Neova

User Manual

November 2019
Version 1.0

ENHANCIA

Before using this unit, carefully read the section entitled: "Safety Regulation". This section provide important information regarding the appropriate usage of the unit. Additionally, in order to feel assured that you understand flawlessly each feature provided by the unit, User's manual should be read entirely.

The information in this document is subject to change without notice and does not represent a commitment on the part of Enhancia SAS.

Document authored by Enhancia Team.

Enhancia Team




3 Parvis Louis Néel, 38000 Grenoble, FRANCE
contact@enhancia.co
www.enhancia.co

Safety Regulation

The following instructions shall be read, understood and respected to prevent of fire, electric shock or injury to persons.

- Before using this unit, make sure to read the instructions below, and the User's Manual.
- Do not open (or modify in any way) the unit.
- Do not attempt to repair the unit, or replace parts within it. In case of any any encountered issue, please contact the Enhancia Support Team at: support@enhancia.co. Our team will pleased to help you out.
- Never use or store the unit in places that are:
    - Subject to temperature extremes (e.g., direct sunlight in an enclosed vehicle, near a heating duel, on top of heat-generating equipmenmt); or are
    - Damp (e.g., baths, washrooms, on wet floors); or are
    - Humid; or are
    - Exposed to rain; or are
    - Dusty; or are
    - Subject to high levels of vibration.

- Make sure you always have the unit placed so it is level and sure to remain stable. Never place it on o stands that could wobble, or on inclined surfaces.
- Be sure to use only the USB cable supplied or equivalent standard USB Type A to USB Type C cable. The Hub require 500 mA to power correctly.
- Do not excessively twist or bend the cables, nor place heavy objects on it. Doing so can damage the cord, producing severed elements and short circuits. Damaged cords are fire and shock hazards!
- Enhancia are not responsible about any damage caused by universal USB – AC adapter used to power supply the Hub. You are responsible of any issue caused by this third party adapter. We recommend to power supply the Hub with a computer.
- Do not allow any objects (e.g., flammable material, coins, pins); or liquids of any kind (water, soft drinks, etc.) to penetrate the unit.
- In households with small children, an adult should provide supervision until the child is capable of following all the rules essential for the safe operation of the unit.
- Protect the unit from strong impact. (Do not drop it!)

Introduction

Thank you for purchasing Neova. At Enhancia, we firmly believe that expressivity should be the very basis of music creation. Your instrument should always let you play in a controlled and subtle way. You should be allowed to express every single musical idea that crosses your mind, and the instrument should be a medium—not an obstacle!—to your music.

Neova was designed with this idea in mind, as a way to enhance the spontaneity of your musical creation.

This comprehensive manual will provide you all information on the product, either as a way to get you started, or as a guide you can later refer to if you want to explore all of Neova's possibilities.

TABLE OF CONTENTS

1. Getting Started

1.1. System Requirements

Operating System:
MacOS 10 (or higher)
Windows 10 (or higher)

Disk space:
4 GB free hard disk space (full installation)

1.2. Register your product

1.3. Download & Update

To unlock the full usage of Neova, you must download the Neova Dashboard Software using the Neova installer. You can find the Neova installer on Enhancia's website under the "download" section:

https://sites.google.com/enhancia.co/dev/download

Download the latest version of the Neova installer for your operating system. When a new version comes out, the website will be updated. To update your software, launch the latest installer to override your outdated version of the software.

1.4. Software Installation

After downloading the installer, find it in your downloaded files and launch it. You may need to authorize the application before you can launch it. Do not worry, our installer will only install the Dashboard and a driver for Neova.

Installing the software on MacOS:
The installer is split into 2 separate steps. First, drag the Dashboard application to your Application folder to install it. Then, click on the package and follow the wizard instructions to install the Neova Driver. Please do not skip this step, as the driver is mandatory for the dashboard to function properly. You will need to restart your computer when the driver is installed.

Installing the software on Windows:
The installer will let you choose the location for the Dashboard app. Once you've chosen one, go through the next steps to install the app.

Once the installation is done, you're all set to start using Neova!

2. Introducing Neova

2.1. Concept

Neova is a ring-shaped device that adds expressivity to your other MIDI instruments or Digital Audio Workstations. By catching the subtlest movements of your hand, Neova will allow you to have a more spontaneous and richer musical experience.

Neova lets you simultaneously use up to 4 different Gestures that you can endlessly customize to your liking.
You can save 4 separate sets of Gestures between which you can switch at will, allowing you to set up neova for different controllers or to have multiple configuration to use on the same device.

The following sections will provide further information on how to set up the Neova product, and how to use it to control your Gesture configuration on the fly.

2.2. Product Overview

The Neova product includes the Neova Ring and the Neova HUB. The package also includes a USB type C cable, two male mini-jack (3.5 mm) to female MIDI connectors. The following diagram presents all parts of the product side by side.

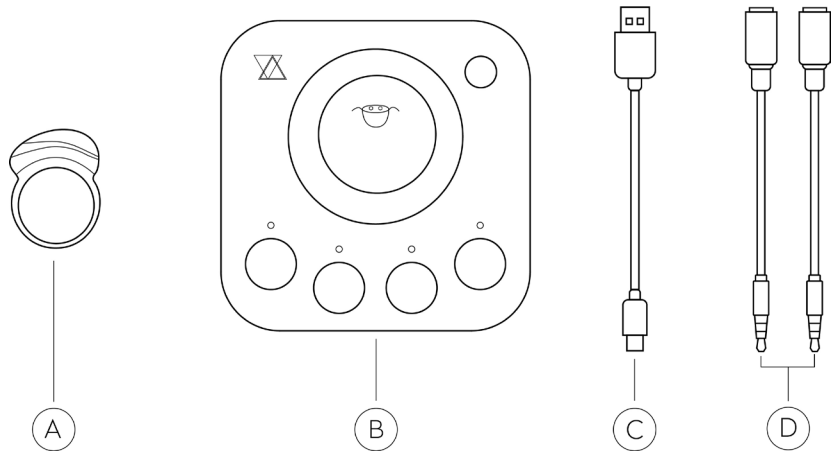


figure 1: The Neova Product

A: Neova Ring
B: Neova HUB
C: USB type C cable
D: Male mini-jack to female MIDI connector

The Ring and HUB communicate wirelessly over a 2 meters range, and should not be separated over this distance for Neova to properly function.

Neova's connectivity is located on the Neova HUB's back side:

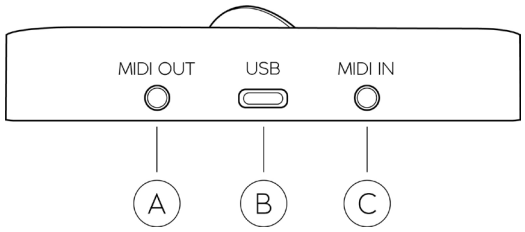


figure 2: Neova's connectivity, located on the back of the Neova HUB

A: Mini-jack (3.5 mm) MIDI Output
B: USB type C
C: Mini-jack (3.5 mm) MIDI Input

2.2.1. Ring

The Neova Ring is the wireless device that detects your hand movement. It is composed of two separate parts: the Stone and the Ring, that need to be assembled before you start using the product.

In the package you received, you will find a Stone along with a set of 8 different-sized rings. Pick the ring that fits your right index finger. It must be tight enough to not move around when you wear it, and large enough to be removed with no effort. If a ring is too tight, please do not force it into your finger.

Once you have found a fitting ring, assemble the stone into it: fit the stone and the ring on their flatter side, then push down on the top of the stone, as described in the following figure:

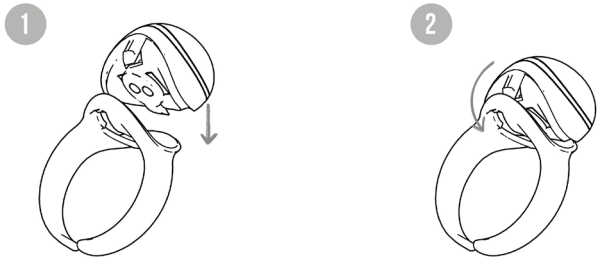


figure 3: Assembling the Neova Ring

If you wish to change the ring size, the Neova Ring can be disassembled by pushing the clip under the stone. The motion is described by the following diagram:

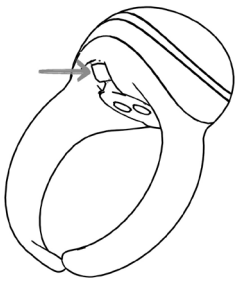


figure 4: Disassembling the Neova Ring

The Neova Ring has to be worn in your right index finger, with the thinner side facing left, as shown in the following diagram. If you wear the Neova Ring in the wrong way, the hand movement detection will not behave the intended way.

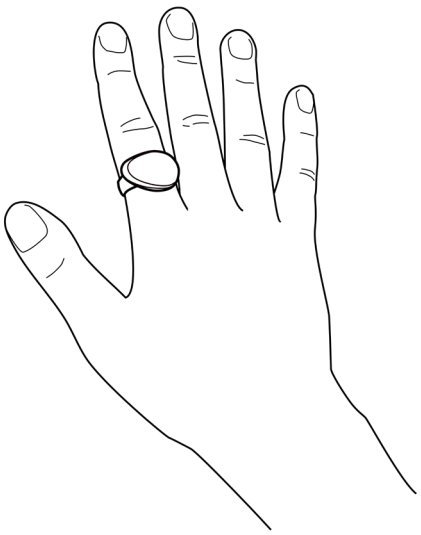


figure 5: Wearing the Ring

2.2.2. HUB

The Neova HUB acts as the link between Neova and your other devices, as well as a controller and charging station for Neova.

- Controls and LED display

The Neova HUB possesses 5 different buttons and 4 display LEDs, as shown in the following diagram:

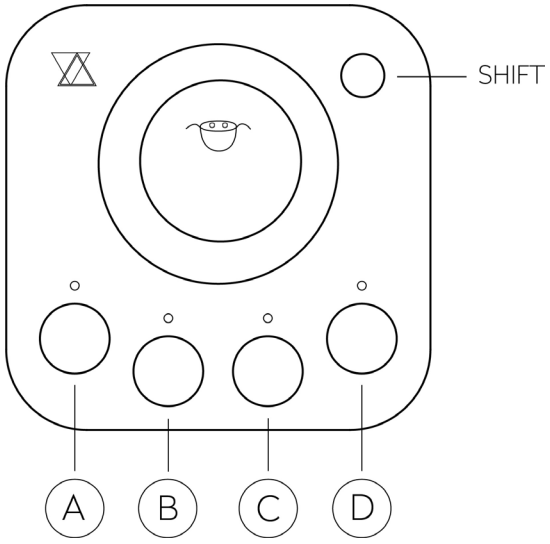


figure 6: The Neova HUB's LEDs and buttons

In its default behaviour, the Neova HUB displays the current gesture set, with each LED colour representing one of the 4 gestures.

If the gesture is active, the LED will glow in a specific colour corresponding to the gesture type.
If the gesture is muted, the LED will instead faintly glow white.
Use the A, B, C or D buttons to mute or unmute the corresponding gesture.

The button in the top right hand corner is called the SHIFT button. It serves several functions, depending on how you press it:

- Single press: pause or unpause

When the Neova HUB is paused, all gesture MIDI messages will be cut. It will however still charge a docked ring and transfer the MIDI messages it receives.

- Single press and hold: slot select mode

When the Neova HUB is in slot select mode, its LED display will change, showing the active gesture set with a bright white color.

To change the active gesture set, press the A, B, C or D button while holding SHIFT. You will notice the white LED shifting to the button you just clicked.
Release the SHIFT button to return to default behaviour.

- Double press and hold: battery display mode

When the Neova HUB is in battery display mode, its LED display will change, showing the current Ring battery with the 4 LEDs. The battery level reads left to right.

- 1 red LED means the battery is around 10%.
- 4 bright green LEDs mean the battery is fully charged.
- 4 red LEDs means the battery is empty or almost empty.
- The first LED glows blue when the ring is charging.

- Charging the Ring

When you are not using the ring, putting it down on its dedicated spot will charge it. The following figure displays the HUB with a charging ring:

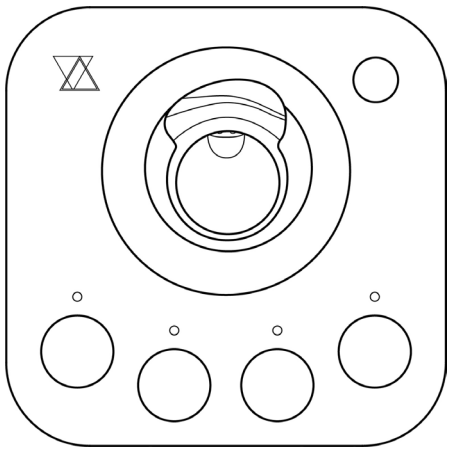


figure 7: Neova HUB with a ring charging on top of it

When you take the ring off the HUB, it will let you use the Neova functionalities.

A full charge will let you use the product for approximately 8 hours. When the HUB is off, the ring will automatically turn off after a few minutes. Remember that the HUB needs to be powered up to properly charge the ring.

Note : Putting the ring down also powers it up. Your ring will turn off after several minutes of Neova being disconnected and inactive. You will then need to put the ring down on a powered up HUB to turn it back on.

2.3. Using Neova as a native MIDI Controller

To use Neova, you will need to connect it to the device you want to interact with.

The HUB has several ways to connect to compatible devices, as shown in figure 8:

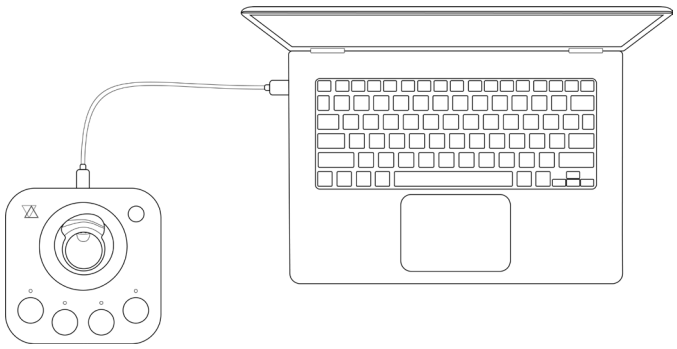


figure 8: HUB with computer

Connect Neova to a computer by using the USB type C connection (see figure 8). Neova will appear in compatible applications as a MIDI controller.

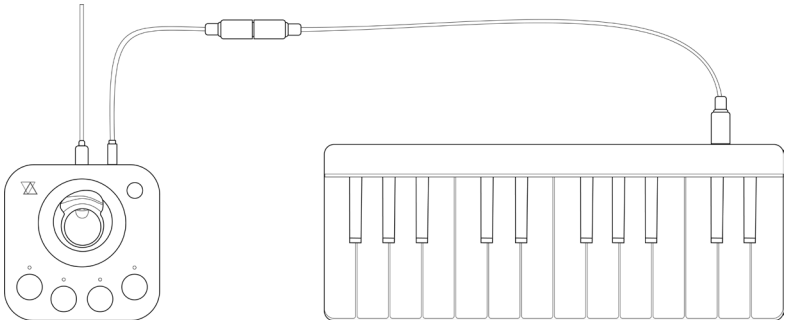


figure 9: HUB with Synth

Connect Neova to a MIDI device using the MIDI output and the (included) jack to MIDI converter.

Chain Neova with MIDI devices using the MIDI input and the (included) jack to MIDI converter.

Note: If you are using the HUB with MIDI devices, it still needs to be powered up using the USB C, either with a computer or with a universal USB-compatible power supply (not included). Please note that you may need an additional (not included) connector such as a male to male MIDI connector.

2.4. Gestures

Neova lets you use the following 4 Gestures types (with their associated color):

Vibrato (light red) Pitch Bend (turquoise) Tilt (yellow) Roll (light purple)

The Vibrato and Pitch Bend control the pitch of the notes you play. The Tilt and Roll allow you to control your instrument's parameters with your hand movements. Each Gesture type has several parameters to tweak to create a unique configuration adapted to your preferences and your instrument.

- Vibrato

The Vibrato replicates an instinctive hand gesture that string instrumentalists use a lot. You might even naturally do the motion while playing the piano already – though it will now actually add the effect!

The Vibrato effect consists in a sine shaped pitch change around the note you are playing. It can be used to stress specific notes in a solo, or to add some extra expressivity on held notes and chords.

To trigger a Vibrato, quickly move your hand sideways in a back and forth motion, when playing a note on your instrument. The effect's speed and intensity will depend on your hand motion. Figure 10 shows what the gesture looks like:

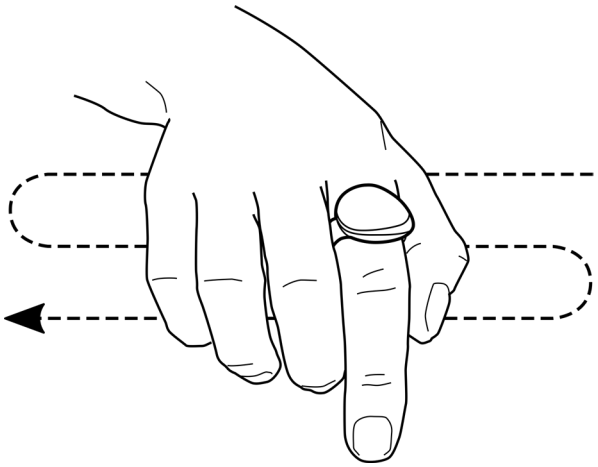


figure 10: The Vibrato motion

The vibrato can be customized with 2 settings: Threshold and Gain.

- Threshold: The higher the threshold, the stronger you will have to move your hand to trigger the effect.
- Gain: The higher the gain, the stronger the vibrato effect will be for the same hand motion.

- Pitch Bend

The Pitch Bend emulates the famous string instrument technique extensively used by guitarists. The Gesture allows you to gradually change the pitch of your note to a higher or a lower note.

To trigger a Pitch Bend, lean your hand sideways while holding a note on your instrument. The direction you lean your hand to will dictate the pitch change: the left side drags the pitch down, the right side lifts the pitch up. Figure 11 describes the motion:

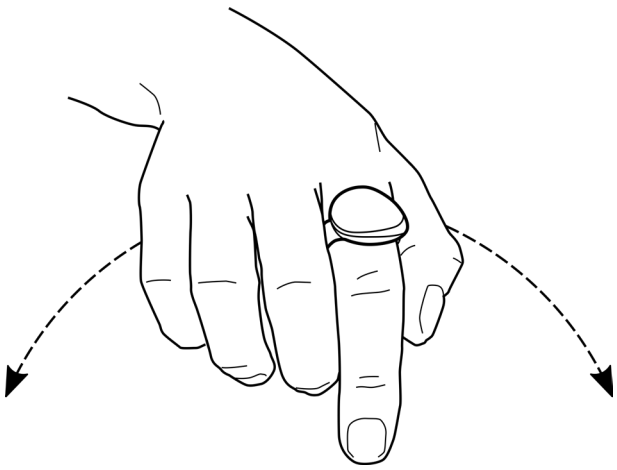


figure 11: The Pitch Bend motion

There are 4 parameters for the Pitch Bend, corresponding to the downwards pitch range and the upwards pitch range. The following diagram shows a visual representation of the ranges depending on the hand position.

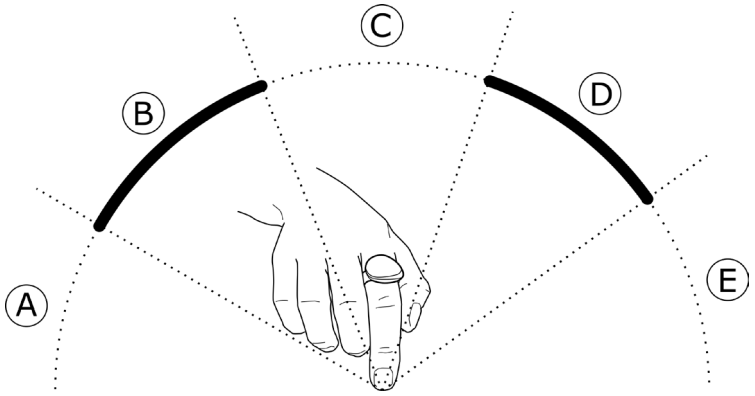


figure 12: Visual representation of the Pitch Bend Ranges

- Zone C: the pitch is not affected.
- Zone B and D: the pitch gradually changes between its neutral and minimal (B) or between neutral and maximal (D) value.
- Zone A and E: the pitch stays at its minimal (A) or maximal (E) value.

Customizing your Pitch Bend means changing the position of both transition ranges, to find a motion you find comfortable and that does not unintentionally trigger the Gesture when playing normally.

Note: Your instrument dictates the amount of semitones the pitch bend will add or remove from your initial note. It usually is 2 semitones (or 1 note), and may be customized from your instrument.

- Tilt and Roll

The Tilt lets you control effects from your instrument by leaning your hand upwards or downwards. It lets you shape your sound dynamically while playing a melody or chords. Figure 13 displays how to perform the gesture:

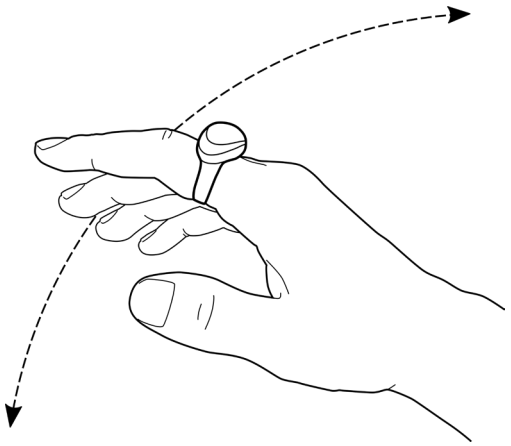


figure 13: The Tilt motion

The Roll lets you control effects from your instrument by rotating your hand in your forearm axis. Figure 14 displays how to perform the gesture:

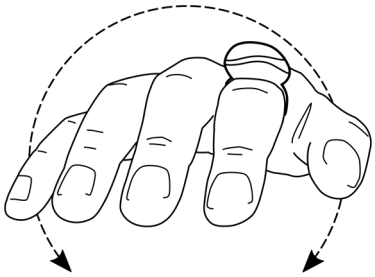
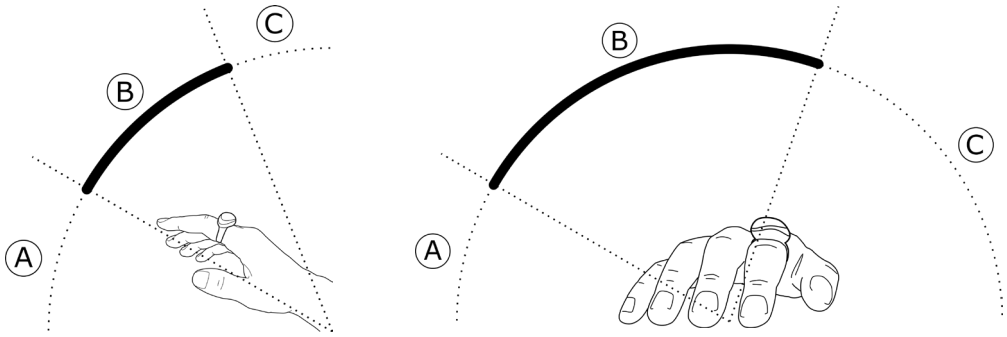


figure 14: The Roll motion

The Roll is mostly designed to be used while freeing the hand that wears the ring and playing with the other. However, you can also trigger the Roll with the Pitch Bend motion.

The Tilt and Roll both use 2 parameters to set their range. The following figures depict how their range work depending on the hand position:



figures 15: Visual representation of the Tilt and Roll ranges

- Zone A: Minimum value.
- Zone B: Gradual change between minimum and maximum value.
- Zone C: Maximum value.

Both gestures use MIDI Control Change messages to control the connected instrument. Refer to your Synthetiser or DAW to know which message to send to control the desired parameters.

3. The Dashboard

The Dashboard is Neova's dedicated software, and a prominent part of the product. The Dashboard lets you change your gesture configuration, and save it so you can bring it anywhere with your Neova HUB and Ring. The following sections will introduce the software and describe how to create and edit gesture configurations.

3.1. Interface Overview

3.1.1. General Overview

The following figure displays the Dashboard interface:

figure 16: Interface overview

- A: Header
- B: Hub Visualiser
- C: Gesture Panel
- D: Upload Button

3.1.2. Interface States

The Dashboard switches between different states depending on the current connection with the HUB, as displayed by figure 17:

figure 17: The interface goes back and forth between its 3 states

- A: Welcome screen (Disconnected HUB)
- B: Default screen (Connected HUB)
- C: Pause screen (Pause button pressed on the HUB)

3.1.3. Header

The Header possesses a button to display the options and a ring information display, as displayed in figure 18:

figure 18: The Dashboard Header

- A: Options button: Press to display software information and access several options. This option menu lets you update your HUB and Ring Firmware and contact the enhancia team.
- B: Ring Information Display: Shows the current ring battery, and the connection info. Visible white arrows mean that the ring is connected and in range of the HUB.

3.1.4. Hub Visualiser

The HUB visualiser is a mirror to your Neova HUB. It has the same buttons and LED display, as well as a indicator telling you which gesture set -or slot- you are using, as shown in figure 19.

figure 19: The HUB Visualiser

In the default behaviour, pressing buttons A, B, C or D will mute or unmute the corresponding gesture.

Changing your slot can be performed in three ways:
- Click on the SHIFT button (E) then click on A, B, C or D.
- Click on the arrows on either side of the slot number display.
- While holding "Ctrl" (Windows) or "Cmd ⌘" (MacOS), click on A, B, C or D.

Note: You may notice that your Neova HUB and the HUB Visualiser display will stay in sync while changing slots. Actually, you are allowed to use "mixed controls": For instance, you can hold the SHIFT button on your Neova HUB and change the slot using a HUB button from the Dashboard application! Quite handy, isn't it?

3.1.5. Gesture Panel

This panel displays the currently used gesture set. Figure 20 shows how the panel looks like:

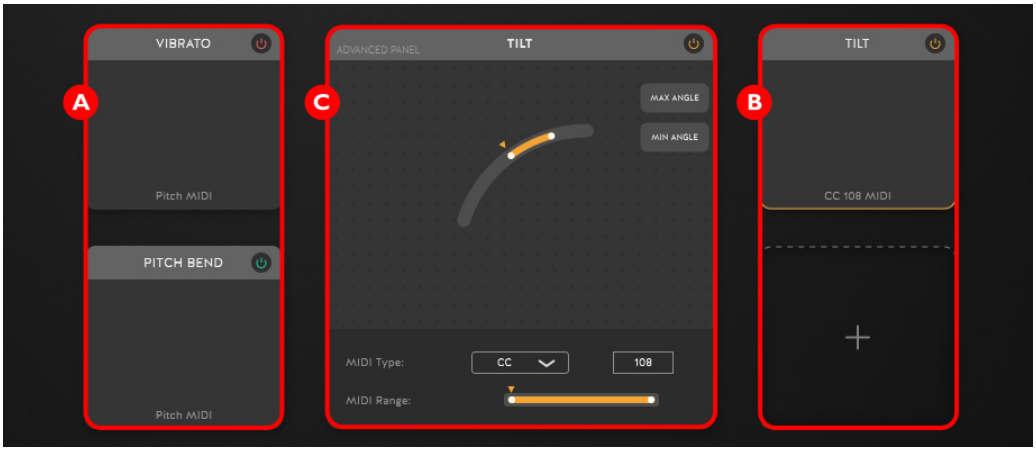


figure 20: The Gesture Panel

- Zones A and B: gestures display
- Zone C: advanced gesture panel for the selected gesture

Zones A and B display a simple representation of gestures 1 to 4. You may notice that two separate representations exist, depending on if this specific gesture exists or not.

If the gesture exists, the area will show its type and info. The top-right-located button lets you mute or unmute the gesture.
Clicking on an existing gesture selects it. A selected gesture has a colored outline: in the example, the Vibrato (gesture 1 in Zone A) is selected.
Once a gesture is selected, its advanced settings will appear in the advanced panel (Zone C), refer to 3.2 to learn how to change those settings.

You can organise your gesture set in multiple ways:
- Move a gesture by dragging it onto an empty gesture location.
- Swap 2 gestures by dragging one onto another.
- Duplicate a gesture using by using right click > duplicate.
- Delete a gesture by either using right click > delete, or by selecting it then pressing the "delete" key (Cmd ⌘ + backspace on MacOS).

To create a new gesture, click on an empty gesture location to show the Gesture Creator Panel, shown in figure 21.

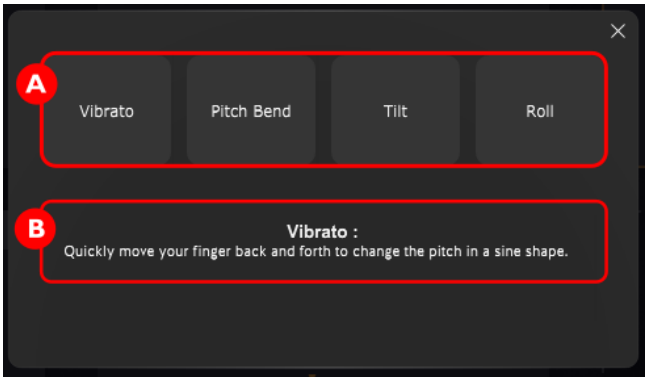


figure 21: Gesture Creator Panel

- Zone A: gesture types.
- Zone B: gesture description.

Hover your move over a type (Zone A) to display a short description (Zone B) of what this gesture type does. Create the gesture by clicking on the gesture type.

3.1.6. Upload Button

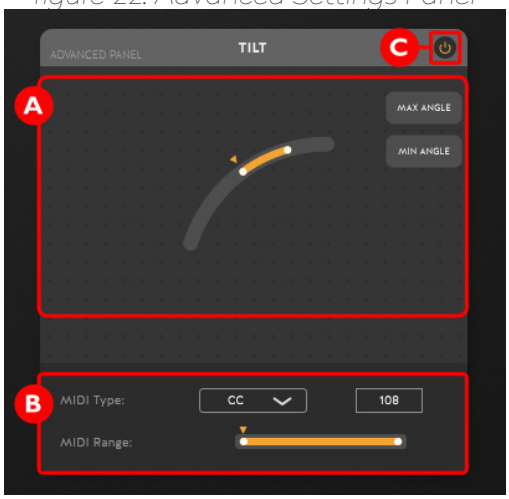
When you change your gesture configuration with the Dashboard, all changes are transferred in real time to the dashboard. However, those changes are not actually saved: if you disconnect and reconnect your Neova HUB, the configuration will be back to the one before the changes!

To save the changes to your Neova, press the upload button. The button will get brighter and become clickable as soon as a change was performed, to let you know that you may save your configuration before unplugging your Neova HUB.

3.2. Configuring a Gesture

This section covers the use of the advanced panel (Zone C in figure 20) to customize an existing gesture. The visuals representation of the control will vary depending on the gesture you selected, but the same principles apply to all. The figure 22 shows the Advanced Settings Panel with its several areas, for a Tilt:

figure 22: Advanced Settings Panel



- Zone A: Range and Sensitivity display
- Zone B: MIDI settings
- C: Mute button

The range display shows a visual representation of the gesture's full range, as well as the current gesture sensitivity values in the form of a slider. A cursor will also display the current value for the gesture, if your Neova Ring is currently connected.

You can change the sensitivity settings in several ways:

- Drag the sliders to change the sensitivities of the gesture to your liking. Note that the change only takes place after the drag ends. For all gestures except Vibrato, you can click in the middle of a range to move the entire range rather than a single value.
- Double click on a slider handle, then manually input the desired value.
- Use the range calibration buttons (for all gestures except Vibrato). They will either set the start or the end the gesture range to the current gesture value.

The MIDI settings display lets you configure the MIDI messages that this gesture will create. It only exists for the Tilt and Roll. It has two separate parts:

- MIDI type: lets you choose which kind of MIDI message this gesture creates.
- MIDI range:
  - A cursor displays the current MIDI value the HUB sends for the gesture.
  - Change the value range of the MIDI messages you send using the same controls as the sensitivities: Drag and release a value or the full range, or double click then enter a value.

The mute button works just like the one from the simple representation of the gesture. Click on it to mute or unmute the selected gesture.

Note: After setting a gesture, the next Gesture of the same type you create will keep the same sensitivity values.

4. Support

4.1. TroubleShooting

- My Ring and HUB are disconnected:

Make sure your ring battery is not empty by docking it around ten minutes on a powered up HUB, then follow this pairing sequence:
If the Ring is docked, take it away from the HUB.
Simultaneously press the HUB's bottom left and bottom right buttons for 2 seconds to launch pairing mode. The HUB left and right lights should glow white to indicate the operation is succesful.
Dock the ring for a few seconds, then undock it, keeping it close to the HUB.

The HUB lights will blink green to indicate a successful pairing.

Note : you should not abuse this pairing sequence, as it will break an existing pairing between your Ring and HUB. Only use it when you are positive that your Ring and HUB are actually disconnected, or if you want to pair a new Ring to a HUB.

If the LEDs have not blinked green after a few seconds, the pairing failed. You can try the sequence again.

If the sequence fails after a few tries, it could indicate that the Ring battery is empty, or that the Ring is damaged in which case you should contact our support.

- The Dashboard doesn't seem to detect my HUB:

Make sure you installed the latest Neova Driver. If unsure, download and launch the Neova Installer for a new installation. On MacOS, do not skip installing the pkg, as this step installs the Driver.

If your Neova Driver is installed and the HUB is undetected, the Driver might be turned off. Unplug your HUB and restart your computer. Then launch the Dashboard and plug your HUB.

If the HUB is still not detected, you can check if the driver is running:
Windows: go to your services, list by name a find Enhancia Service Reader. If the service is disabled, enable it and restart the Dashboard.
MacOS: check that the Daemon__SerialPort__MacOS service is running with the activity monitor.

4.2. Contact

You can contact the Enhancia team if you need information concerning the product or need help dealing with specific issues.

Mail: support@enhancia.co
Website: https://www.enhancia.co/contact

Note: Another way to contact the team is through the Dashboard, in which you can send a bug report to the developper team, and a link to the the support section of the website.

Regulations and conformity

Changes or modifications not expressly approved by ENHANCIA SAS could void the user's authority to operate the equipment.

Always used the USB cable with the ferrite clamp supplied with the device.

HUB: HVIN: NEOVA-H1 • FCC ID: 2AUJX-H1 • IC: 25446-H1
RING: HVIN: NEOVA-R1 • FCC ID: 2AUJX-R1 • IC: 25446-R1

FCC Part 15 compliance 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.

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 instruction, 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 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 circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Licence-Exempt Radio Apparatus (ISED)

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Appareils radio exempts de licence (ISDE)

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique 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;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Ring equipment

Radio Frequency (RF) Exposure Compliance of Radiocommunication portable apparatus
This device complies with FCC and ISED Canada RF radiation exposure limits set forth for general population (uncontrolled exposure). This device must not be collocated or operating in conjunction with any other antenna or transmitter.

Conformité à l'exposition aux champs RF des équipements radio portables
Cet appareil est conforme aux limites FCC et ISDE Canada concernant l'exposition aux rayonnements RF établies pour le grand public. (Environnement non-contrôlé)
Cet émetteur ne doit pas être co-situé ou fonctionner conjointement avec une autre antenne ou un autre émetteur.

Hub equipment

Radio Frequency (RF) Exposure Compliance of Radiocommunication for mobile Apparatus
To satisfy FCC and ISED RF Exposure requirements for mobile devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during operation. To ensure compliance, operation at closer than this distance is not recommended. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Conformité à l'exposition aux champs RF des équipements radio mobiles
Pour satisfaire aux exigences FCC et ISDE concernant l'exposition aux champs RF pour les appareils mobile, une distance de séparation de 20 cm ou plus doit être maintenu entre l'antenne de ce dispositif et les personnes pendant le fonctionnement. Pour assurer la conformité, il est déconseillé d'utiliser cet équipement à une distance inférieure. Cet émetteur ne doit pas être co-situé ou fonctionner conjointement avec une autre antenne ou un autre émetteur.

Déclaration de conformité CE simplifié :

Le soussigné, ENHANCIA SAS, déclare que l'équipement radioélectrique du type Neova est conforme à la directive 2014/53/UE. Le texte complet de la déclaration UE de conformité est disponible à l'adresse internet suivante: www.xxxxxxxx.xxx

Bande de fréquence utilisée en transmission et puissance max rayonnée dans ces bandes :

- Bande de fréquence:	2400-2483.5 MHz
- Puissance Max:	10 mW max e.i.r.p
- Plage de température de fonctionnement:	-10°C à 55°C
- Tension d'alimentation:	5 V (Hub) 3,7 V (Bague)
- Courant nominal:	17 mA (Hub) 7,5 mA (Bague)