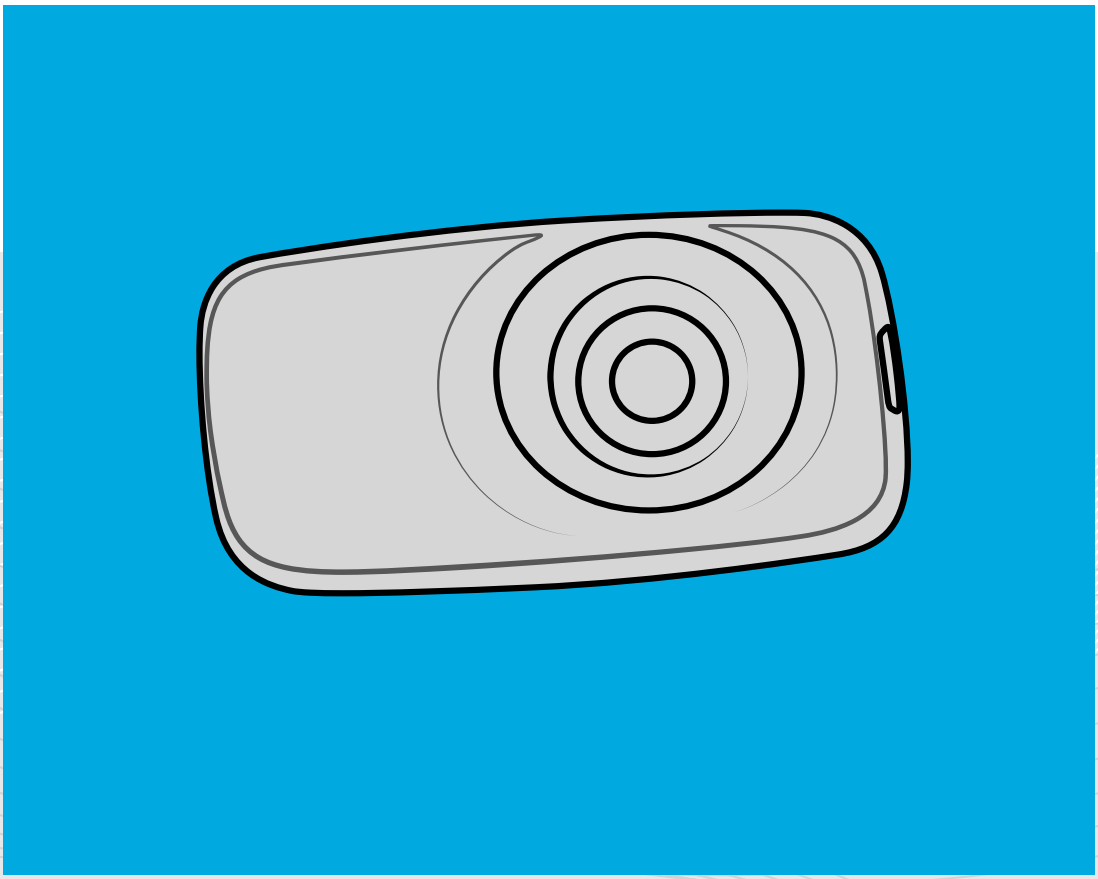
V3

User Manual & Warranty



Foc.us V3
Multi-function Electrical Brain Stimulator

English

INTRODUCTION

This guide will teach you how to use your Foc.us V3 brain stimulator.

If you are new to brain stimulation you may be nervous. Don't be. Right now your brain is full of electrical flows.

Stimulation simply lets you alter those flows a little. Read the warning below and provided you have none of the listed contra-indications the worst case scenario is you may find brain stimulation mildly uncomfortable.

Ready? Then let's take charge.

Important!

You should not use the Foc.us stimulator if you suffer from epilepsy, seizures, brain lesions, bipolar depression, or severe heart disease. Immediately stop using Foc.us if you experience short short-term negative effects. Foc.us is not a toy and is not intended to be used by anyone under the age of 18 years old. If using external electrodes, it is not recommended to place electrodes in patterns that differ from the default Foc.us configurations. Do not position electrodes in a manner where current may pass through the brainstem. Do not position electrodes over cuts, grazes, or damaged skin.
Allow at least 48 hours between each use of Foc.us. Always place wet sponges between the electrodes and your skin when using Foc.us. Do not touch the black silicone electrodes when using Foc.us as you may get burned. Take extra care if using hydrogels.
Self-administration of brain stimulation puts the safety responsibility squarely in your hands.

Again

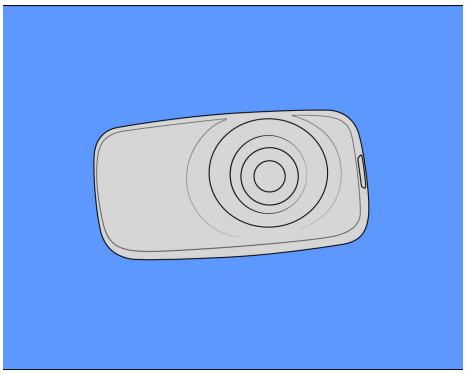
Foc.us V3 is designed to be used by healthy adults who do not suffer from epilepsy, brain conditions, have a metallic implant such as a skull plate, or have other implants such as a cochlear implant or pace-maker. The sole purpose of Foc.us is to improve your brain. You are responsible for the administration of your tDCS so look after yourself.

WARNING

If you suffer from epilepsy, brain lesions, bipolar depression of severe heart disease you should not use a Foc.us stimulator. If you experience short term negative effects with Foc.us you should immediately stop using it. This is not a toy and is not intended to be used by anyone under the age of 18 years old. Do not position the electrodes over cuts, grazes or damaged skin. Allow at least 48 hours between usage. Do not directly touch the electrodes as this can lead to burns. Always use electrodes with wet sponges.

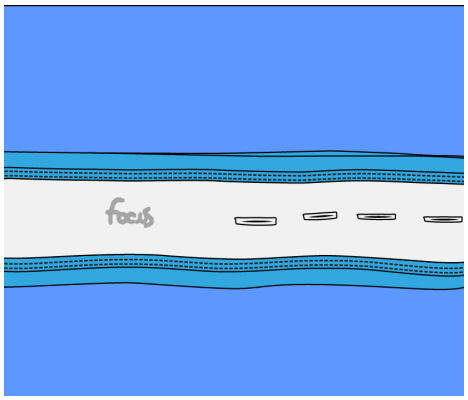
YOUR FOC.US V3

Understand the different parts included with your V3 brain stimulator.



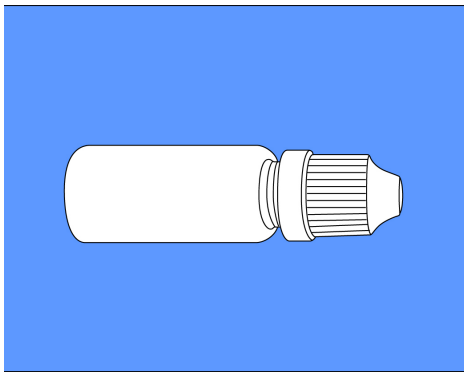
V3

This is the V3 electrical brain stimulator.



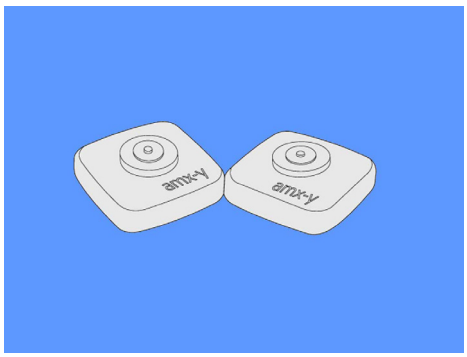
Foc.us Headband

This is the Foc.us headband with amxy-y electrode holes.



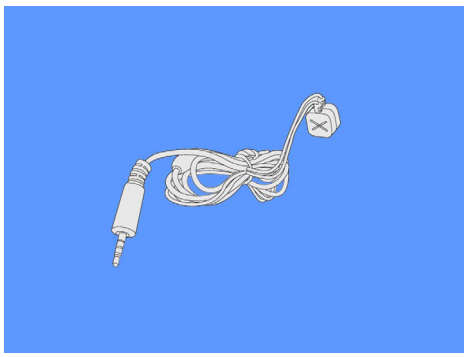
Electrode Water Bottle

Use this small dropper bottle to hold water for sponges.



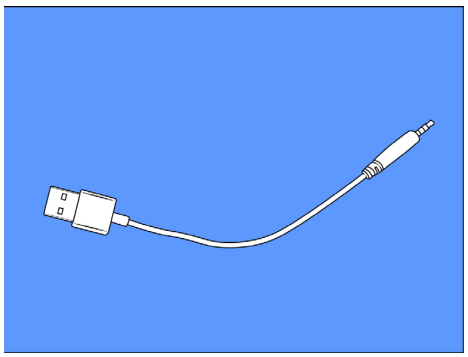
amx-y electrodes

This is the amx-y conductive silicone sponge electrode cjup.



X/Y Magnetic Cables

The magnetic stimulation electrode cables. X is anode, Y is cathode by default.



USB Charging Cable

Connect to any USB outlet power source to recharge.

- Always store your V3 in the supplied case when not in use. Squeeze any excess liquid from the sponges and place them in the electrodes. Ensure the lid of the supplied water bottle is tightly closed before returning to its place.
- The silicone electrodes can be cleaned with warm water. Do not get the V3 wet.

CONTENTS

NAVIGATING YOUR V3

1. PRESS to turn ON

PRESS the blue joystick to turn on and start.
Navigate your Foc.us V3 with the blue joystick.
Use DOWN to select TAKE CHARGE
PRESS to start your journey

2. UP LEFT RIGHT DOWN PRESS

Wherever you see **<** and **>**, use LEFT and RIGHT to scroll through the options available.

Then PRESS or DOWN to proceed with gamer program.

3. Value & Labels

This shows that the current current setting is 1.5mA.
Use LEFT to reduce or RIGHT to increase this value.

Then PRESS or DOWN to proceed to next setting.

4. Duration

Use LEFT and RIGHT to pick a session duration between 1 and 40 minutes.

Then PRESS or DOWN to proceed.

5. START or EDIT

Only the minimum settings are presented so that you can quickly start a session. Hidden settings can be accessed by pressing RIGHT for the EDIT option.

Then PRESS or DOWN to START.

V3 ELECTRICAL BRAIN STIMULATOR

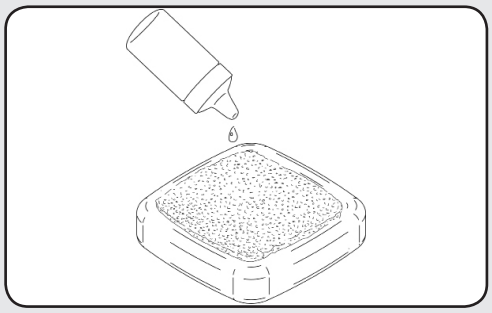
Your Foc.us V3 is an electrical neuro-stimulator which will deliver a controlled current to your brain.

The theory of transcranial Electrical Stimulation (tES) is that by passing a current through your brain, the excitation levels of your brain cells are altered. The delivered current is small compared to the current that is already flowing in your brain; so the current itself does not induce your brain cells to fire, but does prime some of your brain cells to fire more readily depending on the specific settings that are used. It is therefore important that the right settings are used to induce the right level of charge. It is recommended that you do not deviate from prescribed levels of current intensities, current durations and electrode placements. Given the right settings, the subtly induced changes in brain cell excitation levels can result in significant cognitive performance enhancements.

Possible side-effects include visual artifacts (such as white flashes), nausea, headaches, and fatigue. If you experience any of these side-effects, stop your Foc.us session. If you see white flashes (known as phosphenes), adjust the position of the Foc.us electrodes away from your eyes. You may feel tingling, hot, or cold sensations from using Foc.us. If these sensations become uncomfortable or painful, stop your Foc.us session. Skin redness may appear under electrodes after use, which will disappear after a short time. Repeated use of Foc.us may lead to skin irritation. If you exceed the recommended session duration, you increase the risk of consolidating both the excitatory and inhibitory processes. Always proceed gradually and with caution.

Foc.us V3

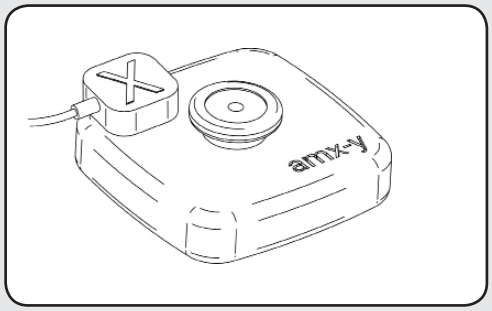
QUICK START GUIDE



1. Prepare Electrodes

Position the amx-y electrodes with wet sponges in the headband and place headband on head.

Liberally wet the sponges before use.



2. Connect everything together

Connect the magnetic ends to the amx-y electrodes and the 2.5mm jack to the V3.

Be careful to ensure X (cathode) and Y (anode) if using tDCS or unipolar stimulation modes.

3. Start a Program

A program defines the target current, duration and mode settings to be used in a stimulation session.

V3 ships with 7 Programs:
Ripple, 3rd eye, wave, pulse, Noise, eDream & gamer.

4. take charge

The stimulation will start at 0mA and slowly increase until reaching the target current

The V3 screen will show you real-time session data.

5. *Because It's Possible*

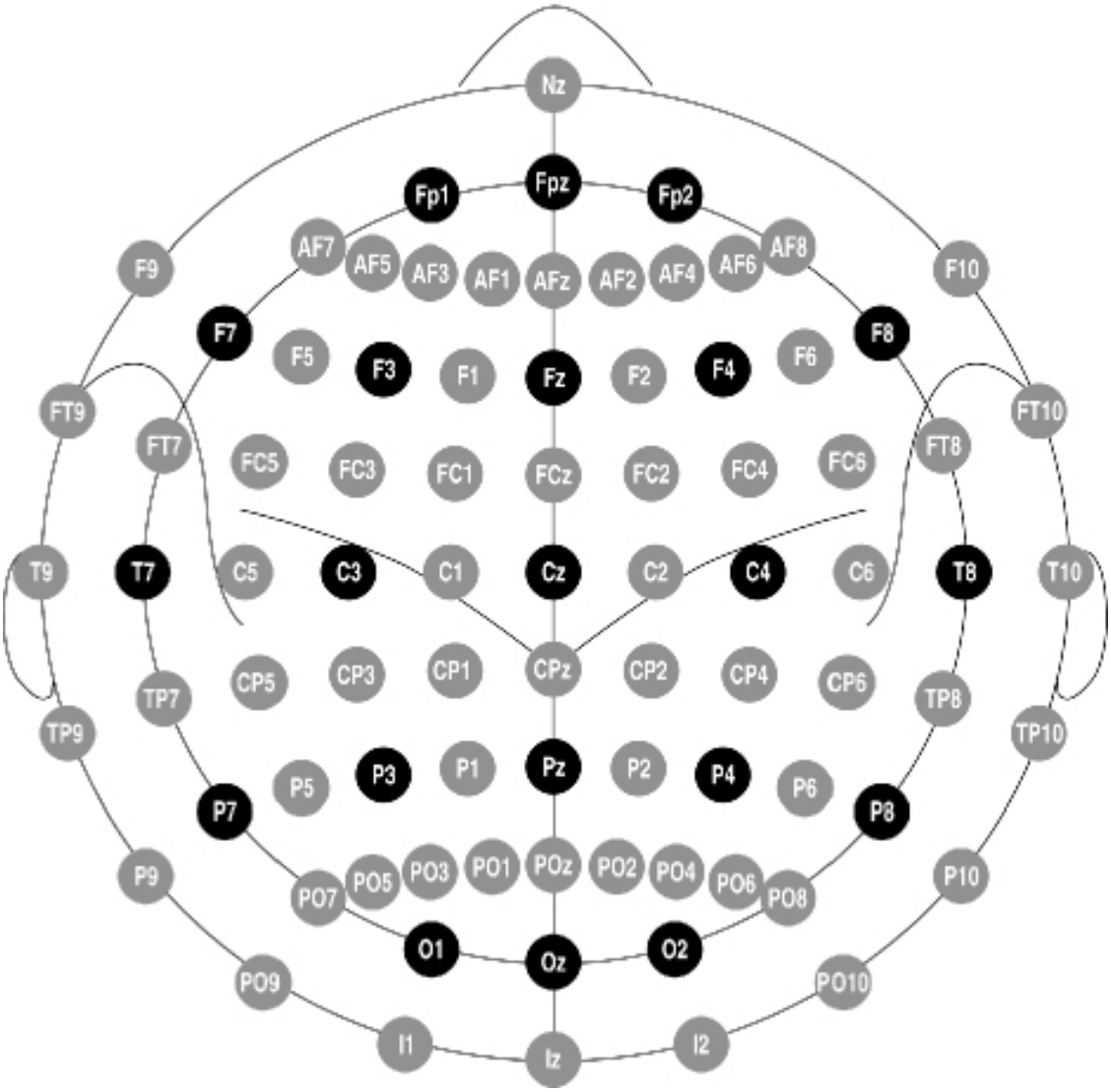
Your brain cells are now excited, your plasticity is increased. Go learn, train & focus!

Tip: Test yourself to confirm it's working

ELECTRODE PLACEMENTS

The effects of tES depend on the positioning and polarity of the electrodes. Anodal stimulation induces an increase in cortical excitability under the X electrode. Cathodal stimulation induces an increase in cortical inhibition under the Y electrode. When electrodes are placed on the shoulder or arm, the exact location is less important than when placed on the head, so long as the correct arm/shoulder is used i.e. left or right.

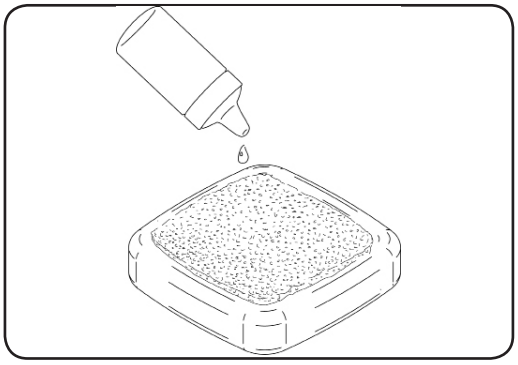
The most common system for electrode positioning is know as the 10-20 system. This system involves measuring your head and placing electrodes at the10%, 20%, 20%, 20%, 20% and 10% positions. This is shown in the dark circles below. The 10-20 system has been further divided into smaller percentages as shown by the gray circles in the same figure.



The focus headband is not designed to be as precise as the 10-10 system. The best way to find accurate electrode placements is to use the montages as a starting guide only. Measure the results from stimulation and use trial and error to find the exact location for your personal physiology.

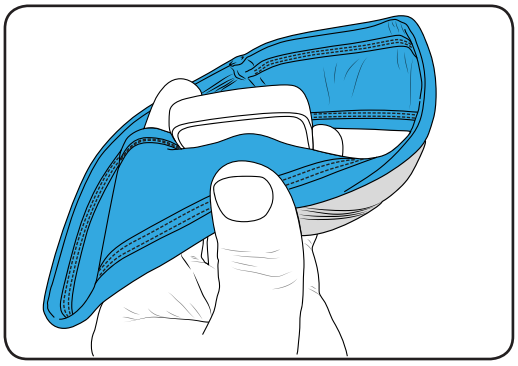
ELECTRODE SETUP DETAILS

Step by step connection instructions



1. Wet sponges in amx-y

To pass an electric current through your brain an electrical circuit must be setup between the device, cable, electrodes, sponges and you.
Sponges should be wet. Use the small water bottle to keep water handy. Be careful not to touch the black silicone as this can result in electrical burns.



2. Amx-y electrodes in place

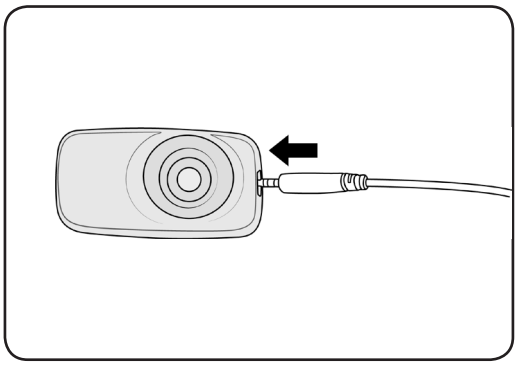
The amx-y electrode tips are designed to fit comfortably through the headband holes. Get them in place before putting the headband on your head. It doesn't matter which one you use as the polarity is determined by the cable.

Tip: Shoulder placements can be held under clothing.

3. Headband On Head

Place the headband on your head and the ensure everything is comfortable. Use the magnetic cables to complete the circuit with the amx-y electrodes.

Tip: X is the anode, Y is the cathode



4. Connect x/y cable to V3

Insert the 2.5mm 4 pin jack end of the x/y cable into the socket on the side of the V3 and you are ready to go.

Understand that the electricity will take the path of least resistance between the X and Y electrodes. This will vary with the electrodes location and cannot be precisely controlled. It is your responsibility to ensure that you place the electrodes consistently to achieve consistent results.

V3 STIMULATION MODES

What is a mode?
The mode describes the shape of the electrical signal. At a minimum V3 includes tDCS, tACS, so-tDCS, tPCS, tRNS and tRCS modes.

Each mode has a set of parameters that control the shape of the electrical output.

During a stimulation session the display of the V3 functions as an oscilloscope. It shows the real-time current graphed against time. Use it to visualize the flow of the electrical current.

tDCS provides a steady current over a period of time. An initial ramp will slowly increase the current at 0.1mA/s until the target current is reached. At the end of the session the current will be tapered off at the same rate. During the stimulation the internal electronics measure the resistance in the circuit flowing through your head 50,000 times per second and adjust the voltage to maintain a super-accurate current.

tACS is a sine shaped stimulation wave where the current changes as a function of time. Studies show that stimulating with particular frequencies can entrain brain oscillations.

so-tDCS is a unipolar slow sine wave. Unipolar means the current always flows in the same direction. It will oscillate between the offset and target current values.

tPCS is a pulsed wave with frequency and duty cycle control.

tRNS generates a random signal i.e. noise. This can be a random frequency, a random current or both. Please note that this mode can be the most physically uncomfortable due to likelihood of fast changes in current levels.

tRCS is an exclusive stimulation mode available only from Foc.us. This dynamic tACS mode uses rippled frequency changes to entrain and increase brain oscillations. The power, intensity and gradient of this change can be selected.

What is a program?
A program defines the target current, duration and mode settings to be used during stimulation. Each program allows you to quickly start a session using the most recent program settings.

You can **EDIT** the program settings to personalize the programs according to your preference by using the arrow options when you reach the **START** screen.

All programs include an advanced **PLACEBO** option. The default is placebo OFF i.e. stimulate. When set to **ON**, the current will ramp up to the target current but then ramp down - you can see this in the real-time current graph. When **PLACEBO** is set to **BLIND** the device will decide whether to stimulate or not at random. If it decides not to stimulate it will ramp up and provide a fake real-time graph so you cannot visually determine. This allows you to run double blind tests with yourself.

You can chose to set a maximum voltage for any program. This may limit the devices ability to hit the target current according to Ohm’s law.

V3 PROGRAMS

Ripple Program
Peak alpha is a marker for neural function and correlates with higher memory performance.

Unfortunately memory and peak alpha both decline with age.

tACS stimulation in alpha frequencies have been shown to entrain brainwaves.

Rippled stimulation (**tRCS**) is designed to entrain your alpha-waves. The stimulation protocol steps through increasing alpha frequencies to entrain your brainwaves into a higher peak-alpha.

With this mode you have a few settings to experiment with:

> **Power**: controls the max current Low (0.5), Medium (1.0) or High (1.5)
> **Intensity**: the target peak alpha: Gentle (10Hz), Moderate (11Hz), Vigorous (12Hz)
> **Gradient**: how quickly to entrain upwards - Shallow, Moderate or Steep

Or use **Ludicrous** settings for a 13hz intensity and 2mA of power.

The electrodes should be placed in the occipital region. You can try X & Y on the following location pairs: Cz & Oz, or P3 & P4 or O1 & O2.

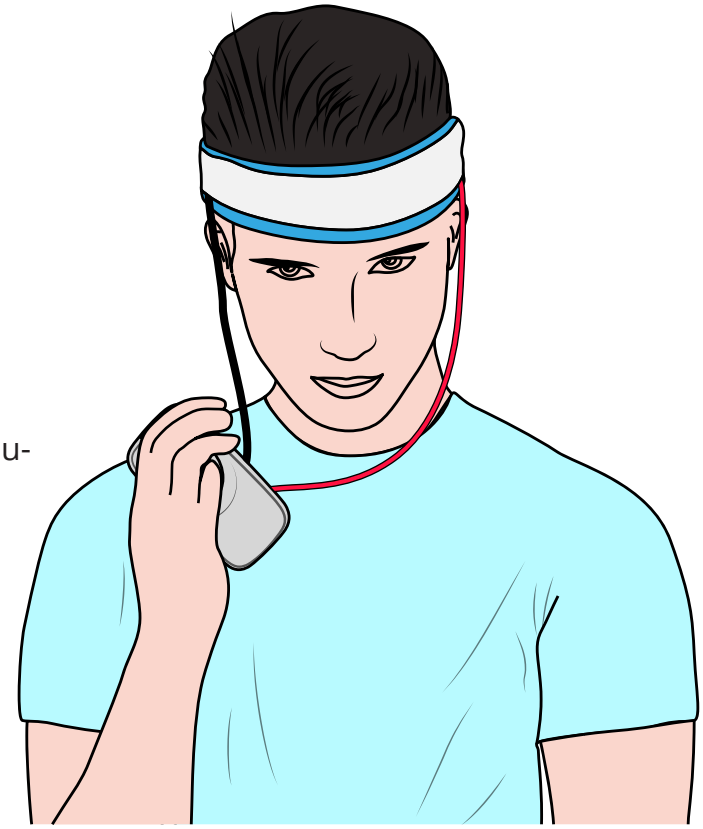
Gamer Program with tDCS
Designed to increase your working memory, focus and vigilance. Place the X over your right eye and the Y over your left to stimulate the pre-frontal cortex.

Try the included N-Back game to test your working memory before and after stimulation.

Electrical Stimulation
You are creating an electrical circuit with your head as the “load”.

The resistance of your head is constantly changing. V3 measures the resistance and adjusts the voltage 50,0000 per second.

This super-fast voltage control is combined with triple current-locking circuitry to ensure the stimulation signal is always true and safe.



EXPERIMENTAL PROGRAMS

eDream Program
Lucid dreaming is an interesting and under-researched phenomenon. In 2014 a study claimed tACS stimulation could induce lucid dreaming.

The eDream program is designed to let you try and induce lucid dreaming in your sleep.

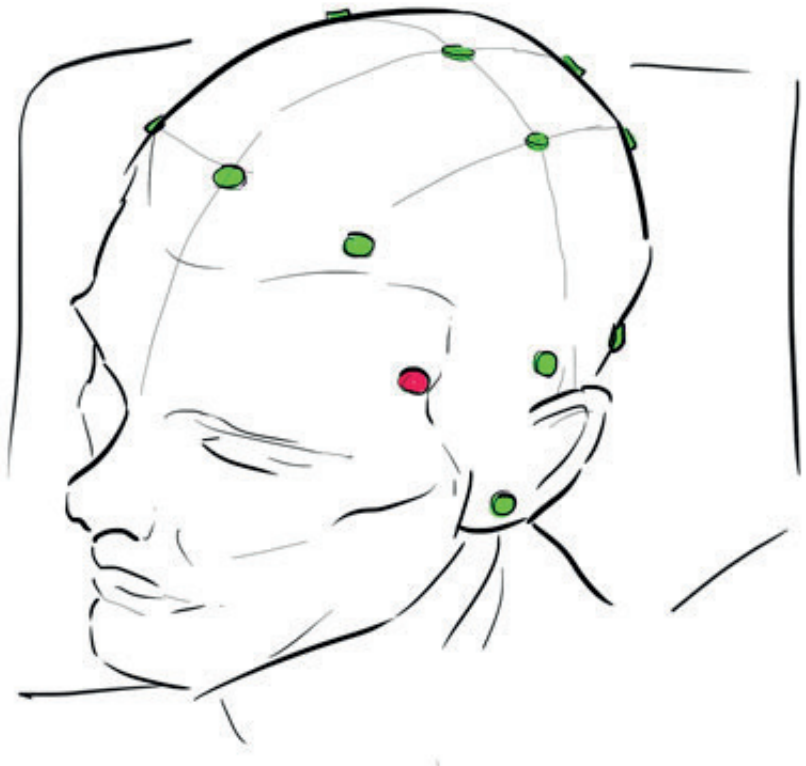
You start an eDream session before you sleep. Using a combination of a timer and movement sensor the V3 will decide when to actually start the stimulation.
The timer ensures you get enough sleep before the stimulation will start e.g. 6 hours.
Then the movement sensor will check that you are not moving e.g. deep REM sleep stage.

If both of those conditions are met, the stimulation will start.

Noise, Pulse, Wave and 3rd Eye
These are experimental programs added at the request of Foc.us customers.

- Noise stimulation showed promise in studies about learning maths
- Pulse has been used for vigilance and attention switching tasks
- 3rd eye was an extra high frequency added to target the pineal gland - also known as the 3rd eye. More information can be found on the website.

If you have a novel stimulation request please post on the Foc.us forums and we will consider developing it for you.



Other Features

- **Calibration**. This feature lets you find the stimulation level that is comfortable without being influenced by knowing the actual value. Follow the steps on the screen to calibrate your device. This calibration value will override a programs current value setting.
- **N-Back** is a simple game to recall a symbol “N” appearances ago. You play by tapping the V3 body whenever you see the character that matches the character N appearances ago. Whilst playing the game you will see a tick or cross when you tap the device to show if you are right or wrong.
- **Track** is an experimental feature that lets you track the devices movement using the on-board 3-axis accelerometer data.
- **BLUET00TH** enables you to control your V3 from a compatible mobile app or via the API
- **SAFETY** allows you to prevent over use by setting a minimum time period between sessions.
- **RESET** allows you to restore all programs and device settings to factory defaults

What to expect?

- **What to expect from brain stimulation**
- You may feel a tingling when the stimulation starts. For most people this sensation is comfortable but if it is not you can try lowering the current level.
- The increased excitation levels of your neurons caused by the stimulation move your brain into a ready state. This state will naturally wear off so you should look to undertake your neuronal activity immediately after the stimulation session ends.
- Studies have shown these stimulation montages work. However, there are factors that can negatively impact your results. By changing the current (both down and up) and duration on different sessions over different days, you can find the best settings for your own unique brain physiology.
- Electrode placement cannot guarantee the exact path of electrical current flow so results can vary between sessions.
- tDCS is much less influential on the brain than drugs or alcohol and should not be combined with either.
- Studies have shown that time of day can effect stimulation results.
- Check the Foc.us website for new montages and new ways to use your V3.
- Good luck and take charge

SPECIFICATIONS

Foc.us V3 Specifications

Size	58mm x 28mm x 16mm
Weight	21g
Battery	3.7V, 190mAh Lithium Polymer Rechargable Battery Pack
Features	• 2.1mA maximum current, 65V maximum output voltage • 1 to 40 minute duration timer • BLUET00TH Low Energy 4.1 • Triple current protection • 0.1mA/s up and down ramping • Blind Sham Placebo • 0-1Khz Frequency Range

Problem	Solution
Current won't reach target current during session?	Try increasing the maximum voltage using EDIT program settings.
Current won't go above 0mA?	Check all connections in circuit - cable, electrodes, sponges and head.
Device wont turn on or charge?	Connect USB charging cable to suitable powered outlet and V3. Try long press (30 seconds) of blue joystick to reboot V3.
Headband doesn't fit	Try holding the electrodes via another method.
Painful sensation?	If you experience discomfort you should stop using Foc.us
Missing Programs?	Use SETUP > Factory reset.

WARRANTY & GUARANTEE

Foc.us warrants the Foc.us V3 (the “Product”), and only the Product, against defects in materials and workmanship under normal use for a period of twleve (12) months commencing on the date of original purchase by the original purchaser (the Warranty Period). This warranty does not cover damage caused by misuse, accident, abuse, natural and/or external causes (i.e. fire, earthquake, flood, etc.), use other than as intended and described in the Product instruction manual, finishes, normal wear and tear, tampering, unreasonable use, service performed by unauthorized service agents, or loss or damage to the battery. Foc.us does not warrant that the operation of the Product will be uninterrupted or error-free.

Limitation of remedies

- Under this Limited Warranty, Foc.us liability and customer’s exclusive remedy under the foregoing paragraph will be limited to replacement or repair of the Product by foc.us or its authorized service centers. A replacement Product or part assumes the remaining warranty of the original Product or ninety (90) days from the date of replacement or repair, whichever is longer. To obtain warranty service, contact help@foc.us For your security, please return your Product with an insured carrier (e.g., FedEx, UPS, USPS Parcel Post) and retain your receipt. Foc.us is not responsible for items damaged or lost in transit. Other than for the reason of hardware defects, the return freight cost responsibility belongs solely to the customer.

Limitation of damages

- In no event will Foc.us or any of its affiliated or subsidiary companies be responsible for any special, incidental, or consequential damages resulting from the use of this Product, or based on any breach of warranty, breach of contract, negligence, tort, or any other legal theory. Such damages may include, without limitation: loss of savings or revenue; loss of profit; loss of use; the claims of third parties, including without limitation retailers; any cost of any substitute equipment or services. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you. The warranty gives specific legal rights, and you may have other legal rights, which vary from state to state or country to country. This Limited Warranty is valid only in the United States and Europe for Products sold in the United States and Europe. Resellers, agents, or employees of Foc.us are not authorized to make any modification, extension, or addition this Limited Warranty.

FCC

- FCC warning statement: 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. This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. Changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

Technical support

Brain Control Co. Ltd.

88 Paul St
London EC2A 4NE
UK
Tel.: +44 (0)8432 899833

help@foc.us
https://foc.us

European Engineers

1017 El Camino
Redwood CIty 94063
US
Tel.: +1 415 9387831

help@foc.us
http://foc.us

SUPPORT

More information is available on the website: https://foc.us/
You can email help@foc.us if you have any questions or concerns.
Help can also be found at https://foc.us/forums

Equipment providing body floating protection against electric shock.