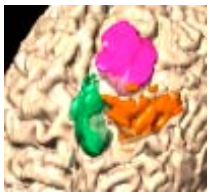
BrainLAB

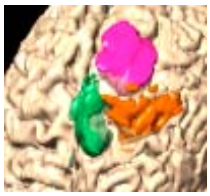
BOLD MRI Scan



In order to provide complete data sets for neurosurgery, anatomical high resolution MRI data must be available in addition to BOLD MRI data. The anatomical data can be (but not necessarily) acquired in the same study with the BOLD MRI data.

Paradigm	• The BrainLAB BOLD MRI module only supports **block-designed** functional paradigms. • Event-oriented paradigms are currently not supported.
Paradigm settings	• For a correct analysis, the functional paradigm must be recorded and later used with the iPlan planning software: when data with/without patient activity was acquired • Single task can be performed: hand, rest, hand, rest…. • Multiple tasks can be performed: rest, hand, feet, rest, hand, feet… • The task and rest length for one activation must remain the same during the scan See next page for details.
FoV (Field of View)	• Include **region of interest** • The field of view must include sufficient anatomical landmarks in order to use the data with the image fusion • Field of view must be orthogonal
Patient orientation	• **Supine** and **head first** position • Patient's head must be supported to reduce movement
Scan Properties	• Axial only • **EPI BOLD scan** sequence • Slice thickness 1.5 – 5.0 mm • A complete functional task must contain at least 20 data volumes • For Siemens mosaic images **F>>H orientation** and **H>>F orientation** is supported (selected under System/Common card); interleaved sorting order is not supported. • If possible, motion correction can be done.
Angulation	• Can be used
Matrix / Pixel size	• Any matrix size, but must be square, e.g.: 64x64, 128x128, 256x256 or 512x512 • Pixel size must be square • Only orthogonal slice spaces are supported Slices have to be parallel, aligned, must have equal slice distances and must not be rotated.
Storage	• Only **standard 16Bit DICOM** format is supported • All BOLD MRI volumes should be stored as image slices • For Siemens data, it is recommended to create Mosaic images in order to reduce the data and accelerate the import • Storage media: CD-ROM or DICOM network • No optical disc or DAT tape

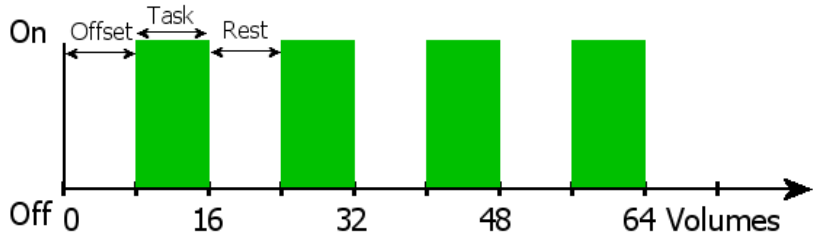
BrainLAB
BOLD MRI Task



The BrainLAB BOLD MRI module only supports block-oriented functional paradigms.
For a correct analysis, the functional paradigm must be recorded and later used with the BrainLAB planning software. The following parameters can be entered as the number of volumes acquired or as the time length in seconds:

- **Offset:** number of dummy volumes (or time length in seconds) before the first task
- **Task length:** number of volumes (or time length in seconds) for one activation phase
- **Rest length:** number of volumes (or time length in seconds) rest phase in current task

An example of a functional task with hand movement is shown below:



In this example, the following values were used and must be forwarded to the person who will use the BOLD MRI processing with the BrainLAB planning software:

Task name	**Offset** (volumes)	**Task Length** (volumes)	**Rest length** (volumes)
Hand	8	8	8

Any changes to the routine functional scan protocols normally used for the BrainLAB system should be discussed and verified with the neurosurgery and radiology department.
Please be aware that head movement will reduce the quality of the image processing.
If you need additional information please contact your local BrainLAB Support Engineer.

The form below may be used to record the functional protocol:

Protocol name			
Task name	**Offset (**volumes)	**Task Length** (volumes)	**Rest length** (volumes)