



Opening **NEW FRONTIERS** in clinical and research MEG



CURRY is the European Epilepsy consortium's standard analysis platform

Pending regulatory clearances

LifeSpan Functional Imaging from Children to Adults

Innovative Advantages:

- Patented, two-in-one MEG system with dual-helmet dewar
- High signal-to-noise ratio DROS SQUIDS
- Both helmet acquisition (hyperscanning) enabled
- Single-helmet, either adult or pediatric, option available
- Simultaneous, interference-free, high-density EEG
- Zero-loss helium recycling with 24/7 uptime
- Powered by the CURRY™ neuroimaging platform, the world's standard software for MEG/EEG analysis
- Real-time video archiving



DUAL HELMET MEG

ORION LIFESPAN™ MEG

Our unique sensing system advantages

- The Compumedics Neuroscan Orion LifeSpan™ MEG system uses new generation high-sensitivity, axial gradiometers with increased SNR for superficial and deep sources
- Patented SQUID sensor type: double-relaxation oscillation, DROS SQUID
- Average sensitivity: better than 3 fT_{rms}/√Hz (@ 100 Hz)
- Sampling rate: up to 10 kHz for all channels with resolution of 24 bits
- 32-256 channels of integrated simultaneous EEG, plus 4-8 bipolar/ auxiliary analog channels

Our hardware advantages

- The unique Orion LifeSpan™ is comprised of a patented rotating dual-helmet dewar for adult and pediatric patients (adult/adult, pediatric/pediatric and single helmet options available)
- 186/138 adult/pediatric sensors*; plus six environmental noise reduction reference channels for each helmet
- For Hyperscanning/simultaneous measurement from both helmets, dewar position will be fixed and the MSR will be sized differently (e.g., 4.5 m (L) x 2.8 m (W) x 2.3 m (H))
- Specially designed adjustable bed system for adult and pediatric patients
- Closed-loop helium-recycling minimizes operating costs & maintenance requirements
- Smaller electronics footprint for reduced lab space & power use

*Up to 250/200 adult/pediatric MEG channel option available

NeXus 360 full cloud-integration enabled

Access and store your data in a proven secure and scalable cloud solution.
Features collaborative research and clinical HIPPA (patient data security compliance).

2 MEGs in 1 MSR

Maximizes ROI
Minimizes Footprint
Minimizes Costs

ZERO-LOSS HELIUM RECYCLING

Continuous Recycling
24/7 MEG Operations
Lower Operational Cost

186/138

Adult / Pediatric
Axial Gradiometers
System Standard

UP TO 256 FULLY SYNCHRONIZED EEG CHANNELS

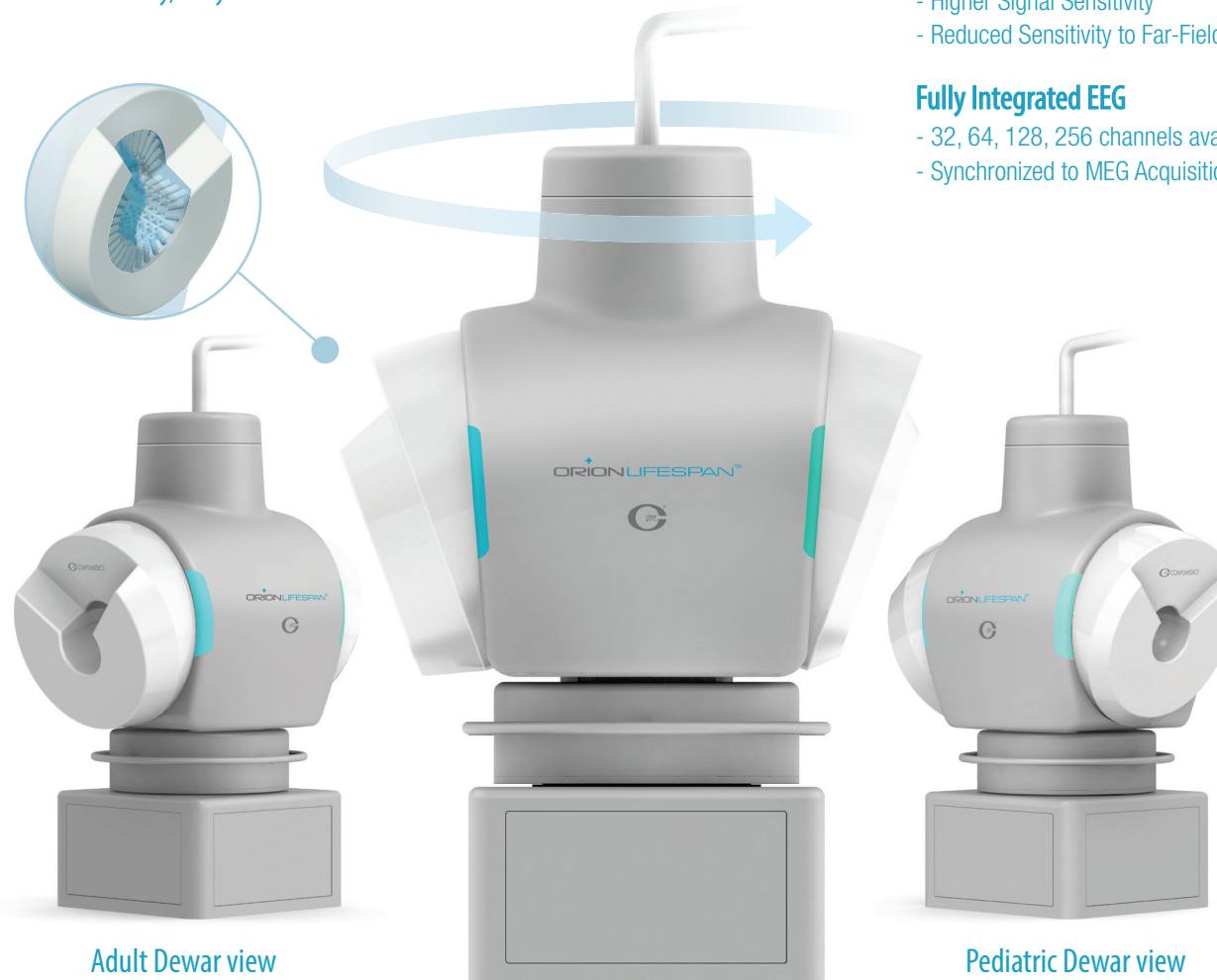
250/200 MEG

Optional Adult / Pediatric
Axial Gradiometer System
Single Helmet Configuration
Options Available

Orion LifeSpan™ Key Advantages

Patented Dual Helmet Rotating Adult/Pediatric Dewar

- Two MEG Systems in One MSR / Minimizes Footprint
- Orion MEG Optimizes Acquired Data Quality Across Lifespan
- Increased Patient Population/Maximizes Return on Investment
- Facility to Record From Both MEG Helmets
Simultaneously, Fully Enabled



Integrated Zero-Loss Helium Recycling

- 24/7 system availability
- Minimizes Operating Costs
- Minimizes System Maintenance

CURRY™ Software Fully Integrated

- Clinical MEG Standard
- World/Industry Standard Source Analysis
- Extensive Pre-Surgical Planning

Patented SQUID Sensing System

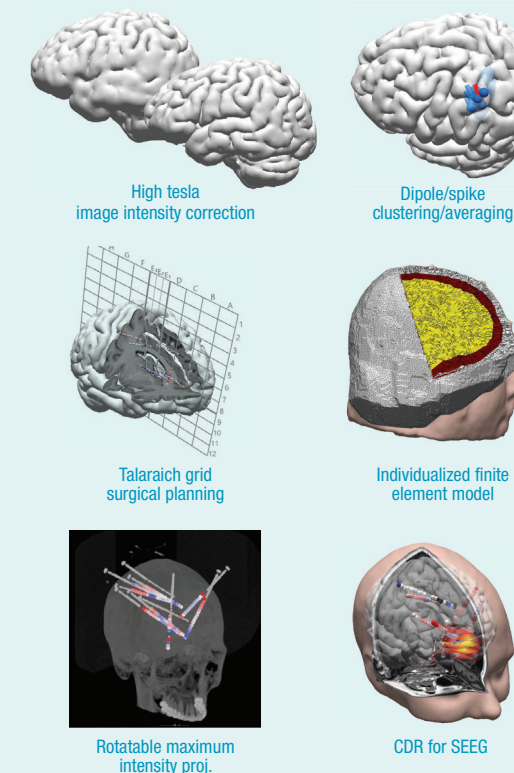
- 2nd Generation DROS Axial Gradiometer
- Higher Signal Sensitivity
- Reduced Sensitivity to Far-Field Noise

Fully Integrated EEG

- 32, 64, 128, 256 channels available
- Synchronized to MEG Acquisition

CURRY™ Acquisition and Analytics Software Platform Advantages^

- Simplified user interface
- Co-registration of EEG & MEG, with MRI, fMRI, CT, SPECT, PET, DTI
- CURRY integrated with STIM2, including eloquent cortex evaluation
- Integrated synchronized video
- Individualized head models for MEG, EEG and combined analysis including both individualized BEM and FEM
- Complete dipole, CDR, statistics modules
- User-friendly pre-surgical planning module
- Maximum memory access for rapid processing of large data files (64 bit native application)
- Suitable for all applications (research, clinical)
- Enhanced connectivity with other hardware and software (e.g. Free Surfer, Matlab™)
- sEEG analysis module



^ - Optimized for 64-bit, Windows OS 10

Magnetoencephalography (MEG) and CURRY™ - A long history together

The CURRY NeuroImaging platform and MEG have a history stretching back over 30 years. CURRY was first conceived as a product in the late 1980's when Philips Electronics investigated the feasibility of developing its own MEG hardware platform. Ultimately, the hardware platform was not released commercially, but the software development, along with its core engineering architects, Dr. Manfred Fuchs and Dr. Michael Wagner, continued. When Philips exited the MEG business, CURRY and the development team were purchased by Neuroscan. At that time, the UNIX-based CURRY platform appealed more to the research community than to the clinical market. By 1999, studies were published describing the application of CURRY for cortical localization of auditory, visual, and tactile stimulation, based on evoked EEG and MEG activity.

Importantly, "novel developments" and "new approaches to detailed localization of specific epileptic discharges" as well as identification of functionally critical areas of the brain controlling language and memory using CURRY, were also described in the clinical literature. Processing algorithms have also been validated for evaluation of mild to severe traumatic brain injury.

The migration of CURRY from the UNIX to Windows platform in 2003 facilitated a rapid expansion of the use of CURRY in both the research and clinical communities.

The benefits associated with CURRY's ability to integrate MEG with EEG and co-register these high temporal resolution functional imaging data with structural neuroimaging data including MRI, CT, DTI, PET, SPECT and fMRI accelerated the adoption of the software for both research and clinical applications. Early clinical adopters, such as Dr. John Ebersole, supported and championed the benefits of source localization tools such as CURRY, contributing to the development of specific source analysis billing codes for EEG and MEG.

For a long time, CURRY has been the industry-standard software platform for clinical MEG community, particularly for those assessing epilepsy. This has culminated in the adoption of CURRY as the standard analysis platform by the European Epilepsy Consortium.

For the CURRY team, integrating CURRY with the KRISS MEG hardware represents a full circle of development. With long-term future development plans for both hardware and software, CURRY MEG will offer a continuous growth of benefits facilitated by the first fully integrated platform supporting multi-modal neuroimaging of EEG, MEG, including co-registration and source reconstruction from a single provider.

Orion LifeSpan specifications**

SQUID gradiometer

SQUID sensor type:	Double relaxation oscillation SQUID (DROS) with largest voltage output
Material:	Based on reliable Nb/AlO _x /Nb junction technology
Feedback:	External feedback to eliminate inter-channel crosstalk
Heater:	Integrated Pd thin-film heater to remove trapped flux
Pickup coil:	High-balancing first-order axial gradiometer baseline 50 mm; Adult winding 1:1 (20 mm diameter), Pediatric winding, 2:2, (16 mm diameter)
Average sensitivity:	Better than 3 fT _{rms} /√Hz (@ 100 Hz)

Insert

Standard coverage:	186 channels for adults/138 pediatric
Max sensor coverage:	250 channels for adults 200 channels for pediatrics
Reference channels:	6 channels per each helmet
Sensor-in-vacuum:	Direct gradiometer array mounting onto helmet dewar for vibration-free function
Field component:	Measurement of dBr/dr (r-axis is normal to local head surface)

Dewar

Dewar structure:	Two helmets for adult and pediatric
Dewar positioning:	Twenty degree inclination for comfort 180 degree rotation to switch between adult and pediatric position
Helium reliquification:	Continuous operation with 24/7 uptime
Tail thermal gap:	< 20 mm

SQUID electronics

Flux-locked loop:	DC bias, direct readout (no modulation)
Control:	Automatic control of SQUID operation using Interference-free optical fiber-based control
Bandwidth:	DC to 2 kHz based on sampling rate

Acquisition workstation (1) / Analysis workstations (2)

A/D conversion:	Max 10 kHz/channel, DC-2 kHz maximum passband for MEG and EEG, 24 bit resolution Synchronized EEG acquisition, 32-256 channels
Computer:	Workstation computers/32-inch color LCD monitor Nvidia graphics card (3D Stereoscopy)**
CPU:	3 GHz, Intel i7 Windows-based, 16 GB RAM
Mass data storage:	1 terabyte SSD main drive & secondary drive**

Real-time archivable synchronized MEG/EEG and video

Software function (CURRY NEUROIMAGING SUITE)

- System control of SQUID operation, FLL (offset voltage, integrator)
- Real-time display of MEG signals/EEG Signals
- Signal processing of baseline correction, digital filtering, artifact suppression, manual/automated event marking
- Dipole and CDR source modeling
- Pre-surgical planning
- Stimulus delivery**
- STIM2 with auditory, visual, electric stimulation
- NDI KRIOS camera-based electrode/sensor digitization

Measurement accessories

Head position monitor:	5 circular coils integrated with EEG Cap
Patient monitor:	1 CCD camera and 1 LCD monitor
Communication:	Voice communication using a noise-free microphone and speaker

Magnetically shielded room

Structure:	2-layer mu-metal and 1-layer aluminum
Inner dimensions:	4 m (L) x 3 m (W) x 2.4 m (H), may be modified upon site evaluation. Wall thickness of 200-250 mm.
Door:	No door threshold (equal height with measurement room)
Shielding factors:	40 dB @ 0.1 Hz, 70 dB @ 10 Hz
Illumination:	Low-noise DC lighting

** Delivered systems will have equal or better specifications



Australia • USA • Germany • France

Specifications subject to change without notice.
Please contact your Compumedics Neuroscan representative for the latest technical information, product availability and pricing.
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