CEREBUS STIM SWITCH
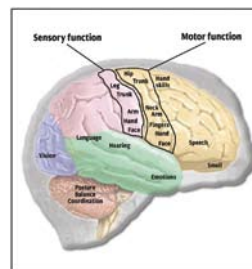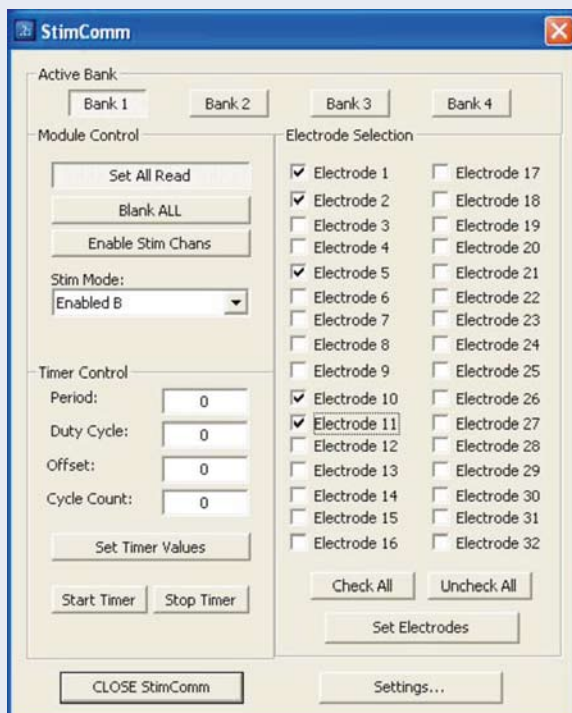
- >> Antidromic stimulation
- >> Closed-loop optimization of deep brain stimulation
- >> Pain modulation
- >> Functional brain mapping

The Cerebus Stim Switch provides unprecedented electrode-switching control for neural stimulation applications by enabling high-quality neural recordings (spikes, field potentials) immediately after stimulation. The Stim Switch is as an add-on module for the Cerebus data acquisition system. It allows researchers to programmatically switch individual electrodes between a stimulation source and the recording electronics. Each Stim Switch headstage module can switch up to 32 electrodes. Multiple modules can be combined for switching up to 256 electrodes. Switch control is accomplished using the provided StimComm GUI or by external gating (TTL) with a 3rd-party control system.

1   **Stim Switch Control Module** – Interfaces Headstage Module with the control computer and analog stimulation sources

2   **Stim Switch Headstage Module** – digitally-controlled solid-state switches for connecting electrodes to stimulation sources or recording electronics

3   **Functional Brain Mapping** – Identify eloquent regions such as those associated with motor, sensory, and cognitive functions

4   **Antidromic Stimulation** – Determine if a synapse exists in the neural pathway under study

Stim Switch Software

Key Features

- >> Fast switching between stimulate and record modes
- >> Switches up to +/- 15 V, 30 mA per channel
- >> Available in 32-256 channels in 32-channel increments
- >> Interfaces with low- and high-impedance electrodes
- >> Ensures high-quality neural recordings immediately after stimulation
- >> Real-time stimulus artifact rejection
- >> Compatible with monopolar and bipolar stimulation paradigms
- >> GUI software-control (StimComm) via PC serial port
- >> Hardware (TTL) control
- >> BNC or high-density connector interface to 3rd-party stimulation source

CEREBUS STIM SWITCH

BLACKROCK™
MICROSYSTEMS

Specifications

Stimulation Inputs	< 1 kΩ (@ 1 kHz) impedance between input and output when stimulation mode is enabled. > 10 MΩ (@ 1 kHz) input impedance when stimulation mode is disabled
Recording Outputs	< 1 kΩ (@ 1 kHz) between input and output when read mode is enabled. > 10 MΩ (@ 1 kHz) output impedance when read mode is disabled
Minimum Switching Time	< 300 µs when using the Enable In input to switch between modes; 1 ms when using StimComm software to switch between modes
Maximum Cerebus Front-End Amplifier Recovery Time	< 3 ms
Maximum Stimulation Input Current	30 mA on any one channel
Maximum Stimulation Input	Voltage Range: ±15 V between any input and ground on any one channel
Enable In Input Voltage Range	-0.1 V to +5.0 V
Multi-Stim Switch (> 128 channels) Synchronization	<1 µs skew when using the Enable In input for synchronization
PC Hardware Interface	RS-232 I/O port (DB-9) with 115k baud data rate
StimComm PC Software Compatibility	Windows 2000 Pro, Windows XP Pro, or Windows Vista
Internal Power Supply	Standard 3-pin PC power connector accepting 110-240 VAC, 50-60 Hz
Emergency Off Switch	¼" Mono Phone Plug, Normally Open Switch with < 1 kΩ on resistance recommended

Complete Cerebus Stim Switch System:

1 Cerebus Stim Switch control module
1 Power cord
2 Rack mounting ears and 4 screws
4 Rubber mounting feet
1 StimComm software CD-ROM
1 Cerebus Stim Switch manual
1 USB Quad Serial Adapter
1 USB quad serial driver installation CD
1 USB A-B cable
1 DB9 serial cable
1 Headstage module
1 Headstage module cable
 (50 Conductors, 3ft long)