Nx Head Tracker



User Guide

WAVES

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Chapter 1 – Introduction

1.1 Welcome

Thank you for choosing Waves. In order to get the most out of your Waves product, please take the time to read through this manual.

We also suggest you become familiar with www.waves.com/support. There you will find an extensive answer base, the latest tech specs, detailed installation guides, new software updates, and current information on licensing and registration.

By signing up at www.waves.com, you will receive personalized information on your registered products, reminders when updates are available, and more.

1.2 Product Overview

The Waves Nx Head Tracker plugin is a small Bluetooth device that latches to your headphones and tracks your head movements in 360 degrees in order to enhance the realistic and immersive 3D audio experience created by Waves Nx technology.

The Nx Head Tracker can be used together with several types of Waves Nx software:

1. Audio professionals – Use the Nx Head Tracker along with the Nx Virtual Mix Room plugin in order to recreate on headphones the ideal spatial acoustics of a high-end room, improving your headphone mixing and recording experience.

2. Everyone – Use the Nx Head Tracker along with the Nx application for 3D audio on headphones **(coming soon)** in order to experience the music, movies and games you love in 3D audio – on your computer, tablet or mobile device, using any set of headphones.

1.3 Why Head Tracking Matters

When you hear sounds in the real world, your physical head movements help your brain create a sense of three-dimensional audio depth.

When your head moves, your brain remembers where the sound used to be and where it is now, combines this with its knowledge that the head (and not the external source) has moved, and uses this information to locate the external source and construct a three-dimensional "audio scene."

However, when you listen to sound on headphones, the audio scene constantly shifts with your head, and your experience of three-dimensional auditory space is gone.

By tracking your head movements and adjusting the audio to the direction and orientation of your head, the Nx Head Tracker (combined with Nx software) helps reconstruct the realistic three-dimensional audio experience of sounds coming at you from external sources in the real world.

There are several ways you can track your head movements to enhance the Nx experience:

1. You can use the Nx Head Tracker device.
2. You can use your computer's camera.
3. If you are using the Nx Virtual Mix Room plugin, you can use both methods simultaneously ("sensor fusion").

For a detailed comparison between these options, see the Overview tab of the Nx Head Tracker webpage: http://www.waves.com/hardware/nx-head-tracker

Chapter 2 – Functions and Features

2.1 Battery

The device works with any standard AAA battery, providing approximately 40 hours of work. Replace the battery through the bottom hatch. The device will go to sleep automatically after a period of time if it is not connected or not moving. In sleep mode, the battery life can last for months.



2.2 Attaching the Nx Head Tracker to Your Headphones

After you insert a standard AAA battery into the Nx Head Tracker, position the device at the top-center of the headphone arc, with the Nx logo facing forwards (battery in the back). The Nx Head Tracker will not track your head movements properly if you place it off-center or facing backwards.



Wrap the strap around the headphone arc and attach it to the hook on the other side. The strap can be disconnected at both ends for replacement: any standard rubber band can be used if needed.

2.3 Button Functions

A short press (under two seconds) in any state will place the unit in advertising mode. In this mode, the device can be detected and paired with your computer.



A long press (over two seconds) will place the unit in sleep mode and disconnect it.

2.4 LED Indications

Sleep	LED off
Advertising	Blinks blue
Connecting	Solid blue
Connected	Blinks blue every 15 seconds
Low Battery	Red instead of blue
Identifying	Blinks white
Updating	Blinks green



Chapter 3 – Pairing the Nx Head Tracker with the Nx Virtual Mix Room Plugin

To use the Nx Head Tracker device with the Nx Virtual Mix Room plugin, you must first pair them. This is done from a dedicated **head tracking application** which opens and closes automatically when you open and close the plugin. For head tracking to be enabled, the application must remain open. If the application is closed, head tracking will stop (this will not affect the plugin itself or your DAW in any way: you can simply restart the head tracking application and re-establish the head tracking).

3.1 Head Tracking Application – Bluetooth Tracker Tab



- **Device List –** This list will show all available Nx Head Tracker devices. (Please note that the current version of the Nx Virtual Mix Room plugin only supports **one** Nx Tracker device at a time. Future updates of the plugin will support multiple Nx Head Trackers.)
- **Connect (check box) – Check or uncheck this box in order** to connect or disconnect an Nx Head Tracker device that appears in the device list.
- **Refresh Device List –** This control will erase the list and rescan for Nx Head Tracker devices.
- **Automatic Connect –** This control is On by default. When On, the application will create a connection automatically with any Nx Head Tracker device it detects. When Off, the application will automatically detect Nx Head Tracker devices and add them to the list, but the user will have to initiate the connection using the connect button in the list. It is advised to select Off when there are several available Nx Tackers on different systems, in order to have better control of which system works with each Nx Head Tracker.
- **Open Bluetooth Settings** (Windows only) – This will open the system Bluetooth settings window. In Windows, you must first pair the Nx Head Tracker in your system's Bluetooth settings before the head tracking application can detect it.

The following controls are currently disabled, and will be available in future updates:

- **Rename –** This control will let you rename your Nx Head Tracker device. The name is permanent and the device will advertise itself by the given name.
- **Identify –** This control will make the Nx Head Tracker device blink white. This is helpful to identify a certain device among several.
- **Update –** This control will initiate FW updates to the Nx Head Tracker's firmware. A message will appear when a firmware update is available for your Nx Head Tracker device.

3.2 Pairing Instructions

1. Open the Nx Virtual Mix Room plugin. The head tracking application will open automatically.

2. In the head tracking application, go to the Bluetooth Tracker tab.

3. Power on the Nx Head Tracker. Make sure your computer's Bluetooth is on and that it supports BLE (Bluetooth Low Energy).

4. **Mac:**
   The Nx Head Tracker device will automatically be recognized and added to the list of devices showing in the Bluetooth Tracker tab. Mark the Connect check box. See the numbers under Tracking Data start to change as the Nx Head Tracker moves.

   Windows:
   Open your computer's Bluetooth settings and pair it with the Nx Head Tracker. Once paired, the Nx Head Tracker device will automatically be recognized and added to the list of devices showing in the Bluetooth Tracker tab. Mark the Connect check box. See the numbers under Tracking Data start to change as the Nx Head Tracker moves.

5. In the Nx Virtual Mix Room plugin, under the Tracking Device menu, select the Nx Head Tracker. The head in the plugin will start to move according to the Nx Head Tracker.

6. Connect the Nx Head Tracker to the top-center of the headphone arc, with the Nx logo facing forward (the L and R icons at the sides of the Nx Head Tracker device should correspond to the L and R of your headphones). Inaccurate positioning of the Nx Head Tracker will result in inaccurate head tracking.

Chapter 4 – Troubleshooter

Problem	Possible Solutions
Head does not move in GUI – no tracking	1. Verify head tracking is 'on' in plugin GUI. 2. Check if tracker app is running. 3. Play audio through the plugin (plugin on CPU). 4. Check tracking rate box in plugin GUI.
Head tracking application is not running	1. Restart head tracking through the plugin. 2. Inactivate/reactivate plugin.
Nx Head Tracker will not connect	1. Make sure your computer's Bluetooth is turned on 2. Make sure your computer's Bluetooth is at least BT4.0 and supports BLE. 3. Make sure the head tracking application is running 4. Make sure the Nx Head Tracker device is on and with a good battery. 5. Windows only – Make sure the Nx Head Tracker is paired to your computer in the system Bluetooth settings menu.
Nx Head Tracker loses connection and doesn't move smoothly	1. Try using a new battery. 2. Try to have the Nx Head Tracker and the Bluetooth receiver closer together. 3. If you are using a BT-USB dongle on a desktop, connect the dongle on the front panel, or on an extension for better BT reception.
Nx Head Tracker is tracking my movements but in wrong directions	1. Make sure the Nx Head Tracker is mounted on the top of the headphone arc with the logo side facing forward (t L & R on the Nx Head Tracker should correspond to L & R on your headphones). Inaccurate positioning of the Nx Head Tracker will result in inaccurate head tracking.
Head tracking shows some latency	1. Try to increase the tracking rate, optimally up to 30 fps. 2. Try to lower the buffer size. 3. In some DAWs, to run in the user-set buffer size, Nx need to be on the master buss or on a live input AUX path.