Omnetics Digital Headstages

Hardware Reference

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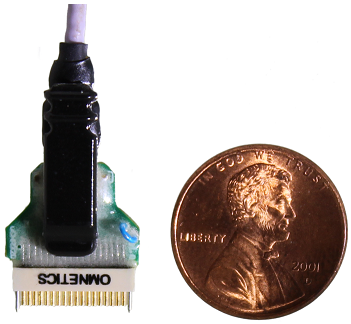


Omnetics OD Overview

OD Omnetics digital headstages use Intan RHD2000 amplifier chips to digitize physiological recordings directly inside the headstage. Digitized signals are routed to a PZ5 or Subject Interface (SIM) with a digital input board for transfer to an RZ base station. A single PZ5/SIM digital input board can support up to 128 channels via a direct connection to any of the OD headstage form factors. The headstage cable is detachable for easy, low-cost replacement.

These headstages are recommended for use with probe that have an impedance in the range of 20 Kohm to 2 Mohm. By default, ground and reference are connected by a blue jumper wire on the headstage for single-ended configuration. This wire may be cut for a referential configuration.

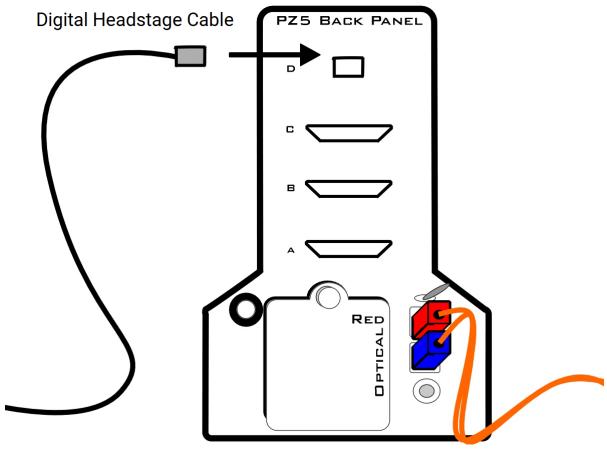
Part Numbers:

OD32 - 32-channel Digital Omnetics headstage

ZD-CBL - digital headstage cable

Omnetics Digital Headstages PZ5/ Subject Interface Connection

The OD Omnetics digital headstage uses a single detachable SPI Interface Cable that transmits all channels to a digital input board, housed in a PZ5 or Subject Interface. The PZ5/ SIM will automatically detect the number of channels in the headstage. If more than one headstage is used, all channels will be concatenated together, starting with the earliest digital bank ordered from bottom "-A-" to top, to create the output signal to the RZ base station. The total channel count of all connected headstages cannot exceed the maximum channel count for the PZ5 / SIM.



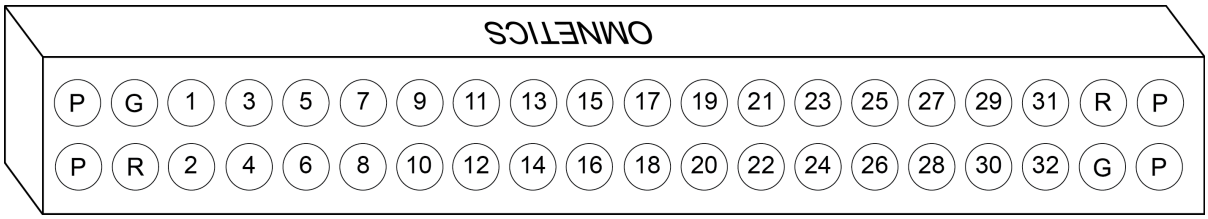
Omnetics OD Digital Headstage to Preamplifier Connection Diagram

Omnetics Digital Headstage Technical Specifications

Input referred noise	2.4 uVrms typical. Varies slightly (<15%) with amplifier bandwidth
Input Impedance	1300 Mohm @ 10 Hz 13 Mohm @ 1 kHz TDT recommends using less than 2 Mohm electrodes
A/D	Up to 32 channels, 16-bit successive-approximation
A/D Sample Rate	Up to 24414.0625 Hz
Maximum Voltage In	±5 mV
Frequency Response	3 dB: 0.1 Hz - 10 kHz
Anti-Aliasing Filter	3rd order low-pass (-18 dB per octave)
Distortion (typical)	<0.8%
Mass	0.93 g with resin

> **Important**
>
> When using multiple headstages, ensure that a single ground is used for all headstages. This will avoid unnecessary noise contamination in recordings. See the Headstage Connection Guide for more information.

Omnetics Headstage Pinout



P=Guide Pins **R**=Reference **G**=Ground

The numbers on the pinout diagram 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 wire.