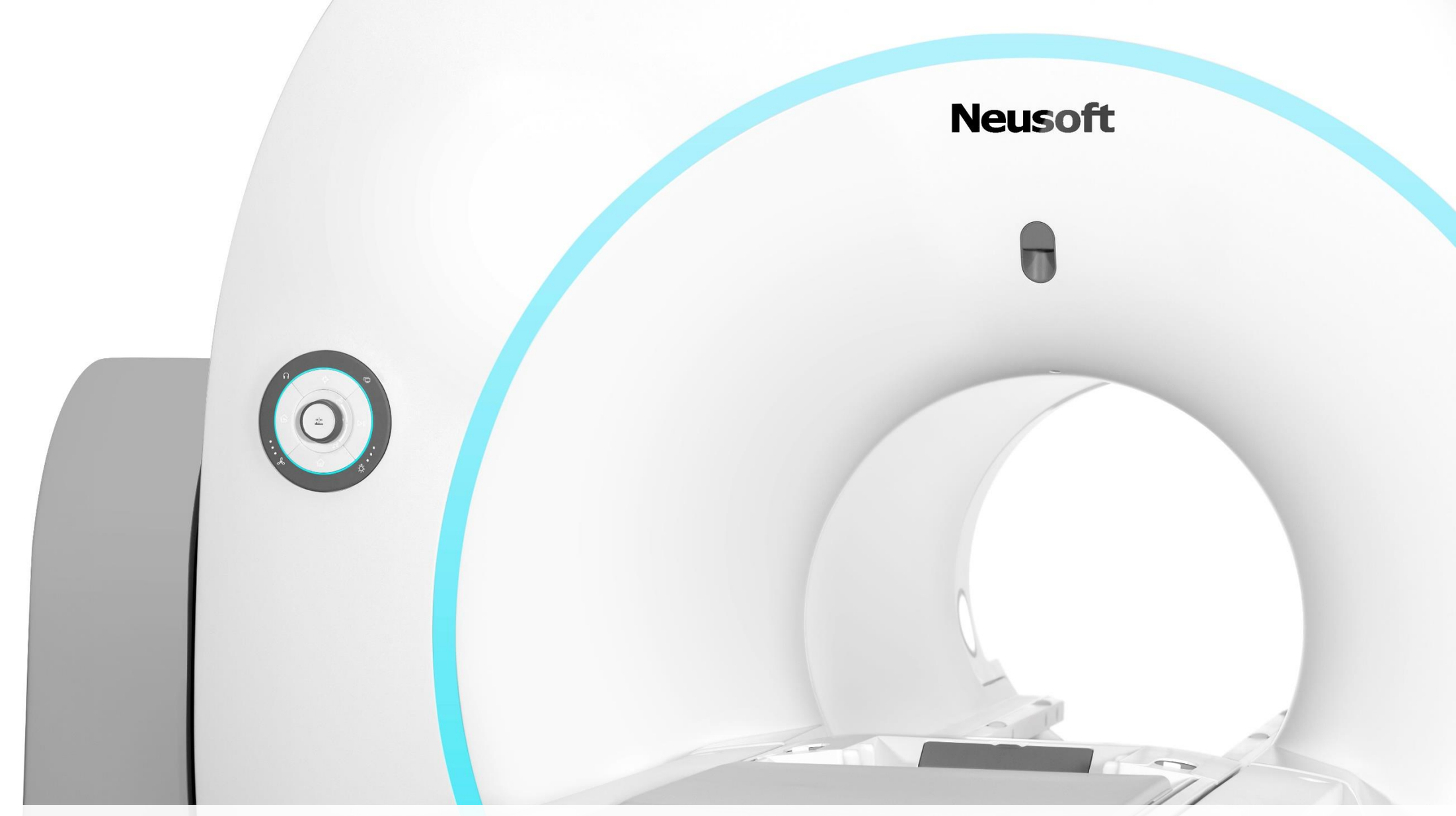


NeuMR Rena Technical Brochure

Optimized Results

NeuMR Rena

NeuMR Rena is the latest MRI system launched by Neusoft. It represents a new breakthrough in technological innovation, as it is the first time that all core components such as magnet, gradient system and RF system have been independently developed and designed, enabling full control over the entire chain. It is also the first MRI system to be equipped with Fiber Distributed Spectrometer, allowing for enhanced system stability, more precise imaging and greater scalability.

Magnet

Content	Parameter
Magnet type	Superconducting magnet
Field strength	1.5T
Field direction	Horizontal
Shield type	Active shielding
Shim method	Passive + Active shimming
Dimension	1910mmX1566mmX2537mm (WxD×H)
Magnet weight	Typical 3750 Kg without liquid helium Typical 3940 Kg with liquid helium
Temporal field stability	≤ 0.1 ppm per hour
Cryogen boil off rate	0 liter per year (cooler system need to keep running with no stop)
Magent bore	60cm
Fringe field – 5 Gauss	≤4m (axial)×2.5m (radial)
Liquid helium capacity	1500L

DSV (Diametrical Spherical Volume)	Typical (ppm)	Guarantee (ppm)
10cm	0.002	0.012
20cm	0.009	0.05
30cm	0.03	0.1
40cm	0.27	0.4
45cm	0.75	1.2
50cm	2.1	3.8

Gradient System

The gradient system is one of the important core components of MRI and the performance of the gradient system directly determines the system's resolution and scanning time. NeuMR Rena adopts a brand-new full-digital gradient chain design, which is composed of full-digital gradient modules under the control of Fiber Distributed Spectrometer, transforming from analog transmission to digital transmission.

Content	Parameter
Gradient type	Digital
Gradient strength	46mT/m
Slew rate	160mT/m/ms
Rise time to peak value	250μs
Shielding method	Self-shielding
Gradient Coil cooling method	Water cooling
Gradient AMP cooling method	Water cooling
Noise reduction technology	Yes

Gradient performance	
Min. slice thickness (2D)	0.05mm
Min. slice thickness (3D)	0.03mm
Min. FOV	0.3cm
Max. FOV	500mm
Max. imaging matrix	1024*1024
Max. recon matrix	1024*1024
Max. echo train length (TSE)	1024
Max. echo train length (EPI)	512
Max. nSENSE factor	9
Max. b value in DWI	10000
Max. slice count	512

RF System

The RF system is the core of MRI system and has been improved comprehensively by utilizing digital RF transmission technology. It is combined with the most advanced Fiber Distributed Spectrometer to produce more flexible sequence pulses, resulting in a significant improvement in image SNR.

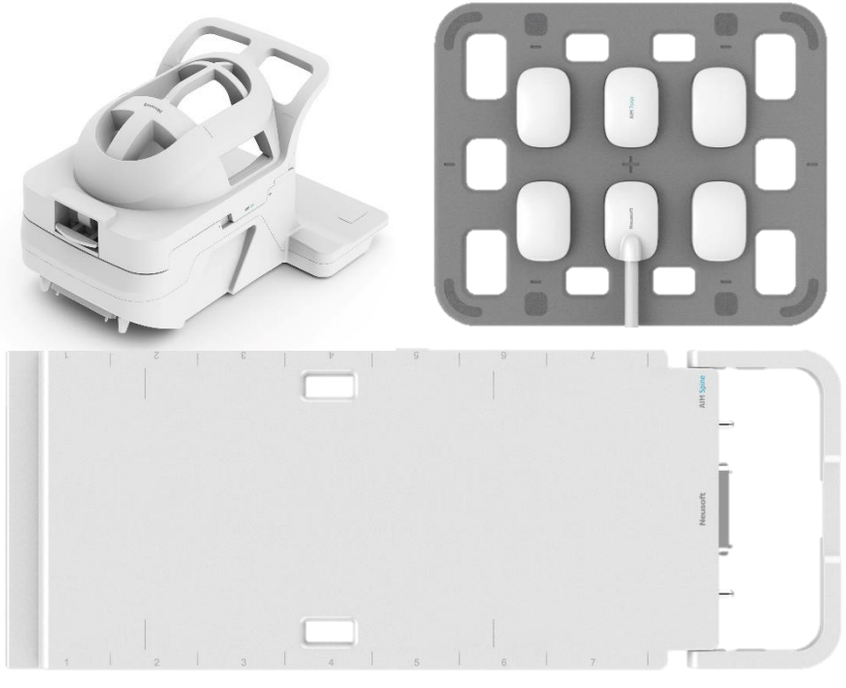
RF transmitter	
Max. RF field	≥23uT@100kg
Amplitude resolution	16bits
Frequency resolution	48bits
Phase resolution	16bits
Amplifier peak power	18KW
RF AMP cooling method	Water cooling

RF receiver	
Independent RF channel	24
Max receiver bandwidth	1MHz
Dynamic range	≥145dB
Receive signal resolution	32bits
RF receiving AMP noise level	0.4dB
Demodulation method	Digital

AIM NV Coil	
Channels	24CH
Coverage	55cmx46cmx33cm
AIM	Supported
nSENSE	Supported

AIM Spine Coil	
Channels	21CH
Coverage	121cmx46cmx4cm
AIM	Supported
nSENSE	Supported

AIM Torso Coil	
Channels	12CH
Coverage	57cmx47cmx5cm
AIM	Supported
nSENSE	Supported



Computer System

NeuMR Rena is equipped with advanced processors of 8 cores, along with large memory that enables transmission, processing and storage of massive amounts of data. The 24-inch dual-screen display processing makes MRI examination more convenient, enhancing scanning efficiency.

Host computer	
Core	Intel Xeon，≥8
Main memory capacity	≥64GB
Hard disk	≥1T
Operation system	Windows
Monitor	24 inches (1920*1200)
Reconstruction speed	20000IPS (256*256)
Temporary storage	＞6,000,000 images (256*256)
Long-term storage	CD-R, CD-RW, DVD –R, DVD-RW, DVD+R, DVD+RW, U disk, PACS

Environmental and room layout

NeuMR Rena offers the most comfortable, safe and efficient examination experience and workflow. The extra-wide scanning couch provides patients with optimal comfort during the scanning experience, while the large LCD can display real-time physiological information of patients as well as machine system information, providing the fastest workflow for positioning.

Patient comfort	
Patient communication	Two way
Patient observation system	Yes
Patient alarm	Yes
Emergency stop button	Yes
Noise reduction headphone	Yes
Respiratory gating	Wireless
ECG gating	Wireless
Peripheral Pulse Unit	Wireless

Patient couch	
Control panel	Bilateral control panel
Couch control method	Two way
Horizontal positioning accuracy	±0.5mm
Max. patient weight	200kg
Couch height	52cm-87cm
Longitudinal speed	110/220mm/s
Movement range	2207mm

Scanning room	
Recommended size (LxWxH)	6.5mx4.9mx3.4m
Temperature	18-22℃
Humidity	40-60%

Operation room	
Recommended size (LxWxH)	4.9mx2.5mx3m
Temperature	15-30℃
Humidity	30-75%

Technical room	
Recommended size (LxWxH)	4.9mx3mx3.2m
Temperature	18-26℃
Humidity	30-75%

Acquisition and reconstruction techniques

Sequence and techniques		Post processing
SE	nSENSE	Multi-Planar Reconstruction (MPR)
TSE	CS	Maximum Intensity Projection (MIP)
GRE	SPAIR	Volume Rendering (VR)
bSSFP	SWI	Shade Surface Display (SSD)
IR	SWIM	Virtual Endoscopy (VE)
FLAIR	MRM	Image add/subtraction
STIR	MRU	Image rotation
TOF	MRCP	Image clipping
PC	VIGE	Image filtering
DWI	DIXON Nova GRE	LUT
dGRE	DIXON Nova TSE	ADC map calculation
DC-TSE	BrainQuant	Isotropic DWI image calculation
FR-TSE	MRS	MRS
ROKAR Nova	BOLD fMRI	BOLD fMRI
Pre-saturation	DTI	Fiber tracking
Cardiac gating	ASL	DSC
Half scan	DSC	ASL
Partial echo	Total spine	BrainART
Respiratory gating	Whole body(from head to pelvis)	CHANCE
MTC	MUSIC	SMILE
T2 preparation	Fast BrainQuant	LiverQuant
IR preparation	BB	KneeQuant
CENTRA	RR	Angio analysis
tSHARE	Elliptical encoding	MRSplice
WATEX		


Neusoft
Medical
Systems