

# RA4AC - 4 Channel Chronic Headstage

## RA4AC Overview

The 4 Channel Acute headstages are recommended for extracellular neurophysiology using silicon electrodes, metal microelectrodes, or microwire arrays with input impedances from 20 kOhm to 5 MOhm.

The RA4AC1 and RA4AC4 headstages have a low-profile 6-pin connector. The RA4AC1 provides unity gain (1x). The RA4AC4 provides 4x gain and is used with electrodes with a recommended impedance range of 20 kOhm to 300 kOhm. The 25-pin connector connects to the RA4PA 4-channel Medusa preamplifier.

### Part Numbers:

RA4AC1—4 Channel Acute Headstage for Medusa PreAmps, with unity (1x) gain

RA4AC4—4 Channel Acute Headstage for Medusa PreAmps, with 4x gain



The headstage has sensitive electronics. Always ground yourself before handling.

## Headstage Voltage Range

**When using a TDT preamplifier the voltage input range of the preamplifier is typically lower than the headstage and must be considered the effective range of the system. Check the specifications of your amplifier for voltage range.** Also keep in mind that the range of the headstage varies depending on the power supply provided by the preamplifier. TDT preamplifiers supply +/- 1.5 VDC, but third party preamplifiers may vary. TDT recommends using preamplifiers which deliver +/- 2.5 VDC or less. Check the preamplifier voltage input and power supply specifications and headstage gain to determine the voltage range of the system.

The table below lists the input voltage ranges for the RA4AC and RA4AC4 headstages for either a +/- 1.5 VDC or +/- 2.5 VDC power source.

	Headstage input range when using +/- 1.5 VDC power source	Headstage input range when using +/- 2.5 VDC power source
RA4AC4	+/- 0.37 V	+/- 0.62 V
RA4AC	+/- 0.9 V	+/- 1.9 V

# Technical Specifications



**WARNING!** When using multiple headstages ensure that all ground pins are connected to a single common node. See “Headstage Connection Guide” on page 6-99, for more information.

<b>Input Referred Noise</b>	3 $\mu$ Vrms bandwidth 300-3000 Hz 6 $\mu$ Vrms bandwidth 30-8000 Hz
<b>Headstage Gain</b>	RA4AC1 - Unity (1x) RA4AC4 - 4x
<b>Input Impedance</b>	$10^{14}$ Ohms

## Pinout



Channel 1 marked with a dot  
on probe head

**(looking into connections)**

The numbers in the above diagram show the channel connections to the amplifier. The electrode connector accepts 0.76 mm diameter male pins.

The RA4AC1/RA4AC4 is also provided with a 6-pin male connector with flying leads. When connecting to the headstage, note that the silver dots marking channel 1 line up. The colors of the lead wires correspond to the headstage channels as follows:

Color	Channel
Black	1
Red	2
Orange	3
Yellow	4
Blue	Reference
Green	Ground