BioSpec 3T

Superior liquid cryogen-free magnet technology

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Accelerate your biomedical research

Extending the range of multi-purpose MRI and MRS systems

At a translational field of 3 Tesla, the BioSpec 3T extends the range of multi-purpose, preclinical MRI and MRS systems. It bridges the gap between morphological reference imaging at 1 Tesla and research level MRI imaging at high-field in a compact, easy to site footprint. Superior cryogen--free design eliminates the need for liquid helium or nitrogen and provides an unmatched magnet hold time of four hours during power outages.

Designed for study of mice and rats, the BioSpec 3T comprises the latest Bruker MRI technology, software application packages and multimodal options. To augment the range of research options in your laboratory the BioSpec 3T is fully compatible with other imaging modalities such as PET.

Key Benefits

- No liquid helium or nitrogen filling required.
- Over 100 validated and ready to use in vivo protocols and scan programs for mice and rats.
- Accurate animal positioning with the motorized animal handling system, including touchscreen operation for a simplified, precise workflow.
- Automated multi-stage, whole body imaging.
- Compact footprint can even fit in small labs.
- Quick and easy installation so you can get started faster.
- Self-shielded system, no Faraday cage necessary
- No quench line required.
- Ensure peace of mind with comprehensive services, hotlines, training courses (application and programming) and onsite training.

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Superior design for unmatched convenience and flexibility

Key Benefits

- Superior MRI magnet technology ensures the magnet remains on field during power outage and/or cold water failure for up to 4 hours.
- Maximum freedom for your animal experiments with a magnet bore of 180 mm.
- Support for very large rats with best-inclass free RF-coil access of 82 mm
- Significant signal-to-noise boost in vivo of at least a factor of 3 with the MRI CryoProbe.
- Widest range of RF coils (~30) for mice and rats available, including coils for head, brain, cardiac, body, x-nuclei and multi-purpose applications.
- Fully-featured ParaVision® preclinical user interface integrates other modalities for streamlined workflow.
- MRI sequence portfolio of more than 1000 sequence variations, including wireless cardiac imaging using navigator based IntraGate methods with a choice of cartesian or radial readout, as well as short echo time imaging, such as UTE and ZTE.
- Best in class homogeneity of ±0.1 ppm for a 50 mm DSV due to solid magnet design.
- Crisp and highly resolved images with a gradient strength of up to 900 mT/m at high gradient linearity of ±3.5% (DSV 50 mm).
- Up to 6 higher order, high power shim channels (e.g. 3750 Hz/cm2 for XZ,YZ) guarantee optimal performance for spectroscopy and MRI.
- In-house development and production of all key components (software, magnet, gradient, spectrometer, RF-coils) ensures the best performance and short repair times.

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Typical configuration (^{1}H and Broadband Channel, 4 Channel Parallel Receive)

Magnet Specifications	
Field strength	3 Tesla (rampable)
Bore diameter	18 cm
Homogeneity (35 mm DSV)	± 0.05 ppm
Homogeneity (50 mm DSV)	± 0.1 ppm
Stray field (center to 0.5 mT)	0.53 / 0.88 m (radial / axial)
Magnet hold-time during power outage or cold water failure	Up to 4 hours
Gradient Specifications	
Gradient inner diameter	105 mm
Gradient strength	450 mT/m (900 mT/m with high power option)
Slew rate	4200 T/m/s
Max. DC gradient strength, @ 15 °C, 8 l/min	335 mT/m
Cooling & Power Requirements	
Magnet compressor cooling	water-water heat exchanger
Gradient cooling	water-water heat exchanger
Electronics cooling	air flow through cabinets
Typical heat dissipation to air instrument / electronics	1.0 kW / 2.0 kW
Typical heat dissipation to facility water	9.6 kW
Space Requirements	
Max. height of instrument	195 cm
Weight of instrument (including motorized animal handling system, transmitters and preamplifiers)	1300 kg
Min. ceiling height (needed for service only)	230 cm
Minimum required floor space	290 cm x 280 cm (8 m^2)
Installation in BSL environments	BSL 1/2: Yes BSL 3/4: Possible, customized project

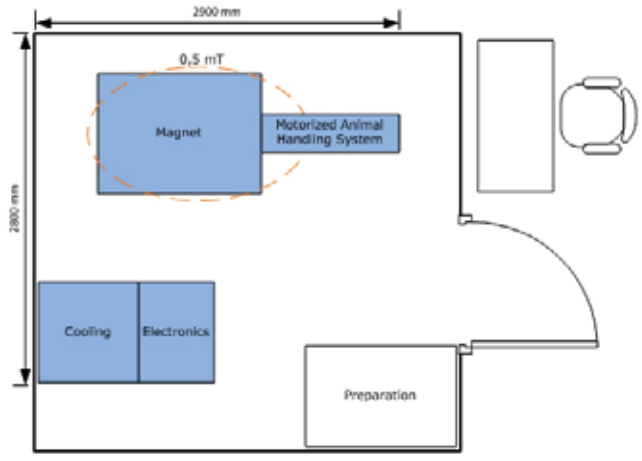

Fig. 1: Example of the BioSpec 3T's layout and minimal space requirements (2.8 x 2.9 m^2)

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