Acute Headstage to Standard Probe Adapters

Each TDT headstage is designed for use with a particular style of probe. Probe adapters allow each headstage to be used with a wider variety of probes. When using adapters, keep in mind that standard operation (differential vs single ended) varies for acute and chronic preparations and headstages are designed accordingly. When adapting across preparations, carefully note and understand the use of the ground (G) and reference (R) connections provided on each adapter. When using multiple headstages, ensure that a single ground is used for all headstages. This will avoid unnecessary noise contamination in recordings. The reverse side of this fast facts provides pinouts for acute headtages to standard (non-ZIF-Clip®) adapters. For more adapter information, see your System 3 manual.

Adapter and Site Remapping. Adapters enable the use of third party electrodes; however, they do add another layer of complexity when determining which physical site corresponds to each channel number in the data. Remapping the channel numbers to a desired "site map" can simplify the task of interpreting your data.

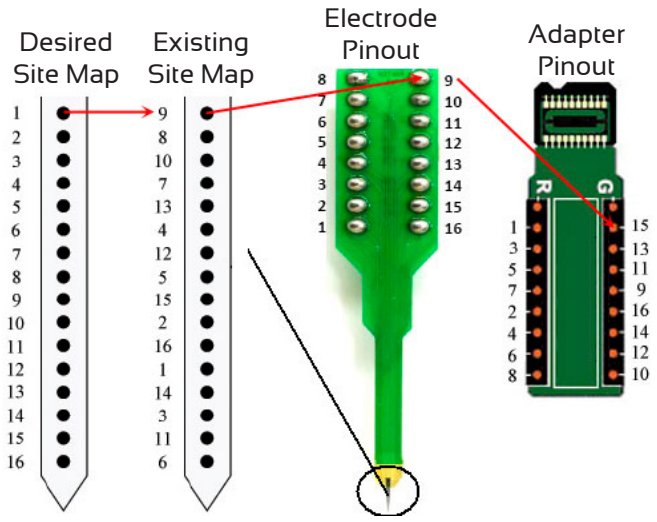
TDT provides an automated remapping function through SpikePac's SiteMap macro to ensure that the spatial organization of the electrodes is properly displayed. SiteMap takes into account the pinouts of the electrode as well as those of any adapters to the TDT headstage. RPvdsEx provides support for an arbitrary spatial pattern by use of the MCMap and DataTable components or input from MATLAB with the use of parameter tags.

When using the MCMap method, the remap values are obtained by referencing the electrode and adapter pinouts with the desired site map. The MCMap component takes hardware based signal inputs and converts them to an arbitrary pattern of channels on the DSP.

All TDT adapters, headstages, and preamplifiers have one-to-one connections, meaning that when connected, the pinouts represent the DSP channels. Unfortunately, the electrode pinout does not necessarily match the adapter pinout. For example, the ZCA-DIP16 adapter (shown right) does not map directly to the NeuroNexus 16-channel electrode. Further, in the existing site map the channel numbers are not assigned in a logical order.

In the figure below, the desired site map reorders the physical sites from 1 to 16 in terms of spatial depth. Site 1 in the desired site map, is physically connected to pin 9 on the electrode pinout. On the adapter pinout this channel corresponds to the DSP channel number 15. Therefore, the Remap value for channel 1 should be the value 15. The table below represents the final site remapping for the DataTable.

In this example, it is easy to visually make this mapping connection, but in more complex adapter configurations, making a series of tables, mapping from the desired site map to the existing site map and from the adapter to the electrode pinout, can help to organize the information. See the MCMap component in the RPvdsEx Manual for an example of how to apply your channel map in a circuit using the DataTable component.



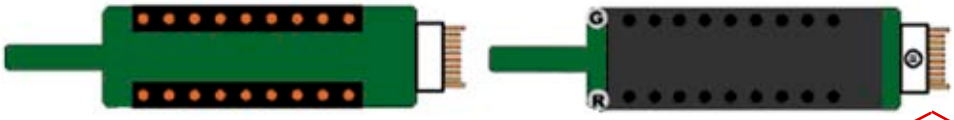
IID Channel Labels	[I1] Remap Value
1	15
2	1
3	13
4	3
5	16
6	2
7	9
8	7
9	12
10	6
11	10
12	8
13	14
14	4
15	11
16	5

Acute Headstage to Standard Probe Adapters

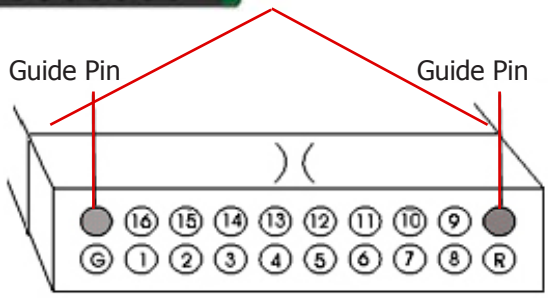
AC-CH

Input connectors: 18-pin female Omnetics nano dual row header
Connects to: 16-channel chronic probe (such as TDT microwire array)
Use with: RA16AC, RA16AC4

Ground and REF: female sockets (for 0.5 mm diameter male pins)



Standard operation for chronic preparations is single ended with ground and reference shorted together in the chronic headstage. However, the acute headstage is designed for differential operation. When using the acute headstage with our microwire arrays, short ground (G) and reference (R) together on the adapter for single ended operation.



R Reference
G Ground

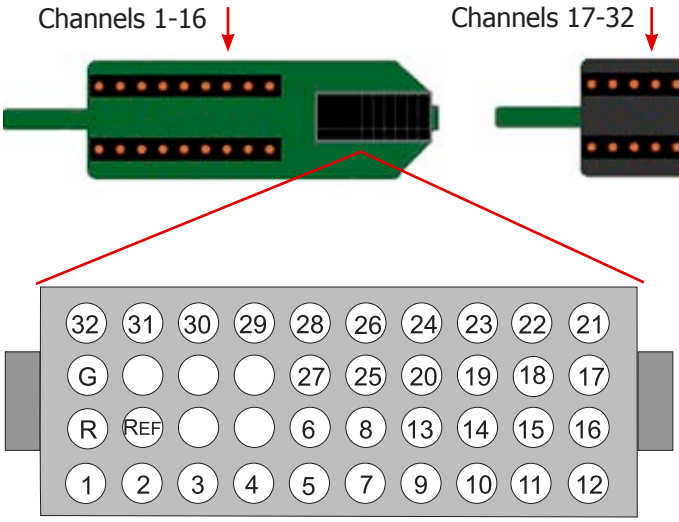
Pinout is looking into the header and reflects the preamplifier channels.

ACx2-NN

Input connectors: 40-pin Samtec FOLC high density socket strip
Connects to: 32-channel acute NeuroNexus probe
Use with: RA16AC x2, RA16AC4 x 2

Ground and REF: female sockets (for 0.5 mm diameter male pins)

Important!: The ACx2-NN is designed for use with Rev 2 of the 32-channel NeuroNexus acute probe. Check the NeuroNexus website for pin diagrams for this and other versions.



R Headstage Reference
REF Probe Reference
G Ground

Pinout is looking into the socket strip and reflects the preamplifier channels.

Standard operation with the NeuroNexus probe is differential. If you wish to use the reference pad on the probe, do not tie ground (G) and reference (R) together.

See the System 3 Manual for other available parts and information.

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