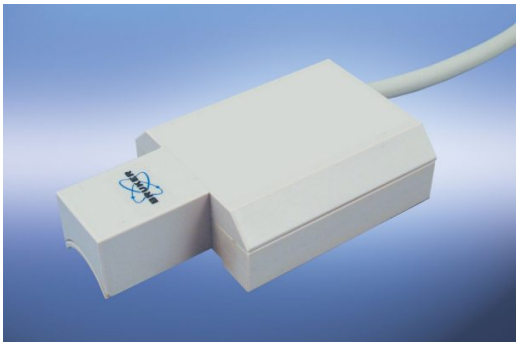
MRI RF Coils Technical Details

^{1}H receive-only mouse brain surface coil



Receive-only mouse brain surface coil

Applications on mouse brain include anatomical studies, fMRI, perfusion, and ASL. In all cases, the region of interest is focused on the entire brain of the mouse. Highest sensitivity throughout the mouse brain is achieved with a cross-coil setup including a volume transmission coil and this anatomically shaped receive-only coil.

This surface coil is mounted directly on the mouse cradle and is placed over the brain of the animal outside of the magnet once the animal preparation is finished. Both animal and coil are then moved to the measurement position simultaneously. This approach allows the user to easily observe and control the correct position of the coil on the brain of the mouse. This pre-tuned and -matched surface coil has integrated low noise preamplifiers for best possible signal-to-noise performance.

This coil is available for BioSpec Maxwell, BioSpec 4.7 T, BioSpec 7 T, BioSpec 9.4 T, BioSpec 117/16, and PharmaScan.

^{1}H receive-only 3 x 1 mouse optogenetic surface array coil

Mouse optogenetic coil

In answer to our customers' request, Bruker provides a receive-only ^{1}H array optimized for mouse optogenetic experiments. This 3 x 1 array with 3 openings can be rotated to provide open access the skull. This coil is to be used in combination with one of the transmit-only resonators.

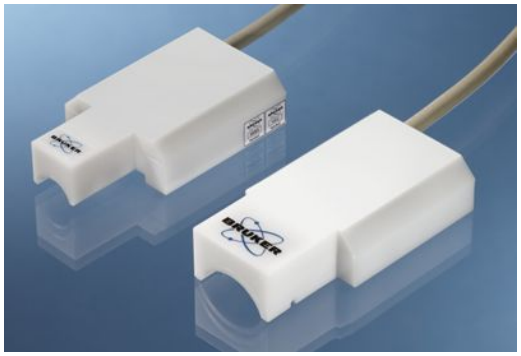
This coil is available for BioSpec 7 T, BioSpec 9.4 T, and PharmaScan.

^{1}H receive-only 2 x 2 mouse brain surface array coil

This coil array is designed for mouse brain investigation on multiple receiver instruments. As an array coil, it allows accelerated image acquisition whenever the total image acquisition time is critical. This coil is mounted directly on the mouse animal cradle and is placed over the brain of

Angiography at 7 T

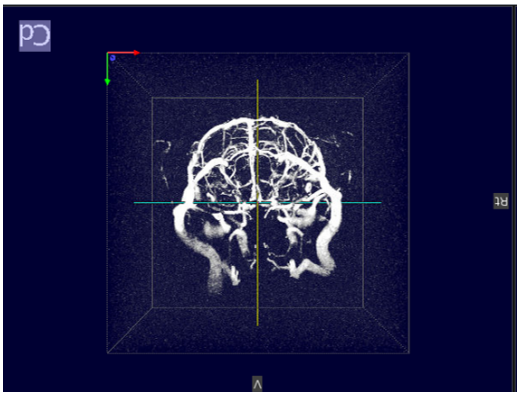
mouse animal cradle and is placed over the brain of the animal outside of the magnet once the animal preparation is finished. Both animal and coil are then moved to the measurement position simultaneously. This approach allows the user to easily observe and control the correct position of the coil on the brain of the mouse.



Mouse and rat brain 2 x 2 surface array coils

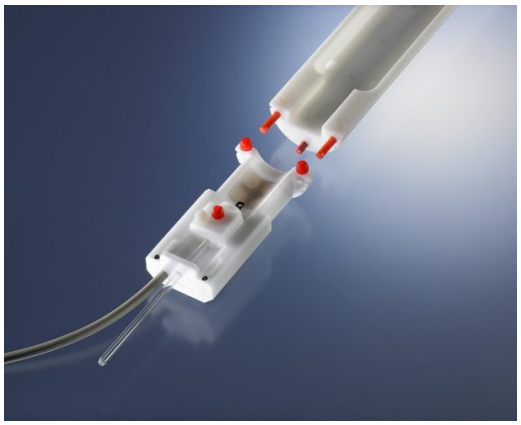
This pre-tuned and -matched surface coil with integrated low noise preamplifiers provides best possible signal-to-noise performance for its dedicated applications. It is to be used in combination with one of the transmit-only resonators.

This coil is available for BioSpec Maxwell, BioSpec 4.7 T, BioSpec 7 T, BioSpec 9.4 T, BioSpec 117/16, BioSpec 15.2 T, and PharmaScan.

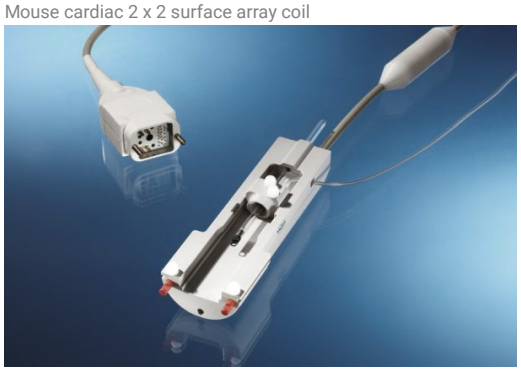


The 1H receive-only 2 x 2 mouse brain surface array coil enables excellent resolution of (62 x 62) µm² in the Time-Of-Flight angiography allowing visualization even of small vessels

^{1}H receive-only 2 x 2 mouse cardiac surface array coil and ^{1}H receive-only 4 x 1 mouse spine surface array coil



Mouse cardiac 2 x 2 surface array coil



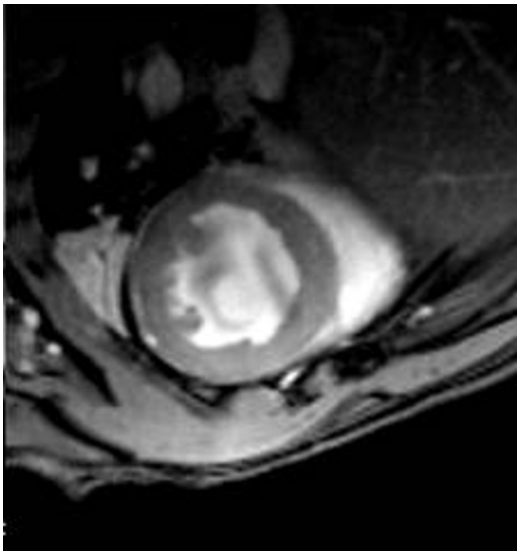
Mouse spine 4 x 1 surface array coil

These coil arrays, designed for mouse heart and spine investigation on multiple receiver systems, have the ideal anatomical fits and receive profiles to provide optimal illumination with excellent SNR. As array coils, they allow accelerated image acquisition whenever the total image acquisition time is critical. Both the 2 x 2 cardiac and the 4 x 1 spine array coils are integrated into corresponding animal cradle tips.

These pre-tuned and -matched surface coils with integrated low noise preamplifiers provide best possible signal-to-noise performance for their dedicated applications. They are to be used in combination with one of the transmit-only resonators.

The 2 x 2 mouse cardiac surface array coil is available for BioSpec Maxwell, BioSpec 4.7 T, BioSpec 7 T, BioSpec 9.4 T, BioSpec 117/16, and PharmaScan. The 4 x 1 mouse spine surface array coil is available for BioSpec 7 T, BioSpec 9.4 T, BioSpec 117/16, and PharmaScan.

Mouse Cardiac Imaging at 9.4 T



The 2 x 2 mouse cardiac phased array surface coil allows for acceleration and excellent sensitivity in time sensitive cine imaging (72 mm volume coil used for transmission)

^{1}H receive-only 8 x 1 mouse head surface array coil and ^{1}H receive-only 8 x 1 mouse body surface array coil

These 8 x 1 coil arrays have a split coil element topology. While the lower half shell is integrated into the corresponding animal cradle, the upper half shell is detachable. The fully integrated animal cradle eases handling and preparation of the animal and the semiflex coil configuration allows for flexible positioning and optimal sensitivity. The 8 rectangularly shaped coils are arranged around the animal such that the long axis of the coils is

Mouse body 8 x 1 surface array coil

aligned with the main axis of the body, which leads to optimal illumination with excellent SNR.

Mouse head 8 x 1 surface array coil

Therefore, accelerated image acquisition is possible whenever the total image acquisition time is critical.

These pre-tuned and -matched surface coils with integrated low noise preamplifiers provide best possible signal-to-noise performance for their dedicated applications. They are to be used in combination with one of the transmit-only resonators.

The 8 x 1 mouse head surface array coil is available for BioSpec 9.4 T. The 8 x 1 mouse body surface array coil is available for BioSpec 4.7 T, BioSpec 7 T, BioSpec 9.4 T, BioSpec 117/16, and PharmaScan.

^{1}H receive-only rat brain surface coil

Receive-only rat brain surface coil

Applications on rat brain include anatomical studies, fMRI, and, perfusion. In all cases, the region of interest is focused on the entire brain of the rat. Highest sensitivity throughout the rat brain is achieved with a cross-coil setup including a volume transmission coil and this anatomically shaped receive-only coil.

This surface coil is mounted directly on the rat bed and is placed over the brain of the animal outside of the magnet once the animal preparation is finished. Both animal and coil are then moved into the measurement position simultaneously.

This approach allows the user to easily observe and control the correct position of the coil on the brain of the rat. This pre-tuned and -matched surface coil has integrated low noise preamplifiers for best possible signal-to-noise performance.

This coil is available for BioSpec Maxwell, BioSpec 4.7 T, BioSpec 7 T, BioSpec 9.4 T, BioSpec 117/16, and PharmaScan.

^{1}H transmit-receive rat Arterial Spin Labeling coil

Arterial Spin Labeling Coil

For perfusion studies Arterial Spin Labeling (ASL) is a powerful method that does not use contrast agents and provides a non-invasive approach for the direct measurement of the cerebral blood flow. Bruker's ASL coil makes such studies in rats straightforward. This coil is fully integrated into the dedicated ASL rat cradle tip. Its position can be finely adjusted once the animal is in place ensuring optimal results. This coil is to be used in combination with one of the transmit-only resonators with inner diameter of 72 mm or larger

and rat brain receive-only coils.

This coil is available for BioSpec 7 T, and BioSpec 9.4 T.

^{1}H receive-only 3 x 1 rat optogenetic surface array coil

In answer to our customers' request, Bruker provides a receive-only ^{1}H array optimized for rat optogenetic experiments. This 3 x 1 aray with 3 openings can be rotated to provide open access the skull. This coil is to be used in combination with one of the transmit-only resonators.

This coil is available for BioSpec 4.7 T, BioSpec 7 T, BioSpec 9.4 T, and PharmaScan.

^{1}H receive-only 2 x 2 rat brain surface array coil

Mouse and rat brain 2 x 2 surface array coils

This coil array is designed for rat brain investigations on multiple receiver instruments. As an array coil, it allows accelerated image acquisition whenever the total image acquisition time is critical. This coil is mounted directly on the rat animal cradle and is placed over the brain of the animal outside of the magnet once the animal preparation is finished. Both animal and coil are then moved to the measurement position simultaneously. This approach allows the user to easily observe and control the correct position of the coil on the brain of the rat.

This pre-tuned and -matched surface coil with integrated low noise preamplifiers provides best possible signal-to-noise performance for its dedicated applications. It is to be used in combination with one of the transit-only resonators.

This coil is available for BioSpec Maxwell, BioSpec 4.7 T, BioSpec 7 T, BioSpec 9.4 T, BioSpec 117/16, and PharmaScan.

DTI at 9.4 T

Single-shot EPI DTI maps were acquired with 30 diffusion directions in only 1 min 45 s using the 1H receive-only 2 x 2 rat brain surface array coil

^{1}H receive-only 4 x 1 rat cardiac surface array coil

Rat cardiac 4 x 1 surface array coil

This coil array, designed for rat heart investigation on multiple receiver systems, has the ideal anatomical fit and receive profile to provide optimal illumination with excellent SNR. As an array coil, it allows accelerated image acquisition whenever the total image acquisition time is critical. The rat cardiac array coil is directly integrated into the rat cradle.

Rat Cardiac Imaging at 7 T

The 4 x 1 rat cardiac phased array surface coil allows for acceleration and excellent sensitivity in time sensitive blackblood and tagging studies (72 mm volume coil used for transmission)

This pre-tuned and -matched surface coil with integrated low noise preamplifiers provides best

possible signal-to-noise performance for its dedicated application. It is to be used in combination with one of the transmit-only resonators.

The 4 x 1 rat cardiac surface array coil is available for BioSpec Maxwell, BioSpec 4.7 T, BioSpec 7 T, BioSpec 9.4 T, BioSpec 117/16, and PharmaScan.

^{1}H receive-only 8 x 1 rat head surface array coil and ^{1}H receive-only 8 x 1 rat body surface array coil

Rat head 8 x 1 surface array coil

Rat body 8 x 1 surface array coil

These 8 x 1 coil arrays have a split coil element topology. While the lower half shell is integrated into the corresponding animal cradle, the upper half shell is detachable. The fully integrated animal cradle eases handling and preparation of the animal and the semiflex coil configuration allows for flexible positioning and optimal sensitivity. The 8 rectangularly shaped coils are arranged around the animal such that the long axis of the coils is aligned with the main axis of the body, which leads to optimal illumination with excellent SNR. Therefore, accelerated image acquisition is possible whenever the total image acquisition time is critical.

These pre-tuned and -matched surface coils with integrated low noise preamplifiers provide best possible signal-to-noise performance for their dedicated applications. They are to be used in combination with one of the transmit-only resonators.

The 8 x 1 rat head surface array coil is available for BioSpec 4.7 T, BioSpec 7 T, BioSpec 9.4 T, and PharmaScan. The 8 x 1 rat body surface array coil is available for BioSpec 9.4 T and BioSpec 117/16.

Rat Abdominal Imaging at 11.7 T

The 8 x 1 rat body phased array surface coil allows for acceleration in time sensitive anatomical studies (72 mm volume coil used for transmission)

^{1}H planar receive-only surface coils with inner diameters 10 mm, 15 mm, 20 mm, 30 mm, and 60 mm

Multi-purpose planar surface coils with inner diameters of 10, 20, and 30 mm

Add to left column of section 1H planar receive-only surface coils with inner diameters 10 mm, 15 mm, 20 mm, 30 mm, and 60 mm

These multi-purpose receive coils with inner diameters of 10, 15, 20, 30 and 60 mm are general purpose RF coils that can be used for many different *in vivo* applications with small and well defined regions of interest.

They are quickly connected and exchanged for the greatest ease and variability of set-up. The RF coil preamplifier is mounted on the animal bed; the RF coil end can be placed and fixed on any part of the body.

The selection of the diameter of the RF coil depends on the size and depth of the region of interest. The B1 profile is typical for planar surface

Knee Imaging at 3 T

Studies on structures very close to the surface are best imaged with planar surface coils, which can be placed at any location on the subject, such as here on a rat knee (20 mm planar surface coil was used for signal reception, 82 mm rat body volume coil was used for transmission)

coils and provides excellent SNR close to the surface.

These coils are to be used in combination with one of the transmit-only resonators.

The 10 mm, and 20 mm coils are available for BioSpec Maxwell, BioSpec 4.7 T, BioSpec 7 T, BioSpec 9.4 T, BioSpec 117/16, and PharmaScan. The 15 mm coil is available for BioSpec 7 T and BioSpec 9.4 T. The 30 mm coils is available for BioSpec Maxwell, BioSpec 4.7 T, BioSpec 7 T, BioSpec 9.4 T, and PharmaScan. The 60 mm coil is available for BioSpec 94/20.

$^{1}H/^{13}C$, $^{1}H/^{17}O$, $^{1}H/^{19}F$, $^{1}H/^{23}Na$, $^{1}H/^{31}P$ transmit-receive surface coils with inner diameters 10 mm, 20 mm, and 30 mm

20 mm 1H/31P transmit-receive coil

20 mm 1H/19F transmit-receive coil

To expand imaging and spectroscopy possibilities, Bruker offers $^{1}H/X$ double resonant transmit-receive surface coils, that are optimized for maximum SNR of the X-nuclei signal for ^{13}C, ^{17}O, ^{19}F, ^{23}Na, and ^{31}P.

These linearly polarized coils, which come with 10, 20, and 30 mm inner diameters, allow locally restricted excitation and detection of MR signals.

In order to increase SNR of X-nuclei signals as well as to simplify NMR data, some X-nuclei applications require ^{1}H decoupling capability of the coil. Bruker's coils meet this requirement with their dedicated ^{1}H block filters. This guarantees excellent ^{1}H decoupling properties paired with a maximum SNR of X-nuclei signal.

The $^{1}H/^{13}C$ transmit-receive surface coil with inner diameter 10 mm is available for BioSpec 117/16. The $^{1}H/^{31}P$ transmit-receive surface coil with inner diameter 10 mm is available for BioSpec 9.4 T and BioSpec 15.2 T. The $^{1}H/^{23}Na$ transmit-receive surface coil with inner diameter 10 mm is available for BioSpec 15.2 T.

The $^{1}H/^{13}C$ and the $^{1}H/^{31}P$ transmit-receive surface coils with inner diameter 20 mm are available for BioSpec Maxwell 3 T, BioSpec 4.7 T, BioSpec 7 T, BioSpec 9.4 T, BioSpec 117/16, and PharmaScan. The $^{1}H/^{17}O$ transmit-receive surface coil with inner diameter 20 mm is available for BioSpec 9.4 T and BioSpec 117/16. The $^{1}H/^{19}F$ transmit-receive surface coil with inner diameter 20 mm is available for BioSpec 4.7 T, BioSpec 7 T, BioSpec 9.4 T, BioSpec 117/16, BioSpec 15.2 T, and PharmaScan. The $^{1}H/^{23}Na$ transmit-receive surface coil with inner diameter 20 mm is available for BioSpec Maxwell 3 T, BioSpec 4.7 T, BioSpec 7 T, BioSpec 9.4 T, BioSpec 117/16, and PharmaScan.

The $^{1}H/^{13}C$ transmit-receive surface coil with inner diameter 30 mm is available for BioSpec 9.4 T.

Spectroscopy at 9.4 T

Studies on structures close to the surface are best imaged with planar surface coils, which can be placed at any location on the subject, such as here on a rat liver using a 31P/1H transmit-receive surface coil with inner diameter 20 mm allowing

The $^{1}H/^{19}F$ and the $^{1}H/^{31}P$ transmit-receive surface coils with inner diameter 30 mm are available for BioSpec 7 T and PharmaScan.

^{1}H transmit-receive volume coils with inner diameters 15 mm and 25 mm

15 mm transmit-receive volume coil

25 mm transmit-receive volume coil

To cover the largest scope of applications in material research, Bruker offers a selection of circularly polarized volume coils with a variety of inner diameters. The coils ensure the best homogeneity along with the highest SNR. General purpose volume coils are available with 15 and 25 mm inner diameters. These coils with their small inner diameters provide the best sensitivity for research on materials, foods, and plants. They are designed so that a wide range of tune and match conditions for different applications can be fulfilled.

These coils are available for BioSpec and PharmaScan 7 T, BioSpec 9.4 T, and BioSpec 15.2 T. The 25 mm coil is additionally available for BioSpec 4.7 T.

^{1}H transmit-receive volume coils with inner diameters 23 mm, 30 mm, 35 mm, 40 mm, 50 mm, 60 mm, and 72 mm

Transmit-receive volume coil with 23 mm inner diameter and 55 mm outer diameter

Transmit-receive volume coil with 40 mm inner diameter and 75 mm outer diameter

Transmit-receive volume coil with 72 mm inner diameter and 112 mm outer diameter

Investigations of the mouse and rat head and mouse and rat body such as anatomical studies or angiography require highly homogeneous signal excitation and detection.

For that reason, the best suited RF coils are often volume coils with the smallest possible inner diameter as the best compromise between free access and sensitivity. Bruker therefore offers a range of mouse and rat head and body coils with varying inner diameters. With inner diameters of 23 mm for mouse brain to 72 mm for rat body, these coils have been designed for optimal fits to the animal anatomy.

The coils are designed for maximal SNR within the optimized B1 homogenous volume. The coils are either conveniently pneumatically fixed inside the gradient or are mounted directly on or integrated into the animal cradle.

The 23 mm coil is available for BioSpec Maxwell, BioSpec 4.7 T, BioSpec and PharmaScan 7 T, BioSpec 9.4 T, BioSpec 11.7 T, and BioSpec 15.2 T.

The 30 mm coil is available for BioSpec Maxwell. The 35 mm coil is available for BioSpec 4.7 T, BioSpec and PharmaScan 7 T, BioSpec 9.4 T, BioSpec 11.7 T, and BioSpec 15.2 T.

The 40 mm and 60 mm coils are available for BioSpec Maxwell, BioSpec 4.7 T, BioSpec 7 T, BioSpec 9.4 T, and BioSpec 117/16.

Dynamic Contrast Enhanced Imaging at 3T

72 mm rat body volume coil shows excellent homogeneity within deep tissues, allowing accurate time courses in Dynamic Contrast Enhanced studies

The 50 mm coil is available for BioSpec 4.7 T, BioSpec 7 T, and BioSpec 9.4 T.

The 72 mm coil is available for BioSpec Maxwell, BioSpec 4.7 T, BioSpec 7 T, and BioSpec 9.4 T.

^{1}H transmit-receive volume coils with active detuning with inner diameters 72 mm, 82 mm, and 86 mm

Active detunable 82 mm volume coil

Active detunable 86 mm volume coil

For the investigations of local organs or specific parts of the animal body, the best set-up is often a cross-coil set-up with a receive-only surface coil used in combination with a transmit volume coil.

Bruker offers volume coils with extremely homogeneous excitation profiles and excellent active detuning properties. These coils that come with inner diameters of 72, 82, and 86 mm provide more available space for e.g. animal supervision, additional devices, or even larger animals.

These coils which are intended to be used for signal excitation, can also be used as transceive coils.

The simple fixation inside the gradient coil is done pneumatically.

The ^{1}H transmit-receive volume coil with active detuning with inner diameter 72 mm is available for PharmaScan 7 T, and BioSpec 11.7/16. The ^{1}H transmit-receive volume coil with active detuning with inner diameter 82 mm is available for BioSpec Maxwell. The ^{1}H transmit-receive volume coil with active detuning with inner diameter 86 mm is available for BioSpec 4.7 T, BioSpec 7 T, and BioSpec 9.4 T.

Relaxometry at 3 T

The 82 mm volume coil combined with the 2 x 2 mouse brain phased array surface coil is used for quantitative T2-mapping of the mouse brain

^{1}H transmit-receive volume coils with active detuning with inner diameters 154 mm, 197 mm, and 198 mm.

Active detunable 154 mm volume coil

These coils have been especially designed to accommodate larger pre-clinical species. Their tuning and matching range extends from unloaded to a load of about 4.5 kg. These coils generate a homogeneous excitation profile over large volumes, while ensuring highest SNR. In addition to accommodating small animals, they offer more available space for e.g. animal supervision and additional devices. The simple fixation inside the gradient coil is done pneumatically. They can be used as transmission coils in combination with receive coils in a cross-coil set-up or as stand-alone coils in transmit-receive mode.

The ^{1}H transmit-receive volume coil with active detuning with inner diameter 154 mm is available for BioSpec 4.7 T and BioSpec 70/40. The ^{1}H transmit-receive volume coil with active detuning with inner diameter 197 mm is available for Biospec 4.7 T. The

^{1}H transmit-receive volume coil with active detuning

with inner diameter 198 mm is available for BioSpec 70/40.

^{1}H transmit-receive PET-optimized volume coils with inner diameters 35 mm, 72 mm, and 86 mm

PET/MR investigations greatly profit from PET-optimized coils with features such as a long axial FOV for greater body coverage, minimized attenuation of gamma rays, and software-based RF coil attenuation map registration. Bruker offers coils with varying inner diameters for studies on mouse, rat, and large rats.

These coils are available for BioSpec 47/40, BioSpec 70/30, and BioSpec 94/30. The 35 mm coil is additionally available for BioSpec Maxwell, BioSpec 70/20, and BioSpec 94/20.

^{1}H 4 x 1 mouse body volume array coil

4 x 1 mouse body volume array coil

With 35 mm inner diameter, this array coil is designed for mouse body examinations on multiple receiver instruments. The 4 channel receive-array, a volume coil for excitation, and an animal cradle are all fully integrated. The 4 coil elements are arranged around the inner coil housing leading to optimal illumination with excellent SNR. MR sequences can therefore be accelerated if the corresponding studies are critical in time.

This coil is available for BioSpec 117/11 and BioSpec 15.2 T.

^{1}H 8 x 2 rat body volume array coil

Rat body 8 x 2 volume array coil

This 60 mm array coil is designed for rat whole body examinations on multiple receiver instruments. The 16 channel receive-array, a volume coil for excitation, and all of the corresponding electronics are fully integrated in the coil housing. The 16 circularly shaped coil elements are arranged around the inner coil housing in a two ring design which leads to optimal illumination with excellent SNR. MR sequences can therefore be accelerated if the corresponding studies are critical in time. The transmission volume coil is pre-tuned and pre-matched.

This coil is available for BioSpec 7 T and BioSpec 9.4 T.

$^{1}H/^{13}C$, $^{1}H/^{19}F$, $^{1}H/^{23}Na$, $^{1}H/^{31}P$ transmit-receive volume coils with inner diameters 23 mm, 32 mm, 35 mm, 40 mm and 72 mm

X-nuclei mouse body/rat head 40 mm volume coil

For direct signal detection as well as decoupling experiments, Bruker offers $^{1}H/\ ^{13}C$, $^{1}H/^{19}F$, $^{1}H/^{23}Na$, and $^{1}H/^{31}P$ volume coils with inner diameters of 23 mm, 32 mm, 35 mm, 40 mm and 72 mm.

These coils are designed as two geometrically decoupled linear resonators for ^{1}H and X-nucleus frequencies with dedicated ^{1}H block filters. This design combines excellent ^{1}H decoupling properties paired with maximum SNR of the X-nucleus signal.

The $^{1}H/^{19}F$ coil with 23mm diameter, the $^{1}H/^{13}C$-^{23}Na coil with 32 mm diameter, and the $^{1}H/^{19}F$ coil with 35 mm diameter are available for BioSpec 15.2T. The $^{1}H/^{13}C$, the $^{1}H/^{19}F$, and the $^{1}H/^{3}1P$ coils with 40 mm diameter are available for BioSpec Maxwell, BioSpec 4.7 T, BioSpec and PharmaScan 7 T, BioSpec 9.4 T, and BioSpec 117/16. The $^{1}H/^{23}Na$ coil with 40 mm diameter is available for BioSpec Maxwell 3 T, BioSpec 4.7 T, and PharmaScan 7 T, and BioSpec 9.4 T. The $^{1}H/^{13}C$ coil with diameter 72 mm is available for BioSpec Maxwell 3 T, BioSpec 4.7 T, BioSpec 7 T, and BioSpec 9.4 T. The $^{1}H/^{19}F$, and the $^{1}H/^{31}P$ coils with 72 mm diameter are available for BioSpec 4.7 T, BioSpec 7 T, and BioSpec 9.4 T. The $^{1}H/^{23}Na$ coil with 72 mm diameter is available for BioSpec 9.4 T.

^{1}H quadrature transmit-receive MRI CryoProbe

Mouse MRI CryoProbe

Bruker's MRI CryoProbe uses cryogenic RF coils and preamplifiers cooled by a closed-cycle refrigeration system. This cooling procedure significantly improves the performance of the MRI CryoProbe. The enormous SNR increase compared to standard room-temperature RF coils can be used for higher resolution *in vivo* up to 20 µm and for new applications that are not feasible with room temperature coils (high res, fMRI…). Furthermore, CryoProbes enable shorter measurement times resulting in shorter anesthesia durations and more cost efficient studies. Animal handling and supervision of the MRI CryoProbe is very similar to standard room temperature RF-coils.

This MRI CryoProbe is available for BioSpec Maxwell, BioSpec 4.7 T, BioSpec 7 T, BioSpec 9.4 T, BioSpec 11.7 T, and BioSpec 15.2 T, and PharmaScan.

More information:

⟶ **Mouse MRI Probes | MRI Cryocooler | Manufacturer**

High Resolution Mouse Brain Imaging at 15.2 T

The 1H mouse MRI CryoProbe allows exceptional resolution of (19.5 x 19.5) µm2 with a slice thickness of 150 µm in vivo (a: FLASH, b: expanded region of a, c: phase image).

^{1}H receive-only four-channel phased array MRI CryoProbe

Mouse MRI CryoProbe

Bruker's MRI CryoProbe uses cryogenic RF coils and preamplifiers cooled by a closed-cycle refrigeration system. This cooling procedure significantly improves the performance of the MRI CryoProbe. The enormous SNR increase compared to standard room-temperature RF coils can be used for higher resolution *in vivo* up to 20 µm and for new applications that are not feasible with room temperature coils (high res, fMRI…). Furthermore, CryoProbes enable shorter measurement times resulting in shorter anesthesia durations and more cost efficient studies. Animal handling and supervision of the MRI CryoProbe is very similar to standard room temperature RF-coils. The four elements allow accelerated imaging if studies are critical in time.

This MRI CryoProbe is available for BioSpec 7 T, BioSpec 9.4 T, and PharmaScan.

More information:

⟶ **Mouse MRI Probes | MRI Cryocooler | Manufacturer**

^{13}C MRI CryoProbe with combined ^{1}H room temperature RF-coil

Mouse MRI CryoProbe

Bruker's MRI CryoProbe uses cryogenic RF coils and preamplifiers cooled by a closed-cycle refrigeration system. This cooling procedure significantly improves the performance of the MRI CryoProbe. The enormous SNR increase compared to standard room-temperature RF coils can be used for higher resolution in vivo and enables shorter measurement times resulting in shorter anesthesia durations and more cost efficient studies. The signal-to-noise gain benefits from lower NMR frequencies: the lower the frequency of the nuclei the higher the SNR gain. Therefore signal-to-noise gains of a factor of 5 are possible in ^{13}C measurements.

This MRI CryoProbe is available for BioSpec 7 T, BioSpec 9.4 T, and PharmaScan..

More information:

⟶ **Mouse MRI Probes | MRI Cryocooler | Manufacturer**

Rat array MRI CryoProbe

Rat MRI CryoProbe

Bruker's MRI CryoProbe uses cryogenic RF coils and preamplifiers cooled by a closed-cycle refrigeration system. This cooling procedure

In Vivo Rat Brain with 60 µm Resolution at 9.4 Tesla

significantly improves the performance of the MRI CryoProbe. Animal handling and supervision of the

MRI CryoProbe is very similar to standard room temperature RF-coils. The rat array MRI CryoProbe for in vivo neuroimaging delivers unparalleled access to rat brain microstructure and biochemistry, previously unresolvable in in vivo imaging of the rat. At 9.4 T, this unique MRI CryoProbe delivers an increase in signal-to-noise ratio (SNR) of up to a factor of 2.4 over equivalent room-temperature RF-coils. The sensitivity increase allows researchers to reduce imaging times by a factor of 5 or to increase spatial resolution.

This MRI CryoProbe is available for BioSpec 7 T, BioSpec 9.4 T, and PharmaScan.

More information:

→ **Rat Array MRI Probes | Advanced MRI Coil Technology**

The rat MRI CryoProbe allows visualization of smallest details of the rat brain, such as in this highly resolved FLASH image (60 x 60 x 120) µm3

Labscape

Service & Life Cycle Support for Magnetic Resonance and Preclinical Imaging

Bruker's commitment to provide customers with unparalleled help throughout the buying cycle, from initial inquiry to evaluation, installation, and the lifetime of the instrument is now characterized by the LabScape service concept.

LabScape Maintenance Agreements, On-Site On-Demand and Enhance Your Lab are designed to offer a new approach to maintenance and service for the modern laboratory

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