



Axon Omnetics Adapter User Guide

32/64 Channel PCB Adapter for neural probes

Product Datasheet (Version 1.2)

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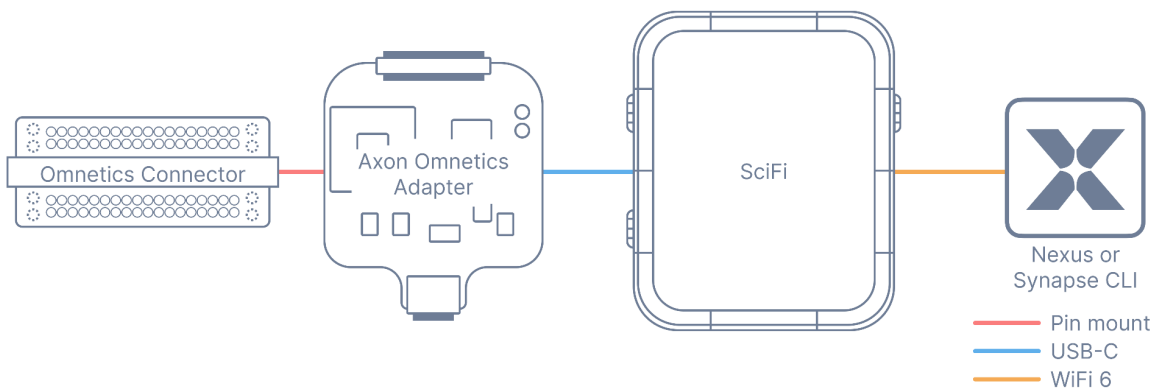
Overview

The Axon Omnetics Adapter is a combined digitizer and USB 3.2 Gen 1 serializer with up to two Omnetics A79025-001 connectors that allows the connection of a wide range of off-the-shelf and custom probes with the SciFi headstage. With up to 64 channels of low noise broadband recording, compact and lightweight footprint, and low power consumption, the Axon Omnetics Adapter is an ideal choice for power- and space-constrained applications.



Key Features

- Up to 64 recording channels
- 4.5 μV_{RMS} noise
- Less than 200 mW power consumption
- 28 x 35 mm² footprint



Summary Table

Adapter characteristics	PCB dimensions	28 x 35 mm ²
	Electrode Interface	Two 36-pin Omnetics connectors
	Power consumption	Less than 200 mW
	Cable interface	USB-C
Recording characteristics	Recording channels	Up to 64
	Recording modes	Single-ended
	Bandwidth	3.8 Hz – 14 kHz (Configurable)
	Gain	13 – 200 V/V (Configurable)
	Input referred noise	4.5 μV_{rms} min.
	Bit depth	10 – 16 bits (Configurable)
	Sampling rate	2 – 32 kHz (Configurable)
	Input capacitance	6.8 pF
	Data throughput	Less than 130 Mb/s

Hardware Requirements

- A neural probe with up to 2 male Omnetics 36 pin connectors (36 ch + 4 guideposts)
 - Omnetics A79024-001 or
 - Omnetics A79026-001
- A [SciFi wireless headstage](#).
- A WiFi network capable of WiFi 5 (802.11ac) or later. To get best performance, use WiFi 6 (802.11ax 160MHz).
- A PC with [synapsect1](#) software installed.

Usage

The Axon Omnetics Adapter is designed for use with a SciFi headstage. Before recording neural data, it must be connected to power and configured with a set of channels with the following directions.



Connecting

1. Ensure your SciFi headstage is powered on by holding the right button down for 3 seconds, and the screen is displaying correctly.
2. Connect the Axon Omnetics Adapter with the SciFi headstage using a USB-C cable. The **Peripheral** tab on the SciFi home screen will change to indicate a peripheral is connecting.
3. Once connected, the **Peripheral** tab will indicate the number of recognized devices.

Configuring

The Axon Omnetics Adapter uses the Science NYX1-512 neural recording chip as its functional core. Please refer to the [Synapse peripheral documentation](#) for all available configuration options, including sample rate, bit depth, and filter cutoff frequencies. The channel configuration information is described in a Synapse JSON file ([GitHub](#)), which can be used with both Nexus software and the Synapse CLI.

Recording

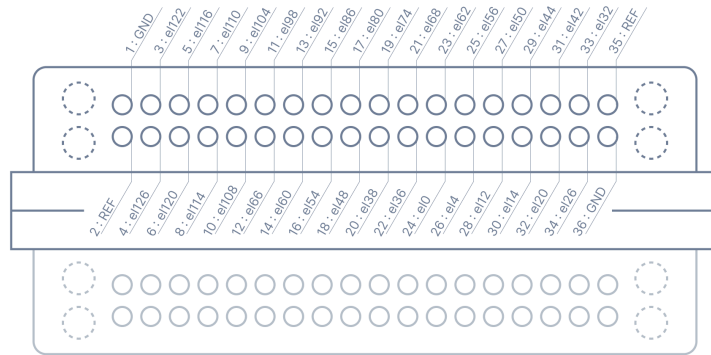
Detailed information regarding recording sessions can be found in the usage section of the SciFi, Nexus, or Synapse-CTL documentation.

- To begin a recording session via the SciFi headstage, long press the **Up** button.
- To end a recording session via the SciFi headstage, long press the **Down** button.

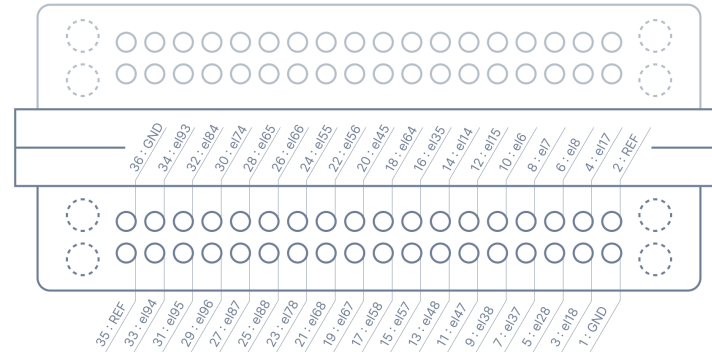
Adapter Pinout

To write your own custom electrode configuration files, refer to the table Omnetics pinouts below. You can use the JSON file linked above as an example of how to write a Synapse configuration file, or refer to the [Synapse peripheral documentation](#).

Top Connector



Bottom Connector



Top Omnetics Connector

Omnetics Pin	NYX1-512 Electrode # (0-255), POS INPUT	Panel
1	GND	x
2	REF	x
3	122	0
4	126	0
5	116	0
6	120	0
7	110	0
8	114	0
9	104	0
10	108	0
11	98	0
12	66	0
13	92	0
14	60	0
15	86	0
16	54	0
17	80	0
18	48	0

Omnetics Pin	NYX1-512 Electrode # (0-255), POS INPUT	Panel
19	74	0
20	38	0
21	68	0
22	36	0
23	62	0
24	0	0
25	56	0
26	4	0
27	50	0
28	12	0
29	44	0
30	14	0
31	42	0
32	20	0
33	32	0
34	26	0
35	REF	x
36	GND	x

Bottom Omnetics Connector

Omnetics Pin	NYX1-512 Electrode # (0-255), POS INPUT	Panel
1	GND	x
2	REF	x
3	420	3
4	414	3
5	422	3
6	108	0
7	432	3
8	96	0
9	438	3
10	84	0
11	444	3
12	390	3
13	450	3
14	386	3
15	456	3
16	426	3
17	462	3
18	428	3

Omnetics Pin	NYX1-512 Electrode # (0-255), POS INPUT	Panel
19	468	3
20	434	3
21	474	3
22	440	3
23	480	3
24	446	3
25	486	3
26	452	3
27	492	3
28	458	3
29	498	3
30	494	3
31	504	3
32	500	3
33	510	3
34	506	3
35	REF	x
36	GND	x

Contact Information



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