

RK-300



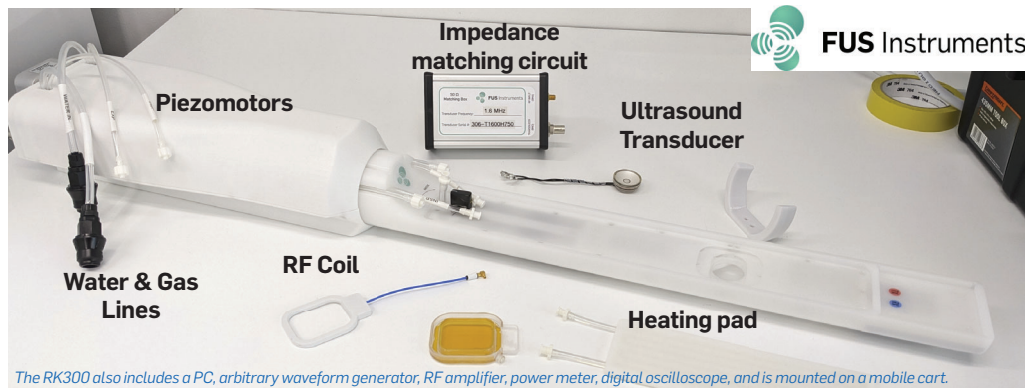
MRI-compatible focused ultrasound system



 **FUS Instruments**
Non-invasive ultrasound delivery

AN MRI-COMPATIBLE FOCUSED ULTRASOUND (FUS) SYSTEM FOR RESEARCH

The RK-300 is a MRI-compatible preclinical FUS system. It enables researchers to investigate the biomedical applications of focused ultrasound, a field receiving global interest and research support. The RK-300 replicates all the features and capabilities of clinical FUS systems, making it an ideal translational research device.



The RK300 also includes a PC, arbitrary waveform generator, RF amplifier, power meter, digital oscilloscope, and is mounted on a mobile cart.

KEY FEATURES

Turnkey System: The RK-300 is ready for brain ultrasound studies right out of the box. The system mounts directly to a Biospec MRI bed.

In-bore transducer motion: Piezoceramic motors integrated into the RK300 move the ultrasound transducer in the horizontal plane while in the MRI bore.

Integration with Paravision 360: The RK300 connects to the Bruker console computer through an ethernet connection, enabling transfer of DICOM images for planning, as well as real-time transfer of T1-Flash images for PRF-shift MR thermometry.

Acoustic feedback: Real-time acoustic emissions monitoring provides visual feedback on the progress of ultrasound experiments.

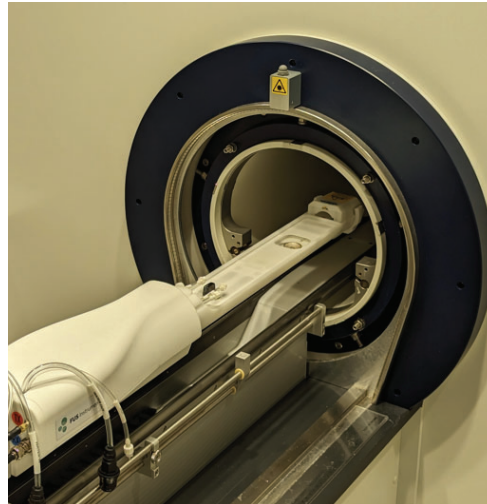
Flexible acoustic parameters: Ultrasound exposures can be pulsed or continuous, with independent control of pressure at each location. The software enables targeting of single, regional, or whole brain coverage. Aureus is written in Python and the source code is available to customers upon request.

Flexible targeting: The RK-300 is capable of single spot, regional or whole brain targeting.

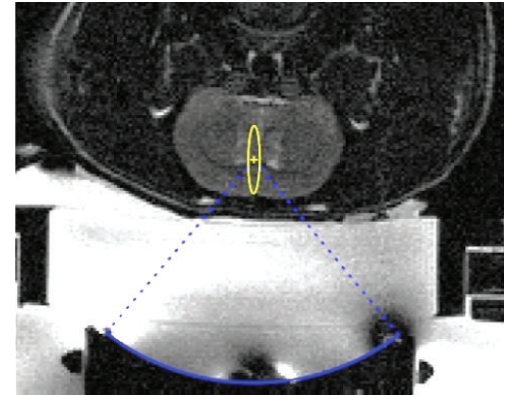
Intuitive interface: The software interface is intuitive and powerful, without the need for ultrasound expertise. Full control over ultrasound parameters is available, enabling a wide range of studies.

Straightforward installation: The RK-300 can be efficiently installed and removed from a preclinical MRI minimizing setup times for studies and enabling the use of the system in a multi-user core. No special modification or construction is required to integrate the RK300 into a preclinical MRI.

Training & support: FUS Instruments offers on-site installation and training with every system, and continues to provide technical and scientific support throughout the warranty period.



The RK-300 integrates seamlessly with all Bruker magnets on both AutoPac and ManPac loading systems.



In-bore placement of the FUS system enables image-guided positioning of ultrasound in the brain.

SPECIFICATIONS

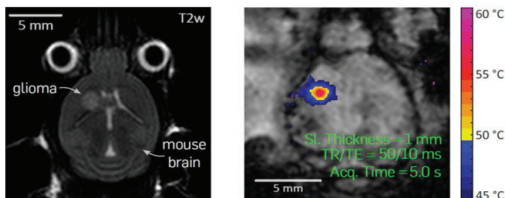
Parameter	Value
X range	24 mm
Y range	18 mm
Z range	6 mm (Manual)
Maximum speed (XY)	8 mm/s
Resolution (XY)	0.1 mm
Power output (max)	15 W (electrical)
Transducer frequencies	1.0, 1.6 MHz
Harmonic frequencies	3.0, 4.8 MHz
Transducer diameter	25 mm
Transducer focal length	20 mm
Outer diameter	70mm
Output modes	Continuous, burst, neuromodulation, BBB opening
Applications	Thermal (hyperthermia, ablation), blood brain barrier opening, neuromodulation, sonodynamic therapy

PRIMARY APPLICATIONS

- BBB disruption for enhanced molecular delivery
- Improved viral gene transfection
- Transcranial neuromodulation
- Immuno-modulation
- Tissue hyperthermia & ablation
- Enhancement of stereotactic injections
- Enhancement of liquid biopsies



Precise delivery of molecular compounds in the rat brain using the RK300 and a 1.5MHz transducer



Real-time MR thermometry is possible using the RK300 for studies intending to perform mild-hyperthermia or ablation.

FUS Instruments is proud to sell Nanobubbles for preclinical BBB opening studies using the RK-300



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