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. Equipped with an connector for an opto probe with two LEDs, the headstage supports optogenetic experiments. A programmable interface provides the synchronization of recording and light stimulation.

**Advantages**

- The small-sized headstage provides an interface to connect two LEDs for optical stimulation.
- Small-sized headstage with integrated A/D converter and LEDs for video tracking.
- The W2100-System converts the recorded signals into digital data already on the headstage.
- The signal-to-noise ratio is excellent and most important, independent from the distance between sender and receiver.

**Connector for optical Stimulation**

An additional connector with three pins is available for the optical stimulation via LED: 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 1 mm Pitch: 860-10-050-10-002000 + Magnet-cuboid Maqna QA-3x1x1-N45-N).

**LED supply:** $V_{LED}$ and LED 1 and LED 2.

Please see the scheme for the electrical circuit. Connect the W2100-opto-Test or the optrode from TBSI for example, in correct orientation as shown on the picture.

**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. Equipped with an connector for an opto probe with two LEDs, the headstage supports optogenetic experiments. A programmable interface provides the synchronization of recording and light stimulation.

**W2100-HS8-opto Headstage**

W2100 Headstage equipped with 2-Channel LED Output for Optical Stimulation

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**W2100-opto-Test**

Equipped with two LEDs for testing the W2100-HS8-opto. Important: Please use max. 20 mA!

**W2100-B-100mAh-BB**

Standard battery for W2100-HS8-opto. Please connect the battery board to the headstage.
**W2100-HS8-opto Headstage**

**Technical Specifications**

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

**Amplifier**

- **Bandwidth**: To avoid aliasing effects, the low pass depends on the sampling frequency:
  - High pass: 1 Hz (0.1 Hz on request)
  - Low pass: 400 Hz, 800 Hz, 1 kHz, 5 kHz
  - Sampling rate: @ 1 kHz, @ 2 kHz, @ 5 kHz, @ 10 - 40 kHz
- **Gain**: 101
- **Input impedance**: 1 GΩ || 10 pF
- **Resolution**: 16 bit
- **Input voltage range**: ± 12.4 mV
- **Input noise**: < 1.9 µVRMS

**Sampling Rate (max.) in kHz**

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

**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, analysis and export software**: Multi Channel Suite Version 1.5.1 and higher

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

**W2100 Headstage with Omnetics connector**

Diagram of the bottom side with pin layout. Please orientate the headstage as shown in the diagram.

**Connector for W2100-HS8-opto with Omnetics Connector A79039-001**