

# RA16LI - 16 Channel Headstage

## RA16LI Overview

The sixteen channel low impedance headstage (RA16LI) is a high quality, low-impedance headstage designed for recording high channel count EEG's.

The RA16LI headstage is designed for low impedance electrodes and electrode caps with input impedances between <1 kOhm and 20 kOhm. Either headstage unit connects to the Medusa preamplifier's 25-pin connector. The simple interface to the RA16PA preamplifier makes it easy to connect your electrodes to our system. An adapter is also available to connect a low impedance headstage to a PZ preamplifier. See "Preamplifier Adapters" on page 12-23, for more information. A built in impedance checker can be used to test each channel and the reference. Additional 20x gain on the headstage improves signal-to-noise of low voltage signals.



## Impedance Checking with the Low-Impedance Headstage

The Impedance checker on the RA16LI provides a simple check of the channel impedance relative to ground. To check the impedance level, press the button next to the channel indicator. The highest-level light indicates the maximum impedance between the channel and the ground. If all impedance lights are illuminated it is likely that one of the channels is not properly connected. The (-) impedance button checks the impedance between the reference and the ground.

## 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 RA16LI headstage 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
+/- 33 mV	+/- 80 mV

## Headstage Technical Specifications



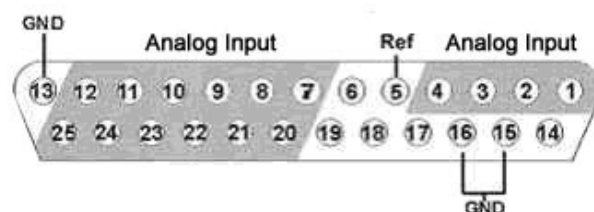
### WARNING!

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>	rms 0.1 $\mu$ V bandwidth 300-3000 Hz 0.3 $\mu$ V bandwidth 2-8000 Hz
<b>Headstage Gain</b>	20x
<b>Highpass Filter</b>	2.2 Hz
<b>Lowpass Filter</b>	7.5 kHz
<b>Input Impedance</b>	$10^6$ Ohm

## Electrode Connector Pinout

The electrode connector is a 25-pin connector. Information on the pin inputs is provided below.



**Note:** Pins 6, 14, 17, 18 and 19 are not connected.

Pin	Name	Description	Pin	Name	Description
1	A1	Analog Input Channels	14	NA	Not Used
2	A2		15	GND	Ground
3	A3		16	GND	
4	A4		17	NA	Not Used
5	Ref	18	NA		
6	NA	19	NA		
7	A5	Analog Input Channels	20	A6	Analog Input Channels
8	A7		21	A8	
9	A9		22	A10	
10	A11		23	A12	
11	A13		24	A14	
12	A15		25	A16	
13	GND	Ground			

