



## OPM-MEG SYSTEM

Quantum-based sensor technology revealing the dynamics of brain activity

MAG4Health Optically Pumped Magnetometer (OPM-MEG) system is based on proprietary Quantum Technology to enable reliable monitoring at room temperature of the tiny magnetic fields of the brain.

Capturing in real-time the full spectrum of brain dynamics of multiple brain regions to assess how the brain processes information with functional connectivity.

A tri-axial sensor array solution to guarantee full brain signal recordings with a large dynamic range.

User-friendly software for real-time data monitoring and data acquisition (FIFF format).

OPM sensors open new avenues for the widespread application of MEG epilepsy, neurological disorders, Traumatic Brain Injury, and fundamental neuroscience.



Wearable helmet with a scalable number of sensors: from 16 up to 96. One size fit all (children and adult).

Tri-axis sensors (x,y,z).  
Sensitivity: 25 fT/rt(Hz) on x,y-axis.

## ROOM TEMPERATURE OPERATION

The MAG4Health OPM-MEG System operates at room temperature, making it neither cooled, nor heated, as opposed to cryogenic MEG and alkali OPM-MEG systems. Designed *for clinical use (long-term recordings, no downtime of the system)*

## LARGE DYNAMIC BAND

The MAG4Health OPMs cover the large spectrum of the brain electrical activity (up to 2000 Hz).

## HIGH DYNAMIC RANGE

The Helium-based OPM-MEG offers a large dynamic range (+/- 200 nT), resulting in reduced requirements in magnetic shielding and improvements in susceptibility to background magnetic noise.

## DIRECT CONTACT WITH THE SCALP

Due to no thermal restraints, as required with other OPM systems, the MAG4Health sensors can be placed in direct contact with the scalp, resulting in higher signal to noise ratio (SNR).

	<b>4He OPM (MAG4Health)</b>	<b>Alkali OPM</b>
Power dissipated by a 50 sensors net	1 W	35 W
Sensors dimensions	19 x 19 x 50 mm	16,6 x 20 x 27 mm
Cell offset from the scalp	1 – 3 mm	5 – 7 mm
Bandwidth (frequency band)	DC – 2000 Hz	1 – 130 Hz
Dynamic range (magnetic field environment in operating)	Up to 200 nT	8 nT
Accuracy	Closed loop on 3 axes	Closed loop on one axis/Open loop on the others
Reliability	Only gas cell and optical length into sensors	Instability due to embedded-heater, laser source and alkali atoms reactivity
Helmet and Sensors localisation	Flexible Helmet, Sensors auto localisation	Rigid Helmet, Sensors self-localized from factory
Lifespan/longevity	~10 years	2 years

