

Our uncompromising pursuit of comfort, function and quality, led to the birth of a new category of Open MR. Discover the renowned reliability, patient comfort and hospital-friendly concept of Hitachi - the leading company of Open MR.

Introducing AIRIS Elite, Advanced Mid-field MR.  
The next logical step in Mid-field MR performance.

A photograph of a Hitachi AIRIS Elite MR scanner. The machine is light blue and white, with a large, open gantry. A patient bed is positioned inside the gantry. The machine is set against a plain white background. The lighting is soft, highlighting the machine's contours. The overall aesthetic is clean and professional.

**AIRIS** *Elite*

Advanced Mid-field MR

AIRIS Elite features a multiprocessor computer architecture enabling comprehensive multi-tasking capabilities to increase efficiency and therefore, patient throughput.

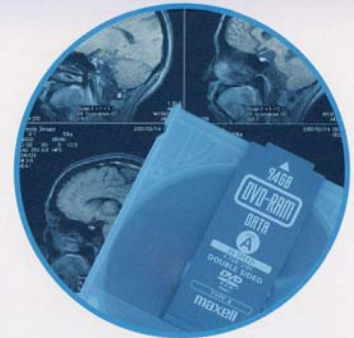
With the integration of faster CPUs, the multiprocessor computer architecture improved its response time to various operations. The required time for image analysis process, such as MIP processing, has decreased to less than half the time it took on conventional systems.

Also realizing comprehensive multi-tasking capabilities, the advanced multiprocessor makes high-speed, parallel processing possible, enabling simultaneous executions of several operations.

Comfort  
and  
Convenience

Powerful  
Gradient  
System

## Sophisticated Computer System



AIRIS *Elite*  
HITACHI

AIRIS *Elite*  
Advanced Mid-field MR

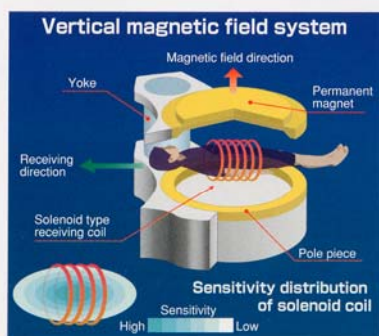
# FUNCTION

Ever since released in 1986, Hitachi has sold more than 3600 Open MR systems throughout the world.

Beginning with the development of permanent magnet MR system, followed by the development of Open MR system, today pursuit of excellence continues with the development of high performance sequences. AIRIS Elite is built on a foundation of technological evolution of Hitachi R&D experience.

## ● Vertical Magnetic Field System

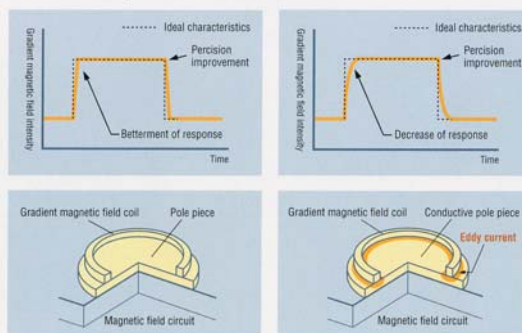
Open MR is a vertical magnetic field system in which the magnetic field runs vertically. Since solenoid coils could be used with the vertical magnetic field system, stronger signal could be obtained compared to those of horizontal magnetic field system of the same field strength. Open MR makes full use of this advantage and realizes high quality images.



## ● Permanent Magnet Technology

In permanent magnet MR system, the key to stable, high quality images is to develop measures against eddy currents. Eddy current is a current which flows opposite in direction as the gradient, consequently degrading the gradient magnetic form.

Eddy currents cause distortion in images and triggers degradation of images. Hitachi controlled the degradation of images and realized advanced imaging sequences such as FSE/EPI/BASG, by integrating technologies to the magnet which inhibit eddy currents.



## ● Gradient Magnetic Field System

Integration of a new gradient magnetic field system realized magnetic gradient field strength of 21mT/m and a slew rate of 55T/m/s. Compared with conventional systems, smaller FOV, thinner slice images, and shorter scan times have been realized.

The technological advancement of the gradient magnetic field system shortened the scan time and realized higher quality images at the same time, which are invaluable advantages also to the patients.

## ● Open Magnet

One of the challenges in the creation of open magnet is the post which connects the magnet found above and below the gantry. Magnetic field strength could weaken or static magnetic field homogeneity could become difficult to maintain when the number or the diameter of the post is decreased. Hitachi overcame this challenge and realized the Open MR system.

## ● User-friendly operation

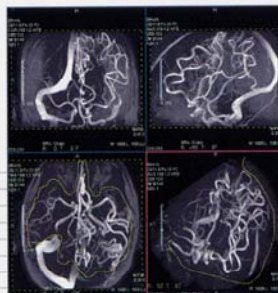
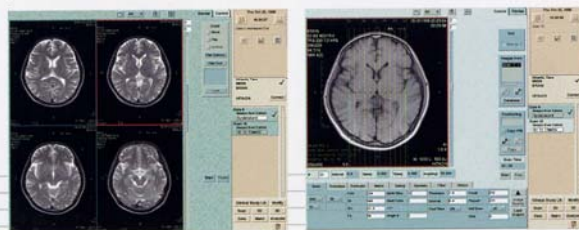
Operation screen adopts the task card system which realizes simultaneous display of several patients' data. By employing a user-friendly GUI (graphical user interface), easy operation is realized. Additionally, since scan protocol is set with each region and object, scanning is made easy by simply selecting the protocol set needed for the specific scan.

## ● Console

As 3-D processing of MR images such as MIP construction is becoming more common, the demand for a more advanced image processing unit is growing. AIRIS Elite, which console integrates dual CPU realizes improvements not only in the field of image processing but also in the field of normal operation.

## ● Image Processing

Unwanted regions could be selectively deleted from 3-D data such as angiography. Rotating display could also be processed in real time. Smooth reconstructions of any given slice image such as those of MPR images are made possible by a newly integrated state-of-the-art CPU.



## ● Network

Preparing for the dawn of a large capacity network age, DICOM is available as a standard feature. Furthermore AIRIS Elite received Gold Star, at IHE\* (Integrating the Healthcare Enterprise) Connectathon. AIRIS Elite could contribute greatly to data communications of the hospital network environment.

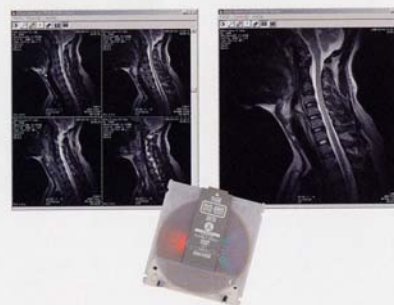
\* option (IHE Compliant DICOM is not available as a standard feature)

## ● I-MR

Open design and small footprint opened the door to "the age of medical treatment". Open MR is being used inside the operation room to improve the rate of complete tumor removal, just one value which AIRIS Elite is creating in MR application.

## ● DVD multi-drive

The newly adopted DVD multi-drive replaces the MOD drives on conventional systems. Huge capacity of 9.4GB along with writing and reading speed faster than those of MOD drives are realized. Hitachi's dedicated image-viewer software designed for Windows is automatically stored on CD-R when image data is archived.



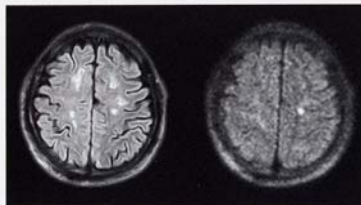
# APPLICATION

For all of those working with Open MR systems, AIRIS Elite made advancements not only in hardware, however also in sequences necessary for clinical application, as well as in the daily workflow.

## Open MR Software ASCENDING® 5.0

### ● DW-EPI

High magnetic homogeneity and enhanced power output of digitally controlled gradient magnetic field system realized distortion-free EPI (Echo-Planar Imaging) sequence. It could be used for diagnosing cases otherwise difficult with T1/T2 weighted images, such as acute cerebral infarction.



FLAIR DWI

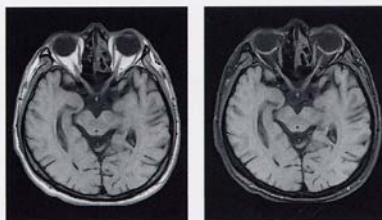
### ● MR Angiography

MRA is considered as one of the most important diagnosis in MR diagnosis. While MRA is a standard feature, it is also a sequence which could be used to judge the basic performance of a MR system. Hitachi with technological foundation from year's experience minimized the misalignment of slabs during reconstruction, realizing seamless, smooth imaging.



### ● Fat/Water Separation

Due to influence of fat, clear images of regions where fat and water mix intricately were difficult to obtain. With AIRIS Elite, images of fat component and water component could be separately constructed. This allows the operator to obtain information of tumor composition.



Spin Echo

Fat / Water Separation



Spin Echo

Fat / Water Separation

### ● CE-MRA with PEAKS\*

Non-contrast imaging of blood vessels is one function which defines a MR system, however with the use of contrast agent, images of blood vessels could be obtained in even shorter scan times. By collecting data in multiple pieces reducing the dependency to time factor for imaging blood vessels, PEAKS enables AIRIS Elite to obtain high quality MRA images.

\* option



### ● DE-FSE

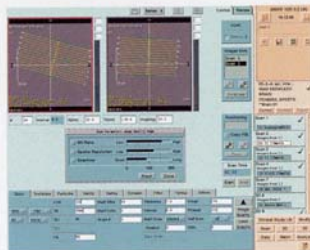
DE-FSE realizes faster and higher resolution T2 weighted imaging. DE-FSE proves its high effectiveness especially in joint and perineural imaging. It is also possible to perform DE-FIR, adding DE pulse with FIR.

### ● BASG (Balanced SARGE)

Advancement and accurate control of gradient magnetic field system made the integration of BASG possible. By shortening the TR, short scan time and high signal strength are realized, sequences long-awaited for applications in joint/abdominal regions.

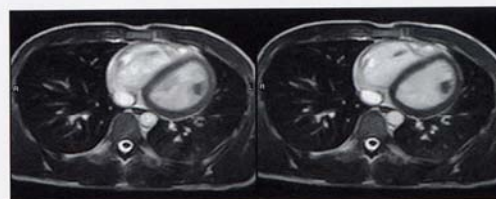
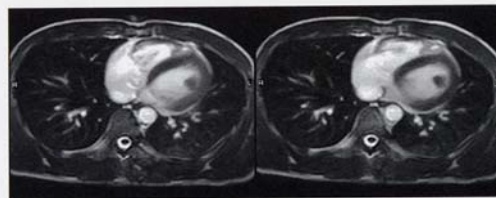
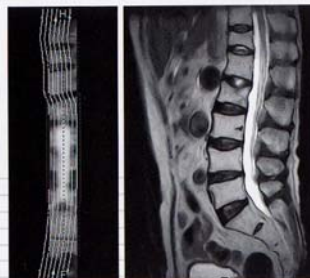
### ● Image Quality

When scan parameters are changed, operator could visually see how the changes made to the scan parameter alter the SN ratio of image and spatial resolution/scan time. The operator could be aware beforehand of the changes of SN ratio of images when scan time is shortened as needed accordingly with the patient.



### ● Curved MPR

With AIRIS Elite, MPR (=Multi Planar Reconstruction) is possible with user-set curves. Multiple lines parallel to the set line could be portrayed, where users could only set a single line until now.



# COST PERFORMANCE

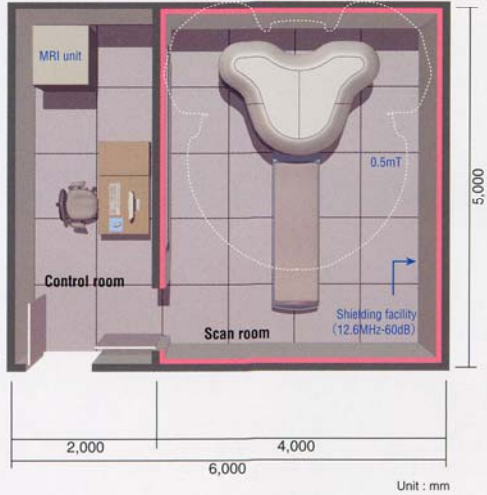
Included in the list of what must be considered when installing a MR system are "siting" and "cost". Along with "image quality" and "function", here lies the reason behind the choice everyone makes of this internationally appraised Open MR.

## ● High Throughput

Open MR system does not require water-cooling system and cooling unit needed with high-field MR systems, moreover quenching which occurs only in high-field MR systems are of no concern. This realizes high patient throughput.



Layout (example)

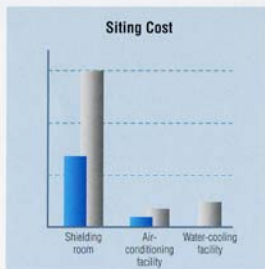
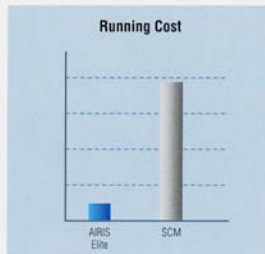


## ● Running Cost

Open MR could operate on a small power supply. Not only could this keep the initial investment low, monthly running cost is also greatly affected. Since superconducting MR system requires utility room and cooling facility, difference in accumulative expense grows larger as the years go by.

## ● Compact Siting

Small footprint keeps installation cost of shield room to minimum while freeing valuable space to be used more effectively.



**AIRIS Elite**  
Advanced Mid-field MR

# PATIENT FRIENDLY

**“Patient Friendly” — This is the DNA in all Hitachi Open MR system.**

When Hitachi develops and designs Open MR system, we always think primarily of patient comfort. Our pursuit for connection with each and every patient in the world is what our Open MR system is all about.

## ● Open Design

Simple in design with elegant curves yet loaded with powerful diagnosing capabilities, AIRIS Elite is a synergy of art and technology. AIRIS Elite is designed not only to give high visual impact, however is designed bearing in mind to give good impression to the patients. AIRIS Elite takes full advantage of the open design which provides patients with comfort, realizes low acoustic noise during examination, ensures plentiful space for injection of contrast agent, and allows parents to stay close to the pediatric patient during examinations.



## ● Patient Table

The patient table, which matters the most to patients, could be lowered to a height of 450mm. Wheelchair patients, pediatric patients, and elderly patients could easily get on and off the table. Even when such regions as knee and shoulder shift from the body axis, with the motorized table capable of vertical, longitudinal and in-gantry 200mm lateral movement, scanning still could be done very smoothly.



## ● Acoustic Noise

During MR diagnosis, acoustic noise is generated. Though adopting a strong gradient magnetic system, AIRIS Elite inherits the quietness unique to Open MR system. AIRIS Elite provides a comfortable environment allowing uneasy patients to undergo examination in a relaxed manner.

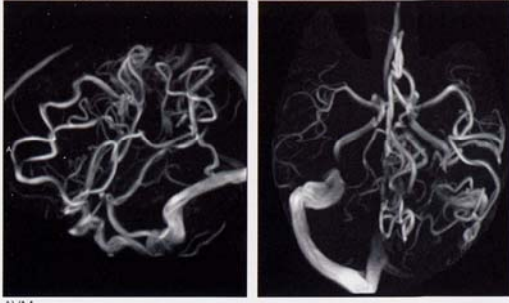
## ● Product Specification

<b>Model</b>	AIRIS Elite
<b>Magnet</b>	0.3T Open type magnet
<b>Magnetic field leakage (0.5mT line)</b>	Left/Right 1.8m Front 1.7m Behind 1.5m Above 2.3m Below 1.7m (Distance from gantry center)
<b>Gradient magnetic field system</b>	21mT/m, 55T/m/s
<b>Patient table</b>	Floating type (Possible lateral movement inside gantry)
<b>Power supply capacity</b>	9.5kVA (Single phase 200/208/220/230/240V±10%)
<b>Available sequence</b>	SE, IR, FSE, STIR, FLAIR, GE, SARGE RSSG, TRSG, BASG, PBSG, SS-EPI, MS-EPI, IR-EPI 2D3D-TOF, 2D3D-PC, CE-MRA MRCP, DW, Fat/water separation

**AIRIS Elite**  
Advanced Mid-field MR

# IMAGE

● 3D-TOF

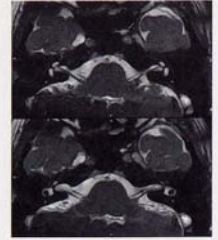


AVM

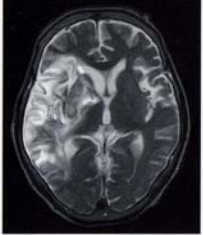
● Myelography



● BASG

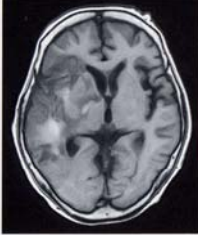


● T2-weighted image (FSE)



Hemorrhagic infarction

● T1-weighted image (SE)



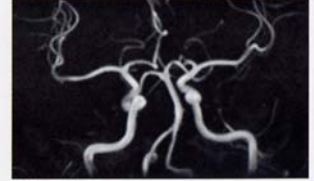
● FLAIR image



● FIR image + DE pulse



● 3D-TOF

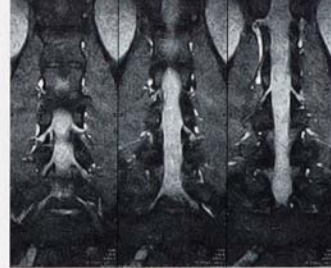


Vertebral artery aneurysm

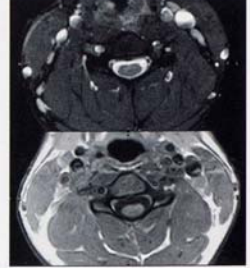
● T2-weighted image (FSE) / T1-weighted image (SE)



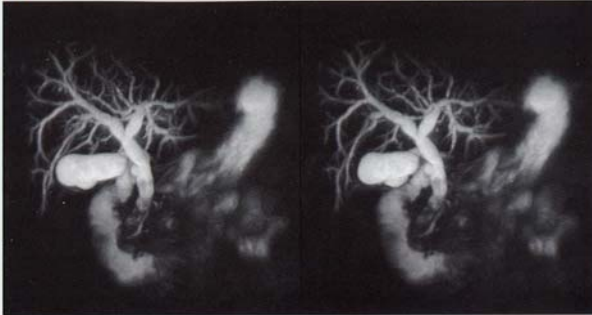
● Myelography / T2\*weighted image (FatSep)



● T2\*weighted image (GE) / T1-weighted image (SE)



● MRCP



Cholelithiasis

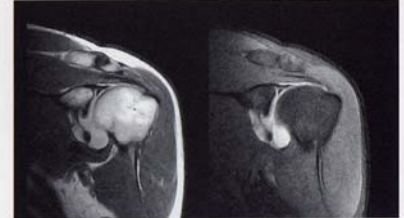
● BASG



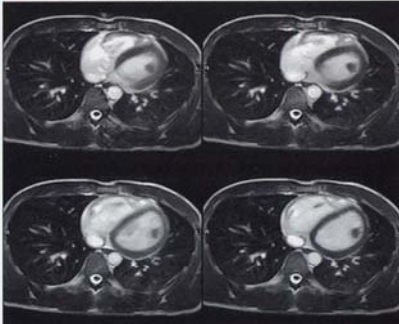
● MRCP



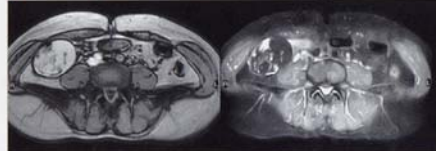
● T1-weighted image (Contrast Enhanced) / T1-weighted image (Contrast Enhanced, FatSep)



● BASG CINE image



● Contrast Enhanced GE / STIR image



Ovarian tumor

Articular lip injury

● T2\*weighted image (GE)



TFCC injury

● T2\*weighted image (GE)



Meniscus injury

● T2-weighted image (FSE)



Calcaneus cyst



Hitachi Medical Corporation  
Medical System Operations  
Division, Kashiwa  
has established and maintains a  
quality management system  
according to  
ISO 9001, ISO 13485.



Hitachi Medical Corporation, Medical System  
Operation Group, is certified as complying  
with the International  
Environmental Management System (ISO 14001).

- Specifications and physical appearance may be changed without prior notice for improvement of performance.
- Be sure to read Instruction Manual for correct operation of the equipment.

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Our uncompromising pursuit of comfort, function and quality, led to the birth of a new category of Open MR. Discover the renowned reliability, patient comfort and hospital-friendly concept of Hitachi - the leading company of Open MR.

Introducing AIRIS Elite, Advanced Mid-field MR.  
The next logical step in Mid-field MR performance.

A photograph of a Hitachi AIRIS Elite MR scanner. The machine is light blue and white, with a large, open gantry. A patient table is extended from the gantry. The machine is set against a plain white background. The text "AIRIS Elite" is overlaid on the bottom of the image in a stylized font. Below it, the text "Advanced Mid-field MR" is written in a simpler font. The Hitachi logo is visible on the machine's gantry.

**AIRIS** *Elite*

Advanced Mid-field MR

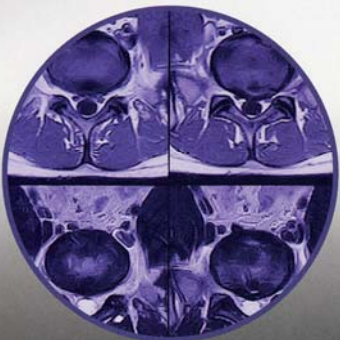
The advanced systems, inheriting Hitachi's award-winning gantry design and vertical field permanent magnet technology, enable AIRIS Elite to break through mid-field MR price/performance conventions, with enhanced image quality across the board.

With 21mT/m maximum amplitude and 55T/m/s maximum slew rate, the powerful and fast gradients provide high resolution and low TE/TR, rivaling many conventional high-field MR systems. This level of gradient performance realizes a variety of advanced imaging techniques traditionally associated with high-field MR systems.

## Powerful Gradient System

Comfort  
and  
Convenience

Sophisticated  
Computer  
System



# AIRIS Elite

Advanced Mid-field MR