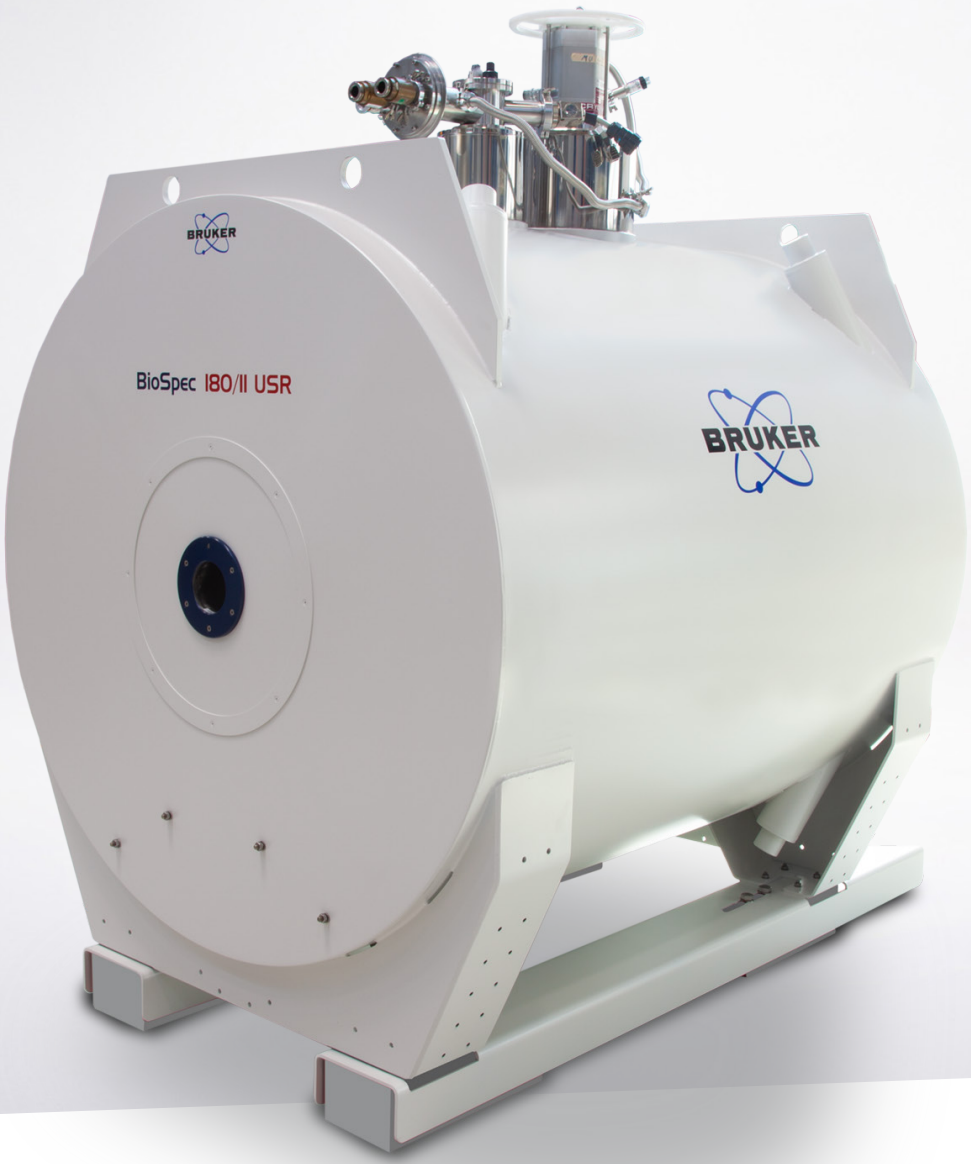


PRECLINICAL IMAGING

BioSpec MRI

Ultra-Shielded Refrigerated (USR) Magnet Technology

Innovation with Integrity

BioSpec USR instruments combine the best in strength and stability with efficiency in ease of use. With field strengths ranging from translational to ultra-high field and bore sizes and gradients designed to match the largest range of preclinical models, there is a BioSpec USR for every preclinical MRI application.

Strong

Field Strengths

- 7 T up to 18 T
- Translational field strengths to novel application enabling ultra-high fields

Bore Sizes

- Covering the full spectrum of preclinical models
- Room for peripherals (i.e. stimulation or optogenetic equipment) or for awake animals imaging

Gradients

- Flexible choice of gradient inserts for high-resolution imaging of smaller preclinical models
- Extremely high linearity for largest field-of-views
- High duty cycles and slew rates for demanding imaging protocols, larger number of slices, or fast scanning

Secure

Secure Investment

- Flexible siting options, including siting in smaller areas
- Fully nitrogen-free
- Fully refrigerated net zero helium boil-off
- Cold delivery significantly reduces installation time and costs

Security of Mind

- Market-leading longest magnet hold time of more than 10 days
- Bruker Monitoring Unit (BMU) constantly monitors magnet parameters
- Customer informed via email should a parameter not be within specifications
- Additional remote monitoring option for maximal magnet security

Safety

- Actively shielded for minimal stray fields
- Installation with self-shielded animal handling system or in Faraday-shielded room

Stable

Temporal Stability

- Most stable pulse tube cooler technology
- Cooler location on top of magnets enable service to be performed without forklift or magnet discharge or warmup

Physical Stability

- Superior stability and maximal image quality due to pulse tube's lack of mechanical valve causing vibrations
- Adjustable oil shock dampers minimize vibrations from building movement
- External Disturbance Suppression (EDS) compensates for electromagnetic interferences from i.e. passing traffic, subways, trains, or elevators

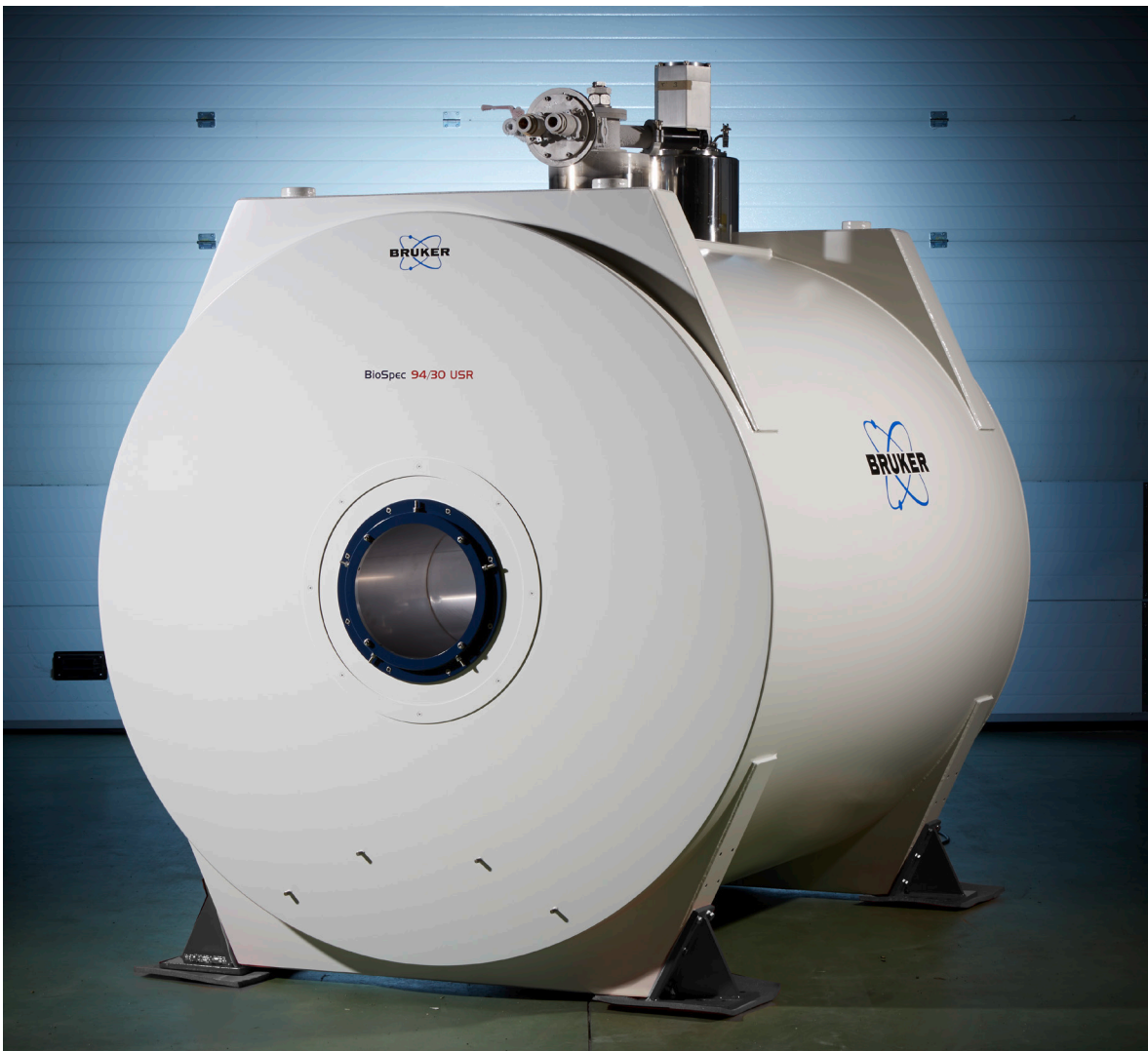
Simple

Clean Design

- Single mains connection
- No cables on the floor
- Ensures compliance with BSL cleaning standards

Intelligent Cooling

- Triple Loop Heat Exchanger provides clean cooling water to three independent circuits for magnet, gradient, and if present, MRI CryoProbe
- Constant monitoring and e-mail alerts for routine control
- Automatic emergency water switch for added magnet security



Instrument	BioSpec 70/20 USR	BioSpec 70/30 USR	BioSpec 70/40 USR	BioSpec 94/20 USR	BioSpec 94/30 USR	BioSpec 117/16 USR	BioSpec 117/22 USR	BioSpec 152/11 US/R	BioSpec 180/11 USR
Magnet Type	B-C 70/20 USR-TT	B-C 70/30 USR-TT V2	B-C 70/40 USR-TT	B-C 94/20 USR-TT	B-C 94/30 USR-TT	B-C 117/16 USR-TT	B-C 117/22 USR-TT	B-C 152/11 US/R	B-C 180/11 USR-TT
Field Strength (T)	7.0	7.0	7.0	9.4	9.4	11.7	11.7	15.2	18.0
^{1}H Resonance Frequency (MHz)	300.3	300.3	300.3	400.3	400.3	500.3	500.3	650.3	767.0
Bore Diameter (cm)	20	30	40	20	30	16	22	11	11
Homogeneity DSV (mm)	120	180	200	120	180	60	100	60x60 (cylinder)	60x60 (cylinder
Homogeneity: Peak-Peak (ppm)	10	10	10	10	10	4	4	10	12
Stray Field: Distance Center to 0.5 mT (radial/ axial) (m)	1.5 / 1.5*)	2.0 / 2.5*)	2.4 / 2.8 *)	2.0 / 3.0*)	2.3 / 3.3*)	1.7 / 2.8*)	2.5 / 2.5 *)	3.0 / 3.0*)	2.5 / 2.5 *)
Helium Zero Boil-off	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No**)	Yes
Helium Refill Volume (typ.) (days)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	365**)	n/a
Helium Refill Interval (l)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	650**)	n/a

*) in persistent mode

**) Helium refill through Bruker service contract recommended

Bruker BioSpin is continually improving its products and reserves the right to change specifications without notice. Order No. BS-100091 © 08/2025 Bruker BioSpin.

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Online information
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