**W2100-System**

**Technical Specifications**

**General Characteristics**

- **Operating temperature**: 10 °C to 50 °C
- **Storage temperature**: 0 °C to 70 °C
- **Relative humidity**: 10 % to 85 %, non-condensing

**Headstage**

- **Dimensions (W x D x H)**:
  - W2100-HS4: 13 x 13 x 5.5 mm (+ antenna)
  - W2100-HS8: 15.5 x 15.5 x 5 mm (+ antennae)
  - W2100-HS16: 15.5 x 15.5 x 5 mm (+ antennae)
  - W2100-HS32: 15.5 x 15.5 x 6.7 mm (+ antennae)
  - W2100-HS8-ES2-0.5mA: 15.5 x 15.5 x 5 mm (+ antennae)
  - W2100-HS14-ES2-0.5mA: 15.5 x 15.5 x 5 mm (+ antennae)
  - W2100-HS4-opto: 13 x 13 x 5.5 mm (+ antenna)

- **Weight**:
  - W2100-HS4: approx. 1.9 g (+ battery)
  - W2100-HS8: approx. 2.8 g with single row connector (+ battery) approx. 3.1 g with Omnetics connector (+ battery)
  - W2100-HS16: approx. 2.9 g (+ battery)
  - W2100-HS32: approx. 3.7 g (+ battery)
  - W2100-HS8-ES2-0.5mA: approx. 3.7 g (+ battery)
  - W2100-HS14-ES2-0.5mA: approx. 3.7 g (+ battery)
  - W2100-HS4-opto: approx. 1.9 g (+ battery)

**Integrated Amplifier**

- **Gain**: 101
- **Bandwidth**: selectable via software: off, 0.1 Hz or 1 Hz
- **Resolution**: 16 bit
- **Input voltage range**: ± 12.4 mV
- **Distance for wireless link**: 5 m guaranteed (under normal circumstances)

*Important: In MC_Rack software the scaling of the analog channels is not correct for a factor of 2, because the gain of the analog channels is not considered.*
W2100-System

Technical Specifications

<table>
<thead>
<tr>
<th>Sampling Rate in kHz/channel</th>
<th>Number of selected channels</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>4  8  16  32</td>
</tr>
<tr>
<td>W2100-HS4</td>
<td>40  25</td>
</tr>
<tr>
<td>W2100-HS8</td>
<td>40  40  25</td>
</tr>
<tr>
<td>W2100-HS16</td>
<td>40  40  25  25</td>
</tr>
<tr>
<td>W2100-HS32</td>
<td>40  40  25  25  20</td>
</tr>
<tr>
<td>W2100-HS8-ES2-0.5mA</td>
<td>40  40  25</td>
</tr>
<tr>
<td>W2100-HS14-ES2-0.5mA</td>
<td>40  40  25  25</td>
</tr>
<tr>
<td>W2100-HS4-opto</td>
<td>10  10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sampling Rate in kHz/channel</th>
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<tr>
<td>2</td>
<td>4  8  16  32</td>
</tr>
<tr>
<td>W2100-HS4</td>
<td>10  10</td>
</tr>
<tr>
<td>W2100-HS8</td>
<td>10  10  10</td>
</tr>
<tr>
<td>W2100-HS16</td>
<td>10  10  10  5</td>
</tr>
<tr>
<td>W2100-HS32</td>
<td>10  10  10  5  2</td>
</tr>
</tbody>
</table>

Electrical Stimulation
- Output current
  - W2100-HS8-ES2-0.5mA: -0.5 mA to +0.5 mA @ ±10 V compliance voltage
  - W2100-HS14-ES2-0.5mA: -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

Optical Stimulation
- LED Stimulation channels: 2
- LED driving current output: max. 1 A @ max. 3.7 V compliance voltage

Receiver
- Dimensions (W x D x H): 250 mm x 83 mm x 25 mm w/o antennae
- Dimension of antenna: 110 mm x 10 mm (length x diameter)
- Frequency band: 2.4 GHz frequency band
- Impedance of antenna: 50 Ohm
- Analog Out only available in W2100-RE-AO: 68-pin MCS standard connector

Power supply unit (MPU 30)
- Input voltage: 90 – 264 VAC @ 47 – 63 Hz
- Output voltage: 11 – 13 V
- Max. power: 30 W
- Mark of conformity: CE, TÜV, cUL
- European standard: EN60601
W2100-System

Technical Specifications

Interface Board „MCS-IFB 3.0 Multiboot“ and Connectors
Dimensions (W x D x H) 250 x 83 x 25 mm
Weight 300 g

Front Panel
4 Digital inputs Lemo connector, EPL 00250 NTN
4 Digital outputs Lemo connector, EPL 00250 NTN
2 Auxiliary channels (not in use) Lemo connector, EPL 00250 NTN

Rear Panel
1 16 Bit Digital In / Out 68-pin MCS standard connector
1 8-Channel Analog In 10-pin connector (2.54 mm grid), dual row standard IDC
2 Analog Inputs Lemo connector, EPL 00250 NTN
Signal input range for analog channels ± 2500 mV
Gain for analog channels 2 *
1 Digital signal processor DSP port 20-pin JTAG connector (1.27 / 2.54 mm grid), dual row
2 USB 3.0 ports USB 3.0 super speed cable (type A - micro B)
Power supply MPU 30, PWR DC 0.85 x 2.75 mm
Ground Common jack 4 mm, banana plug
1 Audio output Stereo jack 3.5 mm PRA.00.250.CTAC29

Side Panel
2 Interface board to headstage connectors External power over serial ATA (eSATAp)

Power Supply Unit (MPU 30)
Input voltage 90 - 264 VAC @ 47 - 63 Hz
Output voltage 11 - 13 V
Max. power 30 W
Mark of conformity CE, TÜV, cUL
European standard EN60601

Software
Operating system Microsoft Windows 10, 8.1, Microsoft Windows 7
(32 or 64 bit), English and German version supported
Data acquisition and analysis software
Multi Channel Experimenter Version 1.5.1 and higher
Multi Channel Analyzer Version 1.5.1 and higher
MC_Rack Version 4.1.1 and higher
Data export software
Multi Channel DataManager Version 1.6.1 and higher, HDF5 (Matlab, Python,
NEX (NeuroExplorer), CED (Spike), ASCII
MC_DataTool Version 2.6.3 and higher
Axion binary file, ASCII, binary file

March 2020
## Technical Specifications

### Storage Battery

<table>
<thead>
<tr>
<th>Battery Type</th>
<th>W2100-HS4</th>
<th>W2100-HS8</th>
<th>W2100-HS16</th>
<th>W2100-HS32</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 mAh battery</td>
<td>0.8</td>
<td>0.6</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>100 mAh battery</td>
<td>2.5</td>
<td>2</td>
<td>1.3</td>
<td>1.2</td>
</tr>
<tr>
<td>200 mAh battery</td>
<td>5</td>
<td>4</td>
<td>2.5</td>
<td>2.3</td>
</tr>
<tr>
<td>300 mAh battery</td>
<td>7.5</td>
<td>6.1</td>
<td>3.8</td>
<td>3.5</td>
</tr>
</tbody>
</table>

### Dimension of battery

<table>
<thead>
<tr>
<th>Battery Type</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 mAh battery</td>
<td>17 x 11 x 3 mm</td>
</tr>
<tr>
<td>100 mAh battery</td>
<td>26 x 19.5 x 2.3 mm</td>
</tr>
<tr>
<td>200 mAh battery</td>
<td>26 x 20 x 4.5 mm</td>
</tr>
<tr>
<td>300 mAh battery</td>
<td>27.5 x 19.5 x 5 mm</td>
</tr>
</tbody>
</table>

### Weight of battery

<table>
<thead>
<tr>
<th>Battery Type</th>
<th>W2100-B-CA</th>
<th>W2100-B-BB</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 mAh battery</td>
<td>approx. 1.5 g</td>
<td>approx. 1.5 g</td>
</tr>
<tr>
<td>100 mAh battery</td>
<td>approx. 3.7 g</td>
<td>approx. 3.8 g</td>
</tr>
<tr>
<td>200 mAh battery</td>
<td>approx. 5.1 g</td>
<td>approx. 6.7 g</td>
</tr>
<tr>
<td>300 mAh battery</td>
<td>approx. 8.1 g</td>
<td>approx. 8.7 g</td>
</tr>
</tbody>
</table>

### Recharging Device

- **Dimensions (W x D x H):** 55 mm x 20 mm x 10 mm
- **Period of charging:** 1 hour
- **Power:** USB powered