W2100-HS8-ES2-EXT-0.5mA Headstage

W2100 Headstage with two electrical Stimulation Channels for Use with the W2100-System

Advantages

- The headstage is equipped with two dedicated channels for electrical stimulation.
- The signal-to-noise ratio is excellent and most important, independent from the distance between sender and receiver.
- The headstage is additionally equipped with a triaxial gyroscope and a triaxial accelerometer by default.

Applications

The W2100 headstage is the ideal solution for the measurement of spikes, LFP, EEG, ECG, EMG, and ECoG. Additional inputs to the interface board allow the synchronization of the data with external devices. Use the two dedicated stimulation channels for recording and electrical stimulation simultaneously.

Gyroscope and Accelerometer

The W2100 headstage is equipped with triaxial gyroscope and accelerometer sensors, which allow synchronization with electrophysiological data.

External Connectors for Electrical Stimulation

Connectors for external stimulation (Stim 2 + Stim 1)

Connector from Mill-Max 1 mm Pitch 861-13-050-10-002000 + Magnet cuboid Maqna QA-3x1x1-N45-N on the headstage mates with Mill-Max 860-10-050-10-002000 + Magnet cuboid Maqna QA-3x1x1-N45-N.

Adapter for External Stimulation

The adapter for external stimulation has to be connected magnet to magnet to the headstage. Please solder a connection wire to the pads provided on the adapter.

W2100-HS8-ES2-EXT top side

Please use the connector for the storage battery in the lower right for orientation of the headstage.

W2100-B-300mAh-BB

Standard battery for the W2100-HS8-ES2-EXT. Please connect the battery board to the headstage.
W2100-HS8-ES2-EXT-0.5mA Headstage

Technical Specifications

Number of recording channels 8
Number of stimulation channels 2
Weight (without battery) ± 3.8 g
Dimensions (W x D x H) 15.5 mm x 15.5 mm x 7.5 mm w/o antennae
Distance of wireless link 5 m and more under normal conditions

Amplifier
Bandwidth: To avoid aliasing effects, the low pass depends on the sampling frequency.

<table>
<thead>
<tr>
<th>Bandwidth</th>
<th>High pass</th>
<th>Low pass</th>
<th>@ Sampling rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 Hz (0.1 Hz on request)</td>
<td>400 Hz</td>
<td>@ 1 kHz</td>
</tr>
<tr>
<td></td>
<td>800 Hz</td>
<td>1 kHz</td>
<td>@ 2 kHz</td>
</tr>
<tr>
<td></td>
<td>1 kHz</td>
<td>5 kHz</td>
<td>@ 5 kHz</td>
</tr>
<tr>
<td></td>
<td>5 kHz</td>
<td>10 - 40 kHz</td>
<td></td>
</tr>
</tbody>
</table>

Gain 101
Input Impedance 1 GΩ || 10 pF
Resolution 16 bit
Input voltage range ± 12.4 mV
Input noise < 1.9 μV RMS

Sampling rate (max.) in kHz

- Single Headstage Mode: 40, 40, 25
- Single Multi Mode: 10, 10, 10

Stimulation
Output current - 0.5 mA to + 0.5 mA @ ± 10 V compliance voltage
Rise time (10 - 66 %) current 0 - 100 µA 1.5 µs @ RL = 10 kΩ

Inertial Measurement Unit
Gyroscope, triaxial ± 8 g @ 16 bit resolution
Accelerometer, triaxial 1000 °/s @ 16 bit resolution

Software
Operating system Windows 10, 8.1 (64 bit)
Data acquisition and analysis software Multi Channel Suite Version 1.5.1 and higher

Important: To handle the headstage, please touch the body, but not the antennae.