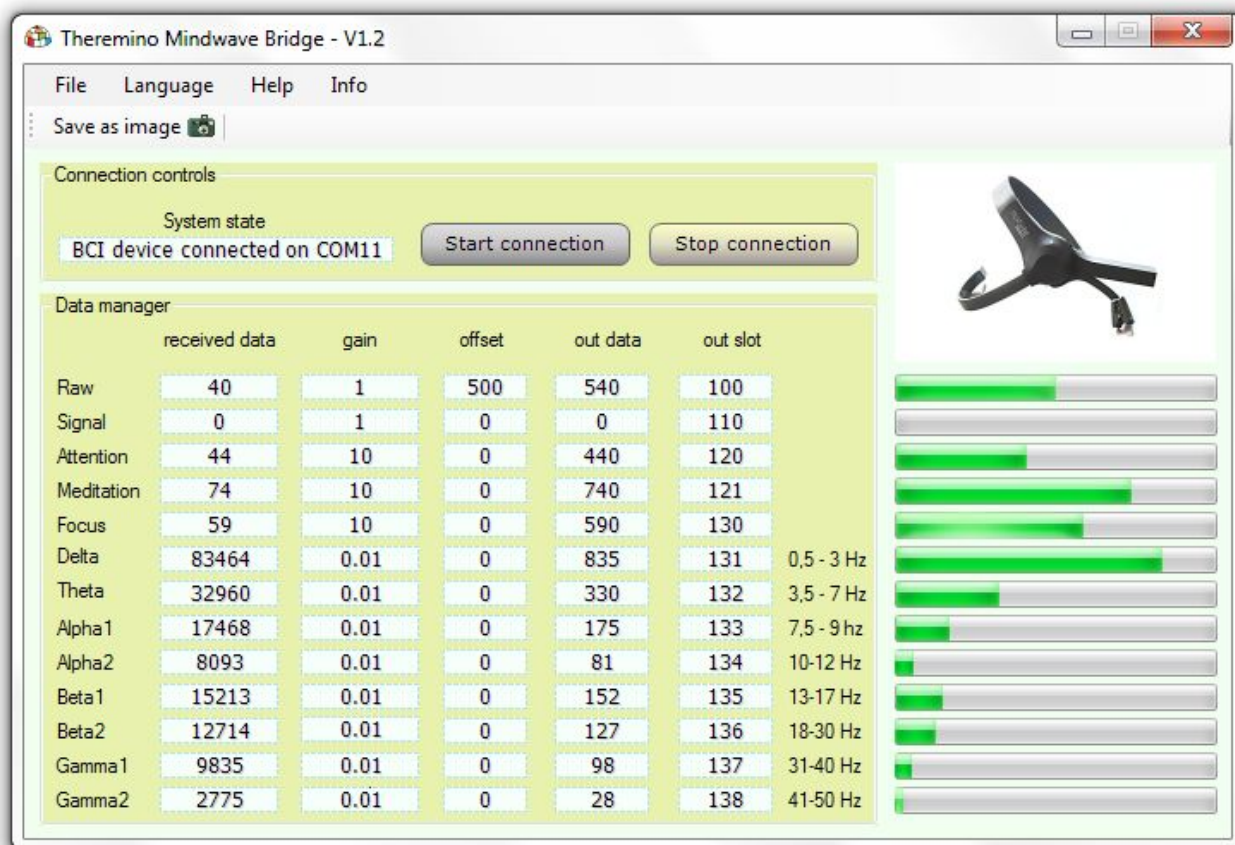


theremino
•the•real•modular•in-out•

System Theremino

Theremino MindwaveBridge

Theremino MindwaveBridge



This application has been tested with the hardware MindWave Mobile version of the European Union (50 Hz), but should also work with the non-mobile and non-European versions at 60 Hz

It is not necessary to use the program thinkgear connector, because Theremino Mindwave Bridge automatically find the Mindwave if this is connected to the computer.

You can connect to a single MindWave, so if you run two programs, only the first launched work.

The sensor reads MindWave brain waves through a single point of contact. The signal can be read in untreated RAW channel.

The internal microprocessor analyzes the signal to the sensor RAW and calculates the values for the two channels Attention and Meditation. In addition, calculate the amplitude of the brain waves for 8 different frequency bands.

The channel Focus, instead, is calculated by the program Theremino MindwaveBridge, and corresponds to the average of the Attention and Meditation values.

Start without reading the manual

- 1) Buy a sensor or Mindwave Mindwave Mobile. The second will also work on iPhone / iPad, but only using the programs Neurosky. Make sure you buy the version for your geographical area, for power at 50 Hz or 60 Hz
- 2) Plug into the computer's USB radio receiver Neurosky USB or Bluetooth USB dongle purchased separately, depending on the model chosen sensor. Turn on the sensor and wear it, and follow the signs NeuroSky for installation. You may need to install drivers. In the case of Bluetooth dongle, make sure that you have found and the associated Bluetooth device, follow the signs to Neurosky.
- 3) Launch the program Theremino Mindwave Bridge, and wait for the sensor to be recognized. In the event that the connection does not happen, you can try again by pressing the Start Connection. After approximately 10 seconds, the boxes will start to be populated by numbers, and the indicator bars on the right indicate the variable values.
- 4) Theremino Mindwave Bridge is now writing the values in the slots of the system Theremino. With the aid of the numerical boxes and bars to the right, change the earnings for the readings within the desired range.
- 5) Now you can use the values of the slots with other system components Theremino. And 'possible to control players or synthesizers, or even servomotors through a master card.

The raw data input

| received data | |
|---------------|---|
| Raw | 0 |
| Signal | 0 |
| Attention | 0 |
| Meditation | 0 |
| Focus | 0 |
| Delta | 0 |
| Theta | 0 |
| Alpha1 | 0 |
| Alpha2 | 0 |
| Beta1 | 0 |
| Beta2 | 0 |
| Gamma1 | 0 |
| Gamma2 | 0 |

These are the raw values received from Mindwave, before processing

The range of data depends on the channel:

Raw : -32.768 / 32.767 +
 Signal : 0 to 200
 to 0 when ok signal and battery charge
 salt in case of problems
 Attention : 0 to 100
 Meditation : 0 to 100
 Focus : 0 to 100
 Delta : 0 to 16,777,216
 Theta : 0 to 16,777,216
 Alpha1 : 0 to 16,777,216
 Alpha2 : 0 to 16,777,216
 Beta1 : 0 to 16,777,216
 Beta2 : 0 to 16,777,216
 Gamma1 : 0 to 16,777,216
 Gamma2 : 0 to 16,777,216

Obviously, the maximum attainable values, especially for the Raw channels and for frequency bands, may be different between a person and the other.

The control parameters

| gain | offset |
|-------|--------|
| 1 | 1 |
| 1 | 0 |
| 10 | 0 |
| 10 | 0 |
| 1 | 0 |
| 0.001 | 0 |
| 0.001 | 0 |
| 0.001 | 0 |
| 0.001 | 0 |
| 0.001 | 0 |
| 0.001 | 0 |
| 0.001 | 0 |
| 0.001 | 0 |
| 0.001 | 0 |

The raw data are processed with these parameters before sending them out.

The gain amplifies (or attenuates) the value read from Theremino Mindwave Bridge, then you can apply an offset, positive or negative.

The processed data output

| out data |
|----------|
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |

These boxes show the processed values to be output to the Slot

The Theremino Mindwave Bridge automatically takes care not to leave the standard range 0-1000 Theremino system, even when the gain and offset settings are wrong.

The "slot" output

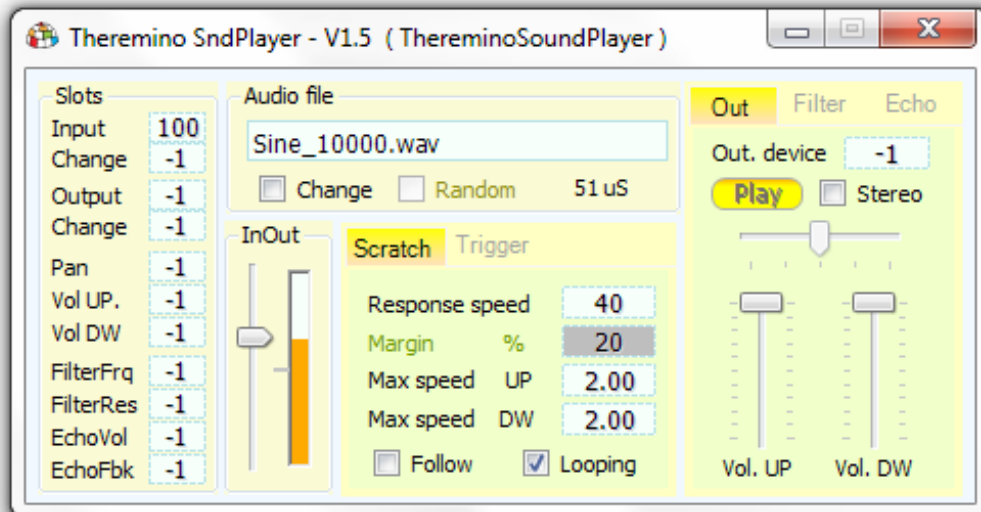
| out slot | |
|----------|----------|
| 100 | |
| 110 | |
| 120 | |
| 121 | |
| 130 | |
| 131 | 0,1-3 Hz |
| 132 | 4-7 Hz |
| 133 | 8-9 hz |
| 134 | 10-11 Hz |
| 135 | 13-18 Hz |
| 136 | 18-30 Hz |
| 137 | 31-50 Hz |
| 138 | 51-70 Hz |

These are the output slot.

To disable the writing of some slots to set the value of "-1"

There are predefined rules for the number of slots in relation to the channel of MindWave. The default numbers are those used in the tests.

Send the output to the SoundPlayer



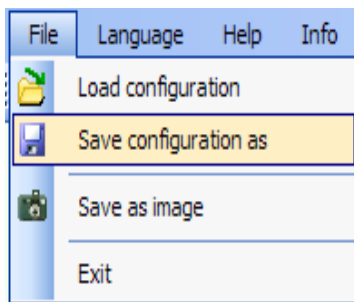
In this image, the channel of the RAW Mindwave is used to control the Sound Player.

Using an audio file sine_10000 (10 kHz sine wave), a speed set to 10% (value of 100 on the slot) produces a sound at 1000 Hz (10% of 10000 Hz).

In this way, the sound output to Sound Player is directly proportional to the input signal.

By changing the values of max speed and max speed UP DW changes the brain wave effect on the sound. Also the response speed is very important: a small number (1-2) corresponds to changes very fast, increasing instead the response speed decreases and the Sound Player follows the trend of the input signal in a less loyal, but also less 'nervous'.

Menu commands

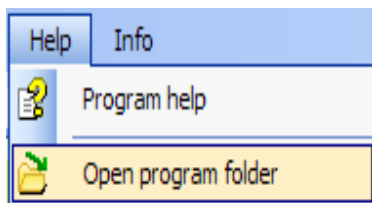


The "configuration" includes all adjustments.

The images are comfortable to exchange information and advice.



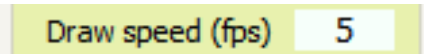
These are used to communicate with the Martians.



With these commands to access the documentation.

E 'can also open the workbook to see the initialization file and language.

Adjusting the numerical boxes



The numerical boxes of Theremino Mindwave Bridge (and all other system applications Theremino) have been developed by us (note 1) to be more comfortable and flexible than the original Microsoft TextBox.

The numerical values are adjustable in many ways

- Clicking and holding down the left mouse button and moving the mouse up or down
- With the mouse wheel
- Use the arrow keys up and arrow-Jun keyboard
- With conventional methods that are used to write numbers with the keypad
- With conventional methods of selection and copy-paste

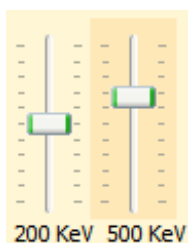
Move the mouse up and down allows large and fast regulations

The mouse wheel allows adjustment convenient and immediate

The arrow keys allow fine adjustments without having to look away from what you are adjusting

(1) Like all our software their source files are available (Freeware and Open Source licensed under Creative Commons) and can be downloaded from here: [www.theremino.com / downloads / uncategorized](http://www.theremino.com/downloads/uncategorized) (Section "Custom controls") These controls can be used freely in any project without name but also the source. The source "Open" also serves as a guarantee that we have not included malware.

Adjust the sliders



Some applications of the system using these sliders, the original Microsoft are comfortable enough so we just added the orange color and the ability to clear them.

The cursors <<< zero are marked with an orange color to clear them just click with the right mouse button (not all sliders have a zero, in which case do not stain and can not be reset with the mouse)

The sliders can be adjusted in the following ways

- Click on the slider with the right mouse button to "clear them"
- Click on the slider with the left mouse button and moving the mouse up or down
- With the mouse wheel
- Use the arrow keys left and arrow-right of the keyboard
- Use the arrow keys up and arrow-Jun keyboard

The method of moving the mouse up and down allows wide and fast adjustments.

The mouse wheel allows adjustment convenient and immediate.

The arrow keys allow fine adjustments without taking your eyes from what you are adjusting.

The arrow keys left / right or up / down have the same effect, but it can be more intuitive to use for the first and second horizontal sliders for vertical sliders.

Questions and Answers

Can I change the text of the panels of the program in different languages?

Of course, just edit the file: ".. \ Docs \ Language_Eng.txt" and ".. \ Docs \ Language_Ita.txt"
For languages German, French and Spanish just copy the file English three times with the following names:
".. \ Docs \ Language_Deu.txt", ".. \ Docs \ Language_Fra.txt", ".. \ Docs \ Language_Esp.txt"

Can I edit the Help file in different languages?

Just ask, we'll send ODT files that can be loaded with OpenOffice and then translated with Google.

Send the translations so we can include them in future versions!