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ASTAR - 3002

Veterinary MRI Model

EPCC / PRODUCTS / APPLICATION / SOFTWARE / ACCESSORIES / CONSUMABLES / SERVICES

Analytical Technologies Limited

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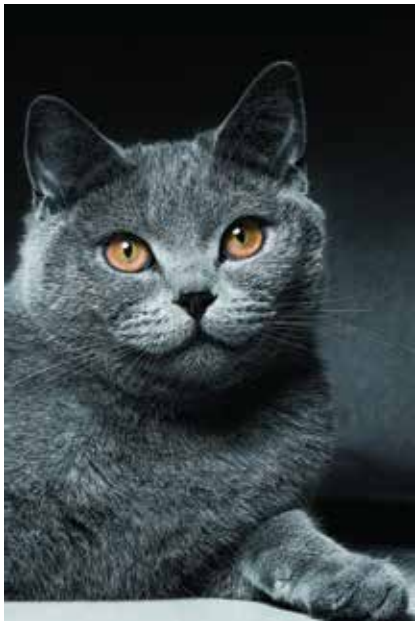
III. Advantages of MRI

1. High soft tissue resolution.

   The soft tissue resolution of magnetic resonance is obviously better than that of CT. Therefore, it has incomparable advantages of CT in the examination of substantive organ diseases such as central nervous system, abdomen and pelvis!



2. Comprehensive evaluation of the lesion area

   The magnetic resonance imaging can carry out multiplanar imaging and multiparameter imaging, and can comprehensively evaluate the relationship between the lesion and surrounding organs, as well as the internal tissue structure and components of the lesion.

3. Vascular imaging is obvious.

   MRI can image blood vessels without contrast agent.

4. No X-ray radiation

   The nuclear magnetic examination produces no X-ray radiation, no harm to the body.

IV. Clinical Application

The significance of clinical application of pet MRI is not only the examination of brain and neurological system. It is a new high-tech imaging examination method in recent years, which can be used for tomography of almost any part of pet body.

1. Nervous system

MRI has almost become a means of diagnosis for pet nervous system diseases, including tumor, infarction, bleeding,
degeneration, congenital malformation, infection and so on. MRI is very effective in the diagnosis of brain diseases such as hematoma, brain tumor, intraspinal tumor, syringomyelia and hydrocephalus.

2. Chest

MRI also has unique advantages for pet heart diseases, lung tumors, heart and large blood vessel diseases, intrathoracic mediastinal masses and so on.

3. Facial features

MRI has more obvious advantages in pet facial features. It can do tomography of nasal cavity, paranasal sinus, frontal sinus, vestibular cochlea, retrobulbar abscess, throat and other parts.

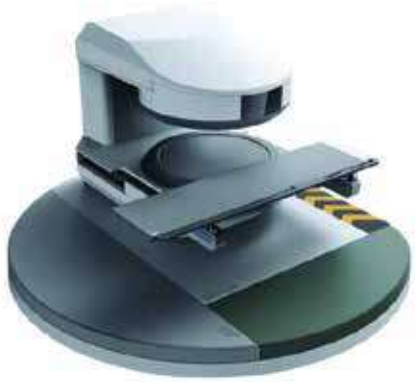
4. Bone, joint and muscle

MRI also has great advantages in the diagnosis of bone, joint and muscle diseases in orthopaedic pets. It can be used for the diagnosis of early osteomyelitis, rupture of anterior cruciate ligament, meniscus injury, femoral head necrosis, muscle tissue diseases and so on.

5. Urogenital system

In terms of urogenital system, the lesions of pet uterus, ovary, bladder, prostate, kidney, ureter and other soft tissue organs are very clear and intuitive in magnetic resonance imaging.

V. PET MAGNETIC RESONANCE IMAGING SYSTEM C



Technical Specifications:

Magnet type: C-type

Magnetic field intensity: 0.3TImaging range: ϕ 150×150mm

Magnet weight: 2.3 ± 0.1t

Eddy current free

Design can be customized

PRODUCT DESCRIPTION

Product Name: type C pet magnetic resonance imaging system With the improvement of national living standards and the vigorous development of pet market, pets play an increasingly important role in the family, and the requirements for pet diagnosis and treatment are higher and higher. Magnetic resonance imaging has the advantages of non ionizing radiation, multi parameter imaging, multi plane and arbitrary angle imaging, good soft tissue contrast and high resolution. It is more and more recognized by the market. As a high-end imaging diagnostic equipment, magnetic resonance imaging system has irreplaceable significance in the diagnosis of nervous system diseases, tumor diseases, joint soft tissue and other diseases.

Type C pet magnetic resonance imaging system is developed from type C medical magnetic resonance imaging system, but medical magnetic resonance imaging system can not be directly used for pet magnetic resonance diagnosis.

This is mainly determined by the different body characteristics of human body and pet. At present, the medical magnetic resonance imaging systems on the market are mainly for adults, with little body shape difference. However, the body shape of pets varies greatly, from cats, pet mice and pet turtles of less than 1 kg to large dogs of more than 100 kg. This needs to be optimized from the aspects of system hardware, software, sequence and accessories, so that different pets can obtain images that meet the diagnostic require-ments.

Product Introduction

Type C pet magnetic resonance imaging system is a compact, cost-effective and convenient magnetic resonance imaging system, which is specially used for imaging cats and dogs. Type C pet magnetic resonance imaging system inherits the characteristics of medical permanent magnetic resonance imaging system and is the most classic pet magnetic reso nance imaging system. The main magnetic field direction of type C pet magnetic resonance imaging is up and down, and the hospital bed can move back and forth, left and right, which is convenient and fast.

VI. Parts

1.GRADIENT COIL

PRODUCT DESCRIPTION

In MRI scanning system, the function of gradient coil is mainly to realize spatial coding. When scanning images,x, y and Z gradient coils work together to select slices, frequency coding and phase coding respectively. When current passes through these coils, a secondary magnetic field is generated. This gradient field slightly distorts the main magnetic field in a predictable mode, resulting in the resonance frequency of the proton changing as a function of position. Therefore, the main function of gradient is to allow spatial coding of MR signal. Gradient coils are also important for a wide range of "physiological" techniques, such as MR angiography, diffusion and perfusion imaging.

At the same time, the gradient coil is also responsible for shimming and anti eddy current functions. Our company provides flat gradient coil with good performance, which can meet the use demand.

In terms of structure, the flat gradient coil has x, y and Z gradient coils, which is easy to connect. It can be equipped with water cooling system to effectively cool the gradient coil and make the imaging more stable; It can also be designed as an active shielding gradient coil to further reduce the eddy current from the source. Because the most effective way to control eddy current is to prevent the generation of eddy current first. This is the motivation of developing active shielding (self shielding) gradient coil; The current in the shielding coil is used to run in the opposite direction of the imaging gradient coil to reduce eddy current. The gradient coil made in this way is reliable and durable.

Technical Parameters
1. Gradient strength: 25mt / m
2. Gradient linearity: < 5%
3. Rise time: ≥ 0.3ms
Switching rate: ≥ 80MT / M / MS,
The size can be customized
according to customers'requirements.

2. SPECIAL COIL FOR INTERVENTION



PRODUCT DESCRIPTION

MRI is a new minimally invasive interventional therapy. Compared with CT and ultrasound-guided minimally invasive interventional therapy, it has incomparable advantages such as high soft tissue resolution, no radiation, rich imaging parameters and so on. MRI interventional imaging coil is an important part of MRI imaging system. However, the traditional MRI coil can only be used for ordinary MRI examination, not for MRI image-guided interventional puncture.Therefore, we specially designed and manufactured the special coil for interventional surgery for the interventional system. While considering the image effect, we also fully consider the openness of escort for interventional surgery.

Like the current traditional coil, different parts need different interventional coils. At present, we provide users with three kinds of interventional coils, namely head interventional coil; Body intervention coil and surface intervention coil. Users can select corresponding products according to their needs. The size can be customized.

The head interventional coil, with a typical size of 260×215×250 (L×w×h), during head scanning, the patient lies down, puts the head into the coil, and carries out interventional treatment after locating the focus.

The animal interventional coil, with a typical size of 300×505×325 (length×width×height), is used for abdominal or spinal interventional surgery. The patient lies flat so that the trunk can easily enter the coil. After locating the focus, interventional therapy is carried out.

The main advantages of surface coils are their portability and ease of use. When using, pay attention to the placement position of the coil and fix it properly.

Interventional imaging coil is one of the important components of interventional magnetic resonance system, which needs to take into account imaging signal-to-noise ratio, surgical uniformity and openness. The performance of interventional imaging coil is directly related to the quality of magnetic resonance imaging and the completion quality of interventional surgery.

3. RECEIVING COIL

After years of unremitting research and efforts, the R & D team of our company has developed its own receiving coil through various repeated tests and comparisons, and its performance index has reached the industry-leading level.

We have many types of receiving coils to choose from, which can be classified according to the appearance. They can be divided into surface coil, birdcage coil and trans ceiver coil. In addition, the user can select the number of chan nels of the coil as needed.

Generally, birdcage coil is the most widely used, which can be used for head, neck, knee and other parts; For example, a dual channel birdcage coil consists of a solenoid coil and a saddle coil.Our coil has high quality factor and good uniformity, which can meet a variety of scanning needs. At the same time, we also provide customized services, and users can choose their own size.
The surface coil can be used to scan the spine or other parts of interest; When using the surface coil, because of its openness, you can scan the area of interest in different poses.

The integrated transceiver coil is a new type of coil. Its transmitting and receiving are integrated, so the size of the coil is smaller than that of an ordinary coil. Under the same conditions,-compared with the traditional transceiver separation system, the power requirement of RF power amplifier is smaller. In addition, because of its small volume and no need for large magnet opening size, it can be used in small systems or other systems with strict space requirements.

Technical Parameters:
1. Type: surface coil, volume coil, integrated transceiver coil
2. Frequency: customized
3. Channel: single channel, double channel, four channel, 8
channel, 16 channel, etc.
4. Input impedance: 50 ohm
5. Isolation: better than 20dB
6. Preamplifier gain: 30dB
7. Noise figure: 0.5-0.7
8. Working bandwidth: 1mH

4. EXAMINATION TABLE



PRODUCT DESCRIPTION

There are many kinds of pets, and the body shape difference is very obvious. For example, large dogs may weigh more than 50kg, while small dogs or most cats are only about 1kg light. Magnetic resonance imaging has its own characteristics. The uniformity of magnet is more uniform within a certain range of the positive center of magnet, as well as RF uniformity and gradient linearity. The quality of the imaging system is better only when it is placed near the center. Such a large difference in pet size requires fast and convenient placement in the center of the magnetic field, which puts forward new requirements for the design of the examination table.

Magnetic resonance examination table is a special diagnostic table for magnetic resonance. It occupies a small space and can be used in small equipment room and
a series of special places including on-board magnetic resonance system, portable magnetic resonance system, pet magnetic resonance system and so on.

Product features:

1. Freely adjust the height direction according to the pet's body shape.
2. Carry out multi-directional position marking to quickly and accurately position to the center of the magnetic field.
3.It can meet the scanning of different parts by moving in the left, right, front, back and circumferential directions.
4.Provide multi-mode limit protection, emergency stop button, safe and reliable.
5.Support laser positioning function, positioning accuracy < 1mm

5. WHOLE BODY MAGNETIC RESONANCE IMAGING MAGNET

PRODUCT DESCRIPTION

Magnetic resonance imaging (MRI) is a non-invasive imaging technology, which can produce three-dimensional detailed anatomical images. It is usually used for disease detection, diagnosis and treatment monitoring.

MRI scanners are particularly suitable for imaging non skeletal parts or soft tissues of the body. They differ from computed tomography (CT) in that they do not use destructive ionizing radiation from X-rays. Compared with conventional X-ray and CT, MRI can more clearly see the brain, spinal cord and nerves, as well as muscles, ligaments and tendons; For this reason, MRI is often used to image knee and shoulder injuries.

In the brain, MRI can distinguish white matter from gray matter, and can also be used to diagnose aneurysms and tumors. Since MRI does not use X-rays or other radiation, it is the preferred imaging method when diagnosis or treatment requires frequent imaging, especially in the brain.

Nuclear magnetic resonance imaging uses powerful magnets to produce a strong magnetic field, forcing protons in the body to align with the magnetic field. Magnet is the core component of MRI system. Its magnetic field intensity, stability and uniformity have a great impact on MRI images.

The permanent magnet produced by our company, which can be used for whole-body testing, adopts high-performance rare earth permanent magnet materials and eddy current suppression design, optimizes the magnet structure, with small floor area, low installation cost, high openness and low system maintenance and operation cost.

Technical Parameters:

1. Magnetic field strength: 0.1T, 0.3T, 0.35T, 0.4T
2. Magnet opening: > 390mm
3. Imaging uniformity area: > 360mm
4. magnet weight: 2.8 tons, 9 tons, 11 tons, 13 tons
5. Eddy current free

The design can be customized according to customer requirements.

Technical Specifica on for ASTAR 3002C veterinary MRI system

A. Specification of Magnet System	
A.1 Magnet	
1.1 Magnet Type	
Magnet Type	Type V Nd-Fe-B eddy-Proof permanent magnet
Magnet strength	0.3T+3%
Magnetic field homogeneity	
Diameter 30x30 (Vrms)	<4ppm
Magnetic field stability	<5ppm/h
1.2 Patient opening	
Open horizontally	270^0
The height of the opening	350 mm ± 10mm
A.2 Gradient subsystem	
Gradient field strength	15 mT/m
Slew rate	48 mT/m/ms
Rising time	≤ 0.30ms
Non-linearity	<3%
Gradient Cooler	
Gradient amplifier	Air cooling
Gradient coil	No cooling required
B. Control System	
B. 1 Digital signal generator	
RF amplifier	
Frequency	12.75+0.5MHz
Maximum output power	5Kw
RF transmission duty	MAX.10%
Coils	
Working frequency	12.75 MHz
Type of transmission coil	Plate transmission coil
B.2 Digital receiver	
Spectrometer	
Maximum number of receive channels	4-channel
Working frequency	12.75 MHz

Frequency range	DC to 30MHz
Noise	<0.3dB
B.3 Receive coils	
Phased array coil	Four coils, big body (4-ch), small body (4-ch), knee(2-ch), and small joint (2-ch) of animals
B.4 Scanning mode	
B.5 Other techniques	Magnetization transfer, flow compensation, phase selection, pre-saturation, automatic gain, Automatic coil recognition, automatic coil collaboration etc.
C. Computer system	
C.1. Hose computer	
Type of host computer	DELL PRECISION workstation
CPU	Intel x4 (TM) Processor of main frequency 3.2GHz
Video memory	1G
RAM	256Mbyte
HARD DISK	1T
Network interface speed	1000M
Host memory	4G
C.2 Peripheral image recorder	
DVD W/R	
C.3 Software	Based on WINDOWS 10 (MRI examination counting software included
Maximum display matrix	1024x1024
Grayscale level	256
Single image reconstruction time	<0.01S
(SES GRE 256056)	
C.4 Pulse sequence	
Spin echo(SE)	
Fast spin echo(FSE)	ETL 3-11
Inversion recovery(IR)	IR-SE/IR-FSE
Short Tl inversion recovery (STIR)	IR-SE/IR-FSE
Inversion recovery fast spin echo(IRFSE)	PD-Weighted IT2-Weighted
Gradient echo(GRE)	2D /3D
FlOW attenuation Inversion recover FLAIR	T2-Weighted/T 1 -Weighted
Fat suppression	IR-Fat Saturation

Water suppression	FLAIR
Water imaging (MRCP, MRU, MRM)	ETLZ 128
Active dynamic shimming technology	Linear Shimming
Self-thermostatic magnet technology	Feedback self-thermostatic magnet
Maximum intensity projection (MIP)	Available
Pre saturation tracking technology	Available
Minimum repetition time(TR)	20 ms
Minimum echo time(TE)	6 ms
Maximum Echo Train Length	256
Accumulation times setting	Arbitrary
C.5 Matrix	
Maximum acquisition matrix	512x512
64x64 512x512 Matrix switchable	Available
C.6 Spatial resolution	
Body 30cmFOV	<1.5mm
Head 20cm FOV	<1mm
point 12cm FOV	<1mm
Slice thickness	Arbitrary in 1-100mm
Slice spacing	Arbitrary in 0-20 mm
C.7 Orientation of the slices	
	Sagital
	Coronal
	Transverse
	Oblique
D. Image recording	
D. 1 Optical recorder	Available
E .Power requirements	
Rated voltage	220V
Voltage fluctuation range	10%
Power frequency	50/60Hz
Total Power Consumption	Maximum 15KVA
E. Examination bed	
Loading ability	>90kgs

ASTAR 3002C Magnetic Resonance Imaging System Configuration

I. Imaging system

1. Magnet system

Type C Open Nd-Fe-B eddy-Proof permanent magnet (field strength 0.3T)

Self-thermostatic heating unit

Self-thermostatic power supply and control unit

2. RF transmit and receive system

All-digital transmitting and receiving system

RF Power Amplifier

Flat RF Transmitter Coil

Preamplifier

RF receiving coils: large, medium and small coils

3. Gradient system

Gradient Amplifier and Gradient Power Supply

x, y, z gradient coils

4. Spectrometer

Multi-channel fully digital spectrometer

Computer system:

Original brand

Four-Core Intel Core(TM) Processor

Main frequency above 3.2GHz

1G video memory

8G memory

More than 1T hard disk

DVD/CDRW recorder, which supports double layer recording function,

High-resolution high-brightness liquid crystal (TFT) color image display monitor (24')

Standard keyboard

Mouse

II. The Console

Special combined console for magnetic resonance imaging

III. Patient handling system

Examination bed

System Control Package
Data processing software package
Image reconstruction package
Laser camera interface software package
Vascular imaging software package
Water imaging software package
V. RF shielding room
Magnet room, RF shield, shielding door, shielding observation window, filter plate, waveguide plate and necessary
interior decoration, etc.
VI.
Power supply and air conditioning system of the host computer
Isolated
transformer
Air
conditioner for the magnet room
VII.
Accessories
Mattresses,
pillows, headrests, head coil holders, test water models, spare fuses, safety signs, etc.
VIII.
Random files
User
manual, technical manual, maintenance manual, etc.
IX.
Training
Application
training (principle, operation, maintenance and primary diagnosis): 2 weeks
On-site
training: 1 week

HPLC Servicing, Validation, Trainings and Preventive Maintenance :

HPLC Servicing :HPLC Servicing : We have team of service engineers who can attend to any make of HPLC promptly @the most affordable cost.

Trainings :We also take up preventive Maintenace to reduce downtime of HPLC's Trainings.

AMC's/CMC :AMC's/CMC :We offer user training both in-House and at customer sites on HPLC principles, operations, trouble-shooting.

Validations :Validations :We have protocols for carrying out periodic Validations as per GLP/GMP/USFDA norms.

Instruments :Instruments :We offer instruments/Renting Services Modules like pumps,detector etc. on Rent.

About Analytical Technologies

Analytical Technologies is synonymous for offering technologies for doing analysis and is the Fastest Growing Global Brand having presence in at least 96 countries across the global. Analytical Technologies Limited is an ISO:9001 Certified Company engaged in Designing, Manufaturing, Marketing & providing Services for the Analytical, Chromatography, Spectroscopy, Bio Technology, Bio Medical, Clinical Diagnostics, Material Science & General Laboratory Instrumentation. Analytical Technologies, India has across the Country operations with at least 4 Regional Offices, 6 Branch Offices & Service Centers. Distributors & Channel partners worldwide.

Our Products & Technologies

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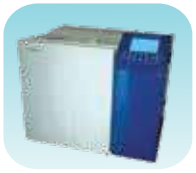

Optima Gas Chromatograph 2979 Plus

Flash Chromatograph

Atomic Absorption Spectrophotometer

Liquid Partical Counter

Optical Emission Spectrophotometer

DSC/TGA

Semi Auto Bio Chemistry Analyzer

HEMA 2062 Hematology Analyzer

Micro Plate Reader/Washer

URINOVA 2800 Urine Analyzer

Total Organic Carbon 3800

Fully Automated CLIA

NOVA-2100 Chemistry Analyzer

PCR/Gradient PCR/ RTPCR

TOC Analyzer

Laser Particle Size Analyzer

Ion Chromatograph

Water purification system

Regulatory compliances

Corporate Social Responsibility

Analytical Foundation is a nonprofit organization (NGO) found for the purpose of:

1.Research & Innovation Scientist's awards/QC Professional Award : Quality life is possible by innovation only and the innovation is possible by research only, hence ANALYTICAL FOUNDATION is committed to identify such personallities for their contributions across various field of Science and Technology and awarding them yearly. To participate for award, send us your details of research / testing / publication at Info@analyticalfoundation.org

2. Improving quality of life by offering YOGA Training courses, Work shops/Seminars etc.

3. ANALYTICAL FOUNDATION aims to DETOXIFY human minds,souls and body by means of yoga, Meditation, Ayurveda, Health Care, Awards, Media, Events, Camps etc.

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