tissue Harmonic Imaging combined with HI Com compound imaging are used to identify debris and tumour within the cavity of this cystic breast mass



The morphology of this 9 week embryo with yolk sac is well visualised with the high frequency endovaginal transducer

Excellent colour Doppler sensitivity and spatial resolution are demonstrated when evaluating the blood flow in the neonatal brain



Colour flow angio mode confirms normal perfusion in this right kidney with the microvasculature displayed to the periphery of the cortex

The luteal phase endometrium is clearly visualised along its length with a small depression at the fundus from a submucosal fibroid



HI Com compound imaging combined with High definition Tissue Harmonic Imaging on the 5 cm wide high frequency linear probe offers clear visualisation of the hypochoic margin throughout the full length of this thyroid tumour

FineFlow mode is used to show the fine detail of the peripheral vasculature associated with this large hepatic tumour

# HI VISION Avius® – Advanced Modalities

Advantage through knowledge – recognising that premium advanced modalities can provide significant diagnostic & therapeutic benefit in routine clinical applications the HI VISION Avius® offers several of our pioneering ultrasound imaging technologies to give you state-of-the-art imaging in a compact and affordable system.

## Hitachi Real-time Tissue Elastography (HI-RTE)\*

HI-RTE has proven clinical benefits in a variety of different applications – breast, prostate, pancreas & lymph nodes, thyroid, musculoskeletal, liver and many more. With the ability to improve focal lesion visualisation and refine a differential diagnosis in real-time using any one of over 20 transducer choices, clinical studies evidence that the technique is accurate, reproducible and easy to perform. HI-RTE is rapidly becoming an essential part of the routine clinical ultrasound examination. New strain histogram analysis helps to quantify and standardise staging of diffuse diseases such as liver fibrosis.



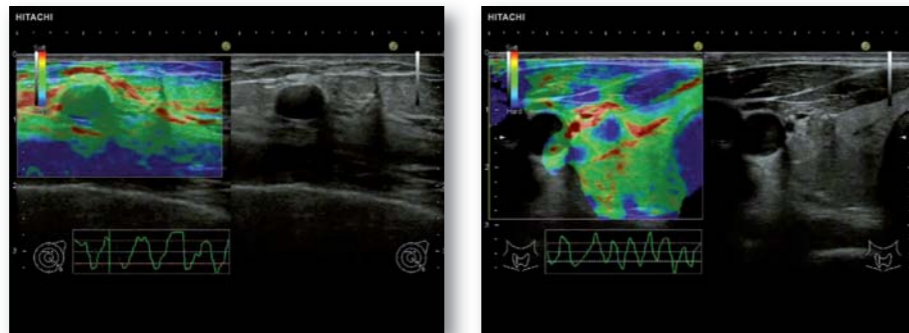
The mixed pattern of stiffness shown by HI-RTE illustrates the heterogeneous nature of this fibroid uterus

The strain histogram analysis software quantifies parameters that can be used to estimate staging of diffuse disease such as liver fibrosis



The benign nature of this breast lesion is confirmed with HI-RTE; normal strain is seen within the areas of shadowing.

The HI-RTE image of this thyroid lobe shows two well circumscribed 'stiff' lesions suggesting further investigation is necessary



## 4D\*

Volume imaging is supported on the HI VISION Avius® platform by dedicated lightweight, ergonomic transducers capable of the same level of HI VISION signal processing as our standard 2D transducers to maximise diagnostic capability whilst minimising operator fatigue. Introduction of a new high frequency linear 4D transducer now extends the clinical utility of this option to breast and other superficial structure applications.

\*Optional

Versatile software features include: HI-DEF 3D selectable in B-mode, colour flow or power Doppler mode, simultaneous display of parallel 'multislice' images derived from the 3D volume data set, and a choice of image rendering modes, e.g. surface, transparency, maximum or minimum intensity projection, skeletal and inversion modes.

A multiplanar reformatting (MPR) function gives you the ability to view any individual anatomic plane either as a 'full screen' image or in quadruple display with its three complementary orthogonal planes – this facilitates accurate linear or volume measurements and improves the accuracy of image-guided interventional procedures. The clinical value of MPR display is further enhanced by the addition of tissue adaptive filtering to reduce the effects of speckle and noise in the reconstructed planes.

Raw volume data can be saved to the internal hard drive or external storage media and are easily retrieved for further manipulation. Previous parameter adjustments can be recorded with the stored data, allowing the user to return to an earlier reconstructed view.



Very fine detail of the fetal hand and umbilical cord are seen in this 3D image of a fetus at 36 weeks gestation

The multiplanar reformatting (MPR) function allows simultaneous display of 3 orthogonal planes of this embryo using the endocavity 4D transducer

## Dynamic Contrast Harmonic Imaging (dCHI)\*

Dynamic Contrast Harmonic Imaging (dCHI) is a wideband pulse-inversion (WPI) technology developed for use with ultrasound contrast agents. We give you increased agent-to-tissue specificity by modulation of both phase and the transmit frequency between pulses – you notice significant improvement in lateral and contrast resolution and greater sensitivity at depth with no compromise in axial resolution.

The Motion-Compensated Microbubble Trace Imaging (MC-MTI) accumulative enhancement mode offers improved visualisation of micro-vessel morphology and by generating Time Intensity Curves (TIC) from stored data you can display contrast agent enhancement over time within multiple selectable regions of interest (ROI). dCHI mode is available on the full range of abdominal, interventional, cardiac, endocavity, endoscopic, and on high frequency linear array, transducers.



The characteristic centripetal filling of a haemangioma is demonstrated in this lesion in the liver 30 seconds after injection of the contrast agent

No uptake was seen in this echo-poor lesion in the pancreatic tail 30 seconds after injection of the contrast agent using the longitudinal echoendoscope

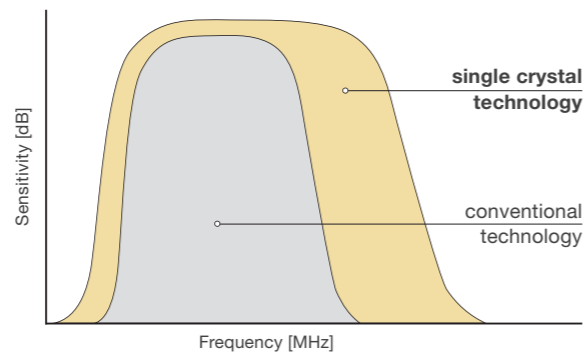
\*Optional



## HI VISION Avius® – Transducer Technology

Our ultrasound systems benefit from more than 30 years experience of in-house transducer design and manufacture. The HI VISION Avius® is compatible with our full range of standard and dedicated specialist transducers – maximising diagnostic potential and maximising return on investment.

Our 'in-house manufacture' expertise has allowed us to customise and optimise transducer performance for each clinical application by using the most appropriate design features. For example, our super multi-layer technology gives you high signal-to-noise ratios at depth in the abdomen whilst micro piezo-composite technology is used to reduce interference and improve signal-to-noise ratio when imaging superficial structures with high frequency linear transducers. State-of-the-art, single crystal technology is used for phased array cardiac imaging to improve stability and energy efficiency resulting in higher quality B-mode imaging and increased Doppler sensitivity.



## Biopsy Guidance

We offer outstanding technological support for interventional diagnostic and therapeutic procedures with a choice of dedicated transducers for biopsy, attachments for performing biopsy with standard transducers and integrated working channels for endoscopes.



■ EUP B514 – dedicated biopsy transducer with a 'through crystal' channel for biopsy needle guidance  
 ■ EUP L65 – high frequency linear transducer with attachment for biopsy needle guidance

## Endoscopic and Endobronchial Ultrasound\*

Endoscopic Ultrasound (EUS) has an increasingly important role in the non-operative diagnosis and staging of malignant disease – a minimally invasive technique that gives you rapid access to the information you need to make clinical decisions with confidence, and which allows your patients to make timely and informed choices about their care and treatment.

Our range of innovative, sophisticated, yet easy-to-use endosonographic transducers utilises the latest multilayer, composite materials with wide bandwidth, enabling you to select the most appropriate frequencies for native B-mode, tissue harmonic, colour and pulse wave Doppler imaging. Their ergonomic design, combined with light weight components, cable flexibility and optimised cable length, help to minimise musculoskeletal strain in the hand and wrist during even the most demanding examinations. Endosonographic transducer options include 360° radial array and longitudinal therapeutic scopes for evaluation of the GI tract and pancreas and an endobronchial scope for diagnosis and staging of mediastinal and hilar lymph nodes.



□ Endosonographic transducers: Longitudinal scope with large working channel and elevator for FNA guidance and therapeutic procedures; 360° radial for primary diagnostic examinations of the GI tract; and endobronchial scope offering transbronchial needle aspiration (TBNA) guidance

\*PENTAX ultrasound endoscopes

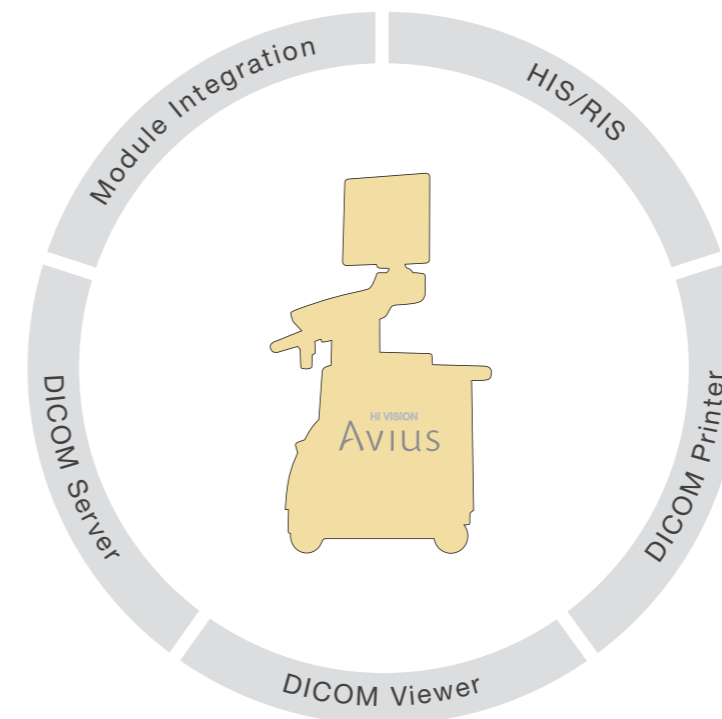


## HI VISION Avius® – Safe and Efficient Patient Data Interfacing

Intelligent software solutions for improved workflow – maximising patient throughput: minimising operator effort.

### Network Connectivity

Full DICOM connectivity allows you to interface with PACS and other image and information management systems, providing integrated worklist, storage, query/retrieve and print functionality. Structured report options expedite examination completion and encourage standardised reporting practice.



 DICOM network/PACS connectivity

### Intelligent Patient Administration – gives you smart Access to Patient Data as and when required

At the start of each 'new patient' previous examination entries can be reviewed for corresponding records and matching patient information automatically populated into relevant data fields.

Prospective worklist entry capability allows rapid patient identification and selection at the start of each examination and ensures accurate and consistent patient records. Flexible interrogation software enables you to search the image database using patient name, date of study or keywords. 'Image Viewer' software allows you to retrieve stored images and measurements for offline review to facilitate image interpretation and examination reporting.



## Our values and services

We combine high technology with the Japanese tradition of long-term thinking, a high level of consciousness for quality aspects and the subsequent understanding of service.

In building valuable, long-term relationships with our customers, we have achieved an understanding of their different needs and expectations. This has strengthened our commitment to deliver high-quality products which fulfil the requirements of each unique clinical speciality.

We provide a one-to-one service to secure first class customer satisfaction. The close working relationships among sales, applications and many other key members guarantee appropriate reactions and fast responses.

We always endeavour to 'go the extra mile'. We succeed because we welcome new ideas, products and services.

Services such as our 360° educational programme, the Hitachi Medical Systems Technology Academy, offering tailor-made, added-value services and solutions for professionals in all fields of medicine and other interested groups.

We abide by our corporate philosophy believing that we have a social responsibility to protect our environment, so that the next generation has a firm grounding on which to build a secure future.



## HI VISION Avius®

A high performance ultrasound platform inspired by experience