INSTRUCTIONS FOR USE: SILICON PROBE, ACUTE RECORDING

TABLE OF CONTENTS

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1. PURPOSE

The Diagnostic Biochips (DBC) silicon probes are intended for acute and chronic (not discussed in this document) neural recordings. By utilizing state-of-art, microfabrication technologies, the DBC probes (**Figure 1**) are designed with minimally invasive probe shank(s), carrying a high-density array of microelectrodes that can record hundreds of well isolated single-units and local field potentials in small, behaving animals.

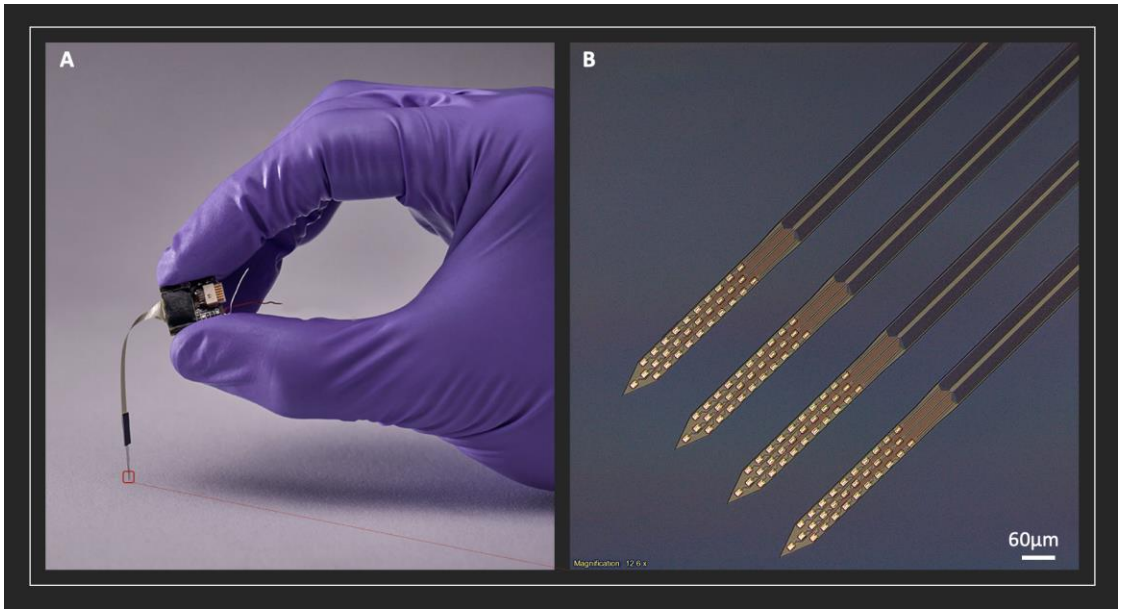

Figure 1: Diagnostic Biochips silicon probe. A) photo showing a chronic 128-channel probe assembly. B) Microscope view of the probe tip showing 128 high-density microelectrodes (gold).

Contraindications: The DBC silicon probes are not medical devices and should not be used in human.

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This Instruction for Use applies only to **16, 32, 64 channel silicon probes for acute recording.**

16 Channel Silicon Probes	32 Channel Silicon Probes	64 Channel Silicon Probes
P16-1-1A6	P32-1-1A6	P64-1-1A6
P16-1-1A9	P32-1-1A9	P64-1-1A9
P16-2-1A6	P32-2-1A6	P64-2-1A6
P16-2-1A9	P32-2-1A9	P64-2-1A9
	P32-3-1A	P64-3-1A
	P32-5-1A	P64-4-1A
	P32-6-1A	P64-5-1A
	P32-7-1A	P64-6-1A
	P32-8-1A	P64-7-1A
	P32-10-1A	P64-8-1A
		P64-9-1A
		P64-10-1A
		P64-11-1A100s
		P64-11-1A35s
		P64-12-1A100s
		P64-12-1A35s
		P64-13-1A

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2. INSTRUCTIONS

2.1. General handling instructions

It is important to avoid handling the silicon component at the distal end. Users are advised to manipulate the probe by holding onto the printed circuit board (black) or via an adaptor board that can plug into the Samtec connectors.

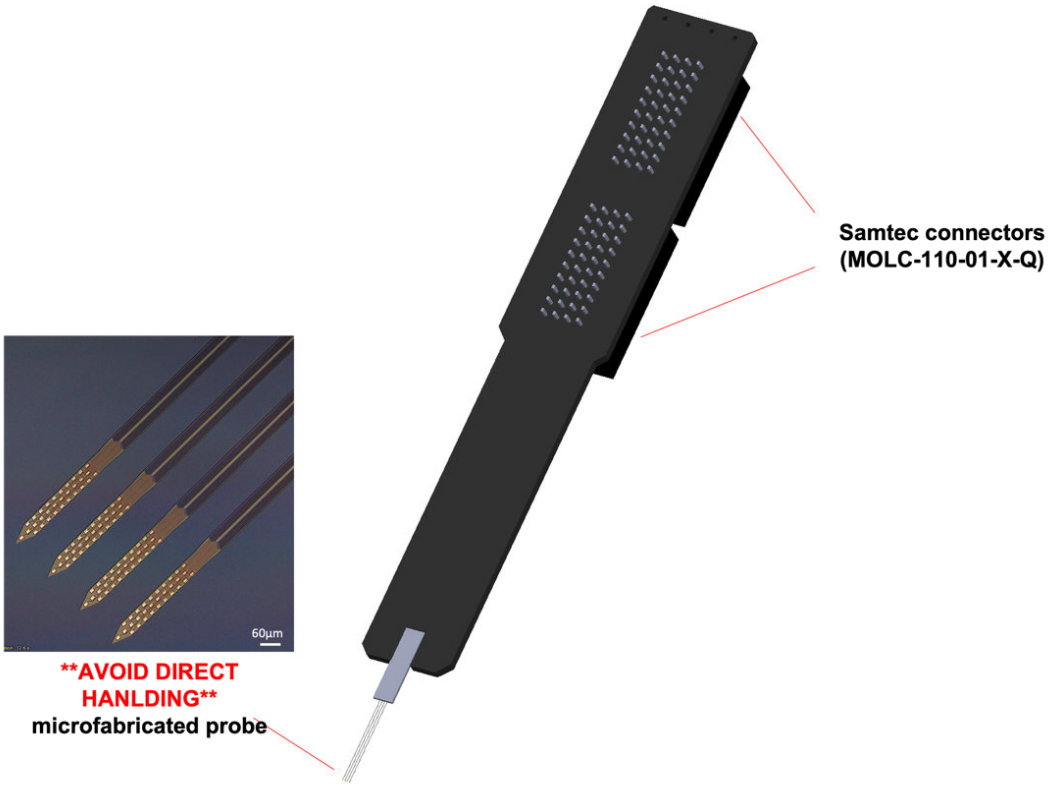

Figure 2: Silicon probe assembled in the acute format.

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2.2. Electrical connections

DBC acute silicon probes are compatible with all data acquisition systems. If you have question on how to connect your probe to a particular acquisition system, please contact our sales team. Note that the channel mapping from the recording electrodes to the acquisition software depends on the adaptor and headstage used.

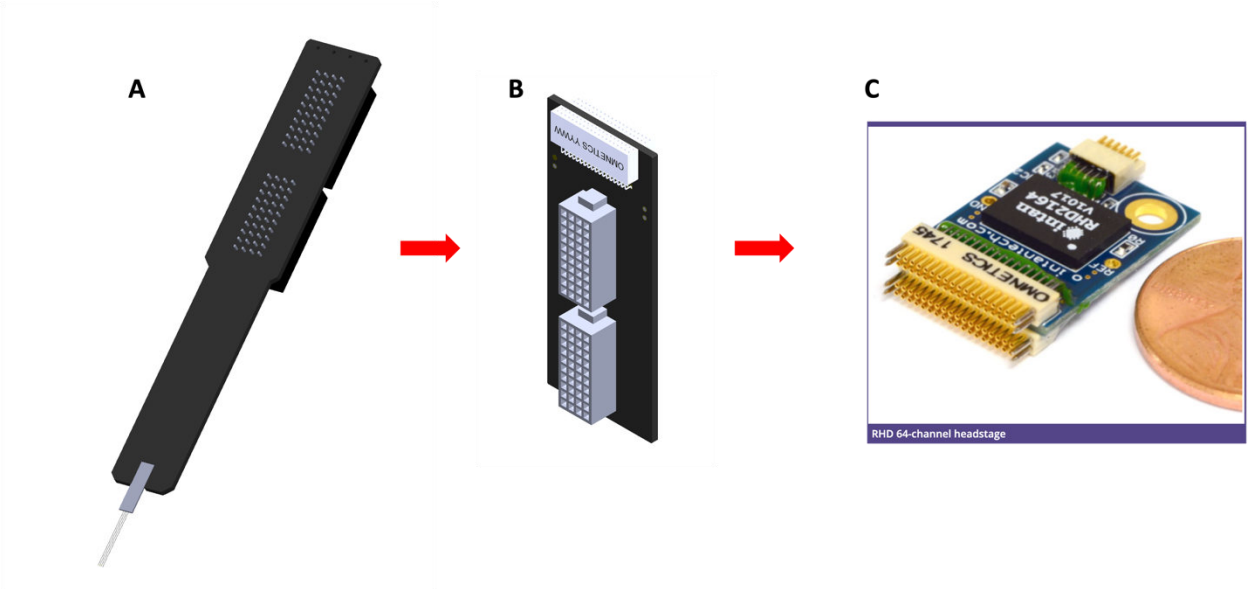

Figure 3: A typical adaptor and headstage (pre-amplifier) used to connect a 64-channel probe to the acquisition system. A) DBC 64-channel acute silicon probe; B) 64-channel Samtec to Omnetics adaptor; C) Intan 64-channel headstage.

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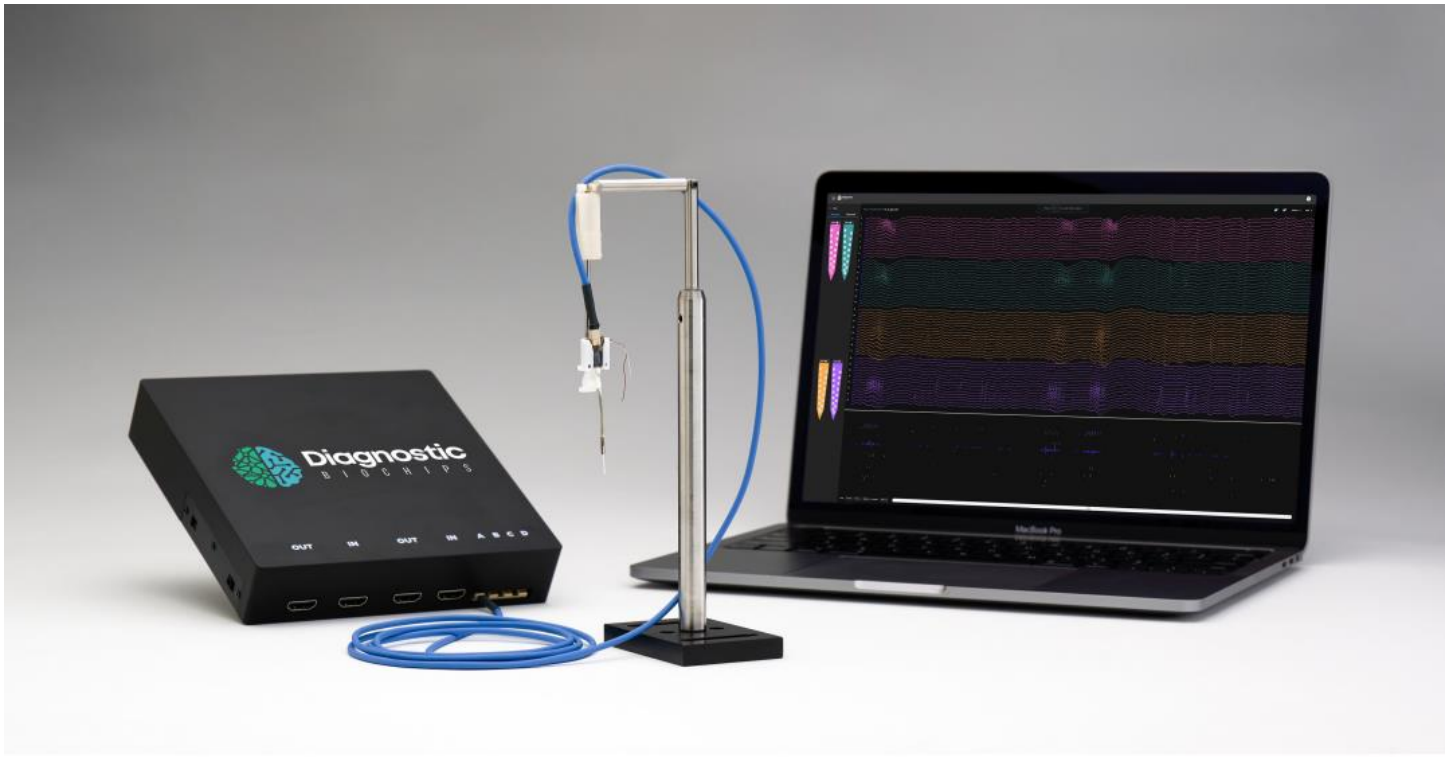
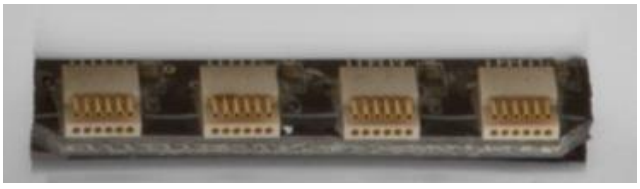
3. DATA ACQUISITION AND CLOUD COMPUTING

DBC provides an acquisition system powered by the Open-Ephys system. The following is a brief outline of how to connect the headstage to the acquisition system. For more detailed information, please see this documentation.



1. Connect Data Acquisition Box to 5V DC power.
2. Connect Data Acquisition Box to a computer using provided USB cable.
3. Connect probe to Data Acquisition Box via SPI cable to any of the four SPI ports.



4. Open opeEphys GUI, which can be downloaded at https://open-ephys.org/gui

   Please follow documented instructions on how to start recording.
5. For on-cloud data management, spikesorting, curation, and sharing, please contact us.

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4. CLEANING INSTRUCTIONS

For repeated use of acute probes, it is critical to remove organic residue from the probe shanks. Users should always avoid air drying fluid carrying residue on the probe surface. The proper cleaning procedures are:

1. Immerse probe in Tergazyme (available from Alconex) for 0.5-1 hour **Immediately** after extraction from the tissue.

    a. Dilute Tergazyme following the manufacturer instructions:

    www.alconox.com/product/tergazyme

    b. Recommended use in 20-40degC water bath.

2. Remove probe from the Tergazyme solution and **immediately** immerse in DI water (gently stirring it to remove any excess residue).
3. Remove probe from DI water and **immediately** rinse probe in IPA (Isopropyl Alcohol) for about 30 seconds.

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