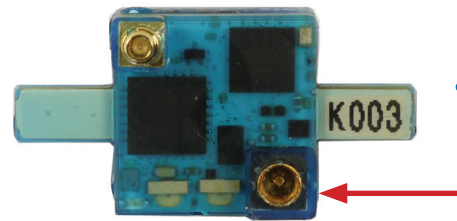# W2100-HS14-ES2-2.0mA Headstage

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.
- Small-sized headstage with integrated A/D converter and LED lights 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.
- The headstage is additionally equipped with a triaxial gyroscope and a triaxial accelerometer by default.

W2100-HS14-ES2 top side
Please use the connector for the storage battery in the lower right for orientation of the headstage.
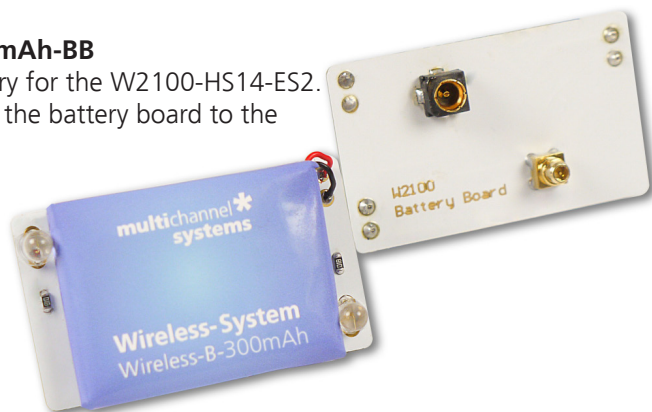
Applications

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.

W2100-B-300mAh-BB
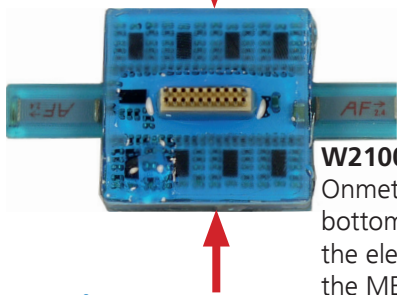Standard battery for the W2100-HS14-ES2. Please connect the battery board to the headstage.

Gyroscope and Accelerometer

The W2100 headstage is equipped with triaxial gyroscope and accelerometer sensors, which allow synchronisation with electrophysiological data.
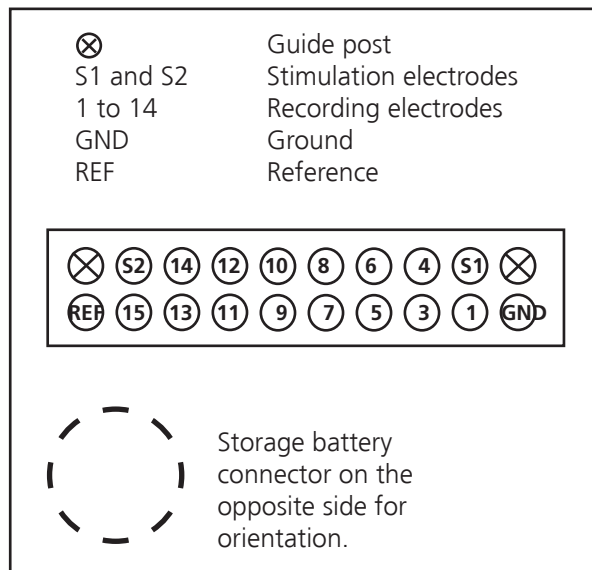
W2100-HS14-ES2-2.0mA Headstage

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

W2100-HS14-ES2 with Onmetics connector bottom side: Connector for the electrode probe or for the ME/W-Signal Generator.

W2100 Headstage with Omnetics Connector
A79039-001 (NSD-18-DD-GS, female, 2 guide posts)
Diagram of the bottom side with pin layout

⊗	Guide post
S1 and S2	Stimulation electrodes
1 to 14	Recording electrodes
GND	Ground
REF	Reference

⊗ S2 14 12 10 8 6 4 S1 ⊗
REF 15 13 11 9 7 5 3 1 GND

Storage battery connector on the opposite side for orientation.

Connector for this Headstage
Omnetics A79039-001
This Omnetics mate with Omnetics such as:
Through Hole:
A79038-001 (NPD-18-DD-GS
Horizontal Surface Mount:
A79040-001 (NPD-18-AA-GS
Vertical Surface Mount:
A79042-001 (NPD-18-VV-GS)
Cable:
A79044-001 (NPD-18-WD-18.0-C-GS)

Technical Specifications

Technical Specifications

Number of recording channels	14
Number of stimulation channels	2
Weight (without battery)	± 3.8 g
Dimensions (W x D x H) w/o antenae	15.5 mm x 15.5 mm x 7.5 mm
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.

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 μV_{RMS}

Sampling rate (max.) in kHz — Number of channels simultaneously

	2	4	8	14
Single Headstage Mode	40	40	25	25
Single Multi Mode	10	10	10	5

Stimulation

Output current	- 2.0 mA to + 2.0 mA @ ± 10 V compliance voltage
Rise time (10 - 66 %) current 0 - 100 µA	± 2.8 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 acquistion and analysis software	Multi Channel Suite Version 1.5.1 and higher