



INSTRUCTIONS FOR USE: SILICON PROBE (CHRONIC, 64/128CHAN)

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1. PURPOSE

The Diagnostic Biochips (DBC) silicon probes are intended for acute (not discussed in this document) and chronic 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.

DBC's chronic silicon probes are integrated with Intan pre-amplifier chips. The proximity of the pre-amplifier relative to the recording microelectrodes reduces ambient interference. This integration technique is also key to minimize size and weight (less than 1 gram for a 128-channel probe), which are critical for freely behaving experiments using small animals.

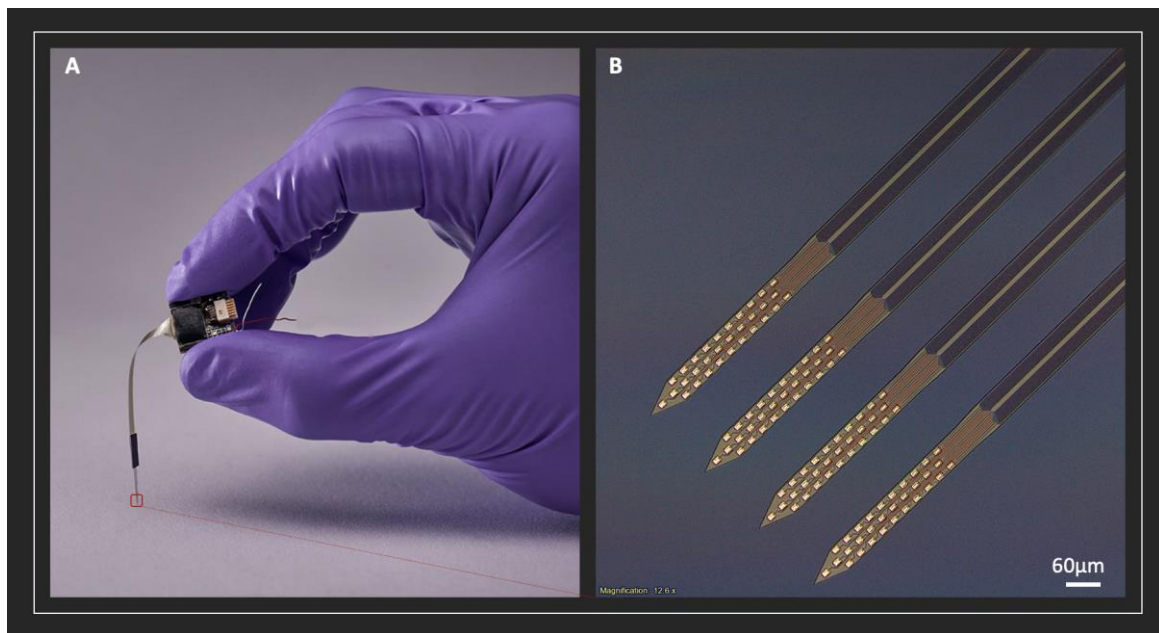


Figure 1: Diagnostic Biochips silicon probe. A) photo showing a chronic 128-channel probe assembly. B) Microscope view of the probe tip showing 128 high-density microelectrodes (gold).

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



This Instruction for Use applies only to **64 channel and 128 channel silicon probes for chronic recording.**

64 Channel Silicon Probes	128 Channel Silicon Probes
P64-1-1C6	P64-1D-1C6
P64-1-1C9	P64-1D-1C9
P64-2-1C6	P64-2D-1C6
P64-2-1C9	P64-2D-1C9
P64-3-1C	P64-7D-1C
P64-4-1C	P64-10D-1C
P64-5-1C	P64-13D-1C
P64-6-1C	P128-1-1C
P64-7-1C	P128-2-1C
P64-8-1C	P128-3-1C
P64-9-1C	P128-4-1C
P64-10-1C	P128-5-1C
P64-11-1C100s	P128-6-1C12
P64-11-1C35s	P128-6-1C6
P64-12-1C100s	P128-7-1C
P64-12-1C35s	P128-8-1C125p
P64-13-1C	P128-8-1C150p10
	P128-8-1C150p6
	P128-9-1C
	P128-10-1C35s
	P128-10-1C100s



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). Chronic probes are typically mounted on a microdrive (not shown) that allows post-implant manipulation of recording depth. If you have questions related to microdrive options, please contact our sales team.

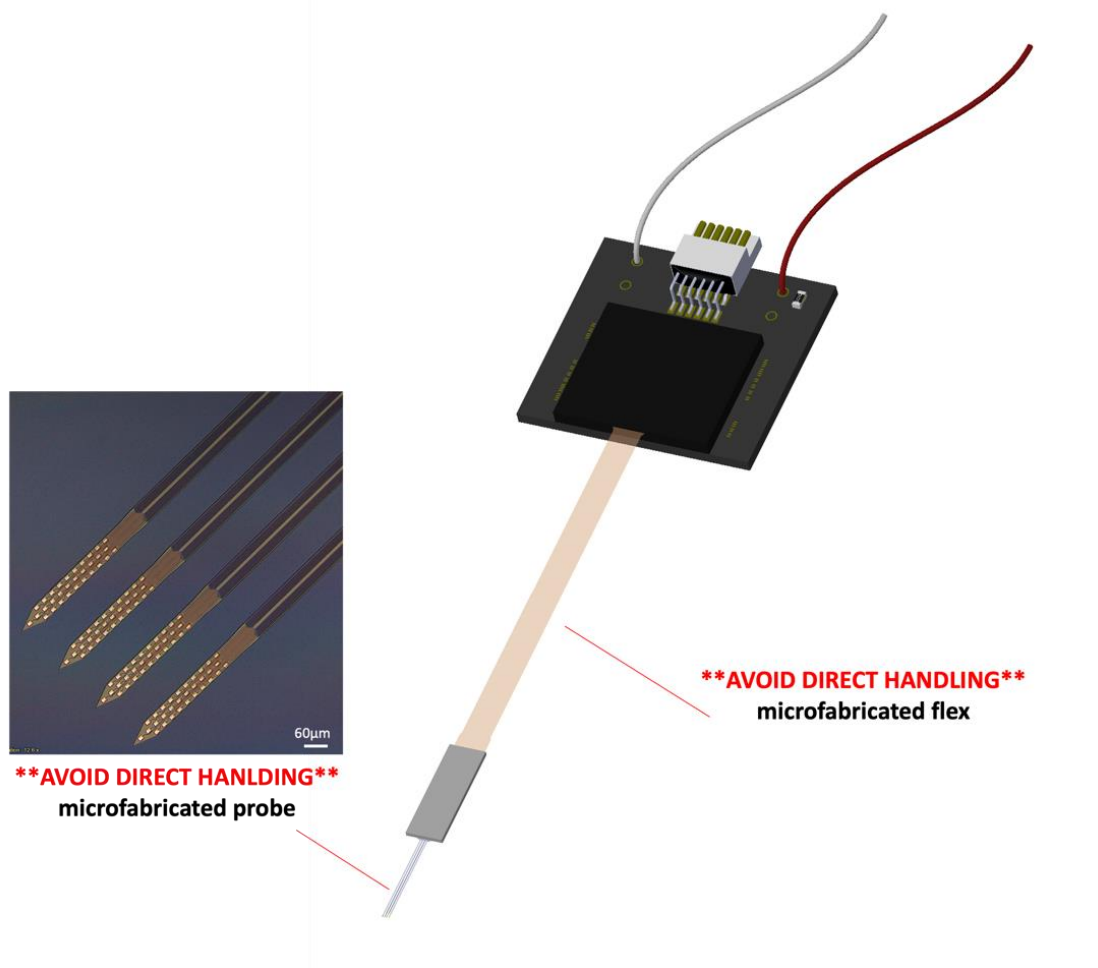


Figure 2: Silicon probe assembled in the chronic format.

2.2. ELECTRICAL CONNECTIONS

DBC 64- and 128-channel chronic silicon probes are compatible with any acquisition systems that can read from an Intan RHD chip. Because the data is multiplexed and digitized on board, only a 12-pin SPI cable is needed to connect directly from the 128-channel probe to an acquisition system (**no headstage required**). The ground and reference connections are electrically shorted by default unless otherwise instructed on the purchase order. If you have question on how to connect your probe to a particular acquisition system, please contact our sales team.

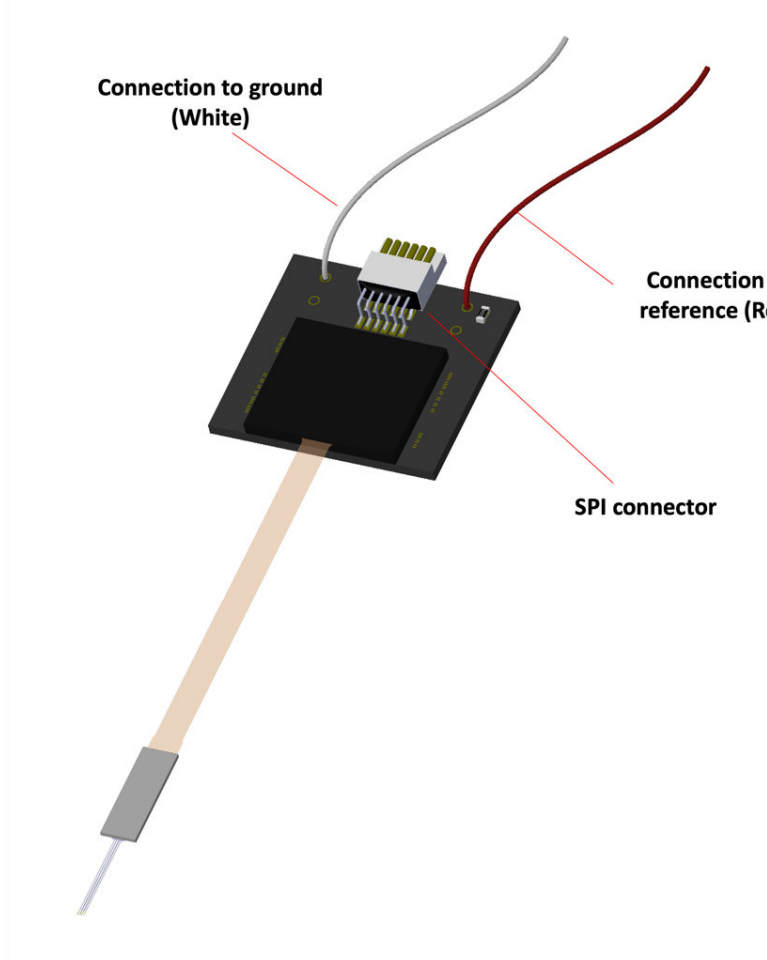
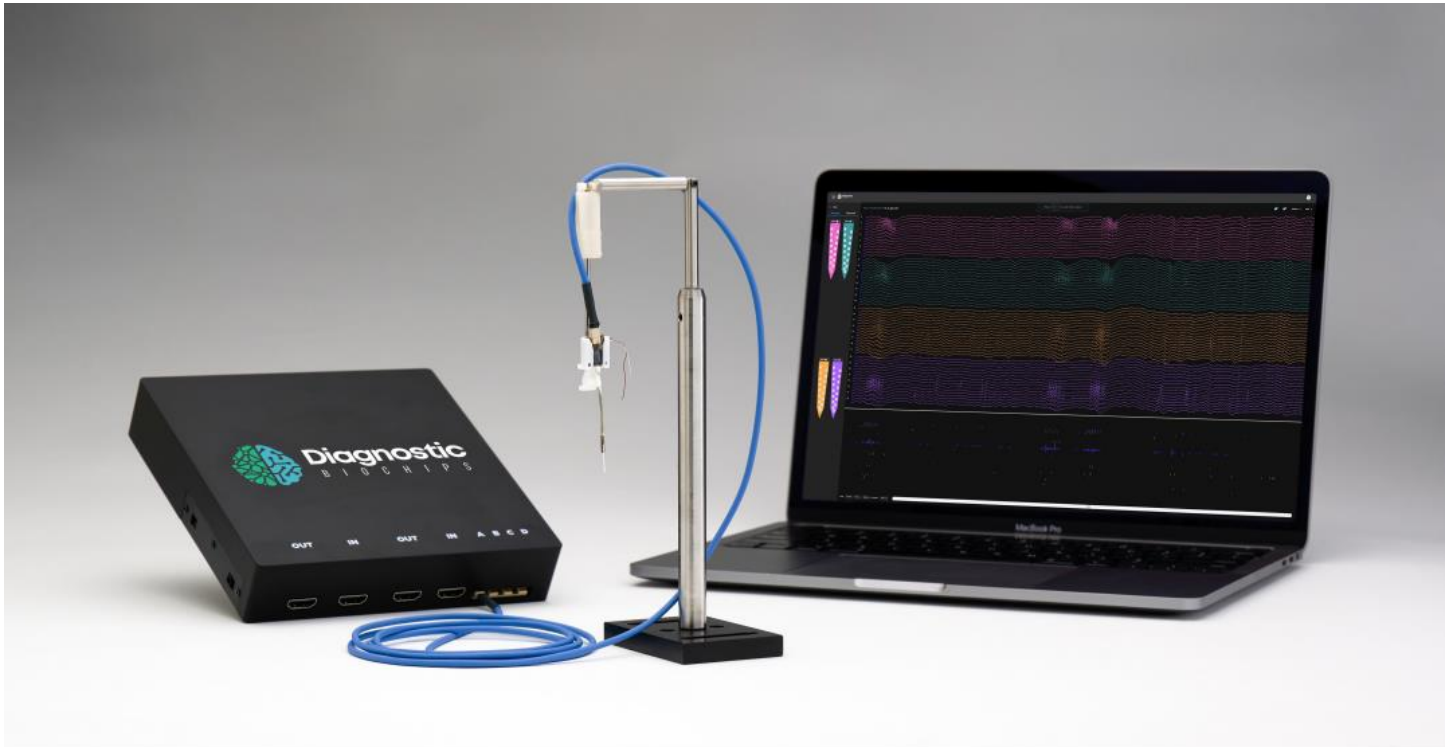


Figure 3: DBC chronic silicon probes can be directly connected to an acquisition system without an headstage.

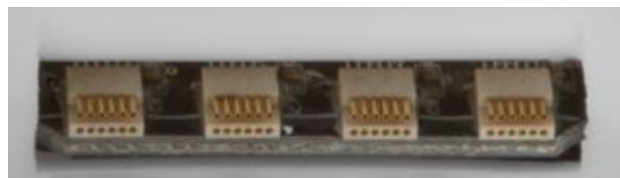


3. DATA ACQUISITION AND CLOUD COMPUTING

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 DBC at us.