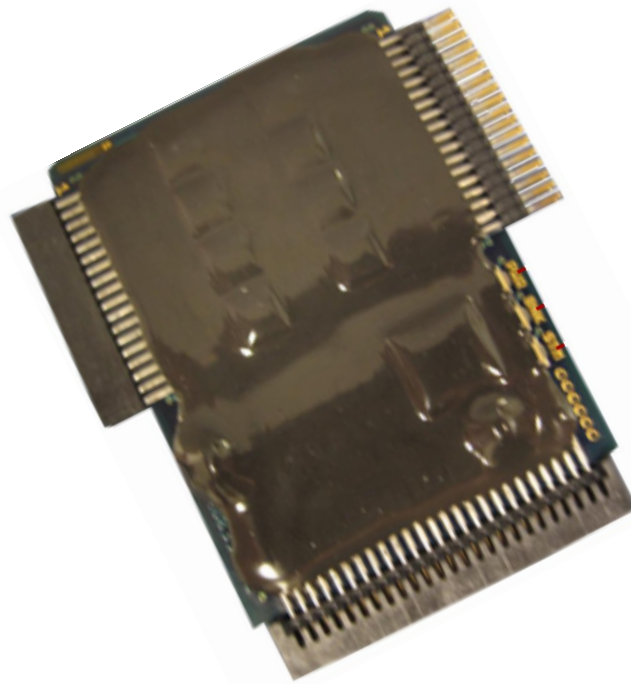


Blackrock Capacitively Coupled Stim Switch Headstage Instructions for Use

PN 8035



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INVESTIGATIONAL DEVICE

Limited by Federal Law to Investigational Use Only

1 System Overview

The Cerebus Stim Switch provides unprecedented electrode-switching control for neural stimulation applications by enabling high-quality neural recordings immediately after stimulation. The Stim Switch is designed as an add-on module for the *Cerebus data acquisition system. It allows researchers to programmatically switch individual electrodes between a stimulation source and a Cerebus front-end amplifier. The figure below shows an application overview of how a Cerebus Stim Switch fits into a complete stimulation system.

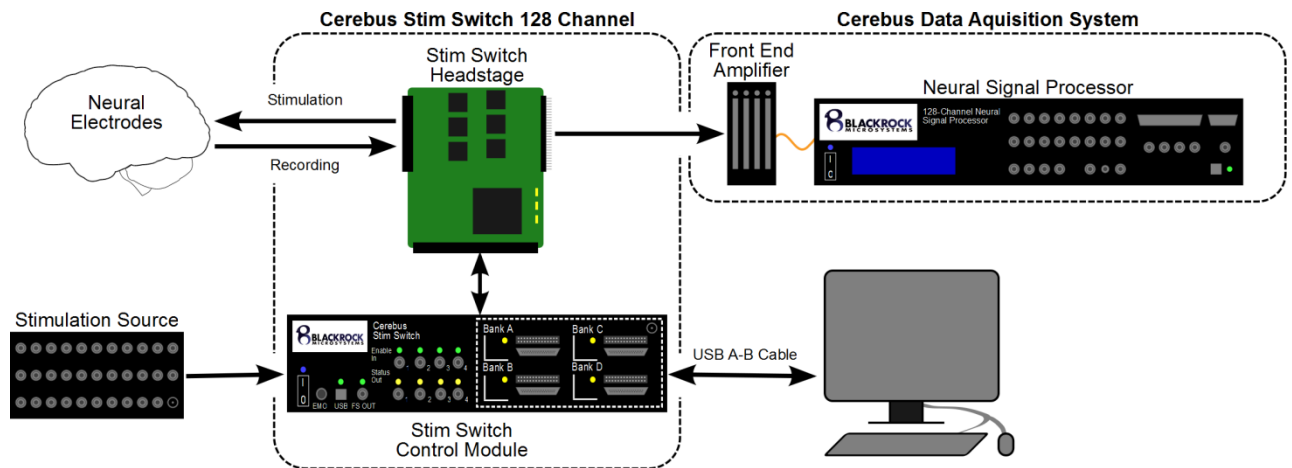


Figure 1: Application Overview

* Blackrock Cerebus System sold separately.

2 Hardware

2.1 Blackrock Capacitively Coupled Stim Switch Headstage

The Headstage Module provides connection between the Cerebus Front End Amplifier, the electrodes, and the Stim Switch. LEDs on the module indicate power (1), blanking enabled (2), and stimulation enabled (3).



The Headstage Module is connected to the Stim Switch with the Headstage Module Cable. **The power switch on the Stim Switch should always be turned off prior too connecting or disconnecting the headstage module cable.**

The Headstage Module is built around connectors from Samtec and is designed to mate with the ICS family of array holders from Blackrock Microsystems. Please refer to the Cerebus User Manual or contact a Blackrock sales reперesentative for more information on the differnct connectors available for use with the Stim Switch Headstage module.

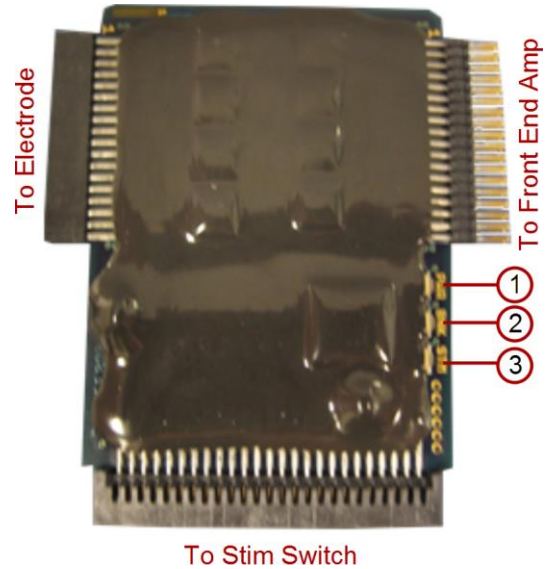


Figure 2: Stim Switch Headstage Module

Each Channel on the Headstage Module is rated for a maximum voltage of ± 15 V with respect and ground and can source or sink a maximum of 30 mA of current. The diagram on the right illustrates the internal connections of a single channel in the Headstage Module. The Amplifier Blanking Switch is closed during Read mode and open during Stimulation and Blanking modes. The Stimulator switch is only closed when the Headstage Module is configured in Stimulation mode and the channel has been selected for Stimulation using the StimComm software. The table below defines the state of each switch for a single channel for any given set of inputs.

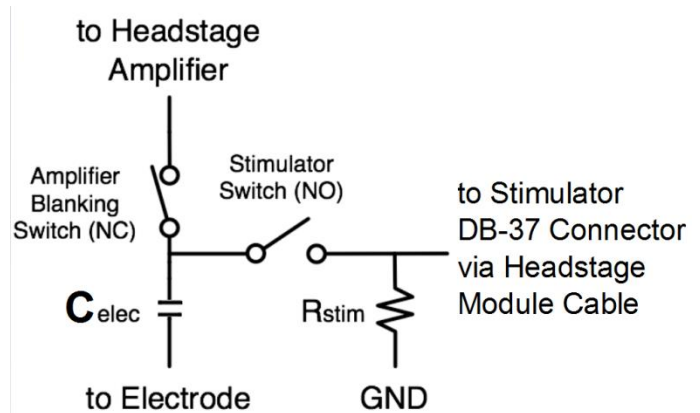


Figure 3: Switch Schematic.
 $R_{stim} = 500 \text{ M}\Omega$ and $C_{elec} = 2000 \text{ pF}$

Table 1: Headstage Module switching states

Channel State	Amplifier Blanking Switch	Stimulator Switch
Read	Closed	Open
Blanking	Open	Open
Stimulation (channel not set for stimulation)	Open	Open
Stimulation (channel set for stimulation)	Open	Closed

3 Warranty

Blackrock Microsystems, LLC warrants that its products are free from defects in materials and manufacturing for a period of one year from the date of shipment. Blackrock will, at its option, repair or replace any product that does not comply with this warranty. This warranty is voided by:

1. Any modification or attempted modification to the product done by anyone other than an authorized Blackrock employee
2. Any abuse, negligent handling or misapplication of the product.

This constitutes the sole warranty made by Blackrock, LLC. There are no other warranties, expressed or implied, which extend beyond those described herein or to anyone other than the original purchaser, including the implied warranties of merchantability and fitness for a particular purpose. In no event shall Blackrock Microsystems, LLC be liable for any incidental or consequential damages, or for the infringement of any patent rights or third party rights due to the use of its products.

3.1 Return Merchandise Authorization (RMA)

In the unlikely event that your adapter needs to be returned to Blackrock for repair or maintenance, do not send any equipment back without a Return Merchandise Authorization Number. An RMA number will be issued to you by a Blackrock representative. If you need to obtain an RMA number, you may contact a product support representative at (801) 582-5533 or toll free at (866) 806-3692.

Once an RMA number has been issued, it is important to safely pack the returned item for shipping back to Blackrock. It is preferred that you save the original boxes and packing materials that your system arrived in for return shipment. Please address the package as follows:

Blackrock Microsystems, LLC
ATTN: RMA#
391 Chipeta Way, Suite G
Salt Lake City, UT 84108 USA
Tel: (801) 582-5533