Shanghai United Imaging Healthcare Co., Ltd.

uMR680

1.5T Superconducting Magnetic Resonance System

Note: This configuration applies to CE Markets only

uMR 680 Product Overview

uCS 2.0 Platform

Powered by the new generation uCS 2.0 platform with intelligent data acquisition, high resolution image reconstruction, and ultra-high performance of uCS engine, uMR 680 provides sequences covering all body parts.

uCS Advanced Applications

Based on the uCS imaging platform, uMR 680 provides comprehensive clinical applications and advanced applications, providing rich and effective tools for clinical diagnosis and treatment, and scientific research, etc.

uCS

uCS (united Compressed Sensing) is a fast acquisition and reconstruction technology through full algorithm optimization. With compressed sensing as the core, the fusion of parallel imaging technology, half-Fourier acquisition, adaptively optimized acquisition mode, reconstruction model and iterative strategy, can achieve complementary advantages of each technology, high temporal resolution and high spatial resolution imaging.

Image Reconstruction System

High-performance multi-core computing platform, uses ultra-high-performance industrial-grade CPU, and at the same time uses intelligent and fast algorithms, to meet the needs of uCS massive data computing.

Magnet

The uMR 680 1.5T superconducting magnet has a balanced design of high homogeneity and large aperture opening, which reduces the patient's fear of claustrophobia and ensures high-resolution imaging. The classic 1:1 niobium-titanium alloy magnetic material, precise and dense superconducting coil winding, and long-term verification of the zero liquid helium volatilization cooling technology, create the unparalleled homogeneity and stability of the uMR 680 1.5T magnet, providing the basics for clinical diagnosis and high-definition imaging. At the same time, it provides a solid foundation for various clinical applications: such as off-center scanning, large-scale fat suppression, echo planar imaging (EPI) of multiple parts of the whole body, etc.

Magnet Parameter

Type	Superconducting magnet
Field strength	1.5T
Dimensions (L×W×H)	1506mm × 2122mm × 2210mm
Weight	≤4000kg (With cryogens)
Fringe field (5 Gauss)	4m × 2.5m × 2.5m
Shielding type	Actively shielding, OIS technology
Stability	<0.1ppm/h

Cryogens

Type	Liquid helium
Helium capacity	1380L
Liquid Helium consumption*	Zero

*Note: Under normal operating conditions.

Magnet Homogeneity*

Shimming	Passive+Active shimming; High-order Shimming
Anti-electromagnetic interference	Yes

	Typical	Guaranteed
@50cm DSV	0.831ppm	1.4ppm
@45cm DSV	0.246ppm	0.9ppm
@40cm DSV	0.101ppm	0.45ppm
@30cm DSV	0.033ppm	0.19ppm
@20cm DSV	0.013ppm	0.12ppm
@10cm DSV	0.003ppm	0.04ppm

*Note: Measured in V-RMS 24 plane plot.

RF System

Advanced digital radio frequency transmit technology effectively reduces and accurately controls the Specific Absorption Ratio (SAR) value. The industry's top RF power amplifier generates flexible and adjustable RF excitation pulses to effectively improve the image signal-to-noise ratio. uMR 680 1.5T opens the era of data transmission "highway". Fully digital input and output high-precision spectrometer, high sampling rate and high receiver bandwidth work together to maximize the collection of effective signals and thus can detect small lesions easily.

RF Receiver

Number of independent receiver channels	48 / 72* / 96*
Receiver bandwidth	1MHz
Receiver bandwidth adjustable	Yes
Sampling rate	100MHz
Quadrature demodulation and filtering	Fully-digital quadrature demodulation and fully-digital filtering techniques
Amplitude resolution	32-bit
Dynamic range (1Hz bandwidth)	165dB
Noise factor	≤0.5dB

RF Transmit

Number of transmit channels	1
Transmit frequency	63.87MHz
Transmit bandwidth	600KHz
Max. transmit field	18uT
Amplitude resolution	16-bit DAC (2ns)
Frequency resolution	32-bit (0.024Hz)
Phase resolution	16-bit (0.006°)
RF power amplifier type	Solid, Water cooling
RF power amplifier power	18kW
Transmit coil free tuning	Provided

* Optional

Gradient System

The uMR 680 1.5T system pushes the traditional 1.5T gradient performance level to a new height. The powerful gradient "engine" meets various clinical ultra-fast imaging sequence requirements. Fully digital control ensures the gradient system continuous and precise accuracy; in the same sequence, the maximum uniaxial gradient field strength and the maximum uniaxial gradient slew rate can be achieved simultaneously. At the same time, active shielding technology and efficient water cooling can ensure the stability of the gradient system. Excellent noise reduction technology ensures both high-speed scan and low-noise environment, eliminating noise annoyance.

Resolution Parameters

Max. FOV	50cm x 50cm x 50cm
Min. FOV	0.5cm
Min. slice thickness 2D	0.1mm
Min. slice thickness 3D	0.05mm
Max. acquisition matrix	1024

Gradient Parameters

Gradient control	Fully digital control
Max. uniaxial gradient strength (X/Y/Z axis)	45mT/m
Max. effective gradient strength	77mT/m
Max. uniaxial slew rate (X/Y/Z axis)	200T/m/s
Max. effective slew rate	346T/m/s
Gradient ramp-up time	0.225ms
Shielding type	Active-shielding
High order shimming	Yes
Duty cycle	100%
Gradient power amplifier current and voltage	900A / 2280V
Cooling type	Water cooling
Noise reduction technology	Yes

Sequence Scanning Parameters*

Sequence	Parameter Type	Matrix		
		64	128	256
2D SE	Min. TR (ms)	2.8	2.9	3.0
	Min. TE (ms)	1.5	1.5	1.6
2D FSE	Min. TR (ms)	2.3	2.3	2.4
	Min. TE (ms)	1.5	1.5	1.6
	Min. echo spacing (ms)	1.5	1.5	1.6
	Max. echo train length (ETL)	1024	1024	1024
SSFSE	Max. echo train length (ETL)	1024	1024	1024
2D GRE	Min. TR (ms)	0.58	0.69	0.96
	Min. TE (ms)	0.21	0.21	0.21
3D GRE	Min. TR (ms)	0.55	0.68	0.9
	Min. TE (ms)	0.1	0.12	0.18
EPI	Min. echo spacing (ms)	0.21	0.28	0.39
	Min. TR (ms)	1.0	1.3	1.5
	Min. TE (ms)	0.45	0.57	0.72
	Max. b-value (s/mm^2)	10000	10000	10000
	Max. echo train length (ETL)	512	512	512
	Number of b-value	100	100	100
DTI	Max. direction	256	256	256

* Note: Optional software packages may be required to achieve certain specifications above.

Computer System

With the development of MR technology, the amount of data and computational complexity continues to increase, and more demands are placed on reconstruction performance. The uMR 680 high-performance reconstruction system uses industrial-grade CPU, and cooperates with intelligent and fast algorithms to meet the needs of massive data operation of magnetic resonance imaging.

Host Computer-SP

Processor	8 cores, 3.9GHz
Memory	64GB
Hard disk	960 GB SSD for system software, 3.84 TB SSD for images
Image storage	19,200,000 (256×256 matrix)
Operating system	Windows, 64-bit
Parallel scanning and storage	Provided
DICOM standards	Provided
Network interface with PACS	Provided

Host Computer-EX*

Processor	8 cores, 3.9GHz
Memory	128GB
Hard disk	960 GB SSD for system software, 3.84 TB SSD for images
Image Storage	19,200,000 (256×256 matrix)
Operating system	Windows, 64-bit
Parallel scanning and storage	Provided
DICOM standards	Provided
Network interface with PACS	Provided

* Optional

Measurement Control System-UT

Processor	4 cores, 3.6GHz
Memory	16GB
Hard disk	1TB
Operating system	Linux, 64-bit

Display Monitor

Screen Size	24 inch
Display resolution	1920×1200 pixel

1.5T Image Reconstruction System-SP

Processor	26 cores x 2, 2.1GHz
Memory	96GB
Hard disk	1TB
Reconstruction speed	130000 recons per second (256*256 matrix, full FOV)
Max. reconstruction matrix	2048*2048 (Interpolation)
Operating system	Linux; 64-bit
Parallel reconstruction	Provided

User Experience

uMR 680 1.5T professional ergonomic design provides better patient comfort, safety and ultra-fast workflow. The coil combined imaging with higher coil unit density and automatic patient table-moving functions greatly improve the workflow of patient positioning and scan operation. It provides large-size touch screens on both sides to display patient basic examination information and coil connection status, as well as provides human-machine interface information. The system is equipped with anti-magnetic earphones and intra-aperture microphone to facilitate the two-way communication between the patient and the operator. The short-cavity and large-aperture magnet design greatly reduces the patient's fear of claustrophobia. The details show the meticulous care for the patient, and the examination process is more comfortable.

Examination Environment

Patient bore size	70cm
Bore length (with shell)	165cm
Bore lighting	LED comfortable light source, starlight
Bore ventilation	Comfortable and adjustable
Voice interface	Two-way communication
VSM unit	Wireless
Patient urgent call device	Yes

Patient Table

Max. patient weight	250kg
Dimensions (L×W×H)	262cm×64cm×88cm
Min. table height	52cm
Max. horizontal speed	20cm/s
Max. scan range	205cm

- The patient table can move automatically, with a maximum weight capacity of 250kg, supporting safety examinations for larger patients.
- Coil sockets are integrated into the patient table to speed up patient preparation.
- There is no relative displacement between the coil cable and the patient during the process of moving the table to ensure patient comfort.
- Head & Neck Coil and Spine Coil are fixed on the patient table which can meet most scan requests to speed up the workflow.
- The infusion stand is integrated into the scan table to facilitate the scan of infusion patients.
- There are emergency stop buttons on both sides of the patient table for emergency table stop.

Foot Pedal

When injecting the contrast agent manually, such as for perfusion or dynamic imaging, you can use the foot pedal to start the scan while pushing the injection syringe.

VSM Unit

Scan triggered by physiological signals (electrocardiograph (ECG), pulse, respiration) can reduce motion artifacts caused by respiratory and cardiac movement. The sensor uses wireless design and is equipped with a rechargeable battery, which makes operation easier.

EasySense

The dual-source phase array millimeter wave sensor is a non-contact motion monitoring system. It uses multiple signals emitted by the millimeter wave sensor, as well as multiple echo signals reflected from patient surface to determine the patient's motion information, with the temporal resolution up to 20 ms. The detection accuracy of breathing motion is 0.1 mm. The dual-source phase array millimeter wave sensor is embedded in the upper part of the aperture, which can be used to detect the cycle and phase of respiratory motion and provide a trigger signal for scanning.

MR Control Box

MR control box is equipped on the scan operation platform, including:

- Intercom system: listen to patient calls and give instructions to the patient, which can comfort the patient and let the patient cooperate with the examination.
- Start/Stop scan and one-key patient table movement can increase the user's freedom of scan operation.
- Music player can improve patient comfort.

High-Density Coil Combination

- High-density coil combination technology can combine coils to optimize workflow.
- Ultra-light coil design ensures better patient comfort.
- High-density coil units ensure a better image quality.
- Multi-part scan requires no repositioning or coil change.

Control Panel

The control panels are integrated on both sides of the front cover to facilitate patient positioning and scan control. Its main features include:

- Patient table control:

  a) move in/out the patient table with slow/fast speed;

b) one button to set isocenter;

c) one button to move the patient table.

- Turn on/off the laser positioning light.
- Release the alarm.
- Adjust the comfort plan: headphone volume, speaker volume, aperture ventilation and aperture illumination.
- Scan control, start/stop scanning through the control panel.

Multifunctional Touch Screen

A multi-functional touch screen is integrated above the control panels on both sides of the shell, which can display scan related information and adjust the comfort plan through touch control.

- Display patient information to facilitate the operator to check the patient's identity in the scanning room to avoid mistakes during peak hour.
- Display patient table location.
- Display coil connection status.
- Display physiological signals.
- Adjust comfort plan.
- Provide user guide for coils and physiological signal units to assist operation.

Software Operation

uExceed-MR software operating system is a cross-platform operating software, with "patient centered" as the core concept. It carries out multi-patients and multi-task parallel workflow mode to complete whole-process functional operation such as patient information management, patient registration, examination, image browsing, advanced analysis, film printing and archiving, etc.

Patient Managment

Patient management achieves the management of patient data. Main features include:

- Exam list area: to display and query the basic information of patient examination. It can configure and sort the display items.
- Image series information area: to describe series information in text form (here in after referred to "image series" as "series").
- Series list area: to show series information using list / image mode, and the display items can be configured.
- Image preview area: to display the images corresponding to the series using list / image mode, and can achieve basic operation such as image translation, zooming, and windowing, etc.
- Functional operation area: to provide the functions such as data source selection, time range definition, search, archive, import, protect/ unprotect, exam information split and merge, modify, delete, etc.
- Application buttons: to achieve entrance guide to other function interface, such as new examination, patient examination, image browsing, film printing and advanced analysis.

Patient Registration

Patient registration achieves the registration of upcoming patient information. Main features include:

- Patient data area: to input the patient's basic information.
- Examination data area: to display and input exam related information.
- Examination protocol area: to select examination part and protocol using image / list mode, i.e., to select exam position.
- Enter the exam interface after finishing patient registration.

Examination

The examination interface is the core function of the software operating system. It completes image acquisition process of MR scanning. Main features include:

- Graphical positioning interface: to complete quick browsing and slice positioning of the image, to offer a variety of positioning tool and mode.
- Exam list: to display protocol loading and protocol attributes, control scan process, display protocol running status, display reconstruction status, and protocol operation, etc.
- Protocol editing area: to edit and modify the protocol parameters.
- Scan inline monitoring: to real-time display the reconstruction of a new image, view historical images, control the scan process, and monitor patient safety index (SAR, dB/dt).
- Time schedule display area: to display an overview of the whole scan progress and the progress of the current scan protocol.

- Physiological signal display area: to configure the display of ECG, respiration and pulse signals.
- Patient comfort adjustment: to configure the interface to control patient table movement and comfort setting, including headphone volume, speaker volume, aperture ventilation, and illumination, etc.
- Protocol management: to view, edit, and manage all protocols, protocol groups and protocol parameters.
- Pre-Scan: to complete pre-scan automatically or manually so as to calibrate center frequency, RF amplitude, general shimming before imaging.
- Automated inline processing: to automatically carry out protocol embedded post-processing after completing scan in order to accelerate scan workflow. For example, ADC (Apparent Diffusion Coefficient), eADC (exponential ADC), and subtraction MIP (Maximum Intensity Projection), etc.

In addition to the above examination workflows, the exam interface can also complete other special workflows, such as physiological gated scan, breath-hold scan, enhanced scan, large FOV patient table-moving scan.

Image Browsing

Image browsing is divided into two-dimensional (2D) and three-dimensional (3D), mainly to assess and evaluate images for diagnosis. Main functions include:

- Layout switch.
- Movie playing.
- Basic image processing tools: to select/scroll, image zooming, image translation, windowing and width adjustment, length and angle measurement, textor or arrow annotation, region of interest statistics, etc.
- Advanced image processing tools: image addition/ subtraction, reference line, pseudo-color display, profile information display, histograms, three-dimensional cutting, tissue segmentation, etc.
- To send images to print.

Film Printing

The images can be printed on film or paper to generate documents and reports. Main features include: series selection, image display, control panel adjustment, etc.

Sequence

- SE (Spin Echo): single-echo, double-echo, and multi-echo sequences which supports IR (Inversion Recovery) technique.
- FSE (Fast Spin Echo): 2D/3D fast spin echo sequence. High quality T2-weighted imaging with short TR can be acquired when combined with driven equilibrium technique; STIR (Short Time Inversion Recovery), T1 & T2 FLAIR (Fluid Attenuated Inversion Recovery) and RealIR (Real Inversion Recovery) contrast can be acquired when combined with IR technique; It supports flexible protocol parameters setting and average acquisition and partial average acquisition; It supports random acquisition and suppresses motion artifacts when combined with uRADAR (UIH Retrospective Abnormal Data Rejection) technique.
- SSFSE (Single Shot Fast Spin Echo): Single shot fast spin echo sequence combined with partial Fourier acquisition, which supports STIR and FLAIR.
- ARMS (Acquisition and Reconstruction with Motion Suppression): Acquisition and Reconstruction Motion Suppression technology uses radial k-space trajectory design. Self-adaptive image motion artifact correction can improve image quality and image stability. It is effective in inhibiting the image quality loss caused by physiological factors such as motion and pulsation.
- WFI (Water Fat Imaging): Water fat imaging sequence based on FSE/GRE can acquire multiple echoes at different echo times. Following contrasts can be obtained within one acquisition: water, fat, in-phase and out-phase images.
- MATRIX (Modulated flip Angle Technique in Refocused Imaging with extended echo train): 3D FSE sequence with modulated echo train. The adaptively optimized echo flip angle design, in order to achieve the best expected image contrast, can support T1, T2, PD, DIR (Double Inversion Recovery), FLAIR, STIR and other contrasts. K-space trajectory design combines FAST, uCS and other acceleration technologies to obtain higher acceleration and more stable image quality.

- SVS-PRESS (Single Voxel Spectroscopy imaging based on Point Resolved Spectroscopy technique): Single voxel spectroscopy imaging based on point resolved spectroscopy technique.
- SVS-STEAM (Single Voxel Spectroscopy imaging based on STimulated Echo Acquisition Mode technique): Single voxel spectroscopy imaging based on stimulated echo acquisition mode technique.
- CSI-PRESS (Chemical Shift Imaging based on Point REsolved Spectroscopy technique): Chemical shift imaging based on point resolved spectroscopy technique.
- GRE-SP (Spoiled Gradient Echo based on Gradient Echo): 2D/3D spoiled gradient echo sequence. It can be used for double echo (in-phase/ out-phase) imaging.
- GRE-FSP (Fast Spoiled Gradient Echo): 2D/3D fast spoiled gradient echo sequence. Combined with IR, single echo T1-weighted imaging can be used in different scenarios such as abdominal free-breathing imaging and cardiac imaging.
- SSFP (Steady State Free Precession): SSFP is a standard GRE sequence with additional balanced gradients on frequency encoding and phase encoding direction. This sequence conducts steady-state of transverse magnetization to generate liquid / soft tissue contrast. SSFP is clinically used in large joint diseases mainly.
- BSSFP (Balanced Steady State Free Precession): 2D/3D balanced steady state free procession gradient echo sequence. Supports IR, SR (Saturation Recovery), FS (Fat Suppres sion) techniques, used for cardiac imaging, e.g. TI Scout, cardiac functional imaging.
- QUICK (3D Fast Spoiled Gradient echo): 2D/3D fast spoiled gradient echo sequence with fast fat sateration technique. Supports double echo (in-phase / out-phase) imaging. Supports dynamic imaging.
- GETI (Gradient Echo Train Imaging): 2D/3D gradient echo train imaging (multi-echo signal combination imaging technology). Mainly used for high-resolution T2*-weighted orthopedic imaging.
- TOF (Time of Flight): 2D/3D time of flight angiographic imaging. Supports single-slab and multi-slab excitation.
- PC (Phase Contrast): 2D/3D phase contrast for angiographic imaging.
- CEMRA (Contrast Enhanced MRA): contrast enhanced angiographic gradient echo sequence.
- FACT (Fat Analysis & Calculation Technique): Following images can be obtained within one acquisition: water, fat, in-phase, out-phase, FF (Fat Fraction) and R2* images.
- SWI (Susceptibility Weighted Imaging): 2D/3D susceptibility weighted imaging. It enhances the display of tissue calcium and iron deposition, veins, and cerebral microbleeds.
- uFreeR (UIH Free Radial imaging): Gradient echo sequence based on radial acquisition. It reduces motion artifact effectively.
- EPI-FID (Echo Planar Imaging based on FID): Echo planar imaging sequence based on free induction decay.
- EPI-SE (Echo Planar Imaging based on SE): Echo planar imaging sequence based on spin echo.
- DWI (Diffusion weighted imaging): Supports multiple b-value weighted imaging and is combined with ADC and eADC post-processing algorithm. It is applied to head, body, joint imaging. Supports Computed b Value and MicroView technology.
- BOLD (Blood oxygenation level dependent imaging): Based on gradient echo, BOLD utilizes susceptibility changes caused by notable changes of blood oxygen in activation brain regions for brain function analysis.
- DTI (Diffusion tensor imaging): The diffusion sensitive gradients are applied on frequency, phase, slice encoding directions, mainly applied to nerve fiber imaging.
- PERFUSION: Perfusion imaging based on echo planar imaging. After injecting intravenous bolus paramagnetic contrast agent, it utilizes EPI-FID sequence to implement T2*-weighted imaging. Multiple repeated acquisitions of brain tissue imaging are implemented with high temporal resolution.

Acquisition & Reconstruction Technology

- Inversion recovery techniques can obtain a variety of contrasts:
  - STIR: Short Time Inversion Recovery technique for fat saturation.
  - T1 FLAIR: Suppresses water signal while obtaining T1 contrast of brain tissue.
  - T2 FLAIR: Suppresses water signal while obtaining T2 contrast of brain tissue.
  - Dark blood: Inversion recovery technique to suppress the flow of blood signal.
  - 3 IR: use SPAIR (Spectral Adiabatic Inversion Recovery) together with dark blood technique to suppress blood and fat signals at the same time.
- FAST parallel imaging technique shortens scan time, which can acquire images with higher temporal and spatial resolution.
- bFAST (bi-directional FAST technique) is an extension of FAST parallel imaging acceleration technology for 3D imaging. Using multiple receiver channels enables accelerated data acquisition in two phase-encoding directions at the same time, providing a much shorter 3D imaging time.
- tFAST (time FAST technique) is a parallel acceleration technology based on FAST. Compared with FAST technique, it involves the time dimension, enabling less data acquisition for each image frame and high sampling efficiency, which can further improve temporal resolution. It's suitable for dynamic imaging.
  - Suitable for cardiac real-time cine imaging for patients with arrhythmia.
  - Increase temporal resolution of perfusion imaging.
- Rectangular FOV technique reduces scan time by reducing the number of phase encoding steps and obtaining a rectangular FOV, and meanwhile maintaining the same within-slice resolution.
- Partial Fourier acquisition and reconstruction technique implements partial k-space acquisition to shorten scan time without reducing image spatial resolution.
- Partial Read Out acquisition and reconstruction technique acquires only partial echo to shorten TE.
- K-space is fullly filled with acquired phase-encoding lines in general clinical imaging, and can also be partially filled with central information by elliptical acquisition technology, which is commonly used in angiography to achieve extremely high contrast MRA and reduce motion artifacts.
- Multi-Slice Multi-Angle Planning technique. Multiple slices are collected in multiple directions in the same scan sequence, used for scout image or transverse imaging of multiple spine intervertebral discs.
- Radial slice planning, used for multi-angle scan like MRCP (Magnetic Resonance Cholangiopancreatography).
- GRE in-phase and out-phase technology produces in/out-phase images within one acquisition, providing opportunities to enhance diagnostic accuracy in clinical routine, including diagnosis and differentiation of fatty liver and adrenal lesions.
- The interface can select sequential and interleaved slice acquisition.
- The interface can select center or linear phase encoding reordering.
- Variable bandwidth, the bandwidth of acquisition sequence is adjustable.
- FatSat (Fat Saturation) uses frequency selective RF pulses for fat saturation. By adjusting the pulse flip angle, the level of fat suppression can be controlled. There are two modes to choose from: strong fat saturation, weak fat saturation.
- SPAIR technique implements multiple acquisitions after a single fat saturation pulse to shorten scan time.
- Water excitation technique selectively excites water signal and suppresses fat signal through combined pulse sequence.
- Frequency search mode. The system automatically searches the main frequency through fitting. It can be divided into water, fat, and silica gel frequency search. It is mainly used for breast examination.
- Space pre-saturated technique can suppress flow and motion artifact through RF saturation pulse.
  - Regional saturation band: Set saturation band in demand. The number of is up to 8. It can be set in any direction.
  - Parallel saturation band: Parallel to imaging slices and is convenient for users. It is used to saturate blood inflow for optimal imaging.
  - Traced saturation band: the saturation band moving along with the scanned slice, eliminating interference of arteries and veins in TOF Angiography.
  - Graphical and interactive saturation band planning: The position of saturation bands can be clearly displayed on the interface, which is able to change thickness and spacing of saturation bands by using the mouse.

- TONE (Tilted Optimized Non-saturation Excitation) technique uses spacial variable flip angle pulses to excite slabs, and the flip angle increases along the direction of blood flow. The variable flip angle can be used to compensate the saturation effects of the slow blood flow in 3D TOF in order to make blood signal more uniform. Thus, the edge artifacts of vascular connections of different layers will be removed.
- Flow compensation technique uses multiple gradient optimization combination to refocus the lost phase caused by the linear part of flow to reduce flow artifacts. Three directions of flow compensation in slice selection, phase, and frequency direction can be achieved.
- Physiological signals trigger scan technique uses ECG, pulsatory, and respiratory signals to trigger the scan and suppresses pulsatory artifact, respiratory and other physiological motion artifacts.
- By using Multi-Breath Hold Scan technique, the 2D protocols of multi-layer acquisition are completed with multiple breath-holds.
- Average Mode (Inner & Outer Mode) is utilized to average acquired data for improving SNR and suppressing motion artifacts.
- Distortion Correction corrects image distortion caused by gradient field non-linearity by using system parameters in reconstruction, recovers contour distortion and restores clinical imaging fidelity.
- Image Filter reduces noise of the acquired images.
- Variable reconstruction matrix.
- Advanced Uniformity Correction improves image uniformity by acquiring prior knowledge of coil sensitivity.
- Image Interpolation, which is considered as one of post-processing tools, is proposed to generate high-quality images by increasing/decreasing number of pixels.

Neurology

Neurology Clinical Application Package is dedicatedly designed for neurology imaging with optimized sequences, protocols and workflow. This package provides the high-SNR standard sequences, including SE, FSE, GRE, etc. to achieve industry-leading lesion detectability. According to the patient's degree of cooperation, high-resolution and fast protocols have been specially developed.

The package includes:

- T1 FLAIR, to enhance grey/white matter contrast by suppressing cerebrospinal fluid (CSF) signal in T1WI;

- FSE-based high-resolution fast imaging, and CSF brightness enhancement with driven equilibrium and flow compensation technology;

- T2 FLAIR, to highlight lesions in intra-cerebral tissues by suppressing CSF signal in T2WI;

- Enhance grey/white matter contrast and reduce pulsatile artifacts in T1WI with flow compensation technology based on SE;

- Optimized dynamic enhanced protocols are designed for pituitary gland imaging;

- High-quality head DWI, and ADC and eADC maps are calculated automatically with atuomatic post-processing technology, which can be applied in the diagnosis of acute/hyper-acute cerebral infarction;

- 3D T1 fast IR isotropic volumetric brain imaging;

- 3D FSE MATRIX high–resolution isotropic inner-ear imaging;

- Negative enhancement maps can be generated using dynamic evaluation software to process the T2* data acquired in EPI dynamic sequence;

- Dynamic evaluation of pituitary gland can obtain positive enhancement maps;

- Large FOV spine imaging;

- Automatic patient table movement for whole spine imaging;

- Enhanced CSF/spinal cord contrast in T2*WI for cervical spine examination with flow compensation technology;

- Use image stitching post-processing technology for whole spine stitching.

Body

Body Clinical Application Package is designed for body imaging with optimized sequences, protocols and workflow for chest, abdomen and pelvis examinations. This package generates high-resolution body imaging with breath-hold and free breathing protocols.

The package includes:

- Suppress motion artifacts with breath-hold or respiratory triggering technology;
- Single-echo T1WI based on 2D GRE sequences;
- Dual-echo in/out phase T1WI based on 2D GRE sequences;
- Dual-echo in/out phase T1WI based on 3D GRE sequences;
- T2WI acquired by breath-hold or respiratory triggering technology based on FSE and SSFSE sequences;
- MRCP and MRU (Magnetic Resonance Urography), thick slice breath-hold scanning based on SSFSE; high-resolution volumetric acquisition triggered by breath-free scanning based on 3D MATRIX;
- Dynamic enhanced abdomen imaging based on T1 QUICK 3D (3D Fast Spoiled Gradient echo);
- Fat saturated/nonfat saturated T1WI and T2WI for male/female pelvis scanning;
- Body DWI;
- Use dynamic evaluation software to analyze the dynamic curve of positive enhancement, and obtain the positive enhancement maps.

Oncology

Oncology Clinical Application Package is designed for oncology sensitive imaging with optimized sequences, protocols and workflow, maximizing detection capability of lesions.

The package includes:

- GRE In/out phase and STIR are highly sensitive to tumor;
- Dynamic imaging to localize and qualify lesions;
- Body DWI;
- Dynamic enhanced high-resolution protocols based on T1 QUICK 3D to generate uniform fat saturation;
- Use Dynamic Evaluation to analyze the dynamic curve of positive enhancement, and obtain the positive enhancement maps.

Breast*

Breast Clinical Application Package is designed for breast imaging with optimized sequences, protocols and workflow. This package displays more diagnostic information using high-resolution dynamic enhanced imaging with remarkable multi-dimensional bilateral fat saturation technology.

The package includes:

- High-resolution T1WI and T2WI protocols based on FSE;
- High-resolution scanning protocols for uniform fat saturation based on T1 QUICK 3D sequences;
- Target water peak for fatty breast and silicone prosthesis imaging using frequency searching mode;
- Frequency confirmation workflow allows user to confirm scanning frequency before starting examinations;
- Breast DWI;
- Subtraction, MPR (Multiplanar Reconstruction), MIP (Maximum Intensity Projection);
- Auto SUB (subtraction) and Auto MIP: subtraction for images before/after enhancement, followed by Auto MIP;
- Use Dynamic Evaluation to analyze the dynamic curve of positive enhancement, and obtain the positive enhancement parameter maps.

* To obtain more parameter information, Breast Coil – 10 and ADVIP-Breast Evaluation post-processing software are required.

Cardiac*

Cardiac Clinical Application Package is dedicatedly designed with optimized sequences, protocols and workflow for cardiac imaging, to provide important diagnostic basis for cardiac diseases.

The package includes:

- Morphology:

• Dark blood imaging, based on FSE, SSFSE and double inversion recovery, to suppress the blood signal, leading to a better imaging on cardiac chamber or vessel wall. This technique is also available for multiple contrasts, including T1, T2, FS, and STIR;

• Bright blood imaging, including BSSFP, GRE-FSP;

- Cardiac function:

• This technique is mainly used for evaluation of global and regional left ventricular (LV) size and function. Prospective cine and retrospective cine can also be provided.

- Auxiliary functions:

• Cardiac shimming algorithm;

• Shimming copy workflow and link function and multi-slice copy;

• Three-point positioning function, mainly used for the positioning of the aortic arch and three-chamber cardiac positioning.

* Real-time cine needs to be equipped with tFAST technology; To obtain more parameter information, ADVIP-Cardiac Function post-processing software is required.

Angiography

Angiography Clinical Application Package is dedicatedly designed with optimized sequences, protocols and workflow to ensure fast and high-resolution angiography with/without contrast agent.

- Non contrast enhanced angiography includes TOF and PC:

Based on GRE technique, TOF (Time-of-Flight) Angiography utilizes enhanced effect of inflow blood and saturation of background tissue to generate excellent blood-tissue contrast.

• 2D TOF is mainly applied to cervical arteries/ veins imaging;

• 3D TOF is mainly applied to arteries imaging of head and neck;

• Traced saturation bands suppress interferences from artery/vein signals;

• TONE pulses are applied to reduce boundary artifacts caused by flow saturation.

PC (Phase Contrast) utilizes the characteristics of flow to produce phase changes, and suppresses the background by subtracting the flow compensation and the flow velocity encoding image while highlighting angiographic signals.

• 2D/3D PC is used for artery/vein scanning, particularly for cerebral venous examination in clinical routine;

• Fast angiography scout imaging based on PC sequences;

• Support multi-directional adjustment of Velocity Encoding (VENC) in PC.

- Contrast enhanced angiography mainly includes:

• Optimized 3D fast spoiled GRE for CE-MRA (Contrast Enhanced MRA), providing fast signal acquisition and excellent SNR by using FAST, partial echo and k-space central sorting technology in combination;

• Bolus tracking workflow:

a) Use bolus tracking protocols in fast dynamic scanning to determine the arrival time of MRA;

b) Use central sorting CE-MRA protocols to obtain initial media contrast and avoid venous contamination;

c) Visualize the whole scanning process in the display area;

• The bolus injection test workflow uses small doses for bolus injection detection to help users determine the delay time of bolus injection;

• Automatic table movement workflow is used together with dedicated scanning sequences and high-density receiving coils to achieve high-quality peripheral angiography;

• Use subtraction, MIP, VRT (Volume Rendering Technique) and SSD (Shade Surface Display) for blood vessel display;

• Auto SUB and Auto MIP: post-scan automatic subtraction before/after enhancement, followed by Auto MIP.

Orthopedics

Orthopedics Clinical Application Package is dedicatedly designed for joint imaging with optimized sequences, protocols and workflow. This package maximizes lesion detectability and provides high-resolution orthopedics imaging with high-density coils.

The package includes:

- High-resolution fat saturated/non-fat saturated T1, PD, T2 protocols based on 2D FSE;

- High-resolution fat saturated imaging based on T1 QUICK 3D sequences;

- High-resolution 3D T2* imaging based on GRE sequences;

- High-resolution 3D imaging based on FSE MATRIX sequence;

- Excellent off-center fat saturation;

- Strong/weak fat saturation both available;

- View the isotropic data with MPR from different directions.

Pediatric

Pediatric Clinical Application Package is dedicatedly designed for pediatric imaging with optimized sequences and protocols, to ensure fast and high resolution acquisition of pediatric images. Due to that the children have small body size, fast heart rate, and poor compliance with instructions, the imaging parameters for children examination are quite different from those of adults.

The package includes:

- T1 FLAIR suppresses the cerebrospinal fluid signal and increases the contrast of gray/white matter on the basis of T1W (T1 weighted) imaging;

- High resolution and fast imaging based on FSE sequence, with driven equivalent and flow compensation technology to help increase the brightness of CSF;

- T2 FLAIR suppresses the cerebrospinal fluid signal and highlights the lesions in the brain parenchyma on the basis of T2W (T2 weighted) imaging;

- Obtain T1W images with good contrast of gray and white matter based on SE sequence, with flow compensation technology to reduce the artifacts of vascular pulsation after enhancement;

- Obtain high quality head diffusion weighted images, and use automatic post-processing technology to automatically calculate ADC and eADC images after scanning.

Maternal

Maternal Clinical Application Package is dedicatedly designed for maternal imaging with optimized sequences and protocols, to ensure fast and high resolution acquisition of maternal images. Due to the movement of fetus in the maternal body, large body size, fast heart rate and poor breath-holding compliance, the parameters of the maternal MR examination are different from other patients.

The package includes:

- T2/T1 contrast of tissue is obtained based on GRE BSSFP sequence with fast speed and high SNR, which is especially suitable for fetal scan;

- Fat/non-fat suppression T1WI optimized specifically for pregnant women;

- SSFSE T2WI optimized specifically for pregnant women;

- High-quality DWI images can be acquired. Automatic post-processing technology calculates ADC and eADC images after scanning.

Advanced Applications

uCS

United Compressed Sensing (uCS) Imaging is a solution to accelerate MR scanning. It is a comprehensive application technology combining sequence scanning technology and reconstruction technology. It makes full use of the information redundancy in the MRI scanning process, such as conjugate symmetry within k-space, multi-channel parallel acquisition, and compressed sensing technology. With the design of the sequence k-space trajectory, reconstruction model design and optimization, it provides highly accelerated scanning with equal image quality:

- Static uCS imaging, tapping the acceleration potential of the spatial domain, is applied to static MR examination with the acceleration factor reaching more than 5 times;

- Dynamic uCS imaging, simultaneously tapping the acceleration potential of the spatial and time domain, giving full consideration to the information redundancy in the time dimension, ensures sparsity in the time axis. Clinically, the comprehensive acceleration factor can be more than 16 times.

EasyScan Head

EasyScan Head optimizes the entire process of head imaging. Based on intelligent algorithm, fast calculation and coil recognition techniques, head examination is fully optimized to realize one-click examination, which can simplify workflow, improve efficiency and reduce error rate. Highly stable and consistent imaging is now provided.

EasyScan Cardiac

EasyScan Cardiac is an intelligent heart positioning and imaging workflow. It automatically calculates the ‘short axis’, ‘two-chamber’, ‘three-chamber’, ‘four-chamber’ and ‘orthogonal positions’. Based on intelligent algorithm, fast calculation and coil recognition techniques, cardiac examination is fully optimized to realize one-click examination,

EasyScan Spine

EasyScan Spine is an intelligent spine positioning and imaging workflow. It can perform automatic slice positioning and optimize the whole imaging process. Based on intelligent algorithm, fast calculation and coil recognition techniques, C-spine, T-spine and L-spine examinations are fully optimized to realize one-click examination, which can simplify workflow, improve efficiency and reduce error rate. Highly stable and consistent imaging is now provided.

EasyScan Knee

EasyScan Knee is an intelligent knee positioning and imaging workflow. It can perform automatic slice positioning and optimize the whole imaging process. Based on intelligent algorithm, fast calculation and coil recognition techniques, knee examination is fully optimized to realize one-click examination, which can simplify workflow, improve efficiency and reduce error rate. Highly stable and consistent imaging is now provided.

EasyScan Shoulder

EasyScan Shoulder is an intelligent shoulder scout workflow based on deep learning. It can achieve automatic slice positioning and optimize the whole set of scan workflow. By using intelligent software control, intelligent algorithm calculation and evaluation, and intelligent coil recognition, shoulder scan can be within one click, thus improving scan efficiency, reducing errors and providing stable and cosistent images.

EasyScan Abdomen

EasyScan Abdomen is an intelligent abdomen scout workflow based on deep learning. It can achieve automatic slice positioning, MRCP, and diaphragm navigator positioning and optimize the whole set of scan workflow. It thus improves scan efficiency, reduces errors and provides stable and cosistent images.

EasyPlan

EasyPlan provides a simplified whole-body MRI workflow. One or more protocols are used to generate a whole-body multi-bed group (WholeBody-Group), through which the protocols for each bed are organized. The protocol group are used to control the number of beds, scanning range, overlap ratio, imaging direction and so on.

During the scanning positioning, this protocol group can perform a whole bed planning and overall scan range positioning, overall bed adjusting, scan range, overlap ratio, at the same time. Overlap areas are visually displayed for easy adjustment. Thus, multi-bed imaging can be performed after one confirmation. It would not be necessary to open several protocols and edit parameters multiple times. EasyPlan can greatly simplify the workflow of wide range imaging.

* Note: The Inline Stitching application is required.

QScan

QScan (Quiet Scan) package optimizes the design of gradient waveform to effectively reduce MR scan noise, improve patient comfort, and reduce noise pollution.

- Support scout and calibration quiet scanning;
- Support FSE sequence routine clinical contrast quiet scanning;
- Support GRE sequence routine clinical contrast quiet scanning;
- Support DWI quiet scanning;
- Support SWI quiet scanning;
- Support WFI quiet scanning;
- Support MRS quiet scanning.

Inline Stitching

With a deformation registration algorithm, the inline stitching can not only simplify the workflow, but also remove the black band and image distortion that may be brought by stitching. This function supports scout, whole spine, vessels, and whole body imaging.

WFI

WFI supports FSE and GRE sequences, enables obtaining of four groups of contrast images within one scan, including water images, fat images, in-phase and out-phase. It can reduce the applied sequences and the scanning time significantly while obtaining multiple clinical contrasts such as T1, T2, PD, etc. It also supports the dynamic contrast-enhanced imaging with GRE sequences.

Fat suppression in WFI has no strict requirement on the homogeneity of B0 and B1. It has great fat suppression accuracy and uniformity. For TMJ (temporomandibular joint), cervical spine, thoracic spine, large FOV (e.g. coronary abdominal images, sagittal spinal images), legs, patella, ankle, which has inhomogeneous B0 field, and abdomen, pelvis and breast which has inhomogeneous B1 field, WFI can still achieve excellent uniform fat suppression. Technically, WFI sequence acquires two echoes corresponding to different water/fat phase difference. After phase analysis, water images, fat images, in-phase images and out-phase images can be reconstructed. Accuracy of phase analysis does not affect by the slowly-varying B0 and B1, water-fat separation accuracy is high, fat suppression is good and scanning speed is fast.

ARMS

ARMS technology uses radial k-space filling method, which is insensitive to motion, to finish data acquisition. In order to eliminate motion effects in each acquisition, overlapped information from multiple acquisitions on the same slice are involved by filling center information in k-space.

ARMS technology is applied to multi-directional and multi-weighted protocols to reduce susceptibility and motion artifacts significantly, especially for patients and children who cannot control their movement autonomously.

MARS+

MARS+(Metal Artifact Reduction Suppression plus) is a techonology based on FSE to reduce metal artifact. It employs multi-spectral excitation, 3D spacial encoding, and VAT technology to reduce susceptibility artifacts and reduce image distortion. It supports T1, T2, PD, and STIR multi contrast imaging. The technology can effectively reduce metallic artifact so that MR scan can cover postorthopaedic operation evaluation. It is typically suitable for the scan of patients with implanted titanium alloy and cobalt-chromium alloy.

Brain Perfusion*

Brain Perfusion provides T2*WI and high temporal resolution brain tissue imaging when combining EPI_perf and injecting intravenous bolus injections of susceptibility contrast agent.

• Support FAST parallel imaging.

• Support partial Fourier acquisition and reconstruction.

Advanced DTI*

DTI is designed by single shot EPI-SE sequence with diffusion sensitive gradients on frequency, phase and spatial encodings. By using particular algorithms, it displays anisotropic differences in diffusion speeds. Features include:

- Provide parallel acquisition technology;
- More than 256 directions are available for perfusion sensitizing gradients to use;
- Real-time display ADC and trace perfusion imaging;

* Combined with Advanced post-processing software to get more parameters information.

BOLD*

BOLD (Blood Oxygenation Level dependent) Imaging), known as EPI T2*WI, utilizes susceptibility changes caused by notable changes of blood oxygen in activation brain regions for brain function analysis, such as motion and cognitive function evaluations. Activation brain regions can be evaluated by statistical analysis. By calculating activated brain regions and observing signal intensity contrast before/after the stimulus, it evaluates hemodynamics and brain functions from a new perspective, further localizes brain functional areas and provides diagnostic references for scientific research and neurosurgery.

SVS MRS*

SVS (Single Voxel Spectroscopy) MRS is designed for physiological metabolism analysis and provides PRESS and STEAM scanning technologies.

- Set pixel angle arbitrarily and easily in graphical scanning interface;
- Shortest TE in PRESS can be 30ms, while in STEAM can be 20ms;
- Optimize homogeneity of interested regions by local 3D volumetric shimming;
- Optimize water suppression technology to ensure quality of spectral lines of metabolite content, being insensitive to B1 and T1;
- To meet various research requirements, the bandwidth of water suppression is flexible to change;
- Outer Volume Suppression (OVS): suppress surrounding tissues' metabolite by applying multiple saturation bands;
- Circulate changeable phases;
- Automatic and manual interactive shimming;
- Provide routine clinical protocols.

CSI MRS*

CSI (Chemical Shift Imaging) MRS is optionally provided to produce metabolite images based on the acquired 2D/3D spectral data, which can be used for the diagnosis of tumor, degenerative changes and metabolism diseases. 2D/3D CSI MRS supports head scanning. The software includes the following sequences and applications:

- 2D CSI scanning, including PRESS and HiSE techniques, with min. TE of 30ms in PRESS, min. TE of 50ms in HiSE;
- 3D CSI scanning, including PRESS and HiSE techniques, with min. TE of 30ms in PRESS, and min. TE of 50ms in HiSE.

* Combined with Advanced post-processing software to get more parameters information.

SWI

SWI (Susceptibility Weighted Imaging) utilizes GRE 3D sequence to present the susceptibility differences of tissue to non-homogenous magnetic field for diagnosis of cerebral hemorrhage and vascular malformations.

• Provide high-resolution 3D head imaging;

• Display micro changes of magnetic susceptibility;

• Display multiple parametric diagrams, such as amplitude, phase, thin-slab MIP reconstruction diagrams.

uSWIFT

uSWIFT (Susceptibility Weighted Imaging with Fast Technique) utilizes fast acquisition and imaging in one slice to enhance susceptibility contrast of tissue for body imaging, providing high quality images for vein and calcium-iron deposition.

* SWI is required.

SWI+

SWI+ (Advanced Susceptibility Weighted Imaging) comprises all the functions of SWI and SWI 2D, and further breaks through the limitations of conventional SWI with improved sequence, reconstruction and post-processing.

• Utilizes fully flow-compensated multi-echo sequences in all directions;

• Eliminate the CUSP artifact by multichannel

merging algorithm ;

• Provides high-fidelity phase information and minimize susceptibility artifact.

* SWI is required.

DB Blood SWI/SWI+

DB SWI/SWI+ technique adds black blood mode under current SWI/SWI+ flow compensation, to perform blood signal suppression imaging. This technique employs the flow scattered phase to suppress the arterial signal, and employs the paramagnetic property of the vein to suppress the venous signal, which can simultaneously image the arterioles and venules. Non-contrast enhanced angiography for head DB SWI/SWI+ is supported.

Maps*

Maps includes T1 Mapping, T2* Mapping and T2 Mapping. T1 Mapping acquires GRE images with multiple flip angles to fit the T1 values of the tissue within each pixel, while T2* Mapping and T2 Mapping acquires multiple echoes through the multi-echo GRE and SE sequences to fit the T2* and T2 values of the tissue within each pixel. This technique can be used for quantitative measurement of T1, T2* and T2 in articular cartilage and other tissues.

Inline Maps

Inline maps includes reconstruction and analysis of maps, optimize workflow and reduce operation time.

• inline T1 mapping;

• inline T2* mapping.

FACT

Fat Analysis & Calculation Technique (FACT) utilizes multi-gradient echo acquisition with accurate interval time and flip angle to obtain the best combination of signal intensity and fat/water phase difference. Provide various evidence for clinical diagnosis with precise fat qualitative results and parametric diagrams, such as water/fat diagrams, IP, OP. Fat Fraction (FF) and R2*. Conduct high-resolution fat quantitative scanning in liver within single breath-hold.

uFreeR

uFreeR provide signal acquisition with specialized angle to cover complete k-space without utilizing Cartesian coordinates,suppressing motion artifact significantly.

Advanced Non-Contrast Enhanced Angiography Imaging

Advanced Non-Contrast Enhanced Angiography Imaging, based on bSSFP sequence and combined with In-Flow Inversion Recovery technology, enables angiography without injecting any contrast agent. It can be applied to renal arterial angiography (3D) and lower-extremity arterial angiography (2D).
Functions include:

• Respiratory trigger is used for renal arterial angiography while ECG trigger is used for lower-extremity arterial angiography, which can suppress respiratory or flow motion artifacts.

• Use spatial selective inversion recovery pulse to suppress the background signal or blood signal.

• Use spectral excitation or FatSat to suppress fat signal.

Respiratory Navigator

Navigator detects the position of diaphragm for analysis of diaphragm movement, in order to provide reference for free-breathing scanning.

* Combined with Advanced post-processing software to get more parameters information.

* Combined with Advanced post-processing software to get more parameters information.

MicroView

MicroView is a small FOV imaging technique, which is based on EPI sequence and uCS iterative reconstruction algorithm. Using orthogonal excitation technology to reduce minimum TE, which can effectively reduce image deformation and wrap and realize high resolution and low distortion diffusion imaging. Support the scan of optic nerve, cervical spine, prostate and other scenarios.

Computed b Value

Computed b Value DWI (cDWI) supports inline virtual imaging, which means more b-value images can be acquired from 2 or more b-value actual imaging. Up to 100 virtual b-value images can be obtained within one single scan, and the maximum b value 2500 is available.

DCE*

Dynamic Contrast Enhancement (DCE) provides accurate T1WI and T1 Map before the contrast agent to evaluate T1 changes and conduct parameters of tissue permeability .

• Provide T1 Mapping;

• Provide high temporal resolution T1

contrast acquired sequence.

3D ASL

Arterial spin labeling (ASL) is based on 3D GRASE (Gradient and Spin Echo) sequence. pCASL (Pseudo-Continuous Arterial Spin Labeling) method is employed to label the magnetization vector of hydrogen protons in arterial blood, so as to quantitatively detect the local cerebral blood flow (CBF) with whole brain coverage. It can obtain inline maps of whole brain CBF perfusion. Compared with traditional dynamic susceptibility contrast (DSC) technology, ASL 3D is non-invasive,

* Combined with Advanced post-processing software to get more parameters information.

4D CEMRA

Dynamic CEMRA for 3D imaging over time. Typically, arteriovenous malformations and aneurysms occur in the lower extremities, neck, and brain. Software features include:

• Support parallel acquisition;

• Automatic online subtraction.

Whole Cardiac Coronary Imaging*

Whole cardiac coronary imaging employs 3D imaging technique, acquires data with BSSFP sequence, to highlight blood signal.

• ECG triggered scan to set the acquisition on the same cardiac phase, and reduce the impact of heart beat

• Respiratory navigator technique, which can effectively monitor patients' respiratory movements with free breathing. Image reconstruction can be implemented using desired image data.

Meanwhile, the diaphragm movement adaptive technology is adopted to real-time change the position of acquisition position. So coronary artery motion compensation can be performed to reduce the impact of respiratory motion and significantly improve the imaging effectiveness

• FatSat technique, to effectively suppress fat signal, so that the coronary artery can be clearly displayed

• T2 prepare technique, to suppress myocardial signal and enhance the contrast between coronary artery and myocardium.

Advanced Cardiac Imaging*

To meet versatile clinical applications, this advanced cardiovascular magnetic resonance (CMR) package is a set of MRI techniques designed to assess myocardial perfusion and viability, providing important diagnostic evidence for clinical cardiac disease.

• Cardiac perfusion: Myocardial perfusion imaging is an imaging technique designed to assess the microcirculation of the myocardium, which uses

* Combined with Advanced post-processing software to get more parameters information.

a T1-weighted fast GRE sequence to perform dynamic imaging right after bolus injection of Gd. A series of dynamic images are acquired during the first-pass of Gd passing through the right heart, lungs, left heart, aorta and flowing into the myocardium via the coronary arteries. After each ECG is triggered, apply a saturation recovery RF pulse to flip the longitudinal magnetizaiton vector to the transverse direction, and then saturate the transverse magnetization vector through the dephasing gradient, and then wait for a certain saturation recovery time and then use gre_fsp_c to collect single-layer signal, repeat it like this to collect 3-4 layers (4 layers: 3 layers of short axis, and 1 layer of four-chamber). With the inflow and outflow of the contrast agent, multiple cardiac cycles are repeated to obtain images of signal intensity changes.

• Cardiac viability or delayed gadolinium enhancement (LGE): a. Realized the TIScout based on the gre_bssfp sequence; b. Realized the PSIR by gre_fsp_c sequence.

uCS Cine

uCS Cine is a single-breath-hold cine imaging technology covering whole heart with multi slices, based on uCS technology. Through uCS sparse acquisition, high frequency acquisition of k-space center as well as high efficiency acquisition of time direction are ensured, simultaneously taking care of the randomness of k-space and time direction. Each slice is scanned one by one, and is independent of each other. uCS iteurative reconstruction is empoyed to demonstrate complete cardiac phase multi-slice cine image.

Cardiac Tagging

Cardiac Tagging adopts SPAMM technique (grid or stripes) based on gre_fsp_c sequence. It provides a powerful tool for the analysis of regional myocardial wall motion, with visualization of both radial wall motion and wall torsion dynamics throughout the cardiac cycle.

Cardiac Mapping

Cardiac Mapping provides T1/T2/T2* Mapping:

- MOLLI (Modified Look-Locker Inversion Recovery) sequence for inline T1 mapping;
- T2-prepared BSSFP sequence for inline T2 mapping;
- Multi-echo GRE sequence for inline T2* mapping.

3D MRCP

Single-breath-hold MRCP 3D technology is based on GRASE (Gradient and Spin Echo) sequence, combined with high acceleration factor, which can realize thin-layer high resolution chalangiopancreatic water imaging in one breath-hold.

Flow Quantification*

The Flow Quantification imaging technology employs 2D phase contrast (PC) technology, and is combined with retrospective ECG triggering to synchronize the acquisition and heartbeat. It applies flow encoding gradient along the flow direction to achieve the phase difference which is proportional to flow velocity. By calculating the relationship between the phase difference and flow velocity encoding set by the system, Flow Quantification can measure the physiological parameters such as CSF flow velocity and vessel blood flow velocity and volume.

UTE

Ultra short echo time (UTE) imaging is used for imaging of short T2 tissues with ultra short TE. It supports joint scanning and free-breathing lung imaging with navigator.

DeepRecon

DeepRecon is based on deep learning network, which can intelligently recognize and remove noise to optimize image detail and improve image quality. DeepRecon supports complex examinations across whole body. DeepRecon demonstrated its benefits in improving SNR

* Combined with Advanced post-processing software to get more parameters information.

FSE DWI

FSE DWI utilizes single-shot excitation. Compared with traditional EPI-DWI, it is insensitive to B0 field related artifacts, and effectively reducing the distortion and artifacts

caused by magnetic field inhomogeneity.

MRS (Prostate)*

SVS MRS is designed for physiological metabolism analysis and provides PRESS technologies for positioning and scanning. SVS MRS (prostate) supports prostate scanning.

- Set pixel angle arbitrarily and easily in graphical scanning interface;
- Provide MEGA water and fat suppression technology;
- The min. FOV is 5mm;
- Optimize homogeneity of interested regions by local 3D volumetric shimming;
- Optimize water suppression technology to ensure the quality of spectral lines of metabolite content;
- OVS: suppress surrounding tissues' metabolite by applying multiple saturation bands;
- Circulate changeable phases;
- Automatic and manual interactive shimming.

CSI MRS is optionally provided to produce metabolite images based on the acquired 2D spectral data, which can be used for the auxiliary diagnosis of prostate tumor. The software includes the following sequences and applications:

- 2D CSI scanning, including PRESS techniques;
- Support elliptical acquisition and weighted acquisition acceleration technology;
- Support MEGA technology to effectively suppress the water and fat signals.

CSI MRS is optionally provided to produce metabolite images based on the acquired 3D spectral data, which can be used for the auxiliary diagnosis of prostate tumor. The software includes the following sequences and applications:

- 3D CSI scanning, including PRESS techniques;
- Support elliptical acquisition and weighted acquisition acceleration technology;
- Support MEGA technology to effectively suppress the water and fat signals.

ARMS DWI

ARMS DWI utilizes multi-shot excitation. Compared with tranditional EPI-DWI, it is insensitive to B0 field related artifacts, and can effectively reduce the distortion and artifacts caused by magnetic fields

inhomogeneity at the skull base, nasopharynx, etc., and increase the detection rate of small lesions.

Multiband

MultiBand supports brain functional imaging, BOLD and DTI. This technology uses a multi-band radio frequency pulse to simultaneously excite multiple layers, and then uses algorithm reconstruction, which greatly shortens the scanning time.

* Combined with Advanced post-processing software to get more parameters information.

Advanced Post-processing

ADVIP-Stitching

A full-view imaging is desired in the practical work for the examination of spine, vessels of lower extremity and soft tissues. Stitching stitches multiple overlapped images to achieve large scanning range and accurate imaging for multi-station examination like spine and blood vessel. This technology has been widely used in clinical routine, including spine malformation and vascular disease diagnosis, preoperative evaluations and before/after treatment comparisons.

- Automatic Stitching: When loading the Stitching application, images are checked according to certain criteria and then composed into overview images. Depending on the type of images, the reconstruction algorithm is automatically set or manually selected by the user.
- Manual Stitching: After reconstruction, the user can manually shift images in the image plane or between the volumes.
- Brightness Normalization: The user can normalize the brightness of image sections for volumes included in the stitched whole body or spine volume (Uneven brightness is caused by measurements performed with different coils).
- Visualization: The application allows the user to display the original and reconstructed images in various layouts.
- Evaluations: After stitching accomplished, the user can perform various measurements for evaluation, including: circle, distance, angle, rectangle ROI, ellipse ROI, freehand ROI, arrow, and annotate.
- Result Saving: Save the images and analyzed results.
- Print: Send the images and analyzed results to print.
- Report: Send the images and analyzed results to report application.

-

ADVIP-Dynamic

MR Dynamic Evaluation provides the arithmetic and statistical functions for evaluating dynamic processes and images. It provides Time Intensity Curve (TIC), Positive Analysis and Negative Analysis functions.

- TIC Analysis: The ROI image intensity curves represent the same information for the pixels within the area of each ROI defined on the image views.
- Positive Analysis: With this function the user can get parameter maps. The maps include PEI (Positive Enhanced Integration), TTP (Time to Peak), MSI (Maximum Slope of Increasing) and MTE (Mean Time to Enhance).
- Negative Analysis: With this function the user can get parameter maps. The maps include NEI (Negative Enhanced Integration), TTP (Time to Peak), MSD (Maximum Slop of Descending) and MTE (Mean Time to Enhance).
- Background Removal: This function allows the user to define the range of images intensity that will be processed by the protocol.
- Statistic Table: It provides the statistical values within the ROI plotted on the parameter maps by the user. And the results are displayed as a statistic table for the user.
- Evaluations: The user can perform various measurements for evaluation, including: Circle, distance, angle, rectangle ROI, ellipse ROI, freehand ROI, arrow, and annotate.
- Result Saving: Save the images and analyzed results.
- Print: Send the images and analyzed results to print.
- Report: Send the images and analyzed results to report application.

ADVIP-MAPS (ADC)

MAPs aim to provide users a convenient and effective image viewer tool to process widespread function images in clinical diagnosis. MAPs with flexible measuring and statistical tool can accurately generate ADC\eADC maps, providing users rapid, accurate and necessary diagnosis information.

- ADC\eADC Calculation: It permits quantification of the tissue parameter ADC and eADC.
- Background Removal: This function allows the user to define the range of images that will be processed by the protocol.
- TIC Analysis: The ROI image intensity curves represent the same information for the pixels within the area of each ROI defined on the image views.
- Statistic Table: It provides the statistical values within the ROI plotted on the parameter maps by the user. And the results are displayed as a statistic table for the user.
- Evaluations: The user can perform various measurements on the images for evaluation, including: Circle, distance, angle, rectangle ROI, ellipse ROI, freehand ROI, arrow, annotate.
- Result Saving: Save the images and analyzed results.
- Print: Send the images and analyzed results to print.
- Report: Send the images and analyzed results to report application.

ADVIP-MAPS (T1& T2 & T2*)

MAPs aim to provide users a convenient and effective image viewer tool to process widespread function images in clinical diagnosis. MAPs with flexible measuring and statistical tool can accurately generate T1, T2\T2* and R2\R2* maps, providing users rapid, accurate and necessary diagnosis information.

- T1 Calculation: Quantification of the tissue parameter T1.
- T2\T2* Calculation: It permits quantification of the tissue parameter T2 and T2*.
- R2\R2* Calculation: It permits quantification of the tissue parameter R2 and R2*.
- Background Removal: This function allows the user to define the range of images that will be processed by the protocol.
- TIC Analysis: The ROI image intensity curves represent the same information for the pixels within the area of each ROI defined on the image views.
- Statistic Table: It provides the statistical values within the ROI plotted on the parameter maps by the user. And the results are displayed as a statistic table for the user.
- Evaluations: The user can perform various measurements on the images for evaluation, including: Circle, distance, angle, rectangle ROI, ellipse ROI, freehand ROI, arrow, annotate.
- Result Saving: Save the images and analyzed results.
- Print: Send the images and analyzed results to print.
- Report: Send the images and analyzed results to report application.

Fusion

Fusion is intended to combine acquisitions (MR, CT and PET) performed at different times by overlaying them. Also enables image fusions from different weighted images to fuse together and enables various parametric diagram fusions, such as FA, perfusion, T1, T2 and standard 2D/3D images. Tools are provided for manual adjustment for a better alignment.

- Data Loading: Load two volume datasets, one reference series and one model series. The reference series serves as an anchor for subsequent overlaying of the two image datasets. The model series is aligned spatially to the reference series.
- Aligning: The model series is aligned spatially to the reference series automatically (Automatic Registration).
- Editing the Fusion image data set: Edit the display parameters in order to display them more specifically.
- Threshold Segmentation: With the masking function, the user can define individual visibility thresholds for the reference and for the model series. Only grayscale values within the thresholds are used for alpha blending.
- Editing the segment layout of image area: Several segment layouts are provided for different occasions, such as transversal/sagittal/coronary views, three orthogonal views.
- User configuration: You can set default parameters for image display such as image window, color and standard views according to personal preferences.
- Save Result: You can save the resulting fusion images or the resampling results to the local database, send them to a DICOM node, or copy them to the Filming task card.

ADVIP-Breast Evalution

Enhanced scan is a high-sensitive and high-accurate scanning method to the early detection and diagnosis of breast tumor, playing significant role in diagnosing the benign and malignant tumor using contrast agent. In breast evaluation, users can observe multiple time point enhanced scanned images and subtracted images, and also can utilize contrast agent changing curve of interested tissue and Wash-In/Wash-Out parameter maps to help analyze mammary disease.

- Volume Subtraction: The subtracted volume data is produced from post-contrast with pre-contrast data when MR Breast Evaluation is loading.
- Motion Correction: It provides rigid and non-rigid motion correction to correct the translation between the volumes.
- Background Removal: This function allows the user to define the range of images that will be processed by the protocol.
- Parameter Maps: With this function the user can get parameter maps. The maps include WO (Wash-Out), WI (Wash-In), TTP (Time to Peak), PEI (Positive Enhanced Integration), and MSI (Maximum Slope of Increasing).
- TIC Analysis: The ROI image intensity curves represent the same information for the pixels within the area of each ROI defined on the image views.
- Statistic Table: It provides the statistical values within the ROI plotted on the parameter maps by the user. And the results are displayed as a statistic table for the user.
- Evaluations: The user can perform various measurements on the images for evaluation, including: Circle, distance, angle, rectangle ROI, ellipse ROI, freehand ROI, arrow, annotate.
- Result Saving: Save the images and analyzed results.
- Print: Send the images and analyzed results to print.
- Report: Send the images and analyzed results to report application.

ADVIP-Brain Perfusion

Because of physiological/pathological brain tissues having close relationship with local blood supply, it is of great significance in clinical diagnosis and treatment to acquire blood perfusion of local tissue and understand hemodynamics and changes of brain function. After contrast agent injection, Perfusion finishes dynamic scanning on the selected slice to obtain time intensity curves for each position. Perfusion model is applied to calculate parameters including relative cerebral blood flow (rCBF), relative cerebral blood volume (rCBV), mean transit time (MTT) and time to peak (TTP) for obtaining their corresponding parametric diagrams. This method helps users to visualize changes of brain tissue perfusion in an efficient and convenient way.

- Motion Correction: Provide rigid motion correction to correct the translation between the volumes.
- Background Removal: Allow users to define the range of images that will be processed by the protocol.
- Arterial Detection: Support manual and semi-auto arterial detection as input for the perfusion calculation.
- Parameter Maps: With this function the user can get parameter maps based on Deconvolution Perfusion Model. The parameter maps include rCBF (Relative Cerebral Blood Flow), rCBV (Relative Cerebral Blood Volume), MTT (Mean Transition Time) and TTP (Time to Peak).
- TIC Analysis: The ROI image intensity curves represent the same information for the pixels within the area of each ROI defined on the image views.
- Statistic Table: It provides the statistical values within the ROI plotted on the parameter maps by the user. And the results are displayed as a statistic table for the user.
- Result Saving: Save the images and analyzed results.
- Print: Send the images and analyzed results to print.
- Report: Send the images and analyzed results to report application.

ADVIP- United Neuro (DTI & DTT)

United Neuro (DTI&DTT) is an analysis tool to analyze DTI data by providing different parametric maps, such as FA, RA, Color FA, etc. Diffusion Tensor Tractography can also be generated based on those parametric maps to evaluate the white matter of the patient. Fusion function can fuse DTI (Dispersion Tensor Imaging), BOLD (Blood Oxygenation Level Dependent) and anatomy images. DTI can build dispersion schematics and BOLD signal can compare hemodynamics and metabolic changes to locate functional region. Incorporating anatomy images for display, it involves more informative and more visual images without radioactive harm. After tracing nerve fiber bundles from user-defined seed points, it can gain complicated distribution and trend of interested fiber bundles.

- Motion Correction: motion correction corrects the original images and displays the movement in terms of translation and rotation of DTI data.
- Diffusion Parameter Analysis: Generate a set of parametric maps from diffusion, including B0, ADC, TraceW, MD, FA, ColorFA, Exp, VR, RA, E1, E2, and E3.
- Fiber Tracking: Generates whole brain tractography results and provides ROI filters for locating specific fiber bundles.
- Time-Intensity curve: Allow users to view time-intensity curve based on selected ROI in activation map.
- ROI Analysis: Allow users to draw ROI and view statistic information on parametric maps.
- MR Segmentation: Provide a MR segmentation tool, which could segment the user-identified region and output statistic result.
- Fused VR: Fused VR can display and hide blood vessel, brain function area, tumor and fiber bundle.
- Result Saving: Save the images and analyzed results.
- Print: Send the images and analyzed results to print.
- Report: Send the images and analyzed results to report application.

ADVIP- United Neuro (BOLD)

The application can calculate BOLD activated region to observe brain BOLD signal intensity comparison before and after stimulus, providing a new vision of understanding hemodynamics and functional metabolism change to locate brain function region and support reference for neurosurgery.

- Motion Correction: motion correction corrects the original images and displays the movement in terms of translation and rotation of BOLD data.
- Functional Activation Calculation: Generate activation map, which shows neural activations superposed on an anatomical underlay.
- Time-Intensity curve: select interested regions and evaluate the change in signal intensity across time.
- Parameter adjustment and displays: adjust spatial thresholds to remove oversize or undersize regions and control signs of thresholds to determine the area of activation.
- Image fusion: fuse functional images with anatomical images.
- Result Saving: Save the images and analyzed results.
- Print: Send the images and analyzed results to print.
- Report: Send the images and analyzed results to report application.

ADVIP- MRS SVS

Chemical concentration of metabolites can reflect the changes of the brain, especially for those patient with brain tumor or stroke. MR spectroscopy is an easy and direct way to measure those neuro-metabolites non-invasively. It is also a semi-quantification tool to monitor the metabolite change in brain. Based on the result of MR spectroscopy, clinician is able to evaluate the treatment outcome. MRS (MR Spectroscopy) is used for evaluating the molecular components and spatial distribution of cell metabolism. It provides a set of tools to view, process, and analyze the complex MRS data.

- SVS data analysis: The user can evaluate spectroscopy data from single voxel of interest (VOI). This process generates a fitted spectrum curve using default or user-defined post-processing protocol, as well as a result table with variables of interest.
- Compare several series/studies: The application enables the user to compare the results of different SVS data within or cross studies.
- Protocol Editing: The user can interactively change the parameters when the default protocol doesn’t generate accurate result.
- Evaluations: The user can perform various measurements for evaluation, including: circle, distance, angle, rectangle ROI, ellipse ROI, freehand ROI, arrow, and annotate.
- Result Saving: Save the images and analyzed results.
- Print: Send the images and analyzed results to print.
- Report: Send the images and analyzed results to report application.

ADVIP- MRS CSI

Chemical concentration of metabolites can reflect the changes of the brain, especially for those patient with brain tumor or stroke. MR spectroscopy is an easy and direct way to measure those neuro-metabolites non-invasively. It is also a semi-quantification tool to monitor the metabolite change in brain. Based on the result of MR spectroscopy, clinician is able to evaluate the treatment outcome. MRS (MR Spectroscopy) is used for evaluating the molecular components and spatial distribution of cell metabolism. It provides a set of tools to view, process, and analyze the complex MRS data.

- CSI data analysis: For CSI data, the user can evaluate spectroscopy data from all voxels of interest within the CSI matrix. This process generates spectrum curves and result table for each voxel. Further, it can provide averaged spectrum of several voxels, spectra matrix, and metabolite pseudo-color images.
- Compare several series/studies: The application enables the user to compare the results of different CSI data within or cross studies.
- Protocol Editing: The user can interactively change the post-processing parameters when the default protocol doesn't generate accurate result.
- Evaluations: The user can perform various measurements for evaluation, including: Circle, distance, angle, rectangle ROI, ellipse ROI, freehand ROI, arrow, and annotate.
- Result Saving: Save the images and analyzed results.
- Print: Send the images and analyzed results to print.
- Report: Send the images and analyzed results to report application.

ADVIP- Vessel Analysis

MR angiography is widely used in diagnosis of peripheral blood vessel, especially for vascular stenosis, aneurysm, dissecting aneurysm and blood supply arteries. MR vessel analysis application provides powerful tools for the accurate extraction of vessels, rapid automatic measurement, etc.

- Optimized Vascular Displaying: It provides VRT, MIP to optimize the volume image display; it provides MPR, MPR Thin, MIP Thin, and CPR to optimize slice image display.
- Centerline Extraction: It provides the centerlines of large vessels when the application is loading. The user can create or edit the path semi-automatically or manually. With the centerline the software reconstructs and displays the data in CPR alone the vessel's path.
- Contour Extraction: It provides the contours of the large vessels when the application is loading. The user can edit the contour manually.
- Evaluating Vascular: Measurement tools are provided for quantitative image evaluation. The following measurements are possible: lengths of vessels, cross-sections of vessels, volume of vessels, angle.
- Vascular Stenosis Analysis: The application evaluates the percent of stenosis which is measured in terms of the diameter or area of stenosis.
- Evaluations: The user can perform various measurements on the images for evaluation, including: Circle, distance, angle, rectangle ROI, ellipse ROI, freehand ROI, arrow, annotate.
- Result Saving: Save the images and analyzed results.
- Print: Send the images and analyzed results to print.
- Report: Send the images and analyzed results to report application.

ADVIP- Cardiac Function

The application can complete automatic ventricle segmentation, myocardial function analysis calculation, including left ventricle end-systolic volume, end-diastolic volume, ejection fraction, cardiac output volume parameters. Besides, it can get four parameter bull's eye plots, namely end-diastolic or end-systolic ventricular wall thickness, ventricular wall displacement, ventricular wall thickening rate, and plot left ventricle volume changing curve.

- Matrix Navigation: Navigate and browse multiple-phase and slice images at any dimension.
- Automatic LV&RV Segmentation: Fully automatic ventricular segmentation, obtaining the epicardial, endocardial contour and papillary muscle of the left ventricle and endocardial contour and papillary muscle of the right ventricle.
- Manual LV&RV Segmentation: Provide corresponding tools to segment the epicardial and endocardial contours for the LV&RV ventricle manually. Edit any contours that are inaccurate.
- Contour Propagation: Provide contour propagation between phases for the edit of ventricle contour.
- LAX Extent Definition: Provide the definition of the left ventricle and right ventricle analysis range based on the long axis image extent of the heart.
- Cardiac Function Calculation: EDV, ESV, ejection fraction, cardiac output, Stroke Volume, etc.
- BSA standardized cardiac function parameters.
- Polar Maps: end-diastolic or end-systolic ventricular wall thickness, Wall Motion, Wall Thickening.
- Ventricular Volume Curve: Ventricular volume changes in a whole cardiac cycle.
- Save: Users can save calculated results and images.
- Print: Users can send cardiac function analyzed results and images to print.
- Report: Produce diagnosis report based on analyzed results.

Inner View

Inner View offers segmentation algorithms to automatically or manually extract the dividing lines of vessel, and simulates an endoscopy display within the organ by using a 3D display from different angles. This helps provide information about a tubular structure.

- Navigation: A virtual camera is navigated within the object model and a display is created showing the walls of the objects from the inside (even colons or vessels). The virtual camera is moved forward or backward in the cavity automatically with different speed, or by users scrolling mouse wheel. User can pause the virtual camera moving at any time.
- VRT: Volume rendering technique (VRT) is a way of creating specific color table in which a 3D effect is achieved with such parameters as transparency, shading, and color transition. The entire volume data set is included in the image. Areas of interest such as bone and blood vessels can be emphasied.
- Result Saving: Save the images and analyzed results.
- Print: Send the images and analyzed results to print.
- Report: Send the images and analyzed results to report application.

ADVIP- Flow Analysis

MR Flow Analysis application can quantitatively calculate blood flow volume, flow rate information of interested organs, contributing great reference value to vascular disease diagnosis and treatment.

- Interested Area : Plot vessel contour and interested area on images, and automatically propagate to each phase.
- Flow Curve: Display blood flow/velocity changes with time.
- Doppler Maps: Display Doppler image of interested section.
- Blood Flow Statistic Analysis: Stroke Volume, Regurgitant Flow Percentage, Stroke Distance forward flow volume and backward flow volume, etc.
- Vessel Management: Edit interested vessel contour, and add or delete interested vessel.
- Save: Users can save analyzed results and interested images.
- Print: Send analyzed results, calculation, and interested images to filming print.
- Report: Produce diagnosis report based on analyzed results.

ADVIP- DCE Analysis

MR DCE (dynamic contrast enhancement) analysis can characterize tumor biology and treatment response and evaluate parameters by different pharmacokinetic models. According to specific parameter map, doctors can judge microcirculation, perfusion and capillary permeability changes. Quantitative results can provide more accurate and objective information for lesion detection, determination and prognosis judge.

- Image Loading and Viewing: Allow users to load and view DCE data.
- Motion Correction: Reduce the motion artifact which is induced during MR scanning.
- Series Registration: Register anatomical data and DCE data.
- Parametric Maps: Generate various parametric maps including Ktrans, Kep, Ve, Vp(only for the extended-tofts model), CER, iAUC and MS.
- ROI Analysis: Allow users to draw ROI and view statistic information on parametric maps.
- Result Saving: Save the images and analyzed results.
- Print: Send the images and analyzed results to print.
- Report: Send the images and analyzed results to report application.

Computed b-Value (offline)

Selected sequences and images are fitted offline to generate Computed b-Value images.

Remote Control

Remote Control provides remote request and remote assistant functions.

Recommended Room Size

Name	Width (m)	Depth (m)	Height (m)	Area (m²)
Scanning Room	5	7	2.7	35
Control Room	6	4	2.8	24
Equipment Room	6	4	3.4	24

Minimum Room Size

Name	Width (m)	Depth (m)	Height (m)	Area (m²)
Scanning Room	3.5	5.7	2.4	19.83
Control Room	2.0	2.0	2.4	4.0
Equipment Room	Depended on the actual situation	Depended on the actual situation	2.9	Depended on the actual situation

Power Supply Requirement

Supply voltage and the floating tolerable range	380/400/415/440/460/480 VAC 3~+independently; ±10%
Supply power frequency and the floating tolerable range	50Hz/60Hz; ±1Hz
Power rating (standby)	25kVA
Power rating (average)	55kVA
Power rating (peak)	92kVA

Warranty Regulations

Dear customers:

Thank you for your concern and use of United Imaging products. If you encounter any questions during the use of United Imaging products, please call United Imaging Service Hotline 4006-866-088. The company reserves the right to identify product failures and the right to amend this regulation at any time.

Compliance

The product design, manufacturing, and after-sales service in accordance with ISO13485 requirements, and comply with all applicable medical device safety standards, such as IEC60601-1, IEC60601-2-33 and EMC related requirements.

UNITED IMAGING

Edition ID: 88000654-MPD-DCE-05

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