Blackrock CerePlex E

Instruction for Use

PN-8010

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Table of Contents

1 Warnings, Cautions, and Specifications 3

1.1 Warnings 3
1.2 Cautions 3
1.3 Specifications 3

2 Introduction 4

3 Hardware 5

3.1 Blackrock CerePlex E Pin-out 5

4 Instruction for Assembly 6

5 Switches 6

6 Filament Film Replacement 7

7 Pedestal Preparation and Hygiene Recommendation 7

8 Cleaning the plug 8

9 Warranty 8

9.1 Return Merchandise Authorization (RMA) 8

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1 Warnings, Cautions, and Specifications

1.1 Warnings

- Do not touch any exposed electrical conductors when the CerePlex E connector is attached to devices on subject's head as this may result in inducing electric charge to the neural tissue. Irreversible damage may occur.
- The CerePlex E is NOT to be used for stimulation.
- The patient/subject should not attempt to remove the connections themselves.
- Use caution when connecting and disconnecting the Cable to the CerePlex E to minimize the risk of the cable being accidently pulled or tugged.
- Do not use the CerePlex E in the presence of flammable anesthetic agents or any other reagents.
- Avoid strong static discharges from sources like television or computer monitors because it can damage the electrical components of the system.
- Keep the CerePlex E away from liquids. Contact with water, shower spray, or wet surfaces can lead to the patient receiving an electrical shock.
- Connection of external instruments to the CerePlex E may compromise electrical safety.
- Always use antistatic or electrostatic discharge (ESD) safe gloves when connecting the CerePlex E.
- Use only the supplied Blackrock Microsystems components (Cerebus™ system, Digital Hub128, CerePlex E Cable). Substitution of components not supplied by Blackrock Microsystems may affect system performance and patient/ subject safety.
- Do not leave the patient/subject connected to the CerePlex E when the Cerebus™ System is not in use.
- Use caution when placing cables and other connectors to minimize the likelihood of tripping or accidentally pulling on cables. Pulled cables may cause damage to the CerePlex E or any other connected devices.

1.2 Cautions

- Read this entire manual prior to using the device.
- This product is for animal research only.

1.3 Specifications

Model Name	Blackrock CerePlex E
Power Requirements	+5 VDC, 150m Amps maximum load
Resolution	16-bit
Sampling Frequency	30ksps
Mode of Operation	Continuous
Input Frequency Range	0.3 Hz – 7.5k Hz / 0.05 Hz – 10K Hz (User selectable)
Input Impedance Range	5kΩ – 1MΩ
Maximum Input Range	± 6mV with respect to reference
Water Ingress Protection	Ordinary Equipment, not fluid resistant, IP20
Operating Environment	10˚C to 40˚C, 5 to 95% R.H. (non-condensing)
Storage Environment	-20˚C to 50˚C, 5 to 100% R.H. (non-condensing)

2 Introduction

The Blackrock CerePlex E provides an interface between the Cerebus Bio-potential/CerePlex Direct recording system and up to 128-channel microelectrode arrays for high fidelity transmission and recording of extracellular spikes and local field potentials from the brain. The Blackrock CerePlex E converts analog signals to digital format right at the recording site which dramatically reduces the noise introduced to the signal during transmission. Figure 2-1 below shows an application overview of how the CerePlex E fits into a complete neural recording system.

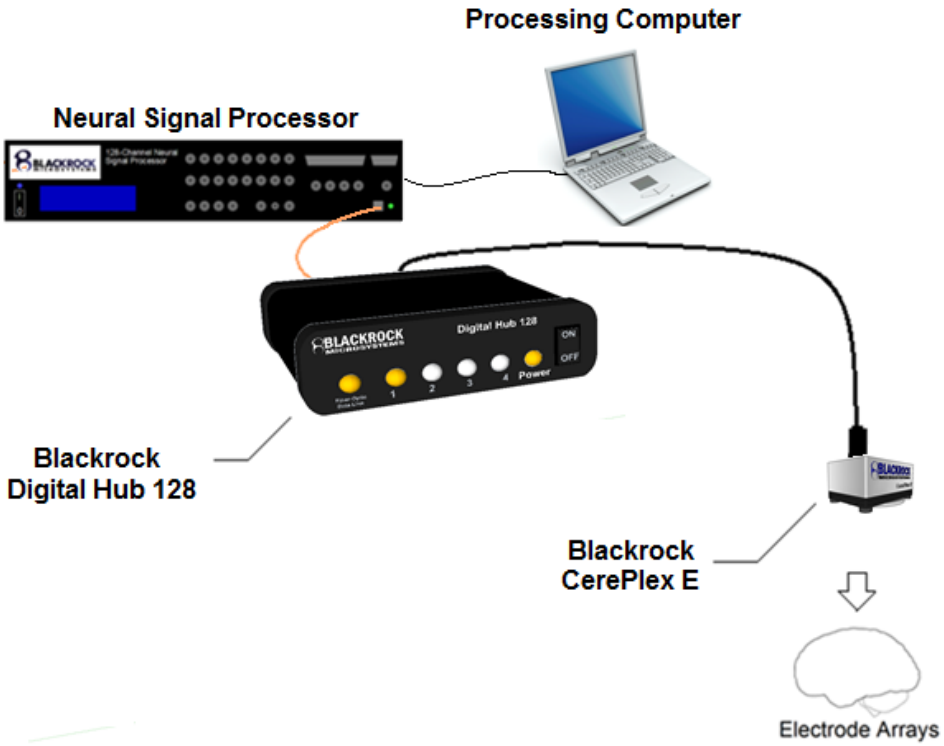


Figure 2-1: Blackrock CerePlex E Set-up

* Blackrock Digital Hub 128, CerePlex Direct and Cerebus Acquisition System are each purchased separately.

3 Hardware

3.1 Blackrock CerePlex E Pin-out

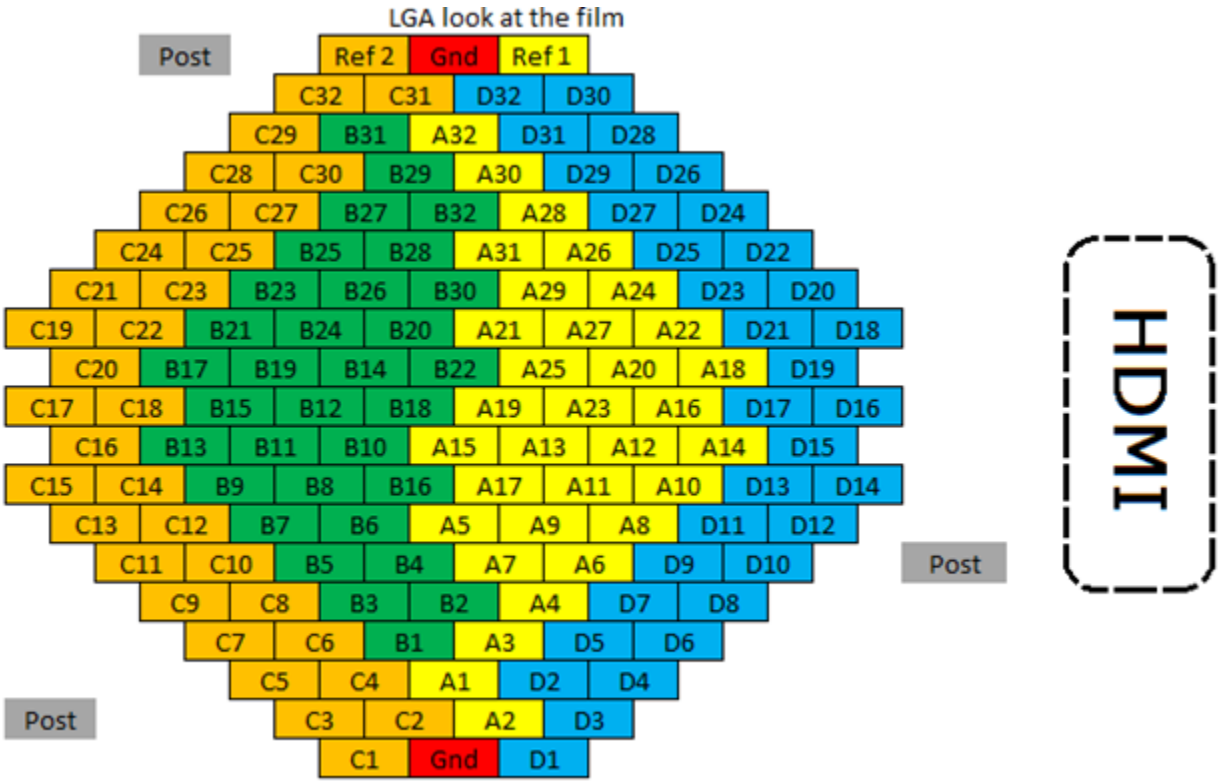
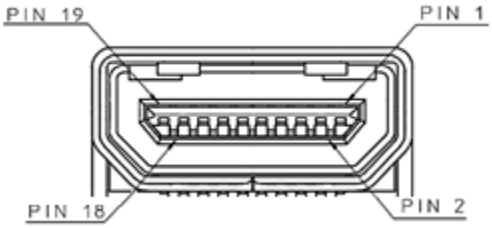


Figure 3-1: CerePlex E Input Connector Pin-Out



HDMI/D Pin #	Description
12	Clock+
14	Clock-
2	Fast Settle
1, 7	Ground
19	V+
9	Data+
11	Data-

Figure 3-2: CerePlex E Output Connector Pin-Out

4 Instruction for Assembly

1. Connect CerePlex E to the host device through an HDMI A-D cable.
2. Turn on the power of the connected host device.
3. The LED on the CerePlex E should light up as red.
4. Roughly align the guide pins with the pedestal before attaching to the pedestal.
5. Hold the CerePlex E housing with one hand and gently rotate the wheel clockwise with another hand.
6. While screwing down, slightly rotate the housing left or right until you feel it drop.
7. Once the CerePlex E is aligned with the pedestal, rotate the wheel more to secure the device on the pedestal.
8. The red LED should turn blue when the device is connected correctly.

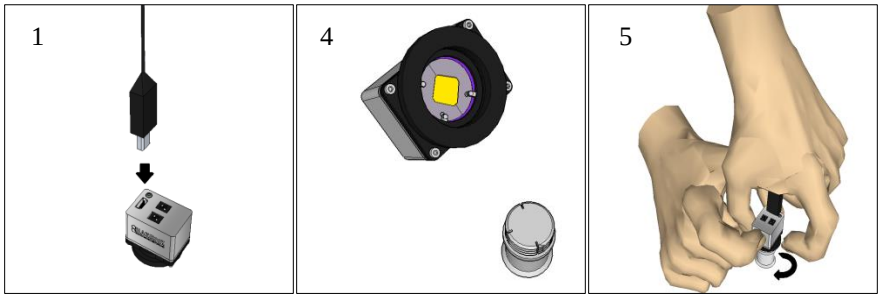


Figure 4-1: Instruction for Assembly

**After recording, turn off the power supply before any disconnection.

5 Switches

There are four switches on top of the CerePlex E.

1. Imp & Rec
   When Imp (Impedance) is selected, the headstage goes into impedance mode. To record, simply toggle the switch to REC (recording).
2. Wide & Norm
   This switch provides different filter ranges. Wide is from 0.05Hz to 10 KHz and Norm (Normal) is 0.3 Hz to 7.5 KHz.
3. REF & GND
   This switch allows the user to use different reference sources. Switch to GND (Ground), patient ground will be used as the reference. Switch to REF (Reference), R2 or R1will be used as the reference. R2 and R1 can be selected by the switch next to it.

Figure 5-1: CerePlex E Switches

4. R1 & R2
   Use this switch to select the reference connected to the pedestal. R1 is connected to REF1 and R2 is connected to REF2 as shown if figure 3-1.

6 Filament Film Replacement

1. Loosen the four screws counterclockwise.
2. Hold the bottom three plates all together and lift it away from the cover.
3. Remove the old filament film and clean the nearby area on the plate and the PCB with cotton swab and 70% alcohol.
4. Place a new filament film back. Make sure the holes on the film are aligned with the pins on the plate.
5. Place the assembly back and fasten the four screws clockwise.

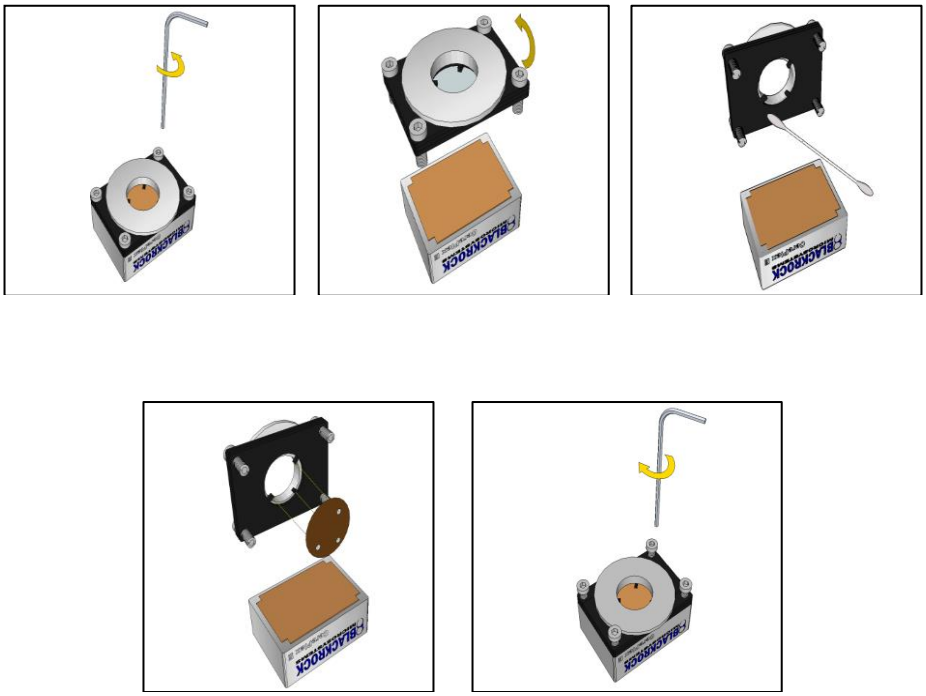


Figure 6-1: Replacing the Filament Film

7 Pedestal Preparation and Hygiene Recommendation

The pedestal site should be cleaned once every 7 days or as required. ChloraPrep and Biopatch are recommended, but not supplied.

1. Wash your hands and put on sterile gloves using sterile technique.
2. Using the tweezers, carefully remove the old Biopatch from the pedestal site and discard.
3. Take time to observe the pedestal site for clinical signs of infection such as erythema, drainage, ecchymosis, pain or unusual redness along lead tunnel or pedestal. If any clinical signs for infection are present the physician should be contacted immediately. Carefully remove the ChloraPrep applicator from the pouch and apply the ChloraPrep solution to a 1.5” diameter area surrounding the pedestal site by gently moving the friction pad back and forth while holding the applicator downward and gently squeezing the wings to release the solution.
4. After you have applied the solution to the skin, wipe down the outside of the pedestal working from the skin up.
5. Enlarge the Biopatch hole by using the scissors supplied by the kit (kept in a solution of alcohol) to allow the Biopatch to rest easily around the pedestal.
6. Place the Biopatch (allow the ChloraPrep solution to dry completely before applying the new Biopatch) around the pedestal.

The ChloraPrep is a single-dose applicator and must be disposed of after each use. The Biopatch

will be changed weekly. Refer ChloraPrep and Biopatch labels and instructions for more information.

8 Cleaning the plug

The collar assembly should be cleaned every time after use and inspected before use. Do NOT immerse the device in water or cleaning solutions. Over use of cleaning liquids might cause swelling of the filament film membrane. Filament film has been tested for 1-year of normal use. We recommend that you replace it once a year or when there is a degradation in signal quality.

Before Use:

1. Visually inspect the connector, remove any particles if present.
2. Visually inspect the film. If the film is swollen or degraded, follow section 6 “Filament Film Replacement” to replace the film.
3. If necessary, clean the connector with cotton swab and 70% alcohol. Do not allow solution to pool. Allow the solution to dry before making contacts.

After Use:

Clean the connector and the film with 70% alcohol. Do not allow solution to pool.

9 Warranty

Blackrock Microsystems, Inc. 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, Inc. 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, Inc. 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.

9.1 Return Merchandise Authorization (RMA)

In the unlikely event that your device 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, Inc.
ATTN: RMA#
630 Komas Dr., Suite 200
Salt Lake City, UT 84108 USA
Tel: (801) 582-5533