

VAMC PERRY POINT, MD
PO# 512-B30610

	Description
	OASIS XP HIGH-FIELD BORE-LESS MR

Oasis: High-field Bore-Less MR Imaging

For You and Hitachi, It's About the Patient. Day in. Day out. High throughput diagnostic performance with uncompromised patient comfort.

Oasis brings high speed gradients, multi-channel RF technology, unmatched Zenith™ RF Coils and advanced High Field imaging capabilities to the only truly open architecture high-performance systems ever installed-Hitachi Systems.

This powerful 1.2T vertical field MRI delivers image quality for today's high-field applications. Combines uncompromised MR imaging with Hitachi's legendary reliability and responsive service. And offers these advancements on the established Hitachi easy-to-learn and use platform.

Patient comfort. Diagnostic confidence. And investment value. The Oasis ownership opportunity is a powerful way to position your imaging abilities as the best in patient care.

Unique Oasis features

- PACT™ - Patient Active Comfort Technology
- 1.2T Hitachi High Field Bore-Less Superconducting Magnet
- HOAST™ - Higher Order Active Shimming Technology
- High Output Gradient System
- Zenith™ Radiofrequency System and Zenith Coils
- Vertex™ II Computer System
- Origin™ V4.0A MR Operating System
- NeuroSuite
- OrthoSuite
- BodySuite
- VascularSuite
- Hitachi UltraPlus Customer Support

PACT™ - Patient Active Comfort Technology

Like you, the Hitachi focus is on the patient. Our mastery of patient-focused MR imaging is demonstrated in the PACT feature, delivering patient comfort and operator convenience benefits in concert with diagnostic confidence. The Hitachi-exclusive PACT feature set includes:

- Unobstructed view offered by our truly Open MRI design and 30 degree rotated table - magnet alignment - patients will always have a clear lateral view
- 660 lbs. patient weight limit - the highest in the industry
- 82cm wide table with 20cm lateral (in bore), 222cm longitudinal and 40cm vertical motor driven movement control (lowers to 51cm for easy wheelchair transfer)
- Multiple simultaneous coil connections to minimize setup time
- Patient area lighting to further reduce anxiety
- SoftSound™ Gradient Technology reduces gradient noise without compromising clinical performance
- Constant two-way communication system reduces patient anxiety
- Operator alert (patient initiated) brings attention to the patient even without speaking

The quadrature T/R Body coil provides the transmit capability for the system, as well as offering an alternative receiver coil when surface and volumetric coils cannot be employed.

A full set of custom pads and straps promotes patient comfort and consistent image quality, with a wide range of patients and body habitus'.

The benefits that flow from PACT and the other Oasis patient management features include minimized patient non-compliance, access to MRI for patients who cannot be managed in other scanners, and high patient volumes.

1.2T Hitachi High Field Bore-Less Superconducting Magnet with HOAST

At 1.2 Tesla, Oasis is the highest field strength, whole body vertical field magnet. And only the proven experience of Hitachi could bring this high-field performance to you. Hitachi expertise in vertical field magnet design and solenoid coil signal detection delivers outstanding image quality-with no compromise on patient comfort.

The high uniformity of the magnetic field established during installation is maintained by per patient electronic shimming in two stages. Gradient shimming is applied to reduce linear terms, and in addition to this linear shimming Oasis also includes HOAST™ per patient Higher Order Active Shimming Technology and regional shimming. The two levels of shimming enable exquisite RF fat saturation.

Important Oasis magnet features include:

- 1.2T vertical field strength for high SNR
- Iron core for high field strength, uniformity and stability
- Homogeneity: 0.3ppm@35cm DSV(VRMS) for excellent general image quality and RF fat saturation
- 45cm FOV in all axes
- Shimming features including Computer-modeled passive shims placement and per-patient Higher Order Active Shim Technology
- Active magnetic shielding to minimize the 5 Gauss footprint
- Helium only cryogen design (single cryocooler) with refill once every two years with HMSA approved maintenance

High Output Gradient System

Recognizing that a high performance gradient system is key to meeting today's expectations for image quality and resolution, Hitachi equipped Oasis with a powerful gradient system. Capable of strength up to 33 mT/m and slew rate of up to 100 T/m/sec, Oasis' gradient system enables selection of low TR, TE and IET in combination with small FOV, and thin slices. This level of gradient capability also positions Oasis to adapt to changing MR technology and widening applications far into the future. Note that all gradient measurements represented here are single axis (not "effective") and represent x, y and z axis capabilities. Hitachi's SoftSound gradient coil mounting technique reduces acoustic noise without compromising image quality or capability.

Zenith™ Radiofrequency System and Zenith Coils

The Hitachi Zenith System is a powerful combination of multi-channel RF technology and Hitachi exclusive Zenith RF coils. Zenith drives excellent image quality, seamless workflow, wide clinical capability and optimized patient comfort. This multi-channel RF system allows simultaneous coil connection for patient comfort and efficiency. And includes RAPID (Hitachi's parallel imaging feature) to reduce scan times and optimize the most comprehensive collection of vertical field RF coils.

Transmit System: An 18kW solid state transmit amplifier ensures sufficient power is available for the broadest range of patient sizes. Oasis' additional power also leaves room for future expansion of MR technology that may require additional RF power. SAR is closely monitored and limited to protect the patient while not needlessly constraining the operator. Oasis' transmit and receiver system is designed for interactive, real-time parameter changes and motion compensation techniques.

Receiver System:

- 8 channel RF receiver system
- 2 coil connection points on the table. Users can plug coils in simultaneously for maximum convenience and patient comfort
- Automatic coil detection ensures the correct coil is in operation for each step of the examination.

Receiver Coils: Oasis' Zenith receiver coils support RAPID parallel imaging as well as conventional imaging modes for maximum clinical flexibility and image quality. These are all Hitachi designs and include features that drive imaging time and quality benefits not available on other equipment.

The standard Zenith receiver coils include:

- 5 Channel RAPID Head - Patient comfort is complemented by an ultra fast, high-resolution Brain imaging capability that drives image quality and workflow benefits.
- 6 Channel RAPID Body - The multi-channel design enables applications from dynamic abdominal scans to cardiac imaging with RAPID parallel imaging.
- 8 Channel RAPID Cervical spine - Volumetric solenoid coil sensitivity and RAPID parallel imaging provide excellent C-spine imaging capability. Even with kyphotic patients.
- 8 Channel RAPID CTL - Optimized to provide the SNR and signal uniformity essential for high quality images of the entire spine. The multi-mode design (C, C-T, T, L) supports RAPID and conventional imaging.
- 6 Channel RAPID Shoulder - The inclusion of a through-arm loop with comfort pads delivers an outstanding axillary penetration capability and coil stability.
- 6 Channel RAPID Knee - The 6-channel Knee coil supports high-resolution acquisitions and provides excellent patient comfort in a compact design. The coil's volumetric solenoid technology enables exquisite orthopedic anatomic detail.

Additional standard Quadrature, Multiple Array and Solenoid coils include:

- MA Flexible Body Large - The quadrature design of this coil delivers excellent abdomen, torso and spine imaging for larger patients.
- MA Flexible Body Extra Large - The industry's largest body receiver coil at 190cm circumference enables collection of diagnostic images from patients at the extreme of the demographic spectrum.
- Integrated transmit/receive - The transmit coil for the system also provides receive capability delivering good imaging results for patients that cannot be imaged with other Oasis RF coils.
- General Purpose Solenoid (Halo coil) - The Solenoid design of this coil delivers good SNR for large joint imaging. The coil can also be used as a Brain coil.

Vertex II Computer System and Origin V4.0A MR Operating Software

From patient registration, through scan planning, scanning, image processing and image management, Oasis' Vertex II computer and Origin V4.0A MR operating Software deliver seamless workflow. The Origin Clinical Study Library, Graphical User Interface (GUI), Intelligent Parameter Guidance and Real-time Image Quality Calculator make scan planning a breeze for even the most complex examinations. Simultaneous scan, reconstruction, and multi-tasked image processing keep patient volume high. With Oasis, your operational efficiency is assured.

Vertex II Computer/ Origin V4.0A MR Operating System Features:

- Minimal operator interaction - fewer mouse clicks
- Wide 24 inch LCD workspace
- User customized protocols combining multiple sequences and post processing steps are provided, ensuring efficient, easy completion of the most complex imaging tasks
- Permanent Hitachi protocol recommendations are provided for reference or everyday use
- Intelligent Parameter Guidance for quick resolution of parameter selection conflicts
- Basic and Advanced control modes adapt to user experience
- Real time Image Quality Calculator shows impact of parameter changes on relative CNR (Contrast to Noise Ratio) and SNR (Signal to Noise Ratio) prior to scanning
- Real time spatial resolution update shows impact of parameter changes prior to scanning
- Simultaneous scan and reconstruction for seamless workflow
- CD/DVD writer combines patient images with auto launching viewer for patient and referring physician convenience
- Patient data security features including audit trail and user authentication

Interoperability features:

With today's need for Electronic Medical Records, connectivity and informatics in medical imaging are key. DICOM 3.0 compliance is a cornerstone of Oasis' Origin software. Image Storage (SCP/SCU), Query/Retrieve (SCP/SCU), Storage Commitment and Print are all provided. Automatic transfer of image series (transfer on scan or exam completion) is basic to Oasis' Storage feature. Auto store to multiple destinations simultaneously is possible.

Oasis supports the DICOM Enhanced MR Image Object which provides more standardized information about the images when transferred to compatible receiving nodes like PACS or workstations. For each DICOM receiving node, Oasis can be configured for MR Image Object, or Enhanced MR Image Object. Secondary capture and transfer of color image data is also supported

Imaging Suites

Imaging Suites

The powerful, cutting edge Oasis imaging architecture delivers its outstanding clinical imaging benefits through the Imaging Suites. The Oasis standard Imaging Suites include a broad range of acquisition sequences, sequence enhancements and post processing tools. Scanning and processing features are available to meet the clinical challenge in Neuro, Orthopedic, Body, Vascular, Breast, Cancer, Cardiac, and Pediatric imaging.

Unique Imaging Suite Features

RAPID and RAPID 3D: Oasis's RAPID Parallel imaging software enables acceleration in slice and/or phase directions, allowing increases in temporal resolution for dynamic imaging, shortened scan times and reduced susceptibility effects for DWI, among many other benefits. The user can employ either a RAPID pre-scan calibrated technique for the fastest possible imaging (typically Brain) or RAPID self calibrating technique that collects calibration data intra-scan for excellent image quality even with physiological motion (typically for abdominal acquisitions). RAPID parallel imaging capable receiver coils are the Oasis standard as well - virtually all of the Oasis coils are designed for use with RAPID.

RADAR: (RADial Acquisition Regime) is a powerful tool for collecting motion suppressed images without sedation or excessive patient restraint. RADAR relies on a radial k-space filling technique and its 2D and 3D modes, combinability with fat saturation, T2, FLAIR, STIR, SE, or BASG type contrast plus its application to all coils, anatomy and slice planes nets the most broadly applicable radial feature available in MR imaging.

BASG - Balanced SARGE: Hitachi's BASG pulse sequence is available in 2D and 3D modes, and can be combined with RF fat saturation. BASG delivers high signal to noise bright fluid images, and is ideal for high spatial resolution cardiac, body, orthopedic and neuro imaging applications.

WE - Water Excitation: An alternative to CHESS type fat suppression, useful for dynamic studies and cartilage imaging applications in combination with BASG (Balanced SARGE) or RSSG (RF spoiled SARGE).

H-SINC RF fat saturation: Hitachi proprietary RF fat saturation technique. The HOAST feature plus H-SINC Light and Heavy modes ensure users can deliver excellent RF fat suppression uniformity from large to small field of view for a broad range of clinical applications. Heavy mode is designed to address the challenges of Breast and Body applications in particular, while the Light mode is useful in Neuro and orthopedic applications.

TIGRE™ Fast T1 weighted 3D Gradient Echo sequence with fat suppression enables the combination of high spatial and high temporal resolution for outstanding dynamic liver and breast imaging.

TIGRE C: TIGRE T1 Fat suppressed volume imaging capability for dynamic imaging can be combined with Fluoro triggering and TPEAKS centric k-space ordering. TIGRE C simplifies arterial phase capture for breath-hold liver imaging, shortens breathhold time as much as 20% and boosts SNR for Body and Breast dynamic imaging applications.

FLUTE™: Fluoro triggered MRA enables easy, consistent capture of the arterial phase. Users monitor the artery of interest for bolus arrival using real time scanning mode, switching instantly to the 3D diagnostic scan upon arrival. FLUTE with TPEAKS k-space ordering ensures minimal venous contamination.

Imaging Suites

PEAKS, RPEAKS, TPEAKS: Hitachi's centric k-space ordering techniques for MRA ensure easy, consistent capture of the critical arterial phase. Three different implementations provide for maximum clinical flexibility.

TRAQ™: Time resolved MRA (4D imaging) provides insight into the dynamics of blood flow, enabling effortless depiction of arterial and venous phases, without consideration of bolus timing.

Diffusion Imaging: The high slew rate gradient system, SS-EPI (Single Shot Echo Planar Imaging), pre-programmed multiple axes acquisitions, and automatic creation of ADC and isotropic images make the Oasis Diffusion imaging capability powerful and workflow oriented.

HOAST™ (Higher Order Active Shimming Technology): The magnet shim is adjusted on each patient with Oasis to promote excellence in large FOV and off-isocenter RF fat suppression. Body and orthopedic imaging benefit in particular from this important Oasis feature.

VASC™ Non contrast MRA: For cases complicated by renal insufficiency, users can employ Hitachi's VASC pulse sequence, netting excellent renal and peripheral vessel image quality without a bolus.

Driven Equilibrium FSE: Provides a method to shorten TR for 2D/3D fast spin echo sequences while maintaining excellent target contrast. The net result is shorter scan time and better patient compliance. The Driven Equilibrium technique also applies to FIR (Fast Inversion Recovery) imaging sequences and can be combined with the RADAR motion compensating technique.

primeFSE and FIR: Oasis delivers user adjustable bandwidth and direct TE selection for ultimate Fast Spin Echo flexibility. Bandwidth selection enables excellent depiction of anatomy in the presence of prostheses.

NATURAL™: Patient-specific image quality enhancement algorithm for optimal image uniformity.

3D-GEIR: Volume gradient echo sequence, delivers enhanced T1 contrast with high grey-white matter differentiation. Isotropic acquired images can be reconstructed in arbitrary planes with the MPR feature with excellent image quality.

Image Stitching: Contiguous sagittal or coronal images can be joined to provide a seamless extended field of view single image. Stitched images may be exported in a DICOM compliant format.

Flexible Reconstruction Matrix: Removes the power of two restriction on reconstruction matrix dimensions. Reconstructed images can be size-optimized to more closely reflect the anatomy of the scan.

NeuroSuite Features

The vital pulse sequences, acquisition features and post processing tools for high-quality imaging of the brain, head/neck and spinal structures are standard on Oasis. Oasis' powerful gradient system drives short neuro scan times for high throughput.

- Preprogrammed and user customized Head and Spine Protocols
- 5 Channel RAPID Head coil for high SNR and signal uniformity
- Multiple coil plug-in feature promotes patient comfort and technologist efficiency
- RADAR motion compensated imaging technique (all plane, all coil) for uncooperative or infirm patients
- High resolution - 1024 imaging
- Large 45cm FOV (all axes) complemented by HOAST features ability to deliver excellent large FOV RF fat suppression
- Image Centering - places center of prescribed slab at magnet isocenter automatically for best neuro image quality
- Fat Suppression - RF Fat saturation, STIR, Water Excitation
- 3D BASG (Balanced SARGE) sequences for IAC imaging with bright fluid
- High resolution 3D-FSE and Driven Equilibrium 3D FSE for IAC imaging
- Volume acquired datasets can be reconstructed in any plane with MPR (Multi-Planar Reconstruction)
- FLAIR, Fast FLAIR and RADAR FLAIR for CSF suppression
- MR Myelography with 3D-FSE and 3D BASG (with fat suppression)
- Multi-slice Fast Spin Echo supports up to 256 echo train
- Diffusion Weighted Imaging with fat suppressed single shot and high resolution multi-shot techniques and ADC mapping capabilities
- 3D-GEIR volume gradient echo sequence, delivers enhanced T1 contrast with high grey-white matter differentiation. Isotropic acquired images can be reconstructed in arbitrary planes with the MPR feature with excellent image quality.
- ADAGE uses combinations of multiple echoes to create high contrast T2*-weighted images with reduced chemical shift. Enhances Gray/White matter contrast in spine imaging.
- Image Stitching: contiguous sagittal or coronal spine images can be joined to provide a seamless extended field of view single images. Stitched images may be exported in a DICOM compliant format.

OrthoSuite Features

Only Oasis delivers the very high field strength and truly open architecture enabling exquisite orthopedic MR imaging. Its inherent high SNR potential promotes high spatial resolution critical for orthopedic imaging, and permitting all anatomy to be imaged at isocenter delivers remarkable RF fat saturation.

- Preprogrammed and user customized Upper and Lower Extremity Protocols
- 2D/3D pulse sequences
- RADAR motion compensated imaging technique for uncooperative or infirm patients also minimizes popliteal flow artifacts for knee imaging applications
- Excellent off-isocenter Fat Suppression with the HOAST feature's Regional Shimming capability. Patient's enjoy comfortable wrist and shoulder positioning with no compromise on RF fat saturation
- 6 Channel RAPID Shoulder demonstrates excellent image quality including high SNR labrum depiction with unique "under the arm" loop and RAPID parallel imaging capability
- 6 Channel RAPID Knee coil supports high-resolution acquisitions providing exceptional orthopedic anatomic detail
- Driven Equilibrium FSE enables heavy T2 weighting (increased CNR) with limited scan time
- Fast STIR fat suppression
- Cartilage imaging excels using Water Excitation and BASG (Balanced SARGE) 3D Gradient Echo sequences
- ADAGE uses combinations of multiple echoes to create high contrast T2*-weighted images with reduced chemical shift. Improves fluid/cartilage differentiation.
- primeFSE's user selectable receiver bandwidth enables exquisite FSE image quality in the presence of prostheses or implants and delivers multi-echo FSE for PD and T2 weighted acquisitions in one sequence
- MR arthrograms benefit from excellent RF fat suppression
- Kinematic imaging support for TMJ studies using RAPID Head coil
- Isocenter positioning promoted by lateral table movement and the extra wide table ensure excellent shoulder and extremity fat saturation and general image quality.
- H-SINC RF fat saturation technique delivers uniform suppression over large to small FOVs

BodySuite Features

The exceptional power of Oasis is demonstrated in this demanding and fastest-growing group of applications. High SNR from the 1.2T magnet and Zenith RF coil technology is complemented by the TIGRE fast, fat suppressed imaging sequence and Hitachi's all coil/all plane motion compensating RADAR technique. 2D and 3D protocols for abdomen, pelvis, MRCP and dynamic liver imaging techniques are all standard.

- Preprogrammed and user customized Body Protocols
- 2D/3D pulse sequences
- Breathing artifact is suppressed for abdominal imaging using Hitachi's RADAR motion compensated imaging technique
- Respiratory triggered techniques benefit from expiratory phase sensing
- Breath hold and free breathing acquisitions supported
- RAPID parallel imaging with 6 Channel Torso/Abdomen coil for fastest scanning while maintaining excellent SNR
- 4 total standard Body imaging coils: Large, Extra Large, RAPID and the T/R Body coil deliver high SNR and broadest patient population support available
- In/Out of phase multi-echo Gradient Echo technique
- Abdominal diffusion weighted imaging (DWI)
- T2 Echo Factor Compensation provides very fast high quality ss FSE imaging
- T/R Body Coil Shim Scan provides consistent image quality for abdominal and cardiac regions
- HOAST - Higher Order Active Shimming Technology drives excellent large FOV fat suppression in all planes.
- TIGRE™ standard fast T1 weighted 3D Gradient Echo sequence with fat suppression enables the combination of high-spatial and high temporal resolution for outstanding dynamic liver and breast imaging.
- TIGRE C: TIGRE T1 Fat suppressed volume imaging capability for dynamic imaging can be combined with Fluoro triggering and TPEAKS centric k-space ordering. TIGRE C simplifies arterial phase capture for breath-hold liver imaging, shortens breathhold time as much as 20% and boosts SNR for Body and Breast dynamic imaging applications.
- Dynamic Liver studies benefit from Oasis's large FOV, uniform fat suppression from the HOAST higher order active shimming feature, and the highly sensitive 6 Channel Torso/Abdomen coil.
- Volume acquired datasets can be post processed with MPR to yield images from any plane.

VascularSuite Features

Conventional 2D/3D TOF and advanced acquisition techniques such as Time Resolved MRA (TRAQ™) and 3D vessel post-processing features provide the tools you need in this fast-growing application segment.

- Preprogrammed and user customized Vascular Protocols
- 2D/3D inflow and bolus methods
- RAPID parallel imaging for fastest scanning while maintaining excellent SNR
- Sloped Slab Profile (SSP) and Magnetization Transfer Contrast (MTC) methods for uniform signal intensity and background suppression
- MRA benefits from 100 T/m/sec slew rate - short TE's are available to minimize intravoxel dephasing
- ECG gating is standard to maximize image quality
- VASC™ Non contrast MRA - Non contrast MRA sequence provides an excellent alternative to bolus MRA for patients with renal insufficiency.
- TRAQ Time resolved MRA provides insight into the dynamics of blood flow, enabling effortless depiction of arterial and venous phases, useful when flow direction is uncertain
- FLUTE Fluoro triggering for easy, consistent arterial phase capture
- PEAKS, RPEAKS, TPEAKS: Hitachi's centric k-space ordering techniques ensure easy, consistent capture of the critical arterial phase. Three different implementations provide for maximum clinical flexibility
- MIP (Maximum Intensity Projection) and Volume Rendered MIP for excellent 3D vessel depiction
- 2D/3D Phase Contrast MRA acquisition and analysis, enables VENC selection from 5 cm/s to 400 cm/s to meet a wide range of clinical needs. Velocity analysis graphs and statistical reports are standard.

Bariatric Imaging Features

Oasis provides unmatched positioning flexibility and accommodation for bariatric patients; delivering the optimal combination of comfort and quality for larger patients.

- Widest patient table (82cm)
- Highest patient weight limit (660lbs)
- Largest Flex Body coil (190cm circumference)
- Large vertical patient gap
- Unlimited lateral opening
- Bariatric scanning protocols optimize image quality

Cardiac Imaging Features

Basic cardiac imaging is supported by standard dark blood and bright blood sequences and the standard, 6-channel Body coil.

- Preprogrammed and user customized Cardiac Protocols
- Cardiac, Peripheral and Respiratory gating system
- Interactive Scan Control (I-Scan) enables efficient imaging plane selection and real-time image collection with slice position and scan parameter change and update during MR Fluoro acquisition
- Double/Triple IR FSE pulse sequences for black blood morphological imaging.
- 2D/3D BASG (Balanced SARGE) bright blood sequences support functional analysis
- RADAR motion compensated imaging technique enables artifact suppressed free breathing acquisitions for uncooperative or infirm patients
- RAPID parallel imaging with 6 Channel Torso/Abdomen coil for fastest scanning while maintaining excellent SNR
- Multiphase bright blood imaging
- Real-time cine review

Breast Imaging Features - complemented by the Optional 7 Channel Breast coil

When coupled with the optional Breast coil, Oasis's standard suite of Breast imaging features delivers excellent image quality and broad capability required for this fast growing and differentiating clinical application.

- Preprogrammed and user customized Breast Protocols
- RADAR motion compensated imaging technique enables artifact suppressed free breathing acquisitions
- RAPID parallel imaging for fastest scanning while maintaining excellent SNR
- TIGRE fast T1 weighted 3D Gradient Echo sequence with fat suppression enables the combination of high-spatial and high temporal resolution for outstanding dynamic bilateral breast imaging.
- Dynamic Breast studies benefit from Oasis's large FOV and uniform fat suppression from the HOAST higher order active shimming feature.
- DICOM exportable time intensity curves for Dynamic studies.

Pediatric Imaging Features

Constant patient contact sets Oasis pediatric imaging apart. Parents and technologist can see and communicate with the patient throughout the exam making them more comfortable. Fast scanning and motion reduction acquisitions provide excellent image quality.

- Preprogrammed and user customized Pediatric Protocols
- PACT and the Oasis Open MR geometry provide an ideal pediatric imaging environment, while Oasis' powerful imaging architecture provides high quality and fast scanning
- RADAR motion compensated imaging technique enables artifact suppressed free breathing acquisitions for uncooperative or infirm patients
- General Purpose Solenoid coil (Halo coil) delivers quality imaging and an all around view
- SoftSound™ mechanical gradient noise damping minimizes acoustic noise without constraining acquisition parameters
- RAPID parallel imaging for fastest scanning while maintaining excellent SNR
- Multiple coil plug-in feature promotes patient comfort and technologist efficiency

Magnet Specifications

Hitachi designed and manufactured for high performance and reliability

-Magnet Type:	Superconducting Iron Core
-Field Strength:	1.2 Tesla
-Field Orientation:	Vertical
-Shielding:	Active self shielding
-5G Fringe field from isocenter	
-Horizontal:	4.0 m
-Vertical:	3.3 m
-Gantry Size (L x W x H):	2.7m x 2.5m x 2.1m
-Patient Aperture:	44cm
-Gantry Weight:	29,040 lbs
-Static Field Homogeneity:	0.3ppm @ 35cm DSV (VRMS)
-Shimming:	
-Installation:	Computer placed iron shims
-Patient:	Linear plus Higher Order Active Shim Technology (HOAST)
-Cryogen:	Helium only
-Refill Frequency:	Once every two years with Hitachi Ultra-Plus Customer Support

Gradient Specifications

Hitachi amplifiers and proprietary eddy current compensation technology delivers imaging excellence in general to advanced applications

-Peak Amplitude:	33 mT/m
-Peak Slew Rate:	100 T/m/s
-Cooling method:	Water
-Shielding:	Active
-Eddy Current compensation:	Computer optimized, with B0 compensation
-Gradient noise reduction:	SoftSound mechanical gradient noise dampening

Zenith RF System Specifications

Powerful transmitter and sensitive receiver electronics ensure the high SNR potential of the Oasis magnet is realized in your imaging results

Solid State Transmitter

- Quadrature transmitter
- 18 kW Peak Envelope Power
- Quadrature Radial type Transmit and Receive Coil

Digital Receiver

- Eight Independent Channels Standard
- Two table-top connection points enable simultaneous coil connections
- Ultra low noise figure (0.5dB) coil mounted preamplifiers
- Variable Receive Bandwidth (manual or automatic)
- RAPID™ parallel imaging capability

Custom Coil and Accessories cabinet

A custom designed cabinet providing organization and in-room storage for all standard and optional coils, as well as other accessories such as table pads, straps and test phantoms.

Patient Table

The Oasis patient table width and capacity helps you efficiently manage the most challenging patients

- Industry best 660 lbs. weight limit
- Industry best 82cm wide (moving portion)
- 2 coil plug-in points
- 3 axes motorized movement
- In-bore lateral movement
- Lowers to wheelchair height (19")

VERTEX II Workstation

Fast GUI, simultaneous scan and reconstruction drive high workflow efficiency

- | | |
|---------------------------|---|
| -Host CPU: | Core i5 |
| -RAM: | 8 GB |
| -Operating System: | Windows based, mouse driven intuitive GUI |
| -Ethernet Interface: | 10/100/Gigabit Auto-sensing |
| -High Resolution monitor: | 24 inch LCD color monitor |
| -Operator input: | Mouse and QWERTY keyboard |
| -Magnetic disk: | 3.5 inch 320 GB storage capacity, capable of holding 400,000 images at 256x256 matrix |
| -Image storage: | DVD writer for image data storage. Reliable DVD-R/+R 4.7GB media stores up to 30,000 images |
| -Intercom: | Two way patient - operator |
| -System controls: | Start scan, pause scan, abort scan, emergency stop |
| -Security Features: | User Authentication, Automatic Logout and Audit Log |

Pulse Sequences

General to advanced, the acquisition sequences you need to meet the clinical challenge

- Spin Echo (SE) with up to 4 echoes
 - RADAR-SE for motion compensated T1 imaging
- 2D/3D Gradient Echo (GE) and Multi-Echo Gradient Echo
- Inversion Recovery (IR)
 - FLAIR
 - STIR
- 2D/3D Fast Spin Echo (FSE)
 - Echo Factors (ETL): 2-256
 - User defined Inter Echo Spacing, TE
 - User defined Echo allocation including Centric, Anti-centric, ADA, and Sequential
 - Single Shot FSE-Ultra fast acquisition, Ultrahigh Echo Factor for MRCP, MR Urography, and MR Myelography
 - Driven Equilibrium- Increases SNR and Contrast over conventional FSE without increasing TR.
 - RADAR radial k-space acquisition
 - primeFSE - uses centric k-space ordering feature enables an SNR increase over conventional methods, user selectable receiver bandwidth and excellent multi-echo (PD and T2 weighted) FSE imaging
- Fast Inversion Recovery (FIR)
 - Echo Factors: 2-256
 - Inversion Time: 20-8000 enables Fast STIR, Fast FLAIR imaging
 - Driven Equilibrium
 - primeFIR
 - RADAR radial k-space acquisition
 - Double and Triple IR Black Blood acquisitions
- Steady-State Acquisition Rewound Gradient Echo (SARGE SG)
 - RF-Spoiled SG- (RSSG) provides T1 weighting
 - Rephased SG -Flow compensation for reduced artifacts
 - Balanced SG (BASG) -Completely balanced SG provides high SNR and bright fluids in a rapid acquisition.
 - RF fat saturation
 - Phase-cycled fat suppression cardiac imaging
 - RADAR - BASG for motion compensated abdominal and cervical spine imaging
 - Time Reversed SG (TRSG)- T2 weighted Fluoro acquisition
- Diffusion Weighted Imaging (DWI)
 - Single Shot SE EPI
 - B-Factor: 0-2000
 - RF Fat Saturation
 - IR pulse
- TIGRE - 3D T1 Gradient Echo
 - Fast gradient echo with optimized fat suppression for dynamic breast and abdomen imaging
- TIGRE C - combined with Fluoro triggering and TPEAKS for liver imaging
- 2D/3D TOF
 - High contrast blood flow visualization
 - Combine with pre-saturation to image arteries or veins
 - Single slab or multi-slab (3D)
- VASC Non-contrast MRA
 - Bright fluid BASG sequence with walking pre-sat
- Phase Contrast MRA (PC-MRA)
 - Velocity Encode: 5-400 cm/sec. increment 1 cm/sec
 - No contrast agent

Acquisition Features and Protocol Enhancements

Scan fast and deliver excellent results using these pulse sequence enhancements and features designed to minimize artifacts and increase ease-of use

- Image Plane Selection
 - Transverse, Sagittal and Coronal
 - Single and Double Oblique
 - Multi-slice, Multi-angle
 - Radial for simplified MRCP, Knee acquisition planning
 - Multi-plane for combined Sagittal, Coronal, Axial acquisition (SC, SCA, CA, or SA)
 - Interactive Scan Control (I-Scan) enables efficient imaging plane selection and real-time image collection with slice position and scan parameter change and update during MR Fluoro acquisition
- Prescan
 - RF power adjustment
 - Center Frequency
 - Volume Shim adjust
- User Defined Regional Shim
- Fat Suppression Techniques
 - Water Excitation (Binomial technique)
 - Graphical presentation of fat-water peaks
 - Graphical prescription of RF fat suppression frequency
 - RF fat saturation (conventional SINC pulse)
 - H-SINC RF Fat Saturation (Light mode for lipid only, Heavy for lipid and olefinic suppression)
 - STIR, Fast STIR (FIR)
 - In/out of phase GE
- Motion Compensation
 - RADAR Radial Acquisition (FSE, FIR, FLAIR, SE, BASG)
 - Gradient Rephasing
 - Presaturation Pulses-up to eight
 - Walking Presaturation
 - Cardiac Gating with Arrhythmia Rejection
 - Peripheral Pulse Gating with Arrhythmia Rejection
 - Respiratory Gating
 - Diaphragm Navigation Echo
 - Intermittent Presaturation
- User defined Variable Bandwidth
- Dual Slice Acquisition
- Rectangular Field of View
- Anti-aliasing
- User defined inter-echo spacing
- Half Scan and 3/4 scan
- Half Echo
- Asymmetric Measurement Imaging (AMI)
- Real time image quality indicator (relative CNR, SNR)
- Real time spatial resolution update shows impact of parameter changes prior to scanning
- Silent Mode gradient noise reduction scan mode
- Image Centering - places center of prescribed slab at magnet isocenter automatically for optimal image quality
- Auto Voice
- Coil mode search optimizes SNR when multiple coils are used simultaneously
- NATURAL™ image quality enhancement algorithm
- Dynamic Scan Time Table Window provides graphical review of dynamic scan procedure (steps and timing) for easy and efficient study planning

Image Processing Tools

Maximize image quality and workflow efficiency with these multi-tasked tools and features. Most are combinable with scanning keep interaction requirements to a minimum

- Maximum/Minimum/Average Intensity Projection (MIP)
 - Sliding and expanding MIP capabilities
 - MRA post processing tool
 - Freehand, Elliptical, and Rectangular Cropping
 - Include/Exclude mode
 - Sliding, Expanding mode
- Multiplanar Reconstruction (MPR)
 - Parallel cut
 - Parallel slant cut
 - Radial cut
 - Curved
- Vascular Volume Rendering
 - Radial, Sliding, and Expanding Projection modes
 - Opacity setting
- Filtering Tools
 - Adaptive imaging filter
 - Edge Enhancement
 - Image Mask
 - IQ2 k-space signal processing
- Image addition and subtraction
- Calculated Images (Proton Density, T1 and T2)
- Dynamic analysis
 - Multiple graph modes include: Normalized Signal Intensity time graph, Multiplicative Signal Intensity-time graph, and Signal Intensity change rate-time graph
 - Multi-slice support
 - DICOM exportable
- Diffusion Analysis
 - ADC map
 - Isotropic DWI map
 - DICOM exportable
- Image Review Tools
 - Unlimited series review
 - Flexible window layout
- Filming Tool with configurable layouts

Image Processing Tools

- Viewport Tools
 - Maximize/Resize
 - WW/WL
 - Magnify
 - Rotate/Reverse
 - Cine Tool
 - Comment/Annotate
 - ROI (circular or rectangular)
 - Measuring functions
 - Statistics
 - Overlay
 - Layout
- Protocol/Task management
 - Windows Explorer style
 - Protocol editing without loaded study
 - Categorized Anatomic Protocol Library
- System Tools
 - Job Queue
 - Stopwatch
 - Waveform Display
 - Patient Table settings
 - System Settings

Echelon/Oasis Heat Exchanger

Provides isolation of Oasis and Echelon gradient coil, gradient amplifier and magnet cryocooler cooling loops from the chilled water source for maximum reliability. Monitoring circuits and signals for flow and temperature condition are provided and interfaced with the MR imaging system.

OASIS PHASE CONTRAST MRA

Phase Contrast MRA

The Phase Contrast acquisition and Analysis tool further expands Oasis's clinical utility. 2D and 3D Phase Contrast acquisitions with a velocity encoding range of 5 cm/s to 400 cm/s are available to meet a wide range of clinical needs.

PULSE SEQUENCES

- 2D/3D Phase Contrast
- Velocity Encoding: 5-400 cm/s
- Cine

IMAGE PROCESSING TASKS

- Statistical Analysis
 - Average flow velocity (cm/s)
 - Mean pixel value
 - Standard deviation
 - Area of ROI (mm²)
 - Number of pixels
- Dynamic Analysis
 - Velocity (Absolute)-Delay time graph
 - Acceleration-Delay time graph

HIGH FIELD COIL CABINET

Echelon and Oasis include an attractive custom designed cabinet that provides organization and in-room storage for all standard and optional coils, as well as other accessories such as table pads, straps and test phantoms

HASKRIS CHILLER

Oasis-Echelon Chiller:

Provides a chilled water source for Oasis and Echelon's in those cases where no chilled water source is available. A compact design and outdoor installation minimizes installation requirements.

OASIS AUTO TABLE STEP

Enables user program of table increment for multi-stage imaging. Complete spine studies are programmable and can be executed from the operator console.

OASIS ADVANCED NEUROSUITE SOFTWARE

Advanced NeuroSuite delivers additional clinical capabilities with ultra fast sequences to probe tissue intensity dynamics. Post processing analysis tools yield mean transit time, relative cerebral blood flow, and relative cerebral blood volume maps.

Pulse Sequences

- Multislice 2D Susceptibility Acquisition
- Multislice 2D SE EPI pulse sequence
- Multislice 2D RSSG EPI pulse sequence for FLAIR contrast

Processing

- Mean Transit Time (MTT) Map
- Relative Cerebral Blood Flow (rCBF) Map
- Relative Cerebral Blood Volume (rCBV) Maps

WORKFLOW PLUS

The Workflow Plus interoperability suite enhances productivity by promoting seamless integration of Oasis with a DICOM compliant HIS/RIS. Workflow Plus gives Oasis IHE Scheduled Workflow/Patient Information Reconciliation profile support, enabling study status flagging to and query of a patient worklist from the HIS/RIS. Data entry errors are thus minimized, promoting operational efficiency.

WORKFLOW PLUS™ adds the following DICOM Service Classes:

-Modality Worklist Management (MWL)

Support of this service class enables the MR system to access scheduled patient information from a DICOM 3.0 compliant hospital or radiology information system, potentially enhancing patient throughput and reducing data entry errors.

-Performed Procedure Step

Works in concert with Modality Worklist Management to update study status from the MR system to the hospital or radiology information system (HIS/RIS).

isoFSE

3D volume T2 isotropic fast spin echo with variable refocusing flip angle technique. Isotropic voxel allows a user to acquire an image in one plane and create high quality images of other planes through Multi-Planar Reformatting (MPR)

OASIS AUTOPOSE

Automatically determines and places optimal main scan slice locations based on the initial scanogram, saving the operator time and improving consistency of routine brain scans.

OASIS RAPID Multi Array Wrist Coil

3 Channel RAPID Wrist

Large enough to support a broad patient demographic, the wrist coil's solenoid design delivers very high spatial resolution at high SNR. This coil supports RAPID and conventional imaging modes.

SHIPPING AND INSURANCE TO CUSTOMER SITE

SHIPPING AND INSURANCE TO CUSTOMER SITE

Includes domestic truck freight charges and transportation insurance; additional charges apply for international and ocean freight expenses.

OASIS RIGGING EXPENSES

OASIS RIGGING EXPENSES

A Rigging Allowance for Reasonable and Customary Rigging Costs (not to exceed the quoted LIST PRICE) is included. Provided no monies are then due and owing to HMSA, upon receipt by HMSA of final system payment, HMSA will promptly pay the Rigging invoice on behalf of the Customer, up to the LIST PRICE quoted herein.

(Note: construction and shoring costs associated with providing a clear rigging path are the responsibility of the Customer)

BIO-MED TRAVEL & LODGING

Travel and Lodging for Bio-Med training sessions. This is for one person and the fare is based on flying coach class to Cleveland, OH.

BIO-MED TUITION

Class participants will gain an understanding of all system components and functions, system adjustments, and scheduled maintenance activities. All technical documentation from the manufacturer will be provided during training.

Upon completion of the training the trainee will be able to perform all scheduled maintenance and routine adjustments independently and troubleshoot system problems under the direction of an experienced engineer.

The classroom training is in Twinsburg, OH.

12 MONTH ADDITIONAL WARRANTY

12 MONTH ADDITIONAL WARRANTY

MRI MUSIC SYSTEM

Magnacoustics Genesis IV MRI Music System

The optional patient music system consists of the following features:

- Active volume compensation (Auto Gain) changes volume automatically to mask MR gradient sounds.
- DSP technology provides the highest sound quality available for the patient.
- Patient volume and music selection controls with voice feedback for maximum comfort, assurance, and distraction.
- Multi Disc CD Changer, AM/FM tuner, iPod interface
- Backlit Technologist Control Unit allows operation of the entire system with a touch of the button.
- Patented - Magnetically Inert RF Shielded Stereo Pneumatic Transducer.
- Technologists Sound System.
- Patented pneumatic headsets providing attenuation. Both "stethoscope" and "muff" style headphones included.
- Interface to MR system console for proper mixing of music and two-way voice communication.

MEDRAD SPECTRIS POWER INJECTOR

The Medrad Spectris is a dual head (contrast and saline) power contrast agent injector designed for use with MRI. Consists of a scan room injection unit and a state of the art fiber optic link to the control room control unit. Includes 6 user-programmable phases for tailoring injection protocols.

VASC-ASL

Hitachi's latest non-contrast MRA breakthrough. VASC-ASL employs a spin labeling Inversion Recovery pulse to tag blood, enabling excellent depictions of vasculature without a contrast agent. This provides another MRA alternative for patients with compromised renal function, with application to renal artery and portal vein imaging.

VASC-FSE

Hitachi's gated, non-contrast MRA option. VASC-FSE acquires image data during systole, when arterial blood flow - and the corresponding blood signal - is low and again during diastole. Subtraction of the two acquisitions produces a high resolution depiction of the arterial flow, all with no contrast agent. VASC-FSE is especially useful for peripheral vessels.

CARDIOSUITE

CardioSuite: Provides an extensive collection of sequences and features that enables functional and morphological evaluation of the cardiovascular system. Ease of use features, such as I-Scan, facilitate accuracy and reproducibility for slice positioning. BASG Cine provides robust CNR - critical for analysis of the myocardial wall. Navigator echo enables cine acquisitions for non-compliant patients.

- Pulse Sequences
 - BASG Cine
 - RSSG Cine
 - Double/Triple IR FSE pulse sequence for black blood morphological imaging.
 - Delayed Enhancement pulse sequence is useful for the assessment of myocardial viability.
 - Dynamic Tissue Intensity pulse sequence aids in the assessment of myocardial infarction.
- Sequence Features and Protocol Enhancements
 - I-Scan interactive scanning for accurate and reproducible slice positioning.
 - Multislice/Multiphase Cine
 - Navigator Echo reduces respiratory artifact for non-breath hold acquisitions.
 - Navi-Slice moves slice position with diaphragm movement to minimize mis-registration during free breathing acquisition

OASIS RAPID 8 Channel NeuroVascular Coil

Provides the flexibility needed to image cranio-cervical anatomy. Multiple coil applications include Head, Cervical, and Head/Neck minimizing patient repositioning. This coil supports RAPID and conventional imaging modes.

OASIS RAPID 8 Channel Bilateral Lower Extremity Coil

Supports RAPID and conventional imaging modes for MSK and vascular applications. This coil also delivers excellent peripheral vessel imaging as a key component of the optional Peripheral Vascular Package.

OASIS COMPUTER ONLY UPS

The optional computer UPS provides clean, uninterrupted power to the Vertex or Vertex II computer and promotes orderly shutdown of the system in the event of main power failure, preventing loss of image and patient data. The UPS includes status and alarm indicators that notify the operator when the system must automatically initiate a safe shutdown.