

Amplifier Manifold

Instructions for Use



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1 Symbols of Contraindications, Warnings, Cautions, and Specifications

	IEC60101-0102	Danger of Electrostatic Discharge (ESD)
	EN-980	Caution
	IEC60417-5019	Protective earth (ground)
	IEC60417-5021	Equipotentiality Connector
	IEC606417-5335	Type of CF Applied Part

1.1 Contraindications

- The Amplifier Manifold is part of a recording system and should not be used in applications involving stimulation.
- Do not plug in devices to the Amplifier Manifold that are not approved by Blackrock Microsystems.

1.2 Warnings

- Always secure the Amplifier Manifold to the Front-end Amplifier with the provided locking clips and screws. Unsecured Amplifier Manifold can cause accidental disconnection that might result in uneven power disconnection. Irreversible damage may occur.
- Always plug in the Amplifier Manifold to the Front-end Amplifier first before connecting other devices to the Amplifier Manifold and always disconnect the connections in the front of the Amplifier Manifold before unplugging the Amplifier Manifold from the Front-end Amplifier. Do not unplug the Amplifier Manifold during operations.
- The Amplifier Manifold 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 Amplifier Manifold Shielded Cable to minimize the risk of the cable being accidentally pulled or tugged.
- Do not use the Amplifier Manifold in the presence of flammable anesthetic agents or any other reagents.
- Avoid strong static discharges from sources like television or computer monitors.
- Keep the Amplifier Manifold 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 Amplifier Manifold may compromise electrical safety.
- Always use antistatic or electro static discharge (ESD) safe gloves when connecting the Amplifier Manifold.

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- Use only the supplied Blackrock Microsystems components (Neuroport™ system, Front-end Amplifier, Amplifier Manifold Shielded Cable, headstage adaptors). Substitution of components not supplied by Blackrock Microsystems may affect system performance and patient safety.
- Do not leave the patient/subject connected to the Amplifier Manifold when the NeuroPort™ 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 Amplifier Manifold and the Amplifier Manifold Shielded Cable, or any other connected devices.

1.3 Cautions

- Federal (USA) law restricts this device to sale, by or on the order of a physician.
- Read this entire manual prior to using the device.
- Third party recording systems connecting to the Amplifier Manifold must be electrically isolated for patient safety.

1.4 Specifications

Model Name	Amplifier Manifold
Input Power Limits	25 VDC, 0.5 Amps maximum load
Mode of Operation	Passive Connections
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)

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2 Introduction

The combination of the Amplifier Manifold and Amplifier Manifold shielded cable provides an ultra-low noise transmission across a desirable distance. The shielded cable can be connected with various adaptors such as the Splitter Box, Cabrio Butterfly Adaptor, PMT Adaptor or other adaptors. Figure 1 below shows an application overview of the Blackrock neural recording system.

The Amplifier Manifold is designed to convert the existing Front-end Amplifier input connectors to QSE connectors that mate with the 32-Ch Amplifier Manifold shielded cable for ultra-low noise transmission. The Amplifier Manifold is purely a passive device that does not have any active electrical components.

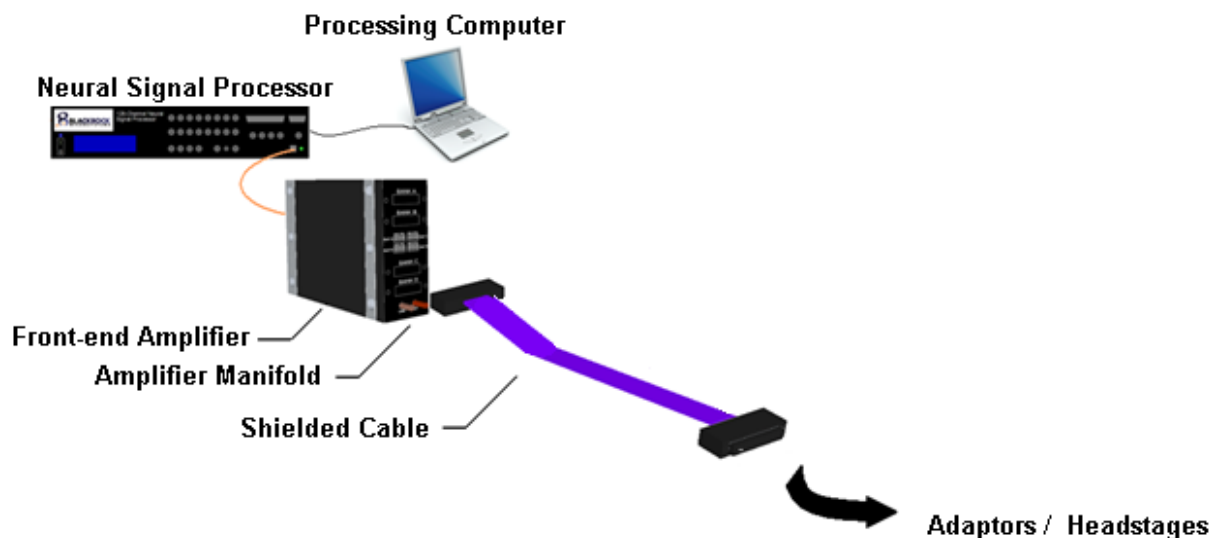


Figure 1. System overview

3 Instruction for Use

The Amplifier Manifold attaches to the amplifier and provides four 32 channel Banks (A-D) with keyed touch proof connectors. The manifold also has a reference jumpering system to allow various combinations of reference selection. There are two additional connectors for reference and ground on the face of the manifold.

To assemble the Amplifier Manifold:

1. Attach the Amplifier Manifold to the front connectors of the Front-end Amplifier.
2. Two clips and screws are provided to secure the Amplifier Manifold on the front end amplifier. These two clips fit into the slits on each side of the Amplifier Manifold. The screws

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can then fasten through the hole on the clips to the front end amplifier as shown in Figure 2.

3. The Amplifier Manifold shielded cable is a ribbon type cable that has a 32 channel touch proof keyed connector with locking mechanism. After attaching the cable connector to the Amplifier Manifold, the two screws on the sides of the connector can be screwed down to secure the connection. The 32-ch Amplifier Manifold shielded cable goes between the Headstage and the Amplifier Manifold for signal transmission.

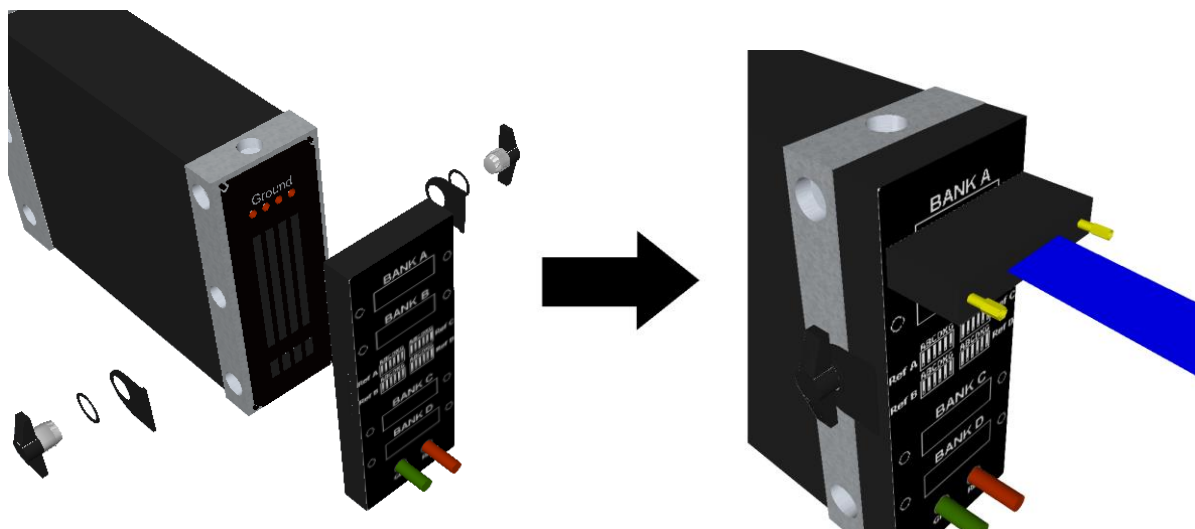


Figure 2. Locking Mechanism

3.1 Jumper Selection

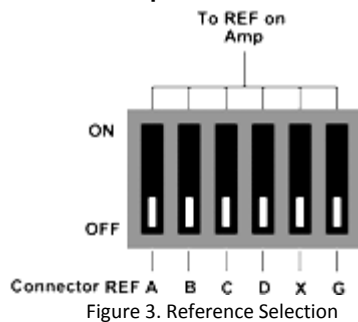


Figure 3. Reference Selection

The dip switches can be used to select the reference to be used for each bank on the Amplifier Manifold. Each dip switch has six jumper selections for each bank (Fig. 3). The X & G Positions are for external reference and ground that are connected to the green and red touch-proof jacks at the lower position of the Amplifier Manifold. The default has A at the on position for the Ref A dip switch, B at the on position for the Ref B dip switch, C at the on position for the Ref C dip switch and D at the on position for the Ref D dip switch. By using the dip switches on the Amplifier Manifold, reference can be selected from a different bank. For example, if both bank A and bank B are connected to different adaptors. On bank A, to use the reference from bank B instead of its original reference, switch A off and switch B on, on the bank A dip switch. This will cause bank B and bank A to share the same reference from adaptor B. Each Bank can use its own reference, the reference from any

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of the other three banks, the external reference or the external ground by switching the jumper on its corresponding dip switch. Only one switch for each bank should be in the on position.

3.2 Manifold Pin-out

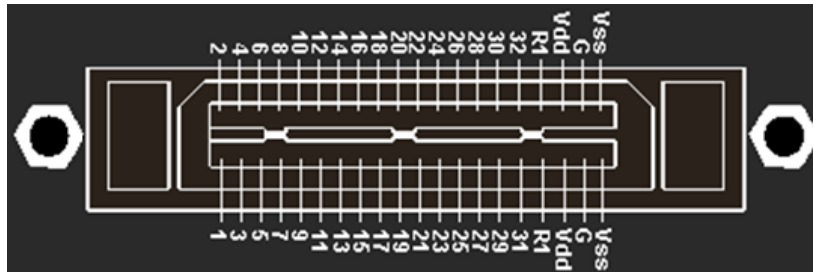


Figure 4. Manifold Connector Pin-out

4 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.

4.1 Return Merchandise Authorization (RMA)

In the unlikely event that your adaptor 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.

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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:

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