

QUICK START GUIDE

BRAINBIT FLEX



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User Guide

www.brainbit.com

Precaution

This information will help to avoid injury, as well as damage to your device during operation.



- *Do not use damaged chargers (USB cable and USB power adapter) or loose wall sockets.*
- *Avoid kinking or damaging the USB cable while charging the BrainBit Flex battery.*
- *Do not touch the USB cable during the charging process, as well as the battery of the BrainBit Flex with wet hands.*
- *Do not use the device during thunderstorms (increased risk of electric shock).*
- *Do not place the device on top of or inside heating appliances (microwave ovens, stoves, etc.). Battery may explode if heated.*
- *Avoid getting moisture inside the device.*



- *Do not disassemble or repair the device by yourself. In the event of a product failure, contact the manufacturer's technical support service.*
- *Temperatures that are too high or too low can damage the device and affect battery capacity and life.*
- *Disposal of this device is carried out at special collection points. Contact your local authority for additional disposal instructions.*
- *The BrainBit Flex must be placed on undamaged areas of the skin.*

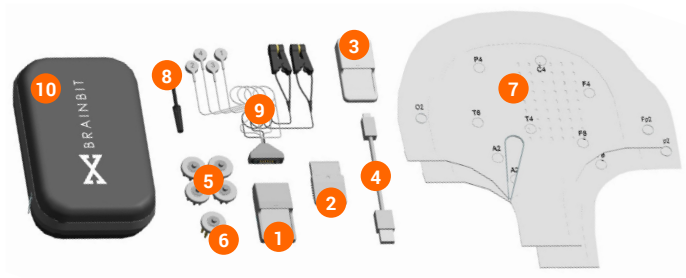
Technical specifications

| | |
|-----------------------------------|---------------------------|
| Device connection with PC | Bluetooth LE |
| Measured voltages range | $\pm 0.4 \text{ V}$ |
| Maximum battery charge current | $100 \text{ mA} \pm 10\%$ |
| Full battery charge time | up to 4 h |
| Continuous registration mode time | 12 h and more |
| Standby duration | 50 days or more |
| Number of EEG channels | 4 |
| Sampling frequency | 250 Hz |

Appearance of the device and components

This device comes in two configurations: with dry and wet electrodes.

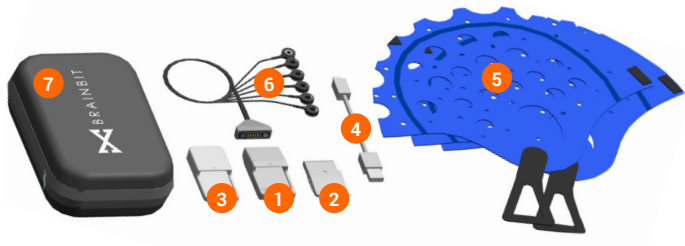
Supply kit with dry electrodes



1. Hardware unit – 1 pcs.
2. Battery unit – 1 pcs.
3. Battery charger – 1 pcs.
4. USB cable – 1 pcs.
5. Standard dry electrodes – 4 pcs.
6. Long pin dry electrodes – 1 pcs.
7. Cap for electrode placement (white)* – 2 pcs.
8. Dry electrode brush – 1 pcs.
9. Signal cable for dry electrodes – 1 pcs.
10. Case – 1 pcs.

** The caps come in 2 sizes (M, L). If none of the cap sizes suits you, please contact the manufacturer's technical support department: **support@brainbit.com***

Supply kit with wet electrodes



1. Hardware unit – 1 pcs.
2. Battery unit – 1 pcs.
3. Battery charger – 1 pcs.
4. USB cable – 1 pcs.
5. Cap for electrode placement (blue)* – 2 pcs.
6. Signal cable for dry electrodes – 1 pcs.
7. Case – 1 pcs.

** The caps come in 2 sizes (M, L). If none of the cap sizes suits you, please contact the manufacturer's technical support department: **support@brainbit.com***

Device indication and operating modes

- **Standby mode.** The battery is connected to the BrainBit Flex, but the device (phone or PC) is not connected. When the battery is connected, the LED lights up for 2 seconds, then flashes with a short flash once every 2 seconds.
- **Connection mode.** BrainBit Flex is connected to the device (phone or PC). The LED is permanently on.
- **Registration mode.** BrainBit Flex registers a signal. The LED flashes with a long flash once every 2 seconds.
- **Discharging mode.** BrainBit Flex enters this mode when the battery voltage is low. The LED is off. The battery must be removed and charged.

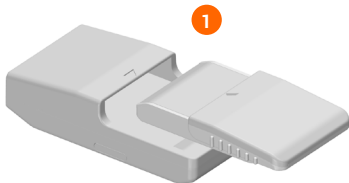
Battery installation



BrainBit Flex does not have an on/off button. When the battery is installed, the device is constantly in standby mode. The battery must be removed from the BrainBit Flex in case of a long period of time without operation!

Follow these steps to turn on the device:

1. Place the battery in the BrainBit Flex device.
2. After inserting the battery, the side indicator of the device will turn green and the device will turn into «Standby Mode» (see paragraph «Device indication and operating modes»).



Power supply requirements

The USB 2.0 cable can be connected to any USB power source (5V) that can supply at least 100mA charging current.

Electrode placement

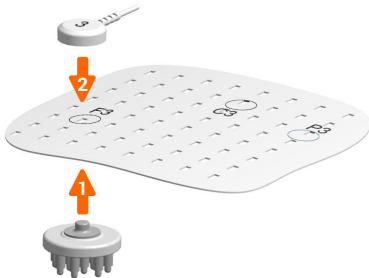
Note! You must choose the right size cap before attaching the electrodes (refer to the «Recommendations for choosing the cap size» section).

Dry electrode placement

Follow the next steps to place dry electrodes in the cap for fixation:

1. Place the dry electrode at the mounting point (inside the cap to fix dry electrodes).
2. Attach the electrode connector to the dry electrode (outside the cap to fix dry electrodes).
3. Repeat the steps for the remaining electrodes.
4. Attach the device to the cap to fix the electrodes.
5. Put on a cap for electrodes fixation on the head.
6. Place the clips of the reference and common electrodes on the earlobes.

Note! It is recommended to move the electrode in circles while holding its body to improve the contact of the electrodes with the scalp.



Wet electrode placement

All electrodes are marked on the top side. Depending on the designation, the location of the electrode on the cap differs. There are only three types of designations:

Ref – the electrode is located behind the ear on the mastoid process. This location corresponds to points TP9 or TP10 on the cap.

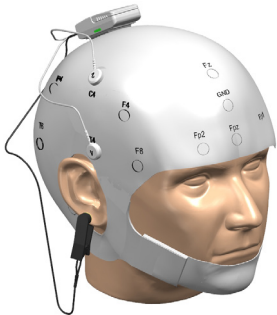
Gnd – the electrode is located in the middle at the top of the forehead. This electrode is placed at the GND point on the cap.

The electrodes with numerical designations (1, 2, 3, 4) are randomly placed on the cap depending on where the EEG signal has to be recorded.

A groove runs through the center of the electrode. To insert the electrode, draw back the fabric at the proper location and insert the lower half of the electrode into the hole on the helmet (which is smaller in diameter than the diameter of the electrode). The electrode is properly positioned when the bottom of the electrode is fully visible from the underside and the cap fabric fits snugly into the groove around the whole circle.

Conducting the session

When the device is ready to use (depending on the supply kit), it looks like this:



Follow these steps to conduct the session:

1. Place the charged battery in the BrainBit Flex device (see «Battery installation» and «Device indication and operating modes» sections).
2. Connect the signal cable to the BrainBit Flex unit.



3. Attach the hardware unit to the cap. To do this, you need to align the Velcro hooks on the hardware unit with the mating part located in the upper part of the cap between points Fz and Cz. In this case, the signal cable should be directed towards the back of the head.

4. Place the electrodes (in accordance with the supply kit, see «Electrode placement»).
5. Run the software.
6. Start the session.
7. After completing the session, you must remove the cap, the electrodes from the holes, the BainBit Flex from the cap, and the battery. The electrodes must be cleaned and disinfected after each use (see «Cleaning and disinfection of electrodes»).

Cleaning and disinfection

To clean and disinfect dry electrodes, use the supplied brush and a disinfectant or alcohol.

1. Pour the disinfectant into a small container.
2. Wet the brush in liquid, clean the electrodes between the contacts.
3. Wipe the electrode with a soft, dry, lint-free cloth to remove any debris.

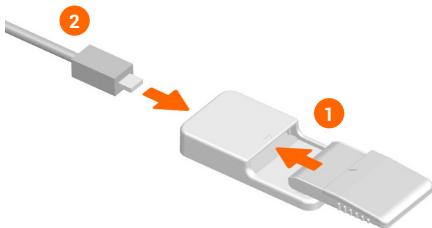
To clean wet electrodes and the cap.

1. Carefully clean the cap and electrodes with running water to remove any remaining gel (paste).
2. Remove any leftover moisture from the cap's and electrodes' surfaces.
3. Treat the electrodes with an alcohol-free disinfectant.
4. Remove any remaining product from the surface of the cap and electrodes.
5. Dry the cap.

Battery charge

Follow these steps to charge the battery:

1. Place the battery in the charger.
2. Connect charger to USB cable.
3. Connect the cable to any power source with a USB connector.



Guidelines for choosing the cap size for fixing electrodes

Caps come in two sizes in the supply kit. Measure the diameter of your head to determine the appropriate cap size, then select the required cap using the size matching table below.

| Cap size | Cap for wet electrodes, cm | Cap for dry electrodes, cm |
|----------|----------------------------|----------------------------|
| L | 54-60 | 57-63 |
| M | 48-54 | 52-57 |

If none of the cap sizes fit you, please contact the manufacturer's technical support department: **support@brainbit.com**.

FCC Warning

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note! This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment

does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- reorient or relocate the receiving antenna;
- increase the separation between the equipment and receiver;
- connect the equipment into an outlet on a circuit different from that to which the receiver is connected;
- consult the dealer or an experienced radio/TV 24 technician for help.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

FCC ID:

Troubleshooting

Before contacting technical support, please review the list of common problems and how to resolve them.

The device does not connect to a PC or mobile device

- Make sure that the LED on the electronics box is on.
- Search for the BrainBit Flex again.
- Remove the battery from the device. After a few seconds, insert the battery into BrainBit Flex and search for the device again.

The LED on the electronics box is off

- Check if the battery is installed in the battery pack of the device. Make sure the battery is installed correctly.
- The battery is completely discharged. Remove the battery from the device and charge it according to the «Battery charge» section. Then install the battery in

BrainBit Flex and make sure that the device is in standby mode (LED flashes 1 time per two seconds).

Poor signal quality

- Make sure there is enough gel on the electrodes (for wet electrodes).
- Make sure that the electrode has good contact with the scalp; if hair gets under the electrode, it must be removed.
- Client should sit quietly and not move.
- Treat the electrode site with abrasive gel.
- Make sure the cap size is correct.

The device does not turn on

- The device's battery may be low. Follow the steps described in «Battery charge» section to charge the device.

Loss of connection between devices/data loss

Unstable connection between «BrainBit Flex» and the mobile device or PC.

- Check whether the «BrainBit Flex» device is in line-of-site with your mobile device or PC. Line-of-site must be maintained between devices. This is due to the fact that the BLE radio channel uses a 2.4 GHz radio frequency. Radio waves at this frequency do not bend effectively around objects.
- Connect the provided Bluetooth adapter and disable the built-in one when working with a PC.
- Check if there are any other devices, especially multimedia ones (headsets, etc.), other than «BrainBit Flex» connected to your mobile device or PC via Bluetooth. All linked devices share the channel bandwidth. Therefore, the fewer devices use the channel, the more opportunities the «BrainBit Flex» device has to efficiently transmit data over the BLE radio channel.
- Reduce the distance between the BrainBit Flex and your mobile device.

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* RF warning for Portable device:

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.