



PORTABLE ELECTROPHYSIOLOGY

Simultaneous Stimulation and Recording for any Environment

Powerful electrophysiology in a lightweight and portable package. Ripple Neuromed's Nomad processor provides you with up to 512 channels of simultaneous recording and stimulation. A truly modular system, the Nomad can record multi-modal electrophysiological signals of uncompromising quality with specialized Front Ends. On-board processing and advanced APIs provides the flexibility for any application. Easily setup in minutes, the Nomad can quickly transition between the laboratory and the hospital.



- ECoG
- sEEG
- EMG
- DBS
- PNS
- CORTICAL MAPPING
- ONBOARD PROCESSING
- CLOSED-LOOP STIMULATION
- CUSTOM APPLICATIONS

FEATURING

Simultaneous stimulation and recording: The Explorer Nomad is capable of both recording and stimulating on every channel without any changes in connections. With a switching time of less than 1ms, you can see the stimulation-evoked neural activity. Drastically reduce cortical mapping time by automatically switching between recording and stimulating.

Small and lightweight for mobility: Weighing only 700 grams, the Nomad fits in the palm of the hand. Ideal for environments where space is limited, like the OR, the system can be transported and setup quickly and easily.

Wireless communication and operation: Eliminate the cables and stream data wirelessly from the Nomad to one (or more) computers. A built in battery and on-board storage gives you hours of untethered recording. Whether you need to give your subjects the freedom to move during long-term recording or simplify setup in a busy environment, the Nomad puts you in complete control, even from afar.

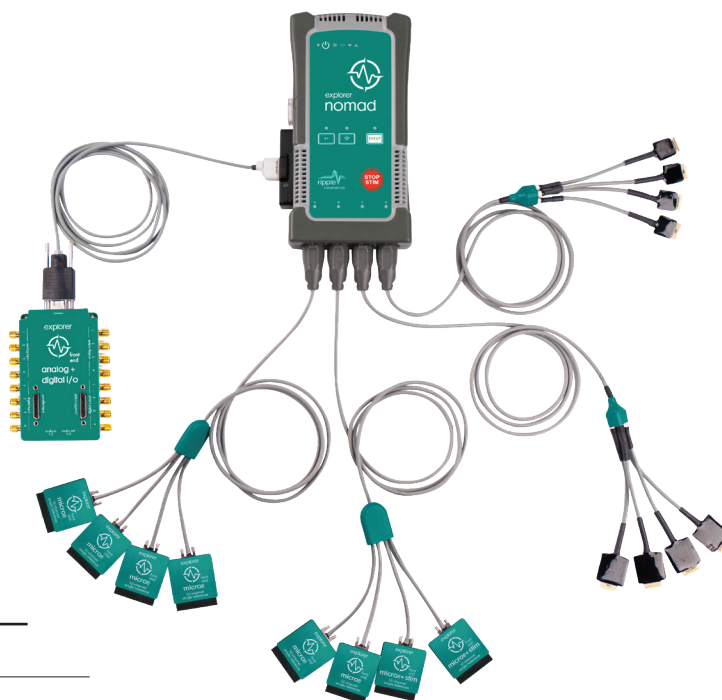
Onboard processing for customizable operation: The Nomad offers an open architecture by supporting third-party code to be run directly on the processor. This functionality enables custom, real-time data processing and streaming with low latency. Our advanced APIs provide complete flexibility with an easy to use programming library. Completely customize the function of the front buttons for stand-alone operation to fit your unique research and clinical applications.

Complete control over stimulus waveforms: Offering more than simple pulses, easily implement custom, novel, and arbitrary stimulation waveforms. Using the Nomad's on-board processing, stimulation can be triggered or modulated on-the-fly, allowing for stimulation based on physiological or behavioral signals. Minimal latency makes it ideal for applications such as epilepsy disruption, closed-loop deep brain stimulation, brain computer interfaces, and similar biofeedback-based applications.

Modular Design and Specialized Front Ends: Customize the system for your specific needs with the Nomad's modular architecture. Add or remove Front Ends to record a variety of electrophysiological signals with the Nomad. Available Front Ends include: The Micro2 line for high-resolution recording and micro-stimulation; they are particularly suitable for high impedance, invasive electrodes. The Macro line for high current stimulation, with recording specifications ideal for ECoG or other low impedance electrodes. The Physio true differential Front End is ideal for EMG, ECG, and similar recordings. The EEG line for noninvasive recording and tES stimulation. Interface with any necessary external devices using our Analog and Digital I/O modules.

Ease of use without sacrificing power: Start recording in just a few clicks with the Ripple Neuromed's Trellis software. Compass automatically detects your connected hardware and offers a common configuration that you can fully customize. An advanced GUI allows you to fine-tune your experiments with ease, and continuously build upon your experiments using our APIs without sacrificing your recording configurations.

Unmatched Warranty and Customer Support: Explorer processors come with an industry leading two-year warranty. All devices are designed and manufactured in-house to conform to our strict quality controls, and to ensure rapid delivery and service lead times. Explorer systems also come with a lifetime of support from Ripple Neuromed's renowned support team.



SPECIFICATIONS

Nomad Processor

Channels	up to 512
Dimensions	183 mm x 95 mm x 36 mm
Weight	700g
Analog I/O	up to 28 Inputs and 28 Outputs
Digital I/O	up to 20 Inputs and 20 Outputs, plus 2 Strobes
Battery Life	Internal, up to 2 hours External, up to an additional 6 hours

PC Communication Gigabit Ethernet or Wi-Fi

Stimulation

Current Range	$\pm 15\text{mA}$ (Macro) $\pm 1.5\text{mA}$ (Micro2)
Compliance Voltage	$\pm 9\text{V}$ to $\pm 30\text{V}$ (Macro, configurable) $\pm 8.5\text{V}$ (Micro2)
Pulse Width Min	$33.3\mu\text{s}$ (Macro) $1\mu\text{s}$ (Micro2)
Frequency	DC to 15kHz

Recording

Resolution	24-bit (Macro) 16-bit (Micro2)
Inferred Noise	$<1 \mu\text{Vrms}$ (Macro) $2.1 \mu\text{Vrms}$ (Micro2)
CMRR	110 dB (Macro) 82dB (Micro2)
Sample Rate	7.5 ksps (Macro) 30 ksps (Micro2)
Input Range Max	$\pm 2 \text{V}$ (Macro) $\pm 12\text{mV}$ (Micro2)
Bandwidth	DC to 2kHz (Macro)

The Nomad is designed to meet relevant safety and electrical isolation standards for use with human subjects under IDE or university IRB

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