

# FYNA Research<sup>®</sup> OPM-MEG system

Product sheet



The **FYNA Research®** system is a MagnetoEncephaloGraphy (MEG) system based on Helium Optically Pumped Magnetometers (OPM). The MAG4Health OPM-MEG is a brain scanner, upgradable up to 96 sensors on a single helmet and above in hyper-scanning configuration.

Compared to former rubidium OPMs, Helium OPMs are a new generation of sensors being able to operate without any noticeable heating, making possible long-time recordings or recordings on newborns and children.

The large bandwidth of the Helium-based MAG4Health sensors (DC-2000 Hz) makes them highly polyvalent and usable in various fields such as magnetospinography (MSG), magnetomyography (MMG), magnetoneurography (MNG).

### Tri-Axial Vector Sensors

Helium-based Optically Pumped Magnetometers.

Footprint: 21 x 21 mm<sup>2</sup>.

Weight of the sensor: 25 grams.

Weight of the sensor with its cable: 114 grams.

- Sensitivity: 25 fT/√Hz on X and Y axis, 200 fT/√Hz on Z axis.
- Bandwidth: DC – 2000 Hz.
- Sensors operate in closed loop mode on each axis, continuously compensating the measured magnetic field.
- Dynamic range:  $\pm 200$ nT on each axis.
- The closed loop operation leads to:
  - A linear response of each sensor if the field to measure is within the dynamic range ( $\pm 200$ nT).
  - Cancellation of cross-axis effects.

- The bare cross-talks in between two adjacent sensors are <8%, a patented automatic correction algorithm brings them below <0.5%
- 4 HPI coils to localize anatomical features for co-registration with MRI volumes in post-processing steps.
- The helmet can be positioned up to two “reference” sensors using the supplied accessory.
- The cable which connects the sensor heads to the control system is 5-meter long.
- Integrated and automated sensor location system.



**FYNA Research®** system features self-localization of the sensors in the patient's head frame as reference, thanks to a proprietary algorithm which sequentially uses some sensors as 3-axis emitters and others as 3-axis receivers. It is possible to move the sensors on the helmet to position them according to the user's needs.

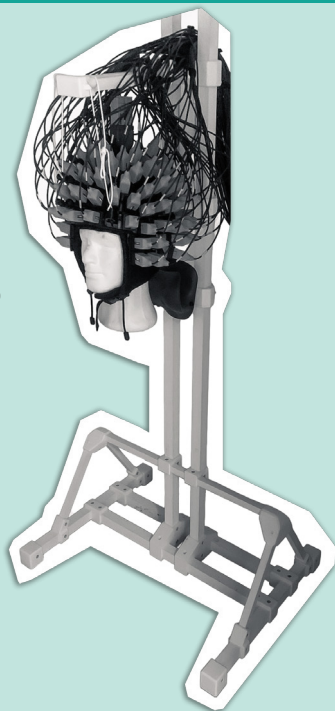
### Control System Cabinet

- Dimensions: 55 x 60 x 160 cm (L x W x H).
- Weight: 80 kgs (for 48 sensors).
- Modular control system: up to 6 blocks of 16 sensors per chassis.
- Power supply: the FYNA Research® device can be used on 110V-220V 50-60Hz mains AC Europe F plug type or United States B plug can be provided. For other sockets, please contact us.

## Conformable Helmet

Our headset holder supports most of the helmet weight and adapts to most chairs.

- Silicon and textile.
- The array of sensors fits onto the patient's head (offset to scalp < 2mm): each sensor remains in contact with its area of the scalp as the head moves.
- 96 slots for holding sensors.
- Adult helmet: 54 cm < head size < 61 cm (96 sensors).
- Child helmet: 49 cm < head size < 54 cm (89 sensors).
- Weight without sensors: 420 grams (adult), 400 grams (child).



## Integration With Other Systems

Digital trigger channels for synchronization with other neurophysiological modalities:

- 16 trigger input lines allowing for  $2^{16}$  trigger codes.
- Up to 24 output trigger lines, TTL 0 to 5 V on DB25 connector.
- 1 video input and 2 video outputs (Display port).
- Stereo audio I/O (3.5 mm jacks).

There is support for synchronization with other neurophysiological modalities:

- 8 bipolar (or 16 unipolar) electrical input channels for EEG, EMG, ECG and EOG recording.

## User Interface & Acquisition Software

Embedded proprietary control and data acquisition software.

- User-friendly graphic interface providing:
  - Automatic start of the system and visual control on sensors status.
  - Easy settings of acquisition and visualization parameters.
- Pre-defined or custom sensors layouts.
- 3D visualization of auto-localization of 3-axis sensors.
- Online, real-time, visualization of the signals, with sampling rates from 100 up to 6000 Hz.
- Online low-pass, high-pass, band-pass and notch filtering.
- Online display of triggers with their event codes.

System data output file format: standard **fff**, compatible with MNE-Python.

The system allows real-time acquisition and the exchange of MEG signals by means of a low-level C++ API.

## Use & Storage

- Environment of use: indoor medical facility, altitude < 2000m.
- Operating temperature range: 15°C to 30°C.
- Storage and transport temperature, non-condensing: 0°C to 40°C.
- Humidity: 0-70% RH.
- Device lifespan: 10 years.

**The FYNA Research® system is for Research use only.**





MAG <sup>4</sup>He alth



[www.mag4health.com](http://www.mag4health.com)  
[contact@mag4health.com](mailto:contact@mag4health.com)

