

CereStim™ R96

Hardware Design

The CereStim™ R96™ is a fully programmable 96 channel neurostimulator with the capability of producing up to 16 concurrent stimuli. The biphasic current pulses are intended to stimulate neurons via a set of implanted electrodes. By interfacing the CereStim™ R96™ with a switching system for stimulation and recording, the CereStim™ R96™ is a very flexible and powerful tool for neural signals analysis.

Software Highlights

Accompanying CereStim™ 96 is Stim Manager Software and SDK. Stim Manager functions in two operating modes, Manual Mode and Program Mode. C++ API programming is included to allow custom-built output configurations.

Default settings for Stim Manager Software allow for single stimulation applications. The user selects an electrode from the Electrode Array Panel (1-96), and creates a custom stimulus in the Waveform Panel. The Waveform Panel allows the user to define single stimulation parameters by defining individual phases including polarity, number of pulses, inter-phase delay, amplitudes, phase width, and frequency levels.

Program Mode allows the user to send multiple stimulations to different electrodes and create custom stimulations and interleave channels.



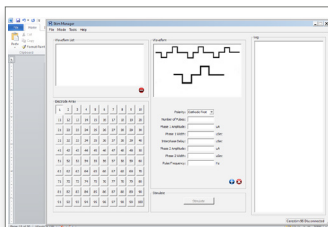
Key Features

Hardware

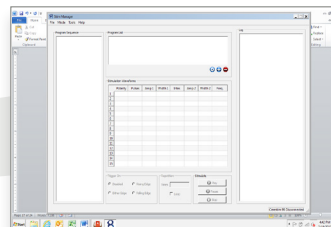
- » 96 output channels
- » Up to 16 simultaneous stimuli
- » Output 1 μ A - 10 mA \pm 9.5 V per channel
- » (TTL) Triggering and syncing capabilities
- » Fast switching between electrodes
- » Compatible with low and high impedance electrodes

Software

- » Intuitive GUI control via PC USB
- » Full API via C++ SDK and MATLAB
- » Compatible with Windows 7 (32/64 bit)
- » Ability to create and store custom waveforms, and stimulation programs



Manual Mode



Program Mode

CereStim™ R96

Specifications

Number of Output Channels	96	Polarity	Anodic or Cathodic First Selection
Maximum Number of Current Modules	16	Stim Manager PC Software Compatibility	Windows 7 (32-bit or 64-bit)
Output Current Macro	100 μ A - 10 mA / 100 μ A increment	APIs	Matlab or C++ x86 & x64 versions
Output Current Micro	1 - 215 μ A / 1 μ A increments	Scripting ability	Create custom stimulation protocols and biphasic waveforms
Maximum Output Voltage	\pm 4.7V to \pm 9.5V, adjustable in 0.6V increments	Slew Rate	550 V/ μ s
Phase Width Range	44 μ s-65,535 μ s	Analog Resolution	12 bits
Interphase Width Range	53 μ s-65,535 μ s	TTL Trigger	Input Low < 0.8 V Input High > 3.0 V
Stimulation Frequency	4 Hz - 5 kHz	TTL Sync	Input Low < 0.8 V Input High > 3.0 V
Recommended Electrode Impedance	Micro < 100 k Ω Macro < 5 k Ω	Recommended Electrode Impedance Macro	< 5 k Ω
Train Pulses Range	1-255	Recommended Electrode Impedance Micro	< 100 k Ω

Complete CereStim™ R96

Compatibility

The CereStim™ R96 is fully compatible with any of the following Blackrock Microsystems products:

- » Stim Switch™ System
- » Cerebus™ Data Acquisition System
- » HSF Stim 32 Headstage

