



MRS*DRYMAG

MR SOLUTIONS

Preclinical MRI scanner
Dry magnet technology



MRS*DRYMAG 9.4T

MRS*DRYMAG 7.0T

MRS*DRYMAG 4.7T

MRS*DRYMAG 3.0T

Imaging Innovations bringing real benefit to researchers

Magnetic Resonance Imaging

MRS*DRYMAG

Preclinical MR scanner with dry magnet technology

MRS*DRYMAG: 9.4T, 7.0T, 4.7T, 3.0T



Superconducting magnet

All **MRS*DRYMAG**, from 3.0T up to 9.4T are superconducting and cryogen-free based on a unique dry magnet technology developed by MR Solutions

Large field of view, bore size up to 42cm

MRS*DRYMAG is designed for a large range of applications including preclinical imaging studies, ex-vivo studies, rock core studies and quality control studies. For preclinical studies a bore size of 17cm allows for mouse and rat imaging, a 26 cm bore size allows for animals up to 3kg and a 42 cm bore size allows for animals up to 6 kg.

Variable field from 0.1T to 9.4T

MRS*DRYMAG technology allows the magnetic field strength to be changed within few minutes. This is a great utility for researchers interested in translational imaging, contrast agent development, or ex-vivo studies.

Upgradable magnet

MRS*DRYMAG is upgradable. For instance a 3T can be upgraded to a 7T on site at any time.

Multimodality ready for PET/MR and SPECT/MR

MRS*DRYMAG is multimodality friendly. All MR models are compatible with the PET Insert (**MRS*PET-I**) for simultaneous PET/MR imaging, PET Clip-On (**MRS*PET-CO**) for sequential PET/MR imaging and the SPECT Clip-On (**MRS*SPECT-CO**) for sequential SPECT/MR.

Self shielded - Small five gauss line

MRS*DRYMAG is self shielded, therefore no Faraday cage is required. **MRS*DRYMAG** systems can be installed side by side to any other imaging modality.

No quench valve or pipes required

MRS*DRYMAG technology doesn't require any pipes or valves in case of a quench. No gas will exit at all from the magnet, which makes the system very safe for all MR Solutions users.

Up to 12 hours autonomy during power outage

MRS*DRYMAG is able to operate up to 12 hours during a power outage. It is important that users can use all the functionality of the system during a power outage.

MRS*DRYMAG: Rotation magnet stand

Some specific applications such as plants studies, fluid flow in porous media, agronomic research or gravity studies require a vertical magnet. **MRS*DRYMAG** was designed so that users can simply move the magnet from one position to the other by spinning the handle.



MRS*DRYMAG

The ultimate cryogen-free magnet: no liquid helium, no nitrogen

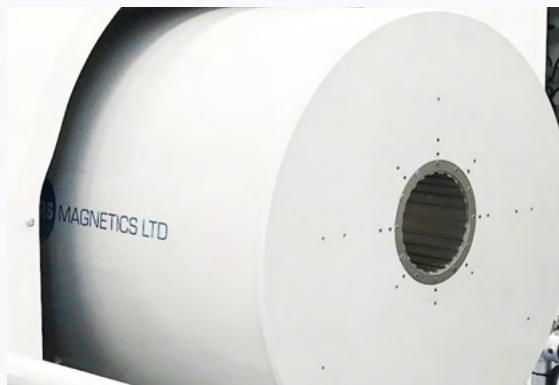
The Dry Magnet technology

The **MRS*DRYMAG** technology doesn't require liquid helium or liquid nitrogen for the cooling, hence the term of dry magnet.

This technology has a huge advantage in providing systems that are very light and compact, for instance 350kg for a 3T and only 500kg for a 7T. It does not need any specific room requirements such as quench pipes, quench valve or a liquid helium reservoir. There are no requirements for ceiling height beyond standard room construction. **MRS*DRYMAG** MRI can be installed almost anywhere in rooms as small as 8m² and on the highest floor of a building.

Low maintenance cost for robust magnets

MRS*DRYMAG is robust and doesn't require expensive service contracts to maintain its high quality performance.

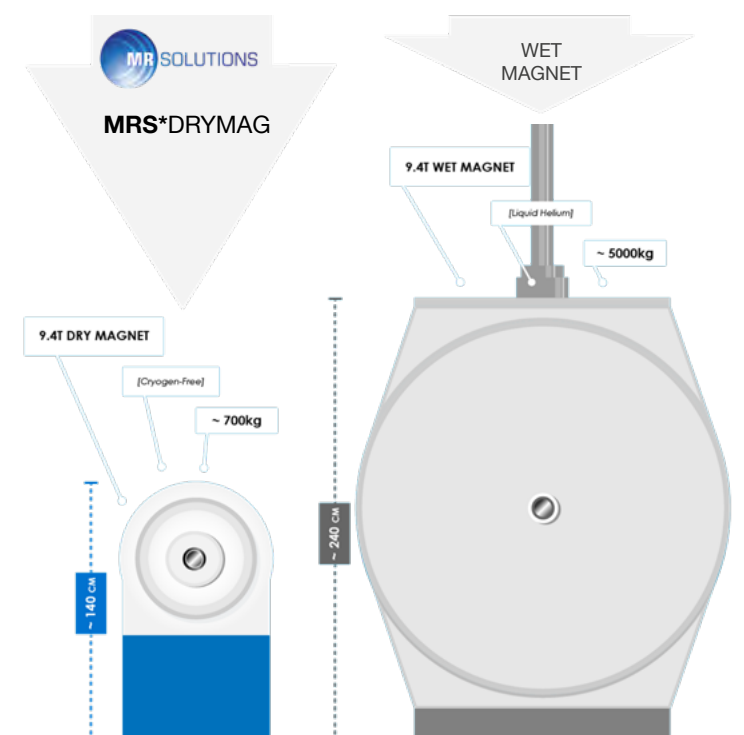


MRS*DRYMAG: stress free installation

Save time and money:
No major site preparation, no consumables

MRS*DRYMAG does not require major site preparation, such as quench lines, reinforced floor, very high ceiling or liquid helium storage. There are no consumables.

The below drawing shows the comparison between a 9.4T **MRS*DRYMAG** weighing 700kg and a traditional 9.4T WET magnet weighing about 5 tons.



Installation in SPF laboratory
Pathogen-free environment

The unique **MRS*DRYMAG** technology does not release any gases into the imaging room in case of quench as there is no helium gas or liquid helium in the magnet.

The safest and true cryogen-free technology

Unlike other "cryogen-free" technology on the market, **MRS*DRYMAG** is very safe for the users and moreover it can be installed in any pathogen free laboratory without specific emergency exit door requirements.

MR Solutions MRI, from 3T to 9.4T does not have any quench valves or pipes.



High floor installation
When weight matters

MR Solutions magnets are very light and compact and can be installed on any floors of any building. The magnet can be loaded in a standard lift and can pass through any standard door without the need to demolish walls. For Instance a **MRS*DRYMAG 3.0T** from MR SOLUTIONS weighs only 350 kg and is 1.40m high.



With **MRS*DRYMAG** technology
MR Solutions users are not the hostages
of the helium shortage and its escalating
price year after year.

MR Solutions preclinical MRI systems
significantly reduce environmental impact.



PRECLINICAL MRI

MRS*DRYMAG

Two versions to meet everyone's needs: Flexiscan and Powerscan

FLEXISCAN

POWERSCAN

Flexiscan and Powerscan: main differences

Researchers may have different needs when it comes to MRI. Some of them solely require high-end MR functionality, whilst others are more interested in multi-modality imaging.

The **Flexiscan MRS*DRYMAG** version does not require specialist knowledge and can be operated by simply selecting predefined protocols. This version is available for all magnet strengths and can be used in combination with MRS*PET INSERT, MRS*PET CLIP-ON and MRS*SPECT CLIP-ON for multimodality imaging.

The **Powerscan MRS*DRYMAG** version allows pulse sequence programming, spectroscopy, a wider variety of radio frequency coils, such as phased array, multi-nuclear coils, stronger gradients, and more transmitters and receivers. The variable magnetic field is available on the Powerscan version. Powerscan is also ready for multimodality imaging such as PET/MR and SPECT/MR.

Research focus may change over time and therefore it is possible to upgrade Flexiscan to Powerscan on site.

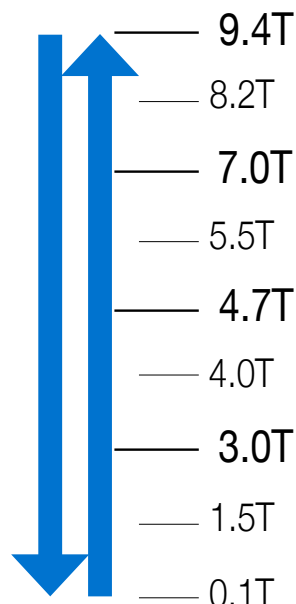
MRS*DRYMAG

Variable field magnet

All Powerscan models have, as an option, the variable field feature. They can be ramped down and ramped up to any field strengths. For instance from 7.0T to 3T for clinical and preclinical translational imaging studies, to 1T for contrast agent development, to 0.5T for ex-vivo studies.

Any other field strengths can be selected upon users choice.

The system can move from one field to the other in minutes. Up to 3 strengths are selectable on a Powerscan version.



MRS*DRYMAG

Large choice of coils

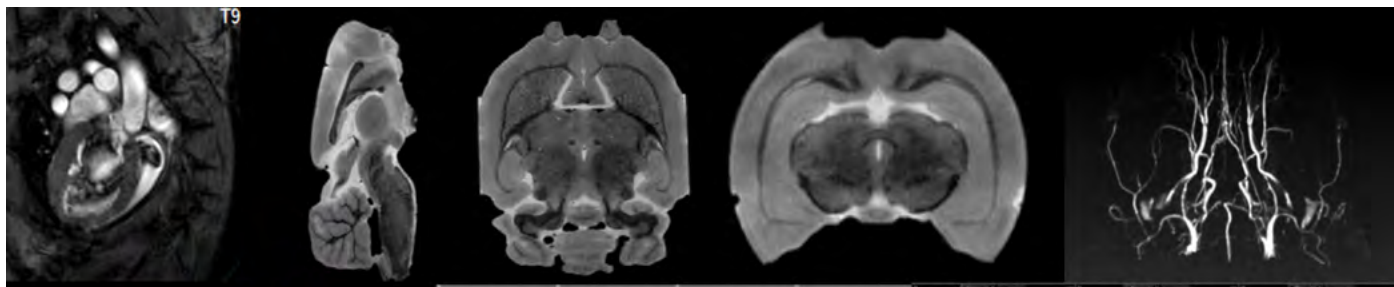
Coils for Flexiscan and Powerscan:

- Transmit/receive birdcage coils
- Surface coils
 - From mice to large animals
 - Whole body, cardiac, and brain

Coils exclusive to Powerscan models :

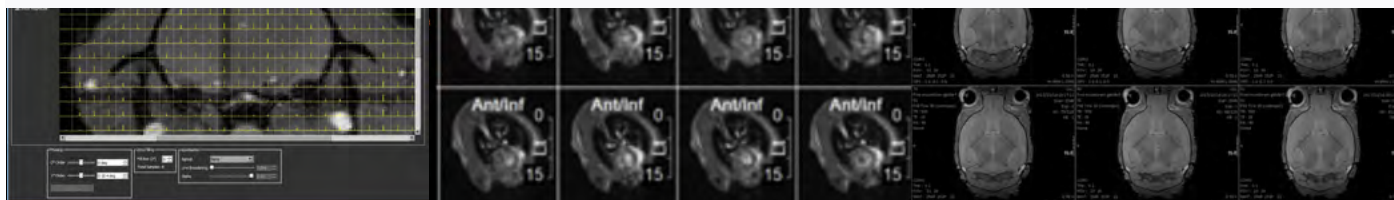
- Phased array coils
- Multinuclear coils:
 - ^{23}Na , ^{15}O , ^{19}F , ^{31}P , ^{13}C
- Specific customised coils.





Advanced MRI methods and protocols

All sequences are available on all MRS*DRYMAG, Flexiscan and Powerscan versions



Cardiac sequences

2D/3D multi-slice FLASH based cardiac cine, Balanced 2D/3D SSFP cine, Saturation Recovery 2D/3D FLASH perfusion, Inversion Preparation FLASH T1 map, IR Dynamic Contrast Enhanced imaging, RF and gradient spoiling, Slice navigator option etc..

Magnetisation transfer contrast imaging techniques

MTC preparation available in most sequences (Spin Echo, Gradient Echo, Fast Spin Echo, Fast Gradient Echo, Inversion Recovery sequences, etc.).

Fat suppression techniques combined with the different sequences

FatSat available for all Gradient Echo, Spin Echo, Fast Spin Echo, EPI sequences, etc.

Pulse sequences with non-Cartesian acquisition (radial, spiral)

Radial (Gradient echo, UTE), Spiral

Gradient non-linearity correction

Image-based calibration using suitable structured phantom

Spectroscopic techniques

- Single voxel spectroscopy: PRESS, STEAM with CHESS and VAPOR water/solvent suppression, LASER.
- Chemical shift imaging: 3D, Multislice CSI, Echo-planar spectroscopic imaging, EPSI Flyback EPSI
- Volume localization for x-nuclei spectroscopy. Voxel positioning using 1H image when double-tuned coils are available, e.g. 1H/19F

Basic 2D and 3D sequences

Spin Echo, Gradient Echo, Fast Spin Echo, Fast Gradient Echo, Inversion recovery (IR SE, FLAIR, STIR) etc.

Perfusion imaging techniques

Dynamic Contrast Enhanced (DCE) Fast Gradient Echo, saturation Recovery Fast Gradient Echo, etc.

MR-angiography techniques and related visualisation package

2D/3D Time of Flight, MIP visualisation built in

Spatial pre-saturation bands combined with the different sequences

Preset available in most sequences

Parallel Imaging techniques available and reconstruction algorithms

Sum-of-squares reconstruction, Multiple TX channel support for simultaneous RF excitation, SENSE reconstruction for parallel imaging, ghost correction, Multi-shot EPI ghost correction, Flyback EPI

Automatic shimming algorithms

Gradient 3D map shim, FASTERMAP (FASTERMAP based method), Iterative shim available for first order shimming

Phase-contrast (velocity encoded) cine imaging

Three directional Phase Contrast Gradient Echo, etc

Relaxometry sequences

MEMS T2 mapping, MPRAGE T1 mapping, IR spin echo, MGE T2* mapping, Bulk CPMG, Inversion Recovery, etc

Diffusion imaging possibilities (2D and 3D)

Diffusion weighted imaging techniques: SE EPI DWI, FSE DWI
Diffusion tensor imaging, E EPI DTI, SE DTI etc..

Ghost correction and EPI

Navigator based Nyquist ghost correction, iterative image based ghost correction, Multi-shot EPI ghost correction, Flyback EPI etc.

fMRI techniques

Gradient Echo, Gradient Echo EPI – with export to DICOM/Nifti for third party processing such as FSL and SPM
Synchronisation between MRI console and stimulus equipment using flexible, configurable real time I/O triggering on the pulse sequence level (16 ports)

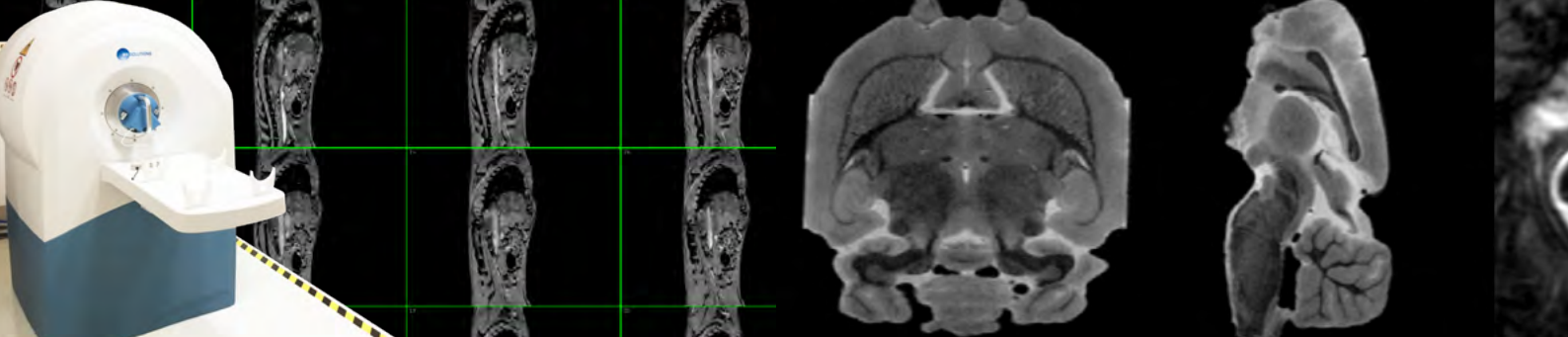
Data export/import, possible DICOM format compliance

DICOM export available for all images, Nifti for neuroimaging
DICOM PACS automatic export
GIF animation export (e.g. cardiac cine)

Pulse sequence programming

Powerscan MRI version allows MRI physicists the full access to all functions of the MRS*DRYMAG system. Pulse sequences may be written and/or modified and new reconstruction algorithms incorporated. Full source code to all pulse sequences is supplied.

Partial list of sequences, please contact MR Solutions representative for more details



17 cm & 26 cm bore size
from mice to 3 kg animals imaging

17 cm & 24 cm bore size
from mice to 3 kg animal imaging

MRS*DRYMAG

9.4T

Dry magnet technology: Cryogen-free
No Liquid Helium - No Nitrogen

MRS*DRYMAG

7.0T

Dry magnet technology: Cryogen-free
No Liquid Helium - No Nitrogen

Main Specifications		
Model reference	MRS*DRYMAG 9417	MRS*DRYMAG 9426
Bore size	17 cm	26 cm
Multimodality imaging compatible with		
MRS*PET INSERT	Yes, for Simultaneous PET/MR	
MRS*PET CLIP-ON	Yes, for Sequential PET/MR	
MRS*SPECT CLIP-ON	Yes, for Sequential SPECT/MRI	
Dry magnet , gradient and spectrometer specifications		
Animal type	Whole body mice, rats & Marmosets	Whole body mice, rats, marmosets, 3kg animals
Clear bore size (mm)	170	259
FOV (mm)	70 mm x 100 mm axially	135 mm DSV
Homogeneity	over 35 mm DSV +/- 0.05ppm	±1 ppm over 98 mm DSV
5 gauss line	105 cm rad. x120 cm axially	140 cm radially x 170cm axially
Magnet stability	<0.05 ppm/hour (intrinsically stable)	
Magnet type	Superconducting	
Magnet Technology / Cooling	Dry Magnet technology MRS*DRYMAG Cryogen free (no liquid helium and no nitrogen)	
Variable fields / Rampable	Yes, for Powerscan version: up to 3 additional strengths	
Integral RF shield	Yes, self shielded	
Rotating magnet stand	Yes, option for both Flexiscan and Powerscan versions	
Diameter	158 mm OD, 100 mm ID	244 mm OD, 161 mm ID
Linearity	L: +/- 5% over 75 mm DSV	L: +/- 5% over 90 mm DSV
Gradient strength	600 mT/m all directions	420 mT/m all directions
Gradient upgrade	1000 mT/m for Powerscan	600 mT/m for Powerscan
Gradient insert	Yes, option for Powerscan version up to 1750mT/m	
EVO Spectrometer	2 Transmitters - 4 receivers	
Channels upgrade	Yes for Powerscan version, up to 8 TX, 32 RX	
Coils		
Volume, surface	Yes	Yes
Phased array, multinuclear	Yes for Powerscan version	
Dimensions and weight with animal table		
DRYMAG Dimensions (mm)	1450 (h) x 800 (w) x 1024 (l)	1540 (h) x 980 (w) x 1310 (l)
Total Weight	700 kg	<1000kg

Main Specifications		
Model reference	MRS*DRYMAG 7017	MRS*DRYMAG 7024
Bore size	17 cm	24 cm
Multimodality imaging compatible with		
MRS*PET INSERT	Yes, for Simultaneous PET/MR	
MRS*PET CLIP-ON	Yes, for Sequential PET/MR	
MRS*SPECT CLIP-ON	Yes, for Sequential SPECT/MRI	
Dry magnet , gradient and spectrometer specifications		
Animal type	Whole body mice, rats & Marmosets	Whole body mice, rats, marmosets, 3kg animals
Clear bore size (mm)	170	240
FOV (mm)	70 mm x 100 mm axially	135 mm DSV
Homogeneity	over 35 mm DSV +/- 0.05ppm	±1 ppm over 98 mm DSV
5 gauss line	85 cm radially x 155 cm axially	120 cm radially x 150cm axially
Magnet stability	<0.05 ppm/hour (intrinsically stable)	
Magnet type	Superconducting	
Magnet Technology / Cooling	Dry Magnet technology MRS*DRYMAG Cryogen free (no liquid helium and no nitrogen)	
Variable fields / Rampable	Yes, for Powerscan version: up to 3 additional strengths	
Integral RF shield	Yes, self shielded	
Rotating magnet stand	Yes, option for both Flexiscan and Powerscan versions	
Diameter	158 mm OD, 100 mm ID	227 mm OD, 160 mm ID
Linearity	L: +/- 5% over 75 mm DSV	L: +/- 5% over 90 mm DSV
Gradient strength	600 mT/m all directions	420 mT/m all directions
Gradient upgrade	1000 mT/m for Powerscan	600 mT/m for Powerscan
Gradient insert	Yes, option for Powerscan version up to 1750mT/m	
EVO Spectrometer	2 Transmitters - 4 receivers	
Channels upgrade	Yes for Powerscan version, up to 8 TX, 32 RX	
Coils		
Volume, surface	Yes	Yes
Phased array, multinuclear	Yes for Powerscan version	
Dimensions and weight with animal table		
DRYMAG Dimensions (mm)	1450 (h) x 800 (w) x 1024 (l)	1500 (h) x 980 (w) x 1310 (l)
Total Weight	<500 kg	<600 kg



17 cm & 24 cm bore size
from mice to 3 kg animals imaging

17 cm, 24 cm & 42 cm bore size
from rodents to 6 kg animal imaging

MRS*DRYMAG 4.7T

Dry magnet technology: Cryogen-free
No Liquid Helium - No Nitrogen

Main Specifications		
Model reference	MRS*DRYMAG 4717	MRS*DRYMAG 4724
Bore size	17 cm	24 cm
Multimodality imaging compatible with		
MRS*PET INSERT	Yes, for Simultaneous PET/MR	
MRS*PET CLIP-ON	Yes, for Sequential PET/MR	
MRS*SPECT CLIP-ON	Yes, for Sequential SPECT/MRI	
Dry magnet , gradient and spectrometer specifications		
Animal type	Whole body mice, rats & Marmosets	Whole body mice, rats, marmosets, 3kg animals
Clear bore size (mm)	170	240
FOV (mm)	70 mm x 100 mm axially	135 mm DSV
Homogeneity	over 35mm DSV +/- 0.05ppm	±1 ppm over 98 mm DSV
5 gauss line	75 cm radially x 90 cm axially	110 cm radially x 140cm axially
Magnet stability	<0.05ppm/hour (intrinsically stable)	
Magnet type	Superconducting	
Magnet Technology / Cooling	Dry Magnet technology MRS*DRYMAG Cryogen free (no liquid helium and no nitrogen)	
Variable fields / Rampable	Yes, for Powerscan version: up to 3 additional strengths	
Integral RF shield	Yes, self shielded	
Rotating magnet stand	Yes, option for both Flexiscan and Powerscan versions	
Diameter	158 mm OD, 100 mm ID	227 mm OD, 160 mm ID
Linearity	L: +/- 5% over 75 mm DSV	L: +/- 5% over 90 mm DSV
Gradient strength	600 mT/m all directions	420 mT/m all directions
Gradient upgrade	1000 mT/m for Powerscan	600 mT/m for Powerscan
Gradient insert	Yes, option for Powerscan version up to 1750mT/m	
EVO Spectrometer	2 Transmitters - 4 receivers	
Channels upgrade	Yes for Powerscan version, up to 8 TX, 32 RX	
Coils		
Volume, surface	Yes	Yes
Phased array, multinuclear	Yes for Powerscan version	
Dimensions and weight with animal table		
DRYMAG Dimensions (mm)	1450 (h) x 800 (w) x 1024 (l)	1500 (h) x 980 (w) x 1310 (l)
Total Weight	<500 kg	<600 kg

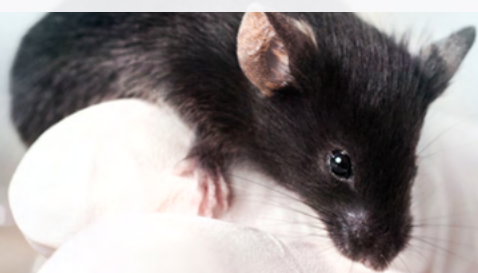
MRS*DRYMAG 3.0T

Dry magnet technology: Cryogen-free
No Liquid Helium - No Nitrogen

Main Specifications			
Model reference	MRS*DRYMAG 017	MRS*DRYMAG 3024	MRS*DRYMAG 3042
Bore size	17 cm	24 cm	42 cm
Multimodality imaging compatible with			
MRS*PET INSERT	Yes, for Simultaneous PET/MR		
MRS*PET CLIP-ON	Yes, for Sequential PET/MR		
MRS*SPECT CLIP-ON	Yes, for Sequential SPECT/MRI		N/A
Dry magnet , gradient and spectrometer specifications			
Animal type	Whole body mice, rats & Marmosets	Whole body mice, rats, ≤ 3kg animals	≤ 6 kg animals
Clear bore size (mm)	170	240	420
FOV (mm)	70 x 100 axially	135 mm DSV	180 mm DSV
Homogeneity DSV	35 mm +/- 0.05ppm	98 mm ±1 ppm	220 mm ±2 ppm
5 gauss line (cm)	65 cm x 80 cm axially	110cm x 140cm axially	160cm x 210cm axially
Magnet stability	<0.05ppm/hour (intrinsically stable)		
Magnet type	Superconducting		
Magnet Technology / Cooling	Dry Magnet technology MRS*DRYMAG Cryogen free (no liquid helium and no nitrogen)		
Variable fields	Yes, for Powerscan: up to 3 additional strengths		N/A
Integral RF shield	Yes, self shielded		
Rotating stand	Yes, option for Flexiscan and Powerscan versions		N/A
Diameter (mm)	158 OD, 100 mm ID	227 OD, 160 mm ID	395 OD, 190 mm ID
Linearity over DSV	+/- 5% (75 mm DSV)	+/- 5% (90 mm DSV)	+/- 5% (180 mm DSV)
Gradient strength	600 mT/m all directions	420 mT/m all directions	266 mT/m all directions
Gradient upgrade	1000 mT/m Powerscan	600 mT/m Powerscan	N/A
Gradient insert	Yes, Powerscan version up to 1750 mT/m		Yes, Option
EVO Spectrometer	2 Transmitters - 4 receivers		
Channels upgrade	Yes for Powerscan version, up to 8 TX, 32 RX		
Coils			
Volume, surface	Yes		
Phased array, nuclear	Yes for Powerscan version		
Dimensions and weight with animal table			
DRYMAG (mm)	1425 x880 x750	1450 x843 x 977	1450 x1200 x
Total Weight	<350 kg	<600 kg	<1300 kg

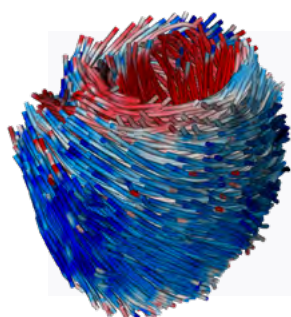
Applications MRI

Performed with **MRS*DRYMAG**



Real case studies from **MRS*DRYMAG** users

Cardiology



Mouse cardiac fiber tractography

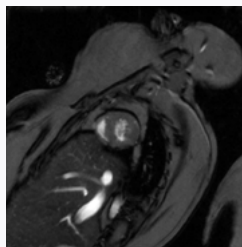
The image is a fiber tractography of the cardiac muscle fibers of the left ventricle reconstructed from a diffusion-tensor-imaging (DTI) acquisition. The goal is to improve the understanding of cardiac remodeling due to cardiomyopathy.

Courtesy of Pr Gustav Strijkers, AMC, Amsterdam, The Netherlands. System: **MRS*DRYMAG 7T**

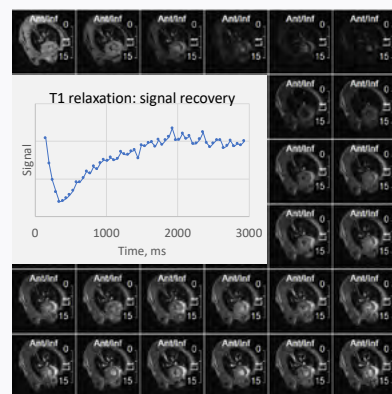
CINE-MRI movie of a diabetic mouse heart with 60 frames per cardiac cycle

The quantification of diastolic cardiac function requires a very high frame rate of at least 60 frames per cardiac cycle, corresponding to a temporal resolution of about 2 ms.

Courtesy of Mariah Daal, MSc – PhD candidate, AMC, Amsterdam, The Netherlands. System: **MRS*DRYMAG 7T**



Relaxation signal recovery Mouse heart



Courtesy of Dr Messroghli, Deutsches Herzzentrum Berlin und Charité CVK, Berlin, Germany, System: **MRS*DRYMAG 3T**

Angiography

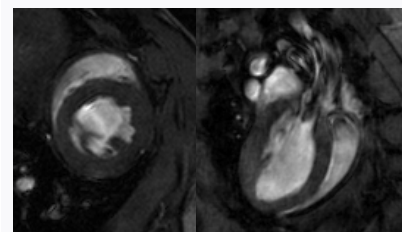


Time of Flight (TOF) Rat brain without contrast agent

Technique used to visualize the inside, or lumen, of blood vessels and organs, with particular interest in the arteries, veins, and the heart chambers.

Courtesy of Dr Prodip Bose, Malcom Randall VA Medical Center, USA, System: **MRS*DRYMAG 7T**

Four chambers, Short axis Rat heart



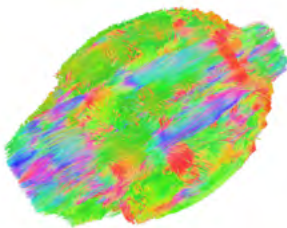
Visualisation of short axis and four chamber views of a rat heart. Left and right ventricles, atriums & entrance of the aorta.

Courtesy of Dr Prodip Bose, Malcom Randall VA Medical Center, USA System: **MRS*DRYMAG 7T**

Applications MRI

Performed with **MRS*DRYMAG**

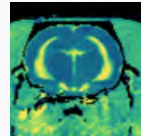
Diffusion



Diffusion Tensor Images (DTI) Rat brain

To detect pathology specific details such as microstructural changes in the axons and white matter.
EPI-DTI, 66 directions

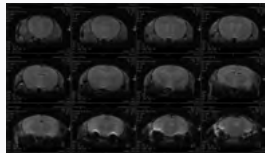
Courtesy of Dr Prodip Bose, Malcom Randall VA Medical Center, USA, System: **MRS*DRYMAG 7T**



ADC Maps / Diffusion weighted Images (DWI)

Mapping of the diffusion process of molecules in vivo and non-invasively.

Courtesy of Pr Gustav Strijkers, AMC, Amsterdam, The Netherlands. System: **MRS*DRYMAG 7T**



Echo planar Imaging DTI Mouse brain

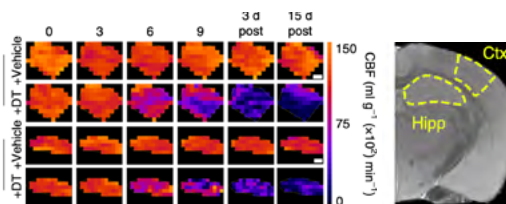
Courtesy of Pr Ilan Tsarfaty, Tel Aviv University, Israel
System: **MRS*DRYMAG 4.7T**



Live Bird Brain DTI

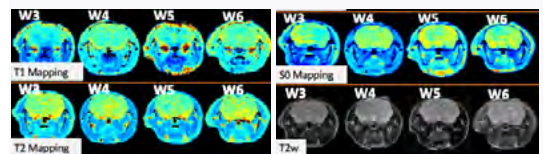
Courtesy of Pr Annemie Van der Linden Bio-imaging Lab, University of Antwerp, Belgium, System: **MRS*DRYMAG 4.7T**

Quantitative Cerebral Blood Flow Measurements



Courtesy of Dr Axel Montagne, Publication in Nature neuroscience
Zilkha Neurogenetic Institute, Keck School of Medicine, University of Southern California USA, System: **MRS*DRYMAG 7T**

Relaxometry



Quantitative relaxometry Mouse brain

Relaxometry maps: Mapping T1, T2, SO

Courtesy of Dr Olivier Keunen, Luxembourg Institute of health, Luxembourg
System: **MRS*DRYMAG 3T**

Oncology



Spontaneous mouse brain tumours Transgenic species

Courtesy of Dr Michael F Jackson

University of Manitoba, Small Animal and Materials Imaging Core Facility, Canada
System: **MRS*DRYMAG 7T**

Perfusion



Dynamic contrast-enhanced (DCE)

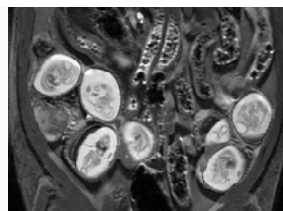
Mouse leg tumour study, Non-contrast enhanced T1, T2, DCE (Gd)

Courtesy of Pr Annemie Van der Linden Bio-imaging Lab, University of Antwerp, Belgium, System: **MRS*DRYMAG 4.7T**

Anatomy

Pregnant sprague dawley rat T2w anatomical images at gestational day E13 showing embryonic implant

Courtesy of Dr Nana Sunn, Sydney Imaging, a Core Research Facility at the University of Sydney, Australia
System: **MRS*DRYMAG 7T**



Spectroscopy

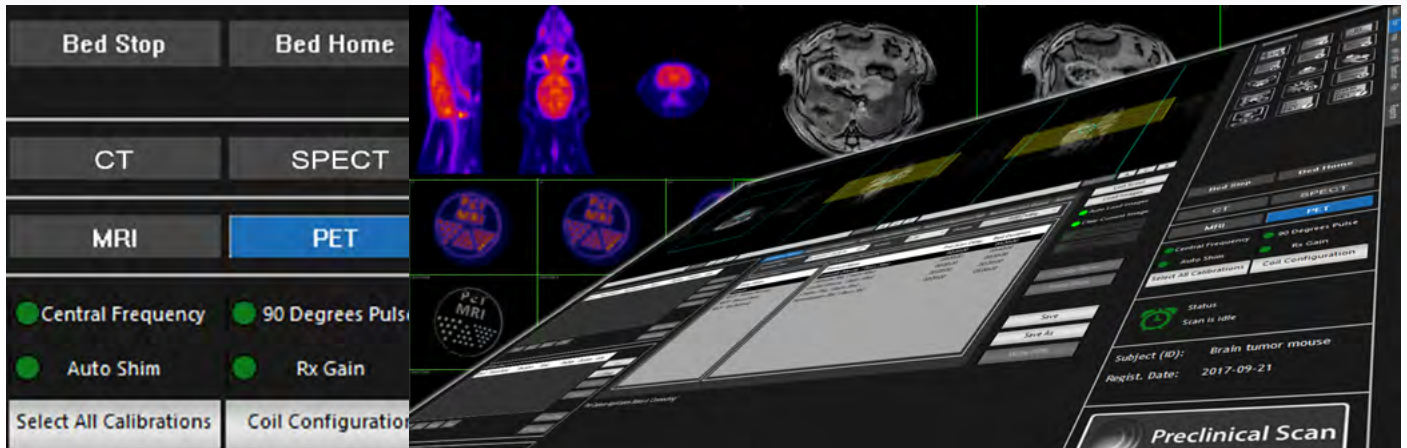


Chemical Shift Imaging Hyperpolarized 13C in-vivo spectroscopy

Courtesy of Dr. Murali Krishna Cherukuri, National Institute of Health (NIH), United States, System: **MRS*DRYMAG 3T**

PRECLINICAL SCAN Software

All your imaging modalities controlled through one interface

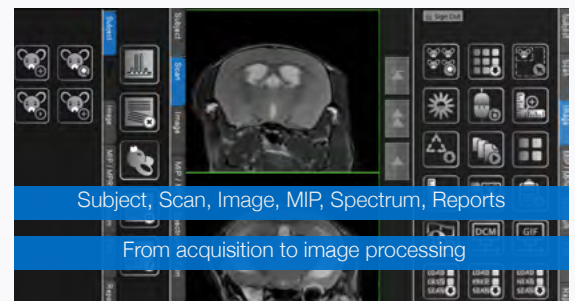


The most advanced multimodality imaging software

Preclinical Scan is the multimodality interface for preclinical imaging. Under one interface users have access to all MRI functionality such as adjusting acquisition parameters, reconstruction parameters, image geometry, but also have access to the PET, SPECT and CT extended functionalities.

There is no need for our users to move from one console to another or even from one software to another as they change imaging modality. Everything is covered within the Preclinical Scan software.

We have designed the graphical user interface to be friendly and easy to set up, even for the new user. For the advanced user, real-time optimisation and advanced functionalities are available. Preclinical Scan software can be configured with different levels of access depending on the experience of designated users.



Subject, Scan, Image, MIP, Spectrum, Reports

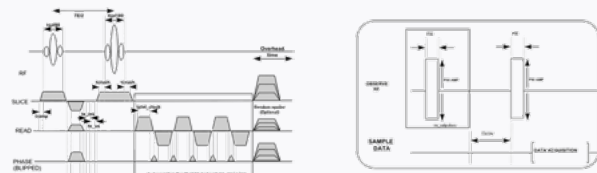
From acquisition to image processing

POWERSCAN Software

Pulse Sequence Programming

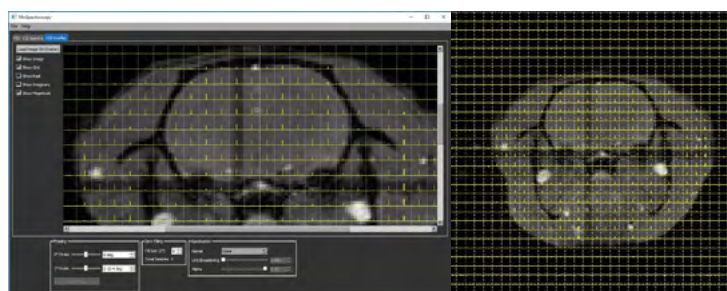
Powerscan allows the MRI physicist full access to all functions of the MRI system. Pulse sequences may be written and/or modified and new reconstruction algorithms incorporated. Full source code to all pulse sequences is supplied.

All sequences developed by MRI physicists can be uploaded to Preclinical Scan Software once validated. MR SOLUTIONS also provides assistance and services for development of new pulse sequences.



- Full control of the system
- Access to individual components such as reconstruction software
- Interface to user programs
- Flexible pulse programming environment with user defined graphical wave shape generation
- Interactive setup mode for sequence parameter optimisation including real-time display of images and/or spectra and time data
- Scripting of own set of modes of acquisition
- Customisable reconstruction processing
- DICOM export
- DICOM worklist
- User customisable text with international language display

Spectroscopy Software



MR Solutions has developed a new software for spectroscopy. This software is provided with all the Powerscan versions of the MRS*DRYMAG and comes with several sequences:

- Single voxel spectroscopy: PRESS, STEAM with CHESSE and VAPOR water/solvent suppression, LASER.
- Chemical shift imaging: 3D, Multislice CSI, Echo-planar spectroscopic imaging, EPSI Flyback EPSI
- Volume localization for x-nuclei spectroscopy. Voxel positioning using 1H image when double-tuned coils are available, e.g. 1H/19F

Animal Handling



Anaesthesia

Cardiac Gating

Respiratory Gating

Pathogen-free beds

The Imaging beds on MR SOLUTIONS systems are designed to provide important support functions to the animal during the preparation stage and throughout the imaging process. The beds provide anaesthetic gas to the animal and thermo-regulation of the animal during the scan.



Pathogen-free Imaging Cells with physiological monitoring for mice, rats, marmoset, monkeys and rabbits.

Ensures reproducible imaging conditions for longitudinal studies and provides a pathogen-free environment for immunodeficient animals and infectious disease studies.

ANIMAL IMAGING BEDS MRI COMPATIBLE

Mice

Rats

Large animals 3 kg up to 12 kg

Ø38mm

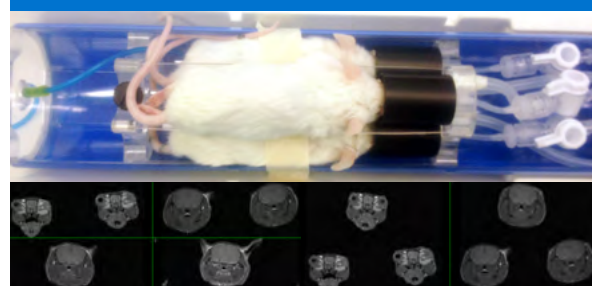
Ø70mm

Ø115mm

Ø150mm



High-throughput scanning
Imaging 3 mice simultaneously



MRS*DRY MAG

The unique and most flexible path to multimodality imaging

MRS*PET/MR

Simultaneous imaging

MRS*PET INSERT up to 9.4T



MRS*PET/MR and MRS*PET/CT

Sequential imaging with MRS*PET CLIP-ON up to 9.4T

MRS*SPECT/MR and MRS*SPECT/CT

Sequential imaging with MRS*SPECT CLIP-ON up to 9.4T





Imaging INNOVATION

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