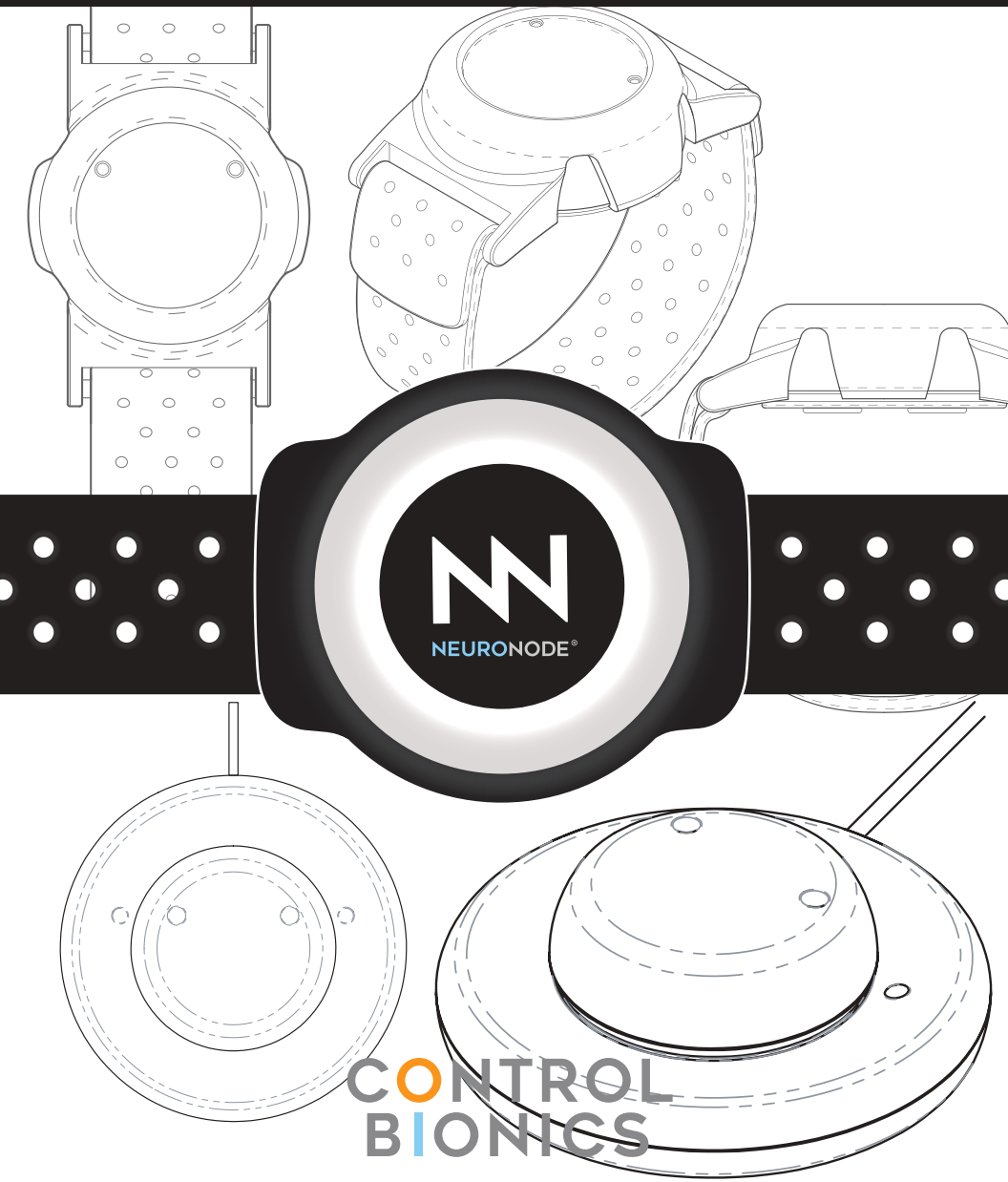
NeuroNode
USER GUIDE

Client Support
USA: 1-855-831-7521
AUS: 1300 971 744



CONTROL BIONICS

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Catalog Number: 27-3500
User Guide, Revision M

Address comments, questions, or requests pertaining to this manual to:

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Milford, Ohio 45150
www.controlbionics.com
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US: (513) 453-4848
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AUS: +61 3 9897 3576

The NeuroNode is listed and registered with the FDA as a Powered Communication System and a Powered Environmental Control System and certified by the Australian Government Department of Health Therapeutic Goods Administration.

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20240412

Catalog Number: 27-3500
User Guide

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.

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 technician for help.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Intended Purpose: NeuroNode is an Augmentative and Alternative Communication (AAC) device intended to provide noninvasive, electromyographic (EMG)-mediated computer access, communication, and environmental control capability for users with impaired speech and/or motor function. Other user actions and gestures (e.g. touch, visual, movement) can complement this EMG-based computer control.

NeuroNode is non-sterile and reusable, and is intended to be used continuously for up to 24 hours in contact with the user's intact muscle-contacting skin surface.

It is intended that either users themselves (depending upon the extent of their communication or mobility limitations) or their caregivers fit the NeuroNode to the user and place the electrode sensors on the user's skin.

It is intended that during routine use, the NeuroNode electrode sensors are placed over target muscles that meet two criteria:

- The target muscle responds, at least minimally, to a command for contraction; and
- The target muscle returns to a resting state in order to differentiate one activation from another.

Indications: NeuroNode uses the body's bio-electrical EMG signals to control a computer and/or generate speech.

NeuroNode is comprised of AAC technology that is easy to use and is indicated for users suffering from diseases or conditions which limit their motor functions and communication abilities such as ALS (Amyotrophic Lateral Sclerosis, also known as Lou Gehrig's Disease), MND (Motor Neuron Disease), SCI (Spinal Cord Injury), or cerebral palsy.

Contraindications: NeuroNode is not indicated to be a life-supporting device or the user's sole means of communication. An alternative communication method should be available at all times. The NeuroNode is not indicated to be the user's sole means of environmental control or computer-controlled mobility. Use of the NeuroNode for these purposes must be performed under supervision.

NeuroNode System

Made in the USA

Refer to the packing list included in the carton for a list of packaging contents

MD REF PL-27-1000

EC REP

Compliance Management Solutions Europe LTD.
2 Bulgaria Str
2850 Petrich
Bulgaria.

Control Bionics Inc.
745 Center Street
Suite 303
Milford, OH 45150 USA

UK REP

CMS UK
Compliance Management Solutions UK
Flat 13, 10 Elm Road
Wembley
LONDON
HA9 7JR England UK

LATEX

UK CA CE

Reporting:
In the unlikely event that a serious incident occurs as a result of your supplied NeuroNode product, please report immediately to Control Bionics. In addition, the competent authority of the Member State in which the user and or patient reside, should be contacted.

Disposal:
At the end of product life cycle, it is recommended to follow all local E-Waste policies and procedures in disposing of your NeuroNode equipment.

Warnings and Precautions

Battery Handling: When the NeuroNode battery is nearing the end of its useful charge, the NeuroNode will blink yellow. The NeuroNode should be placed on the charger and recharged at this point.

Unless the NeuroNode is already charged within 10% of its capacity, the red charger light should illuminate when the NeuroNode is placed on the charger. The red charger light will turn off once the NeuroNode is fully charged.

Environment: Do not allow a conductive object to touch the battery contacts on the bottom of the NeuroNode.

Warnings in this document are indicated with this symbol:
Adherence to the noted warnings will promote safe and efficacious use of the NeuroNode.

Precautions in this document are indicated with this symbol:
An understanding of the noted precautions will enhance the usefulness of the NeuroNode.

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1.0 Welcome to NeuroNode



The NeuroNode uses the body's bio-electrical EMG (electromyography) signals or 3D Spatial awareness to give a user complete control of a computer to generate speech, browse the web, listen to music, and more.

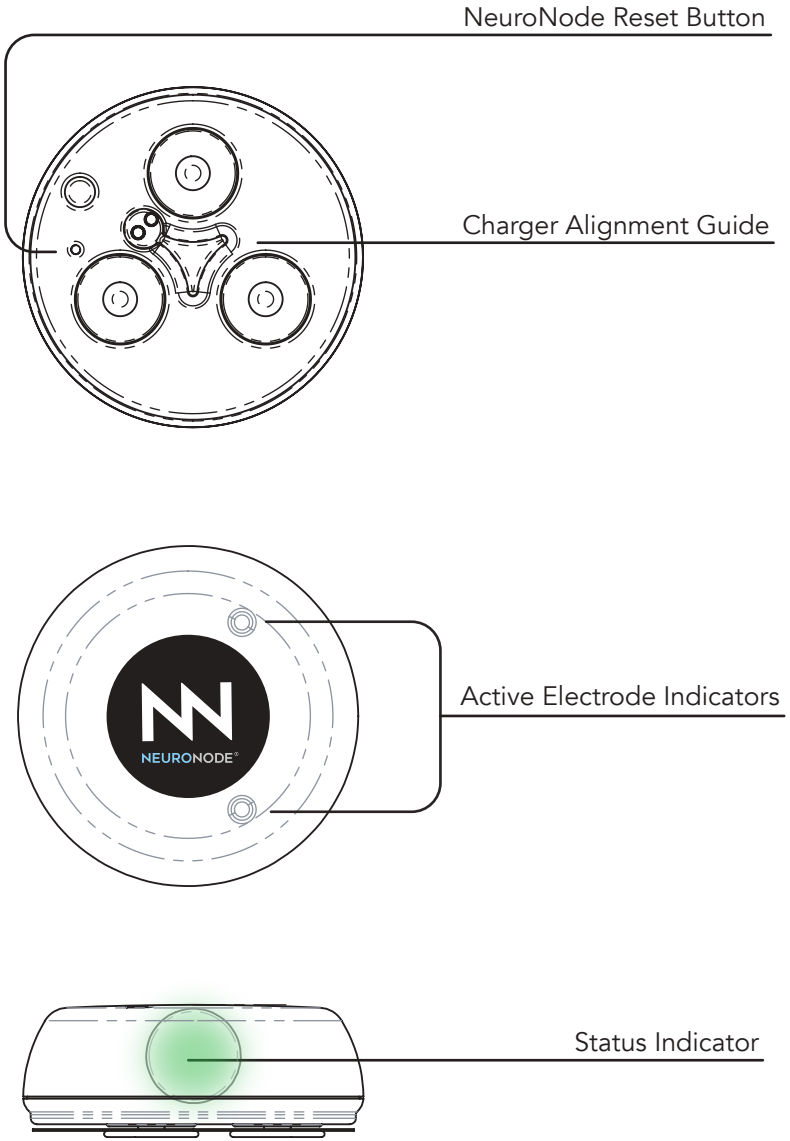
It is alternative/augmentative communication (AAC) technology that is easy to use and works for conditions like ALS, MND, SCI, or Cerebral Palsy.

The NeuroNode Controller App, installed on the user's iOS or Windows device, is used to set the signaling parameters while simultaneously graphing the user's EMG/Spatial signals.

The above are trademarks of their respective companies

1.1 Overview of NeuroNode

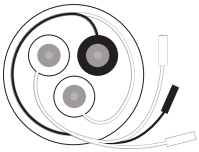
This user guide reflects the current configuration of the NeuroNode. Previous versions of the NeuroNode may differ in the feature set, battery management, reset functions, and the behavior of the indicator light. Contact Control Bionics for more information.



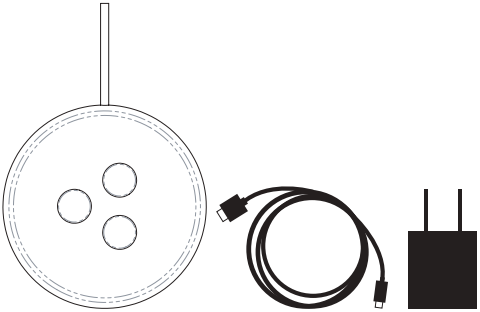
1.2 Overview of Accessories



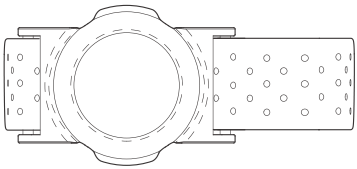
NeuroNode



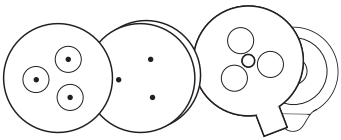
Lead-wire Adapter Base



Charger Kit

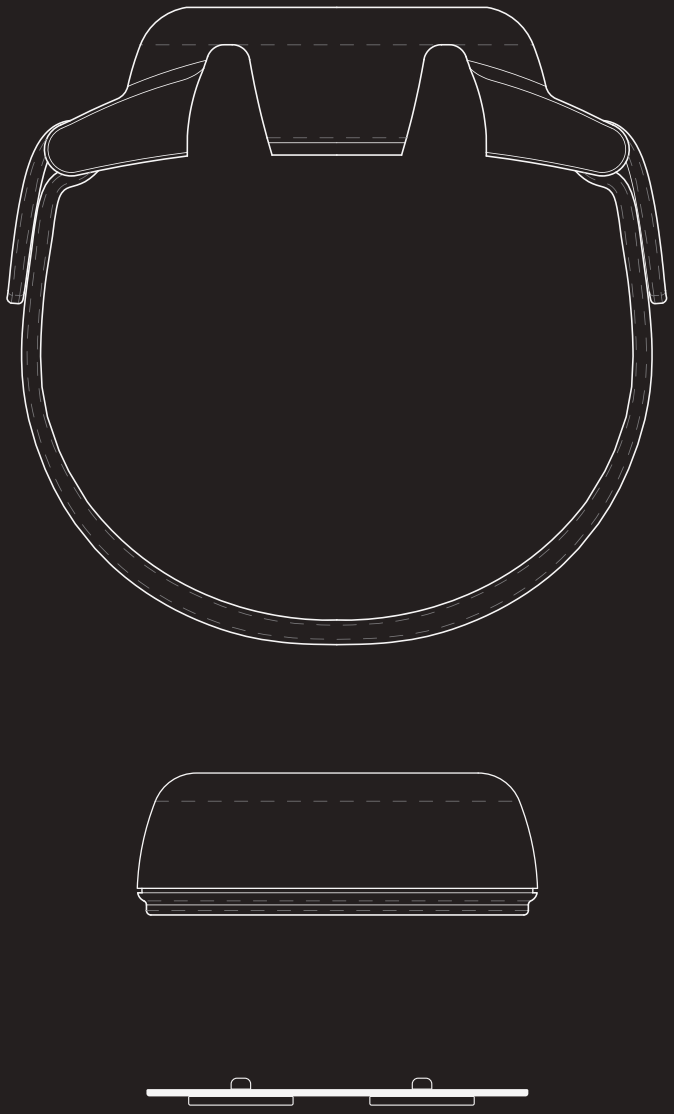


NeuroNode Band



Electrode Kit

Item	What It Does
NeuroNode	The NeuroNode is a wearable, wireless, EMG + 3D Spatial AAC device for communication and control.
Lead-wire Adapter Base	The Lead-wires connect to the Lead-wire Adapter Base of the NeuroNode. The three Snap-leads on the other end of the Lead-wires attach to the electrodes on the user's skin.
Charger Kit	The NeuroNode Charging Base and included cords allow for hassle-free charging for up to 24 hours of battery life.
NeuroNode Band	The NeuroNode Band is an adjustable, adhesive-free solution for placement of the NeuroNode on the user's skin.
Electrode Kit	A starter electrode kit is included with the NeuroNode. This kit includes both adhesive and non-adhesive solutions as required.



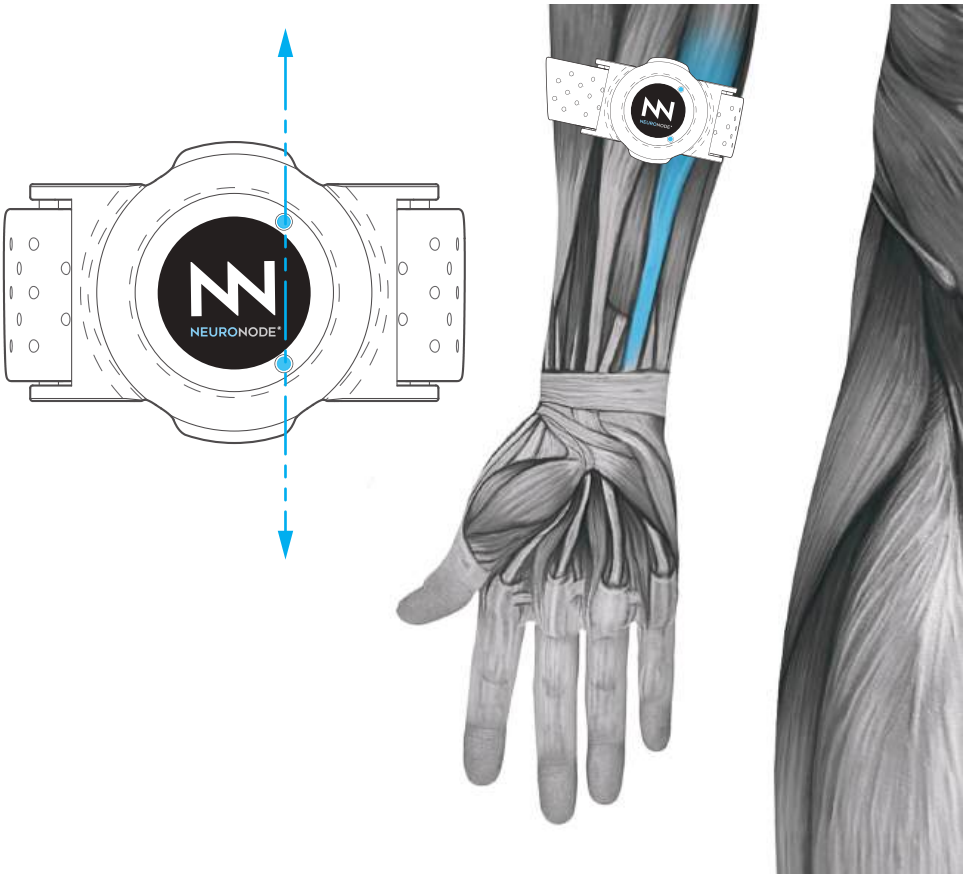
NeuroNode Band + NeuroNode + Non-Adhesive Electrode

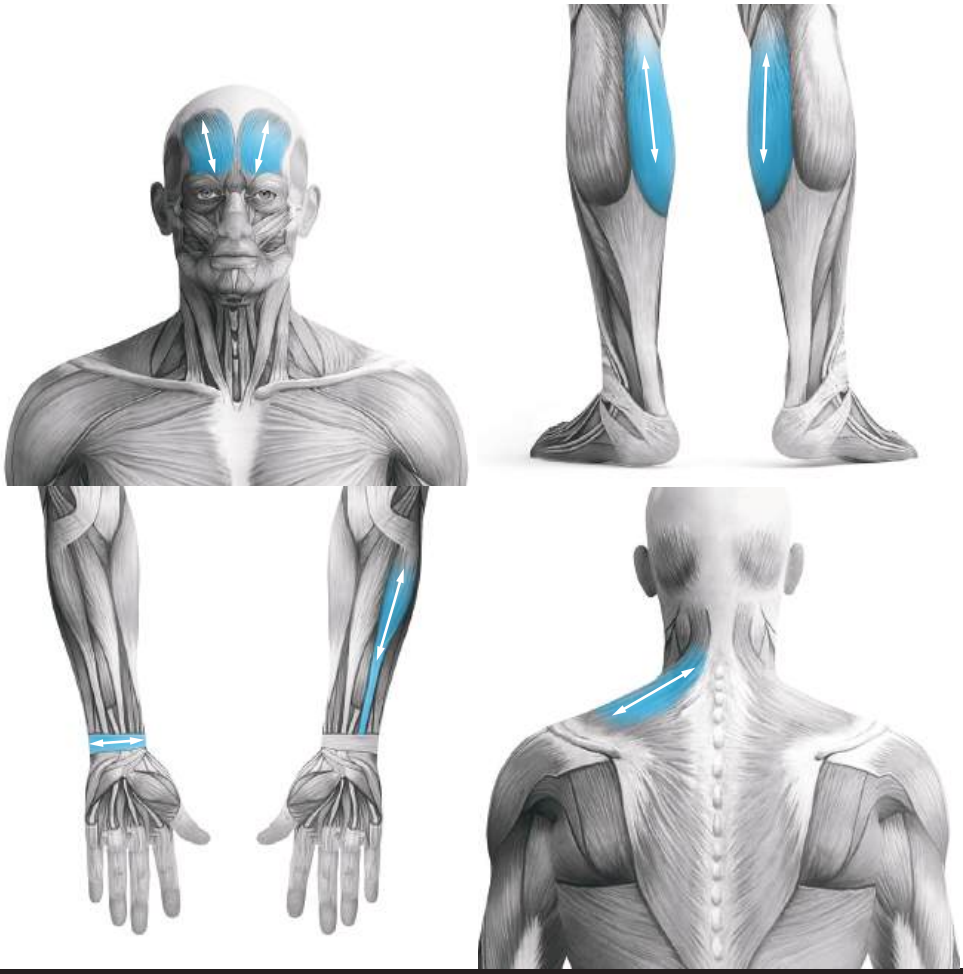
2.1 Positioning the NeuroNode Using EMG

Although the placement of the NeuroNode does not have to be exact, there are some general guidelines for placing the device on the muscle site.

When using the Non-Adhesive Electrode and NeuroNode Band, or the "Triple" adhesive electrode, the two active electrodes are located on the bottom of the NeuroNode, as indicated by the Active Electrode Indicators on the top of the NeuroNode. The active electrodes should be placed along the length of the muscle chosen to generate a "Switch."

When using "Single" electrodes and the Lead-wire Adapter Base, the two active electrodes (white snaps) should be placed along the length of the muscle chosen to generate a "Switch." The reference electrode (black snap) should be placed, forming a triangle, to one side or the other of the two active electrodes.





2.1.1 NeuroNode EMG Placement

The EMG Target Muscle is chosen during the assessment, but can be changed at any point. Only one effective Target Muscle is needed to use the NeuroNode. This muscle is chosen based on two criteria:

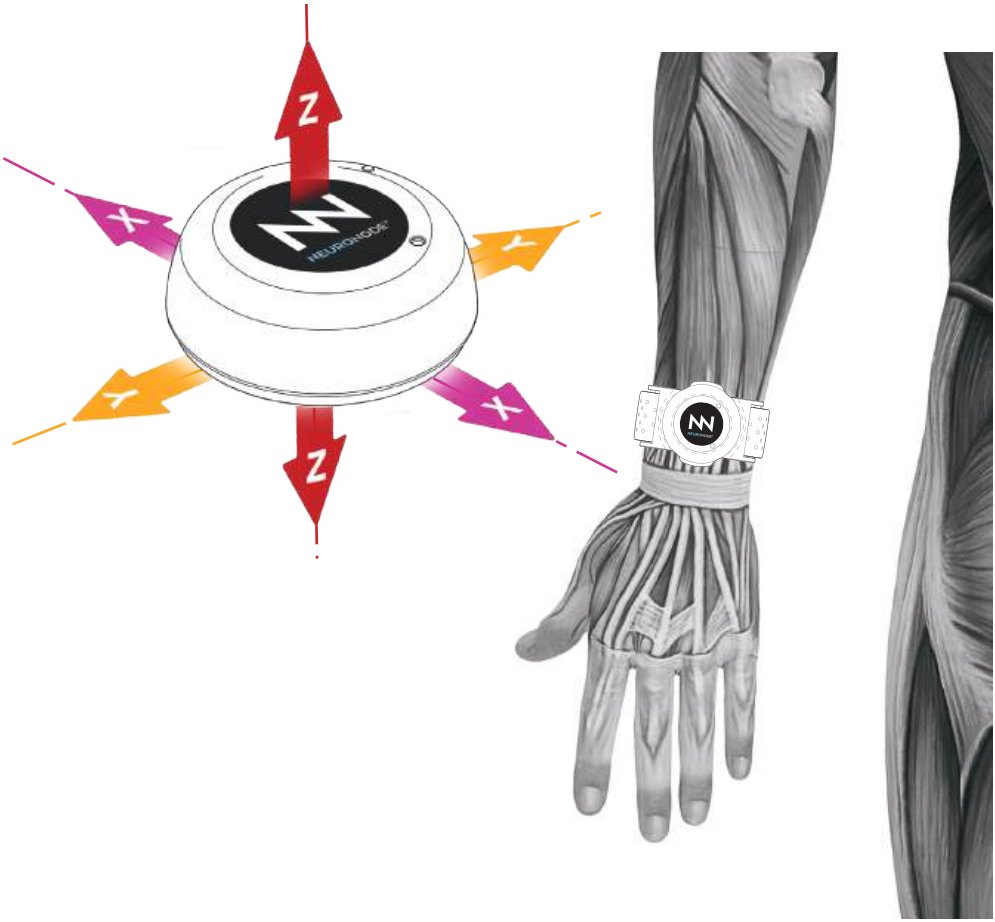
It should respond, at least minimally, to a command to contract the muscle.
The muscle should return to a resting state in a timely manner.

The muscle does not need to function at optimal levels. The NeuroNode is designed to respond reliably and accurately to minimal signals at the Target Muscle site.

2.2 Positioning the NeuroNode Using 3D Spatial Control

Three axes define movement: X, Y, and Z. The Graph Settings page allows for the sensitivity of these axes to be changed in order to magnify or diminish their importance in the calculation of "Activity." For example, if the NeuroNode is placed on the foot to capture a toe tapping motion as a switch (strapped in place but no electrodes required), then the Z axis will be set to 100% and the X and Y sliders would be set to 0%.

The Graph Settings page also allows for the X, Y, and Z activity to be graphed along with the Spatial Activity. This visualization is useful when first determining the percentages of the X, Y, and Z Activity sliders. Once the sliders are set, it can be helpful to turn off the display of X, Y, and Z in order to simplify the graph and give the user a single Activity line to focus on. Selecting Static scaling and setting Signal On and Signal Off values will provide the best possible Switch. Like an EMG Switch, the Spatial Switch should require a minimum amount of effort while consistently filtering out activity that is not intended as a Switch.



2.2.1 NeuroNode using 3D Spatial Control

The NeuroNode Spatial mode provides an alternative method of Switching. In the Spatial mode, the NeuroNode is placed on a point on the body that is registering voluntary movement. Ideally, the NeuroNode is attached at the point of maximum deflection for a particular movement. For example, if the movement is an arm extension, the NeuroNode could be placed on the wrist. This movement is captured by the NeuroNode and processed to create a graph of Activity that looks nearly identical to the EMG graph. The Graph Settings also have the same format; the units simply change from microvolts to "Gs" (i.e., units of gravity).





2.3 Connecting the NeuroNode

The NeuroNode is shipped ready to be paired with a device upon arrival. To pair the NeuroNode to another device, follow these steps:

1. Ensure the NeuroNode is fully charged.

2. Power on the device and access the device's Bluetooth Settings.

3. Ensure the device's Bluetooth is turned ON and Shake to Wake the NeuroNode.

4. For Windows, discover and pair the NeuroNode in the Bluetooth settings prior to step 5.

5. Launch the NeuroNode Controller App and connect as prompted.

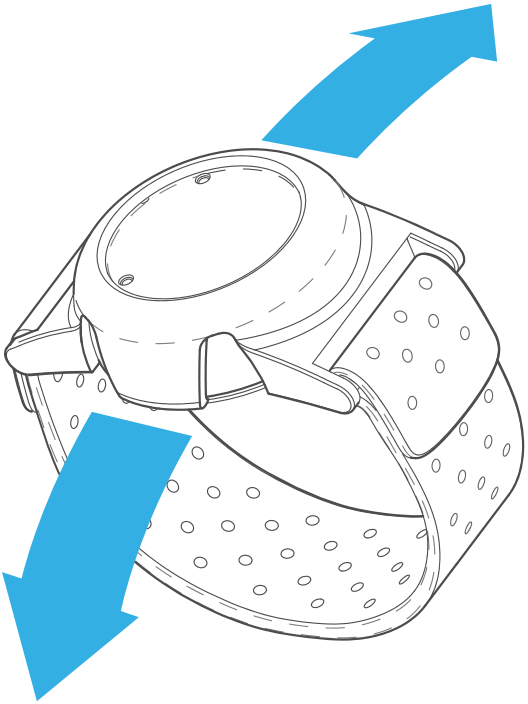
2.3.1 NeuroNode Shake to Wake

To wake up the NeuroNode from Standby mode, shake it back and forth. The NeuroNode will detect the motion and begin blinking one of two colours:

Blinking Blue, means the NeuroNode is Bluetooth searching and is available for connection to a device.

Blinking White, means that the NeuroNode is connected to a device and ready to detect EMG or Spatial activity

Use the Shake To Wake slider on the Advanced Settings display to set the wake up sensitivity. The left-most setting will allow wake up with the slightest of movements (e.g., lifting the NeuroNode off the charger). The right-most setting will set the NeuroNode to require a vigorous shake to wake up.



If the NeuroNode wakes from Standby mode and begins to periodically blink Red, this means the NeuroNode is in an error state and will need to either be disconnected from a previously connected device or reset.

2.3.2 Establishing a Good Signal

Upon connecting to the NeuroNode, it is important to establish a good signal. This will become the user's "Switch" for selecting items and controlling the device.

Most importantly, there should be a clear difference between the "resting" level and the "switching" level.



2.4 Signal Indicator

As a stand-alone switch, the NeuroNode has a built-in indicator to notify the user at the instance of a good signal or Switch.



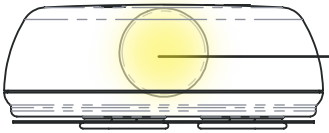
NeuroNode Connected

The NeuroNode is active and bluetooth broadcasting

Switch Signal

A green blink means the EMG/Spatial signal was counted as a switch





Low Battery

The NeuroNode has reached the last fourth of its battery life; recharging is recommended

Bluetooth Searching

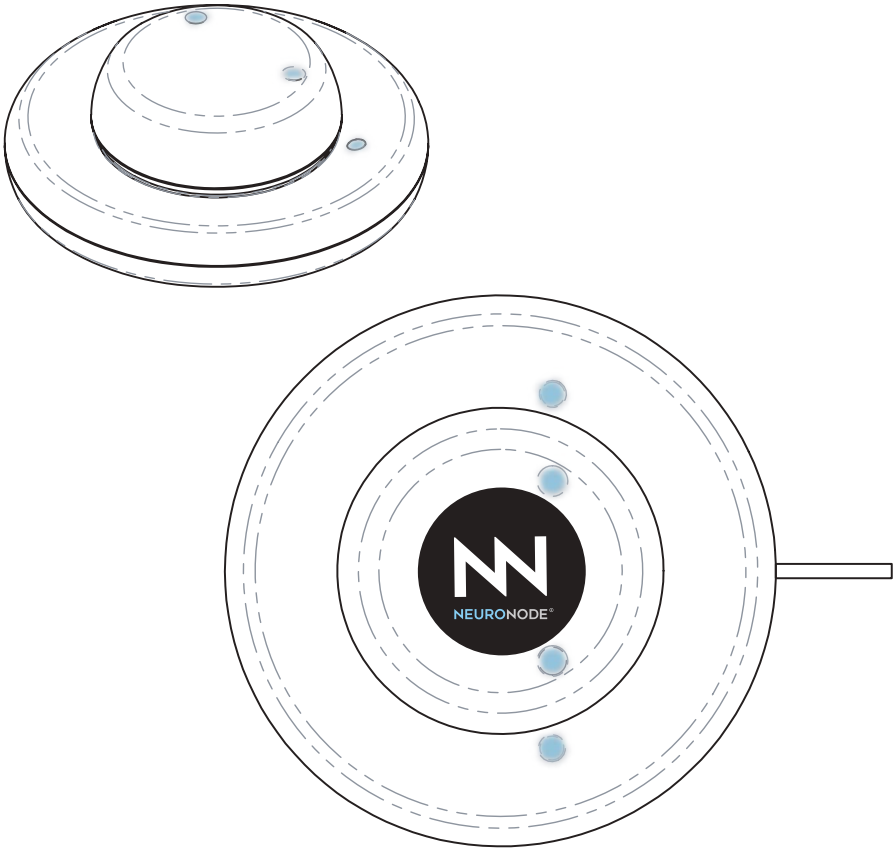
The NeuroNode is searching for a Bluetooth connection and will return to standby after 60 sec





Error

The NeuroNode is in an error state; contact support or initiate a Reset / Bluetooth Scrub



2.5 Charging the NeuroNode

1. Using the provided cable, connect the charger to the provided wall port.

2. Carefully align the NeuroNode with the NeuroNode charging indicators in order to ensure the device is charging properly.

A green light on the charger base indicates the NeuroNode charger is properly powered.

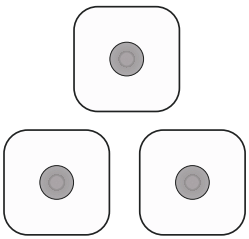
When the NeuroNode is charging, a second light (red) on the charger base will indicate the device is charging.

A full charge is indicated when the red charging light turns off.

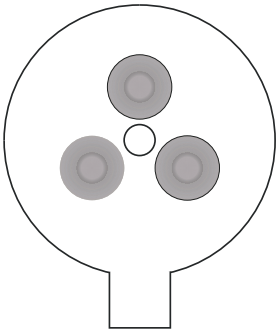
2.6 EMG Electrode Options

Good skin prep and proper electrode arrangement are all-important. EMG signals measure in the millionths of a volt, and electrical signals are everywhere, from cell phones to transmission towers to fluorescent lights. Correct electrode set-up helps ensure the NeuroNode can tease out unwanted signals, leaving only the EMG signals to be processed as the "Switch" for the NeuroNode Controller App.

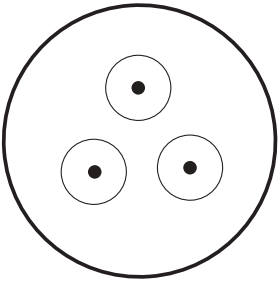
Use skin prep to remove oils, dirt, and dead skin cells from the surface of the skin. This will help to ensure good contact is made between the skin and the conducting surface of the electrodes.



Single Use,
Individually Gelled Electrodes



Single Use "Triple"
Single Adhesive Disk
with 3 Snap Connectors



Reusable,
Non-Adhesive Electrode

Control Bionics recommends using the Non-Adhesive Electrode along with the NeuroNode Band for the most convenient setup; however, some users will need to use adhesive electrodes to produce a reliable signal.

In order to use Lead-wires for individual electrodes, the NeuroNode comes with a Lead-wire Adapter Base. Simply orient the plastic keying points on the face of the adapter plate with the matching keying points on the bottom of the NeuroNode. Take care that the two pieces are aligned before snapping them together.

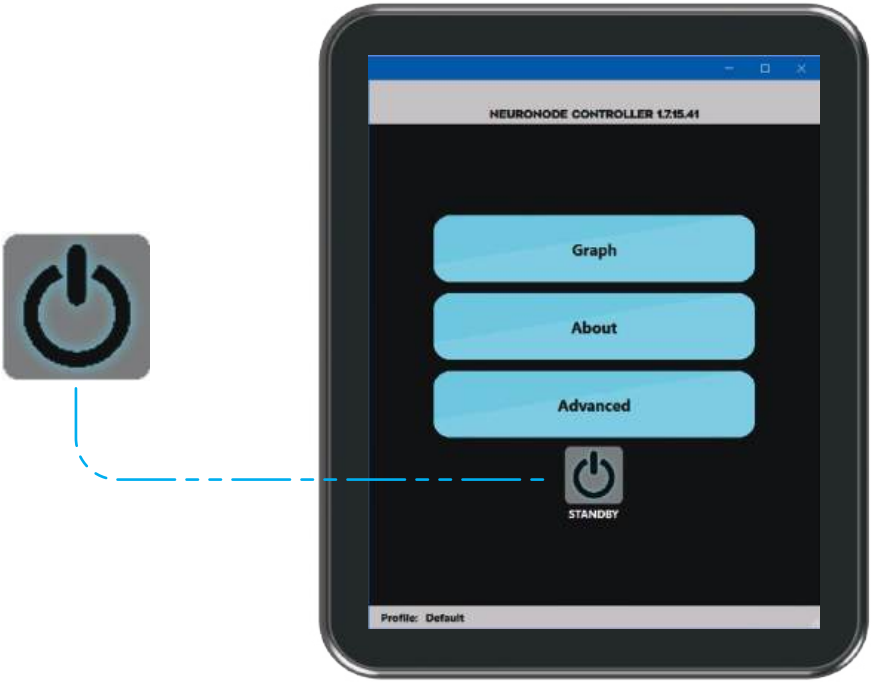
Observe the black and white color-coding of the Lead-wires (two white, one black) and match them to the accompanying connectors exiting the Adapter Plate.

2.7 Putting the NeuroNode in Standby Mode

At times it will be helpful to end a current NeuroNode session in order to resume at a later time. In order to ensure this does not disrupt the user's connection, click the Standby Icon from the NeuroNode Controller App Main Menu to place the NeuroNode into standby mode.

Alternatively, follow step one listed in the Power Cycle Guide to put the NeuroNode in standby mode.

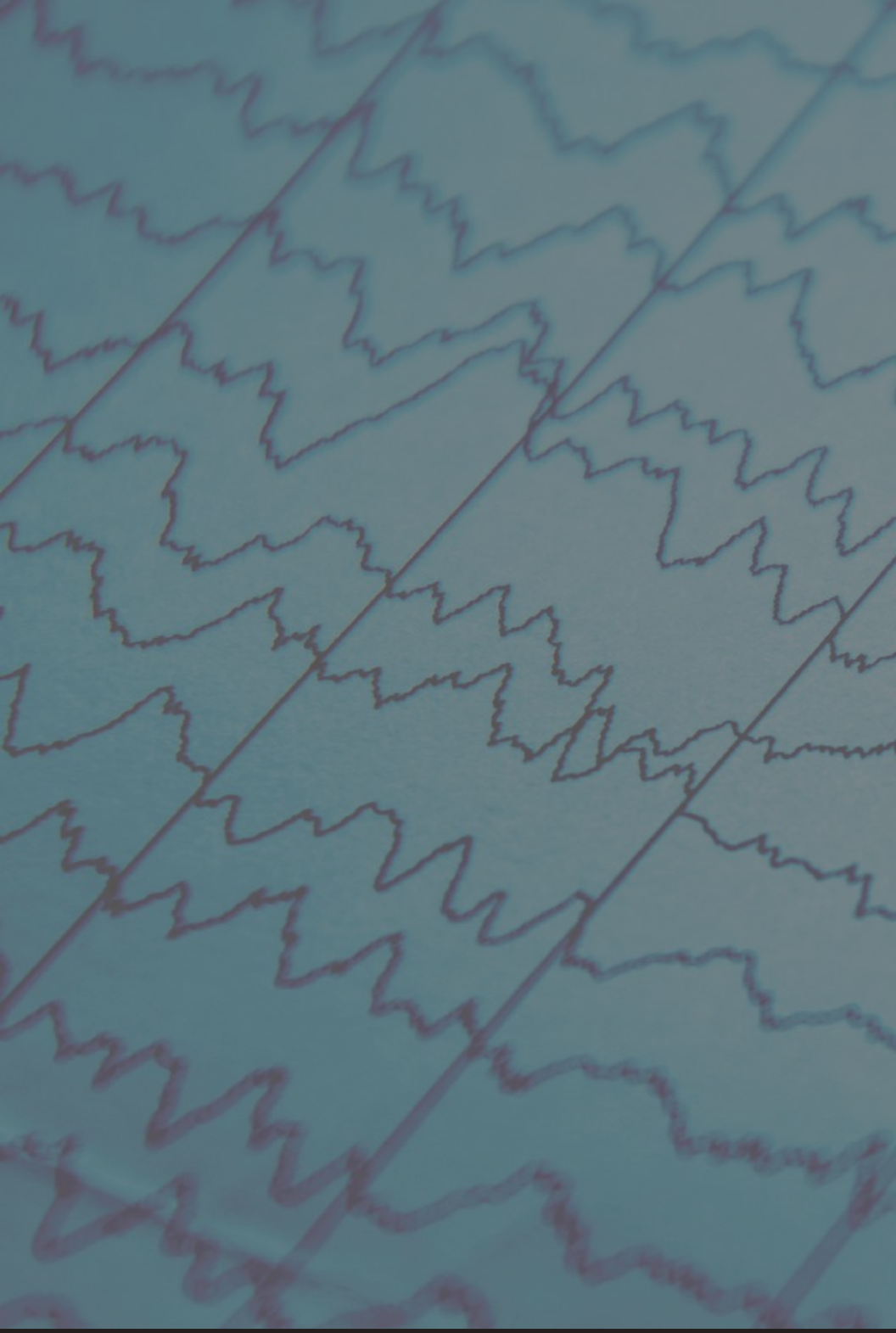
When in Standby Mode, the NeuroNode will turn off its indicator light to conserve battery life.



2.7.1 Resuming a NeuroNode Session

In order to resume a NeuroNode session and remove the device from Standby mode, shake the NeuroNode and it will transition out of Standby, allowing the NeuroNode to be connected in the NeuroNode Controller App.

Optionally, use the provided push pin tool to briefly push the Standby button on the bottom of the device.



3.0 NeuroNode Controller App

The NeuroNode Controller App is designed to operate as a companion app to the tablet device and NeuroNode unit. The application allows the user to adjust parameters and monitor the EMG/Spatial signal activity to ensure optimal signal outcomes for efficient and effective control of the user's device.



3.1 Graph Menu

Home Menu:
Clicking this icon will return the user to the Home Menu.

Graph Settings:
See page 22 for more information about the NeuroNode Controller App Graph Settings.

Save Settings:
Clicking this icon will save the current settings of the graph and advanced settings to the profile of choice. On power-up, the NeuroNode will allow the user to choose a profile from a list of prevously saved Profiles.

Play/Pause:
This will pause or play the real-time graphing of the EMG/Spatial activity. When Paused, the NeuroNode will be disconnected as an input device. This can be helpful for performing maintenance or updates to the device.

Profile:
Clicking this icon will allow the user to choose from a list of saved Profiles. Deleting one or more Profiles is also available via the Profile dialog. See page 26 for more information about profiles.



Switch Adjust Menu:

Pressing or clicking anywhere on the graph will bring up the Switch Adjust Menu to allow changes to the Signal On and Off switching thresholds. The Signal On + & - buttons will increase or decrease the relevant line by 1 microvolt or 0.01 gravity. When Dynamic Scaling is active, the Signal Off threshold adjustment will not be available as this setting is automatically set based on the user's average activity. Clicking the back icon will return control to the Graph Menu.

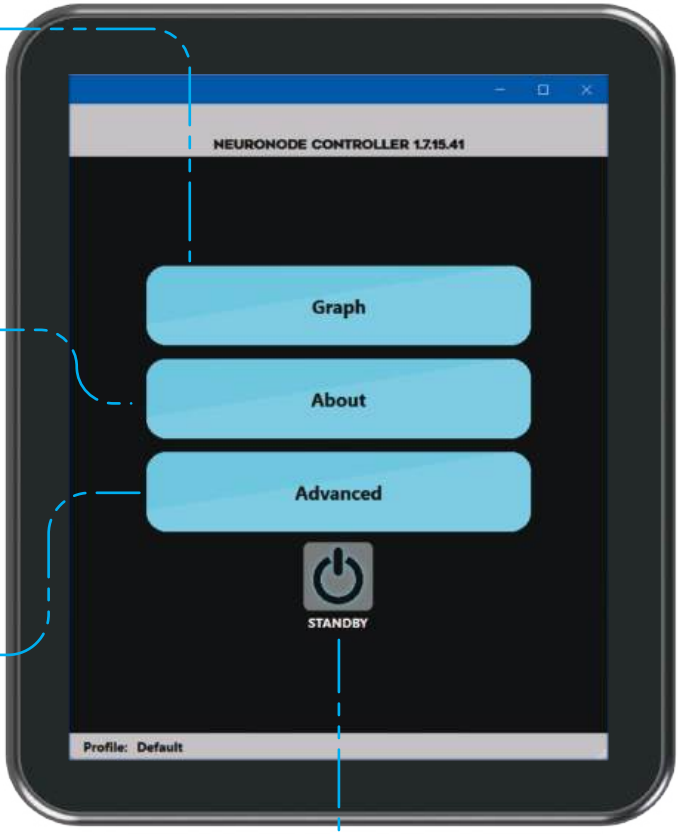
3.2 Home Menu

The Home Menu is accessed by selecting the Home icon from the Graph Menu.

Graph:
Pressing this button presents a graph that plots the real-time measurements of the user's Switching activity. Most often the Switching parameters are set based on the results noted on the graph.

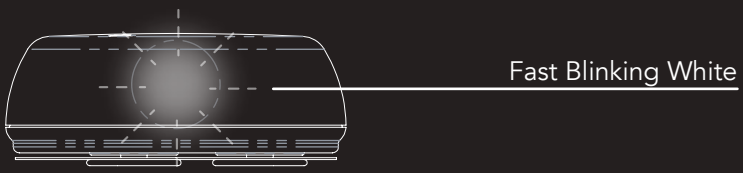
About NeuroNode:
Pressing this button will display identifying information about this NeuroNode System, including the serial number of the NeuroNode, the software version of the Application, and the firmware version of the NeuroNode itself.

Advanced:
Pressing this button will provide access to advanced Settings display and various troubleshooting features. See page 28 for more information.



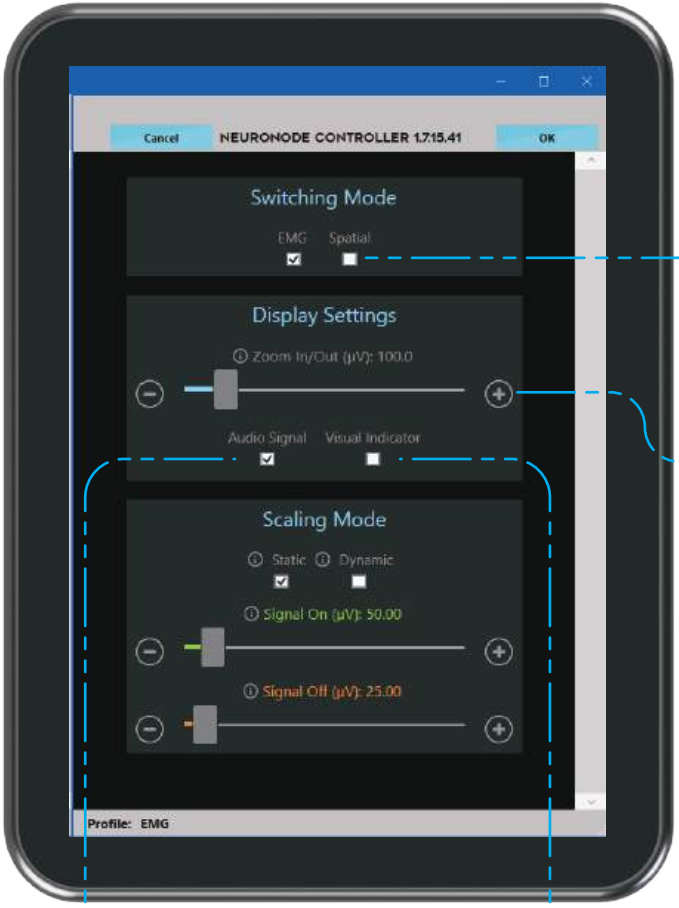
Standby:

Press Standby to turn off the NeuroNode's Bluetooth and place the NeuroNode into a low-power mode, the NeuroNode will blink white rapidly for 2 seconds. To reconnect the NeuroNode, Shake to Wake and reconnect to the NeuroNode Controller App.



3.3 Graph Settings

Access the Graph Settings page by selecting the Settings icon in the center of the Graph Menu.



Switching Mode:
Toggle on "EMG" to use the NeuroNode in the EMG mode. Toggle on "Spatial" to use the NeuroNode in the Spatial mode.

Zoom In/Out:
Adjusts the signal range viewable on the graph page. Setting this parameter to 100 microvolts, for example, will allow EMG signals of 0 to 100 microvolts to fully appear on the graph.

Audio Signal Indicator:
Directs the Application to beep when a successful switch activation is made.

Visual Signal Indicator:
Directs the Application to flash the display when a successful switch activation is made.

3.3.1 Graph Settings: Static Scaling

Static Scaling allows for the manual setting of fixed criteria that the EMG/Spatial signal must satisfy in order to be counted as a Switch. These criteria can be changed on the Graph Settings page or the Switch Adjust Menu.

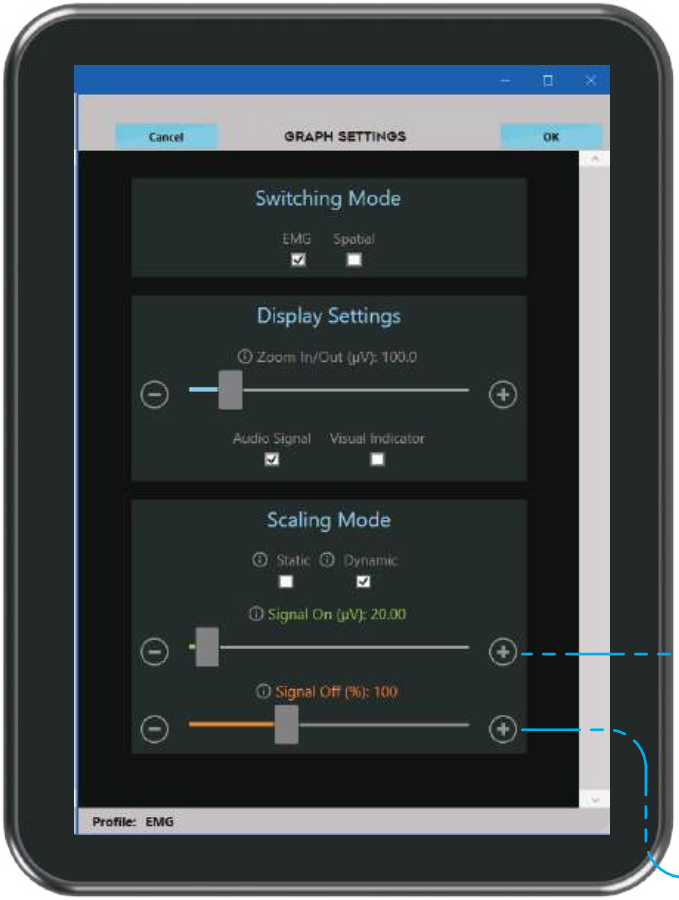


Signal On Amplitude: Sets the EMG/Spatial amplitude the signal needs to reach above in order to be counted as a Switch.

Signal Off Amplitude: Sets the EMG/Spatial amplitude a Switch signal must fall below before a new Switch can be counted. Setting this parameter at the same level as the Signal On Amplitude will remove Signal Off Amplitude as a factor in a Switch/No-Switch determination.

3.3.2 Graph Settings: Dynamic Scaling

Dynamic Scaling changes the criteria over time for determining if a Switch has been made based on the user's performance. The EMG/Spatial resting level and the EMG/Spatial signaling level are both used in the dynamic scaling calculations. As such, the NeuroNode will adjust to make it easier to Switch as the user fatigues, or as the electrode interface condition changes.

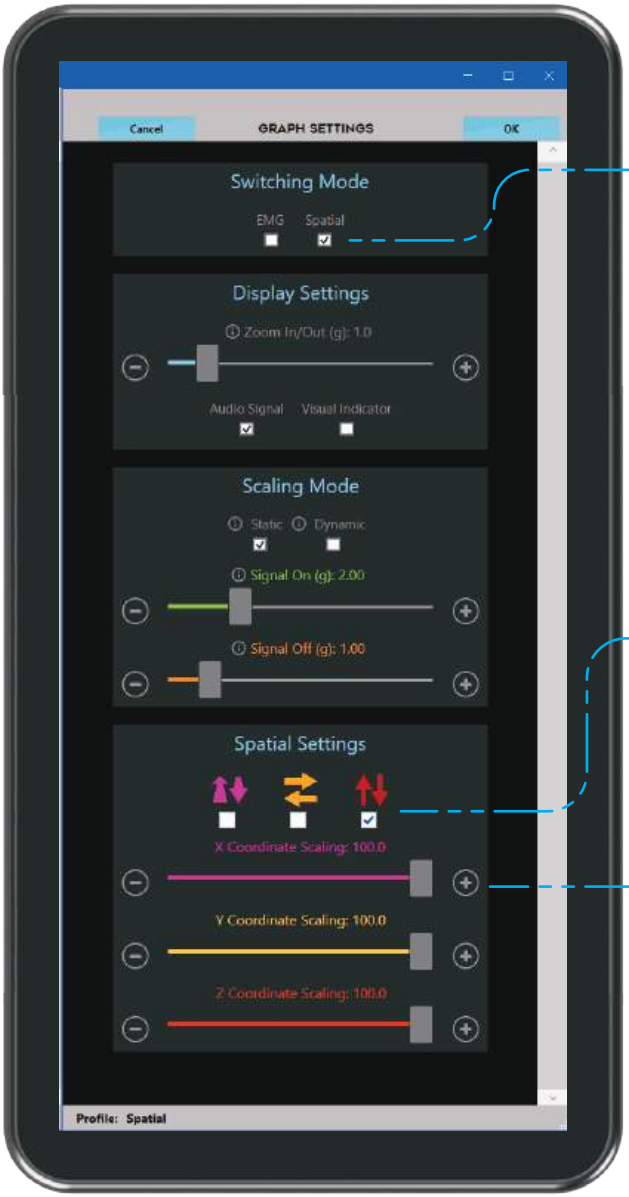


Signal On Amplitude: Sets the sensitivty of Dynamic Scaling Mode. The lower the level, the more sensitive the NeuroNode will be in allowing a switch to be made.

Signal Off Amplitude: Sets the level a Switch signal must drop below before another Switch is allowed. Setting this at 100% will set the Signal Off Amplitude to the user's ongoing average activity level.

3.3.3 Spatial Settings

While the graph settings are nearly the same in the EMG mode as they are in the Spatial mode, the Graph Settings and the Advanced Settings displays offer some parameters that are unique to the Spatial mode.



Switching Mode:
Toggle on "Spatial" to use the NeuroNode in the Spatial mode and reveal the settings specific to this mode.

X, Y, Z Coordinates:
These on/off check marks determine if the X, Y, and Z activity will be graphed along with the Spatial Activity. This visualization is useful when determining percentages for the X, Y, and Z Activity sliders.

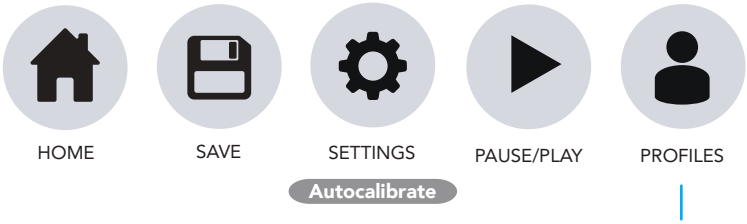
Coordinate Scaling:
Three axes define movement: X, Y, and Z. Adjust the associated sliders to set the contribution of each of these axes of movement in order to magnify or diminish their importance in the calculation of "Activity."

3.4 Saving and Managing Profiles

When the NeuroNode Controller App is launched, a dialog will appear to select the last-used Profile or a previously saved Profile (from a drop down).



At any point in a session, the Switch settings can be saved as either the previously selected profile or by renaming and saving as a new profile. The "Advanced" link on the Save Profile dialog allows selection of the place of storage: the NeuroNode unit, the App, or both locations.



Managing Profiles

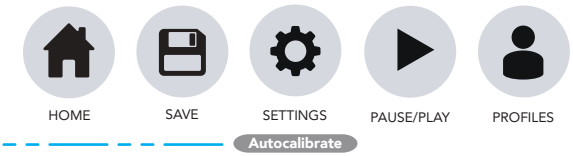
Pressing the Profile button on the Graph Menu will bring the user to the Profile Settings display. A pull-down list here provides access to all previously saved Profiles. Deleting profiles is also possible via the Trash can icon in the dropdown menu.



3.5 Auto Calibration

Auto Calibrate can be used to automatically set the basic NeuroNode settings rather than setting them manually. Before starting calibration, the user should be positioned in a relaxed manner and the modality of EMG or Spatial should be determined. The electrode interface, in the case of EMG, should be outfitted in the configuration that would be expected for normal use. Practice activations are advised on the Graph display before starting the calibration process.

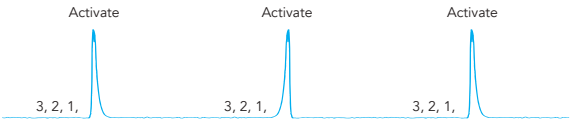
Instructions



1. Open Auto Calibrate by pressing the button at the bottom of the Graph display.

2. Select the Calibration Instruction Set desired (if multiple avaliable).

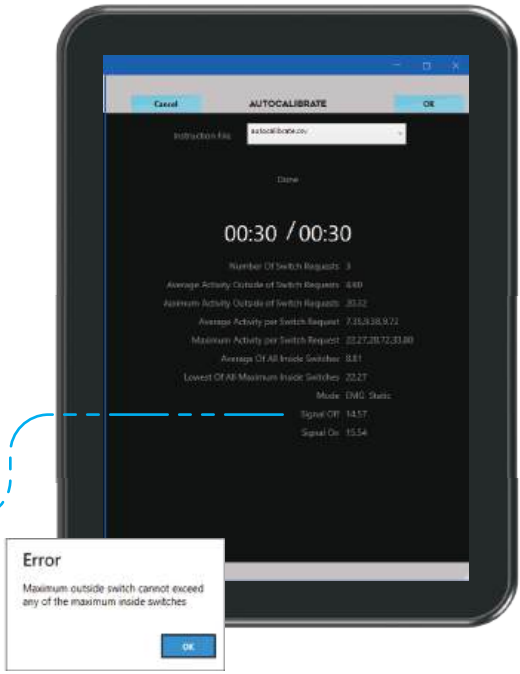
3. Press “Start Calibration.”



4. Follow the prompts on the display. A countdown will appear before an activation request. When “activate” appears, the user should make the activation that is intended to be the Switch. The effort should be natural, with no inclination to seek a pronounced activation (a minimum effort is best).

5. For each activation, relax as soon as the activation is attempted.

6. Once the calibration is complete (typically 30 seconds), the App will display the results, including new values for Signal On (green line) and Signal Off (yellow line).

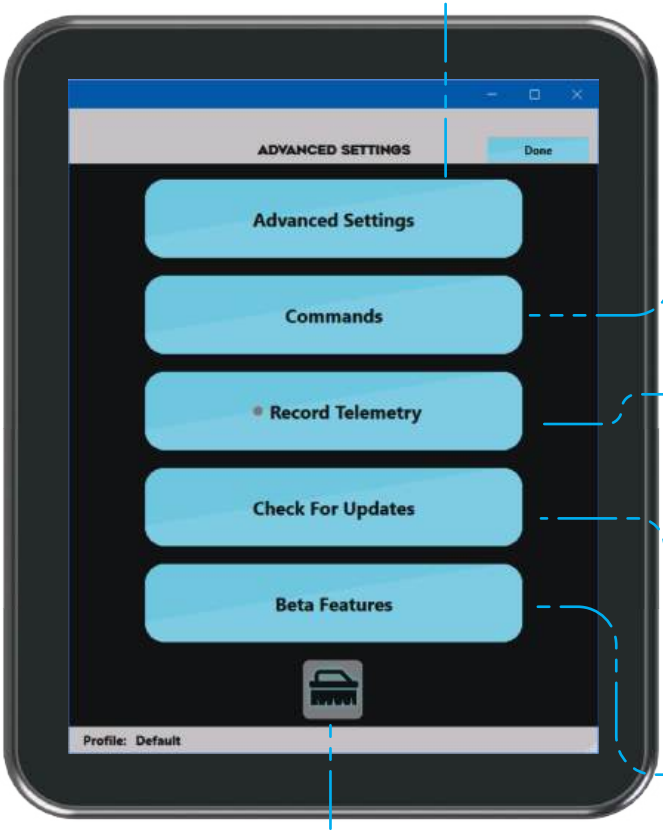


7. In the event of a calibration error, the reason for the failure will be displayed.

Auto Calibration is not available on all versions of the Controller App. Contact Control Bionics for more information.

3.6 Advanced Menu

The Advanced Menu is accessed by pressing the Advanced button from the Main Menu.



Advanced Settings:
This button navigates to a display to set Switch settings that are more advanced than the settings on the Graph Settings display. Typically these settings are not changed as often.

Commands:
Pressing this button will advance to a page where commands can be sent directly to the NeuroNode. The Commands page is usually used by Control Bionics personnel for troubleshooting. It is rarely if ever needed by the user.

Record Telemetry:
This on/off button sets an option to save the last 60 seconds of telemetry every time the Pause button is pressed on the Graph display.

Check for Updates:
This button serves the same function as when the App is launched, checking for a newer version of the NeuroNode Controller App.

Beta Features:
This allows certain just-released features to be toggled on or off.

Bluetooth Scrub:
This button provides a simple method of removing the NeuroNode connection from the NeuroNode Controller App. Use this button before moving the NeuroNode to a new device. After pressing the scrub button and confirming the request, the NeuroNode will blink blue rapidly before transitioning to Standby mode. To finish the process, remove the NeuroNode from the device's Bluetooth settings.

3.6.1 Advanced Settings

Parameters necessary for more complicated user cases can be found on the Advanced Settings display. In addition, some settings here (e.g., Language) will remain unchanged for the majority of NeuroNode users.



Language:
Sets the menus, prompts, and instructions of the NeuroNode Controller App to English, French, or Japanese.

Auto Baseline:
Sets the NeuroNode to a mode where a new baseline is established based on the user's current resting level. If the resting level decreases, the NeuroNode will use the new resting level as the baseline.

Switch Tracing:
If toggled on, this setting allows the status of the Switch to be traced on the Graph Window. This is useful to illustrate the behavior of Long Press, Ignore Switch Repeats, and Keypress Off Delay.

HID Keycode Sendout:
This selected radio button sets the default keycode sent when a Switch is made. This setting ensures NeuroNode compatibility with a wide range of accessibility applications.

3.6.2 Advanced Settings: Switch Filtering

Switch filtering provides additional control over when a Switch is or isn't made. Often times the "fine tuning" for Switch/No-Switch is a matter of ignoring unwanted Switch activations.



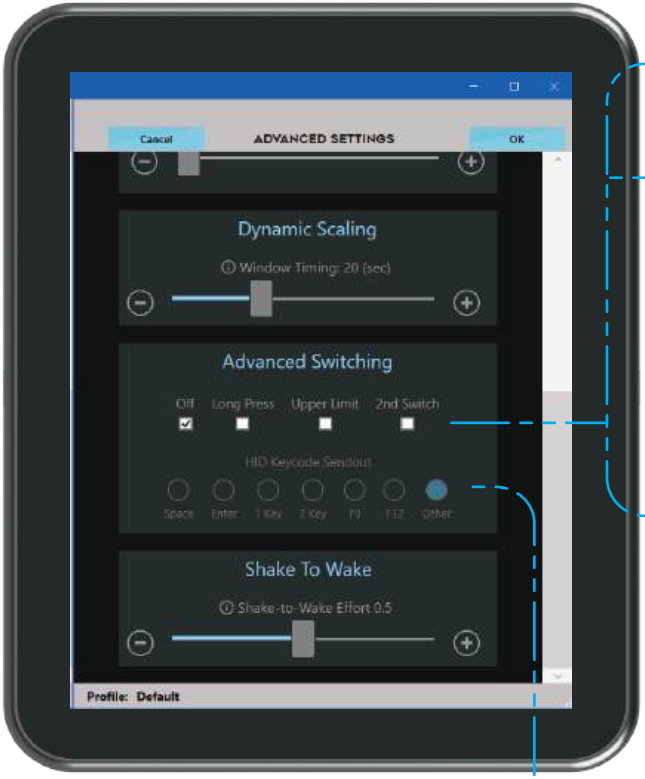
Key Press Off Delay:
This slider sets a fixed delay the NeuroNode will use to determine when to send the key released code. The delay starts when the "pressed key" code is sent (i.e., when the signal first crosses the Signal On Amplitude). This setting is primarily used for accessibility applications that require a minimum duration for a switch press.

Ignore Switch Repeats:
This setting helps to reduce the chances of "false" Switches after the original Switch. These unintended Switches can be the result of fasciculation or an inability to relax after making the original Switch. Most Assistive Technology software suites have a similar setting, but the implementation details can vary. As offered by the NeuroNode Controller Application, saving the Ignore Switch Repeats setting to the NeuroNode can provide more consistent Switching performance across multiple platforms and applications.

Window Timing:
The Dynamic Scaling Window slider sets the amount of signaling activity the NeuroNode will examine in order to adjust the levels for the Signal On and Signal Off Amplitudes. A shorter window duration will make the NeuroNode respond faster to changes in EMG/Spatial signaling and resting levels. A longer duration will allow the NeuroNode to respond more to long-term trends in the EMG/Spatial level.

3.6.3 Advanced Settings: Advanced Switching

Advanced Switching provides the means to either filter out an unwanted switch (Upper Limit mode) or to provide a secondary Switch (Long Press and 2nd Switch). The secondary Switch modes would typically be used with users who have a greater level of coordination than baseline users.



Off:
Toggle on to retain the most basic operation of Signal On/Signal Off Switching.

Long Press:
This setting determines the timing of the "key released" code that the NeuroNode sends. With Long Press on, the NeuroNode will send the key released code when the EMG/Spatial signal falls below the Signal On Amplitude. The long press setting may need to be set in the device's accessibility settings.

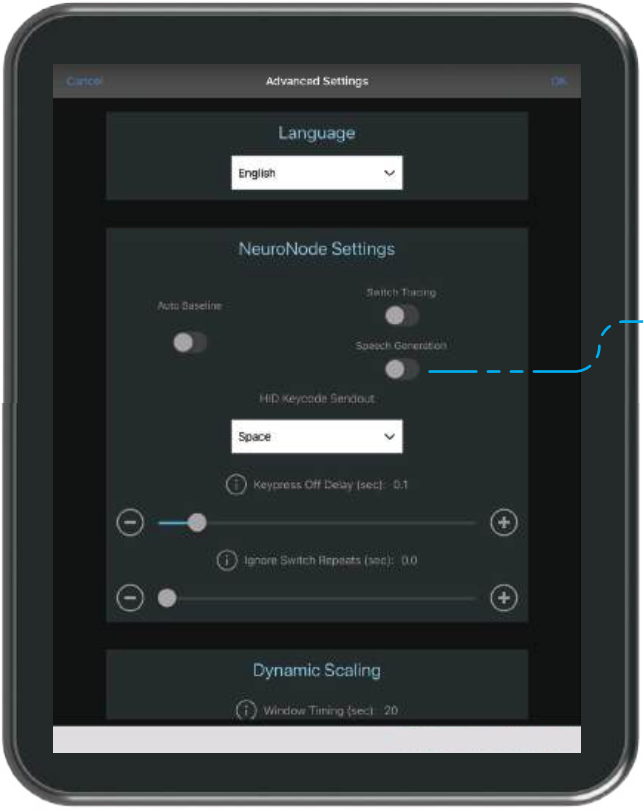
Upper Limit:
This settings allows an amplitude to be set to a point where, if crossed, a Switch will be ignored. The Upper Limit line is shown as a red line on the Graph. The slider for setting the separation between the Signal On (green line) and Upper Limit (red line) will appear on the Graph Settings display when Upper Limit is selected.

2nd Switch:
This settings allows an amplitude to be set to a point where, if crossed, a different HID keycode will be sent instead of the "standard" keycode. The 2nd Switch line is denoted as a red line on the Graph. The slider for setting the separation between the Signal On (green line) and 2nd Switch (red line) will appear on the Graph Settings display when 2nd Switch is selected.

HID Keycode Send Out:
This radio button selection only applies when 2nd Switch is set. In this mode, the NeuroNode unit will send an alternate keycode when activity crosses the 2nd Switch line.

3.6.4 Advanced Settings: Speech Generation

Speech Generation in the NeuroNode Controller App is designed to be used in conjunction with the NeuroNode Switch Capabilities. When the Speech Generation menu is opened, the application will automatically start scanning between the three speech options. The user can then start their desired answer using the Switch functionality that has been set up for the NeuroNode. If Adjustments need to be made, the same, familiar buttons can be accessed in this mode as well.



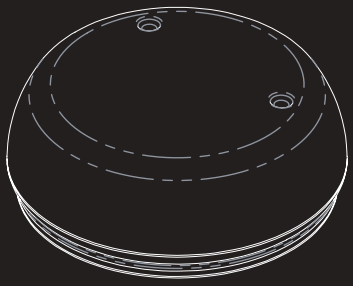
Speech Generation: This setting can be found in the advanced settings menu.

3.6.4 Advanced Settings: Speech Generation

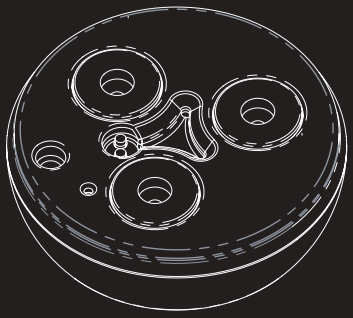
When in Speech Generation mode, the NeuroNode Controller app will automatically scan through the three speech options and audibly read each option. Scanning occurs at a default 2 second timing interval. When a user activates the NeuroNode and thus the switch mechanism, the Controller app will speak aloud the selection made and green, red, or yellow will flash on the screen based on the option selected.

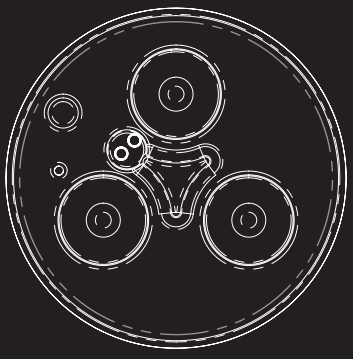


Speech Generation is only available in the iOS Controller App. Contact Control Bionics for more information.









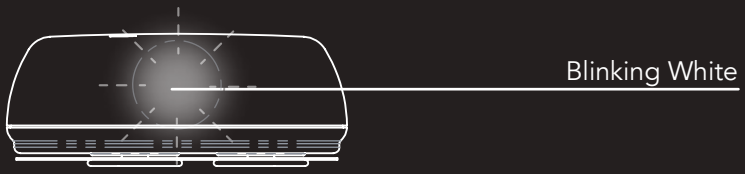
4.1 NeuroNode Power Cycle Guide

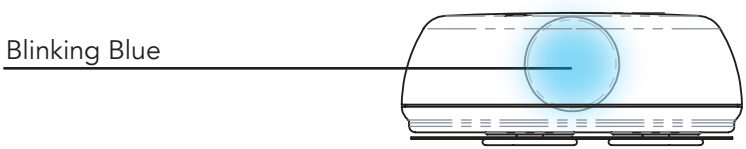
In some circumstances, it may be necessary to perform a power cycle of the NeuroNode. In order to do this follow these steps:

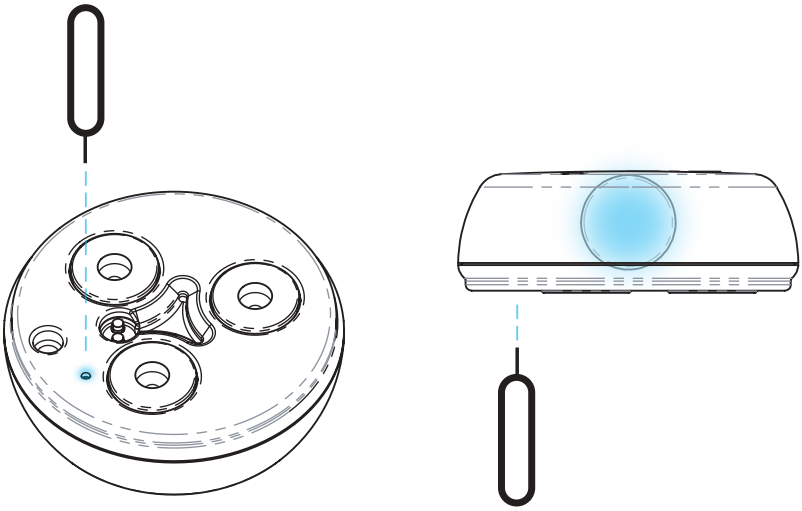
1. If applicable, in the NeuroNode Controller App, select the Standby Icon then proceed to step 2.

   If unable to connect to the NeuroNode Controller App, See page 34 for NeuroNode Reset instructions.

2. After the indicator goes dark, "Shake-to-Wake" can be used to bring the NeuroNode out of Standby mode, allowing the NeuroNode to be connected in the application.







4.2 NeuroNode Reset Guide

In some circumstances, it may be necessary to manually reset and reconnect the NeuroNode to the device. To do so, follow these steps:

1. Close the NeuroNode Controller App.

2. Go to the device's Bluetooth Settings and, if applicable, forget or delete "NeuroNode" from the device list.

3. Turn off Bluetooth on the Windows or iOS device.

4. To perform the Bluetooth scrub use the push pin tool provided to hold down the reset button, the NeuroNode will blink white rapidly. Release the push pin when the light blinks blue rapidly.

5. After the blue light stops flashing, the NeuroNode unit will be "scrubbed" of Bluetooth connection information, making it ready for connection to another device. If necessary, wake up the NeuroNode with a shake or with the push pin.

6. Turn on Bluetooth on the Windows or iOS device.

7. In Windows: Pair to the NeuroNode in the Windows Bluetooth settings then launch the NeuroNode Controller App. In iOS: Launch the NeuroNode Controller Application and select "Connect to NeuroNode."

NeuroNode
USER GUIDE

CONTROL BIONICS

Client Support
USA: 1-855-831-7521
AUS: 1300 971 744

Indicator Quick Guide

