# Chronic (Non-ZIF) Headstages

## LP32CH-Z - 32 Channel Chronic Headstage

The 32 channel chronic headstage is recommended for extracellular neurophysiology using silicon electrodes, metal microelectrodes or microwire arrays with input impedance from 20 kOhm to 5 MOhm. The headstage uses a female Omnetics connector to mate with chronic electrodes.

The LF32CH-Z uses an Omnetics 36 socket female dual row nano connector (0.025"/0.64mm) with 4 guide posts. The LP32CH-ZNF uses non-ferrous materials, including a non-ferrous female Omnetics connector with the same size and pinout as the LF32CH. It can be used for recording single-unit electrophysiology during fMRI neuroimaging.

**Part Numbers:**

LP32CH-Z: 32-Channel Chronic Low Profile Headstage for Z-Series (PZ) PreAmps

LP32CH-ZNF: 32-Channel Non-Ferrous, Chronic Low Profile Headstage for Z-Series (PZ) Preamps

The headstages have 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 V, but third party preamplifiers may vary. TDT recommends using preamplifiers which deliver +/- 2.5 V or less. Check the preamplifier voltage input and power supply specifications and headstage gain to determine the voltage range of the system.

|  | Headstage input range when using +/- 1.5 V power source | Headstage input range when using +/- 2.5 V power source |
|---|---|---|
| LP32CH, LP32CH-Z, LP32CH-ZNF | +/- 1.48 V | +/- 2.49 V |

## Technical Specifications

| | |
|---|---|
| **Input Referred Noise** | rms 3 μV bandwidth 300-3000 Hz<br>rms 6 μV bandwidth 30-8000 Hz |
| **Headstage Gain** | Unity (1x) |
| **Input Impedance** | $10^{14}$ Ohms |
| **Connector** | Omnetics 36 socket female dual row nano connector (.025"/.64mm) with 4 guide posts |

**Pinout**
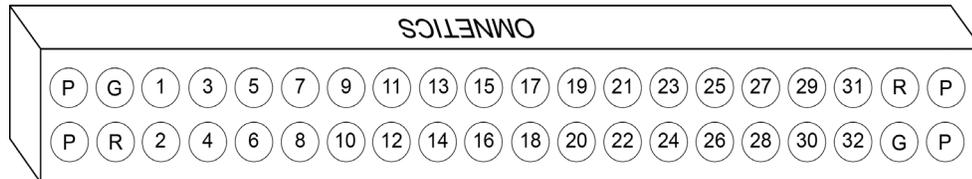


P=Guide Pins R=Reference G=Ground

Looking into connector, numbers reflect preamplifier channels.

The numbers on the pinout diagram above show the channel connections to the amplifier. By default, the headstage inputs are single ended, with Reference and Ground tied together by a jumper. To make the inputs referential, cut the jumper pictured below.

LP32CH:



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.

# RA16CH/LP16CH/LP16CH-ZNF - 16 Channel Chronic Headstage

The 16 channel chronic headstages are recommended for extracellular neurophysiology using silicon electrodes, metal microelectrodes or microwire arrays with input impedance from 20 kOhm to 5 MOhm. They come in three configurations: standard profile, low profile, and non-ferrous low profile.

The RA16CH and LP16CH (low profile) use a female Omnetics 18 socket female dual row nano connector (0.025"/0.64mm) with 2 guide posts that is compatible with TDT microwire arrays, NeuroNexus chronic electrodes, and a wide variety of connectors. Users can also request a matching male Omnetics connector (OMCON_ML_HB) from TDT for custom built electrode arrays. The low profile LP16CH provides a smaller footprint than the RA16CH for better clearance in tight applications.
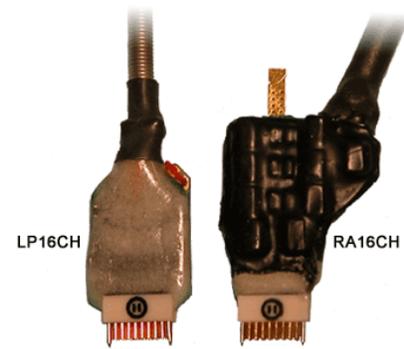
The LP16CH-ZNF uses non-ferrous materials, including a non-ferrous Omnetics connector with the same size and pinout as the RA16CH and LP16CH headstages. It can be used for recording single-unit electrophysiology during fMRI neuroimaging.

**Part Numbers:**

LP16CH: 16-Channel Chronic Low Profile Headstage for Medusa PreAmps

LP16CH-Z: 16-Channel Chronic Low Profile Headstage for Z-Series (PZ) PreAmps

LP16CH-ZNF: 16-Channel Non-Ferrous, Chronic Low Profile Headstage for Z-Series (PZ) Preamps

RA16CH: 16-Channel Chronic Headstage for Medusa PreAmps

RA16CH-Z: 16-Channel Chronic Headstage for Z-Series (PZ) PreAmps

The headstages have 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 V, but third party preamplifiers may vary. TDT recommends using preamplifiers which deliver +/- 2.5 V 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 16 channel chronic headstages for either a +/- 1.5 V or +/- 2.5 V power source.

|  | Headstage input range when using +/- 1.5 V power source | Headstage input range when using +/- 2.5 V power source |
|---|---|---|
| LP16CH, LP16CH-ZNF | +/- 1.48 V | +/- 2.49 V |
| RA16CH | +/- 0.9 V | +/- 1.9 V |

# Technical Specifications

| | |
|---|---|
| **Input Referred Noise** | rms 3 μV bandwidth 300-3000 Hz<br>rms 6 μV bandwidth 30-8000 Hz |
| **Headstage Gain** | Unity（1x） |
| **Input Impedance** | $10^{14}$ Ohms |
| **Connector** | Omnetics 18 socket female dual row nano connector（.025"/.64mm）with 2 guide posts |

**Pinout**
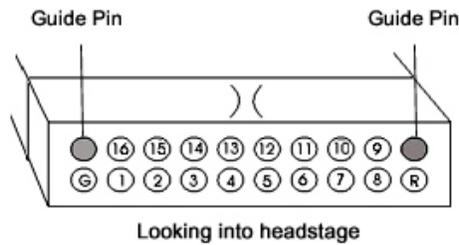


Looking into headstage

The numbers on the pinout diagram above show the channel connections to the amplifier. By default, the headstage inputs are single ended, with Reference and Ground tied together by a jumper. To make the inputs referential, cut the jumper pictured below.

RA16CH：



LP16CH/LP16CH-ZNF：



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.