E-CONTROLLER

Compatible with

ZWIFT

DISCORD

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ABOUT THIS PRODUCT

ABOUT THEVO2PROJECT

TheVO$_2$Project is a collaboration between brothers Dr. Dave and Dr. Andy Nichols. Combining their passion for bike racing with expertise in their academic disciplines to offer world class, evidence-based coaching and nutrition services to cyclists of all ability levels. You can find out more about our services by visiting www.TheVO2Project.co.uk.

ABOUT THE E-CONTROLLER

With the pausing of outdoor racing in 2020, first category road racer Andy, switched his focus to e-racing on Zwift, but was left frustrated by the limitations of the companion app. Moving your hands off the bars to launch a power up seemed to hark back to the days down tube shifters, switching camera angles felt clunky at best, resulting in many a dropped wheel in team time trials and trying to operate push to talk on a phone screen with sweaty fingers frequently meant lost communications. There had to be a better way.

After finding starting point of using Bluetooth media buttons and some useful tips on coding from Jarl Petter Kvalsvik's post on Zwifthacks, we began to work on our own code (a slightly daunting task for someone with no prior experience of computer programming), and after a few weeks of refinement, we had produced our first e-racing controller. A ZwiftInsider article later and we were inundated with both positive feedback and suggestions, so went back to the drawing board, testing differing media buttons and developing completely new software to overcome the limitations of our first attempt. We have improved functionality and reliability to create the ultimate Zwift e-controller whilst creating a product that is priced to be accessible to all users.

WITH THANKS TO

Jarl Petter Kvalsvik
Eric Schlange
Lazlo
Barry Stewart, Alice Lethbridge, and Christian Fox (product testers)
Software written under GPL license using AutoHotkey
Installer Created using Install Forge Software

SYSTEM REQUIREMENTS

ESSENTIAL REQUIREMENTS

A PC with Bluetooth connectivity, running a Windows operating system.

We have only tested our software on Windows 10, but believe it likely that slightly older versions of Windows will also work without issues.

If your PC does not have Bluetooth connectivity, USB dongles can be purchased for around £5. We recommend using Bluetooth 5.0 enabled dongles if you plan to use Discord voice chat on a Bluetooth headset whilst Zwifting.

DISCORD VOICE CHAT REQUIREMENTS

If you plan to use your E-controller for discord push to talk voice chat, it is likely that you will need either a wired, 2.4ghz wireless, or Bluetooth 5.0 connected headset to ensure sufficient bandwidth.

OTHER RECOMMENDATIONS

For maximal reliability, ensure you have a good wireless environment for your trainer. We recommend uploading your ride logs to Zwiftalizer.com and following the recommended connectivity feedback provided.

SETTING UP YOUR E-CONTROLLER

HARDWARE SETUP

Left side of the handlebar, beneath but as close to the shifter as possible and pointing backwards and slightly inwards.

Ensure use the strap to ensure it is fitted snuggle but not overtightened – stretching the strap to ensure a tighter fit may result in failure.

SOFTWARE INSTALLATION

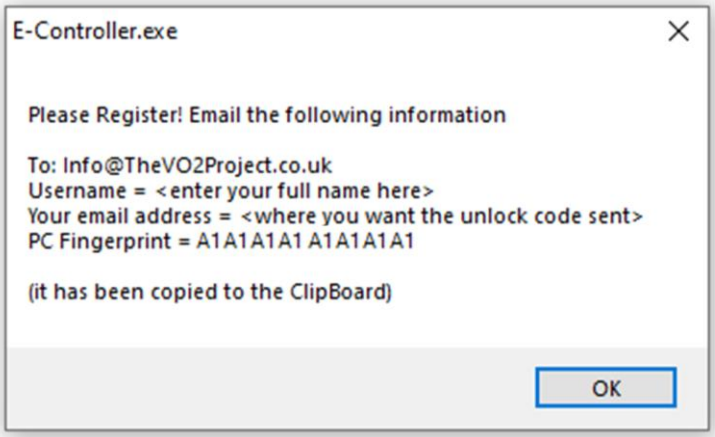
Running the setup.exe file you are provided with when you purchase an E-Controller will enable you to install the software.

The default location is **C:\Program Files (x86)\TheVO2Project\E-Controller**

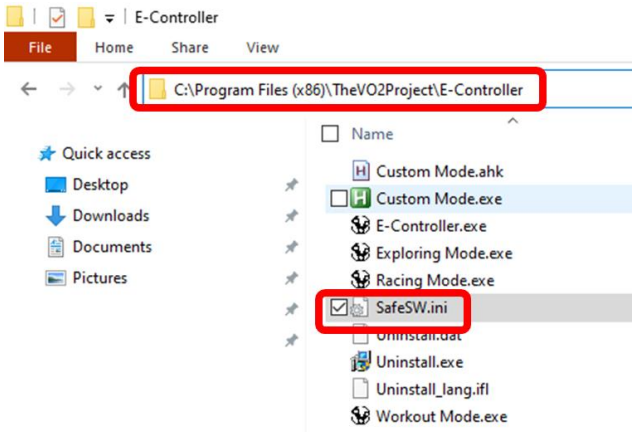
ACTIVATING THE SOFTWARE

The first time you run the software, you will find it locked, the procedure below shows you how to activate your copy.

1. you will be asked to provide a username and email address
2. The software will then provide a Fingerprint ID



3. This information will be copied to your clipboard, paste it into an email addressed to info@thevo2project.co.uk
4. We will email you back a unique unlock key in a file named SafeSW.ini. copy this file to the folder containing the software (usually **C:\Program Files (x86)\TheVO2Project\E-Controller)**



5. We recommend making a backup copy of SafeSW.ini in case you need to reinstall the software.

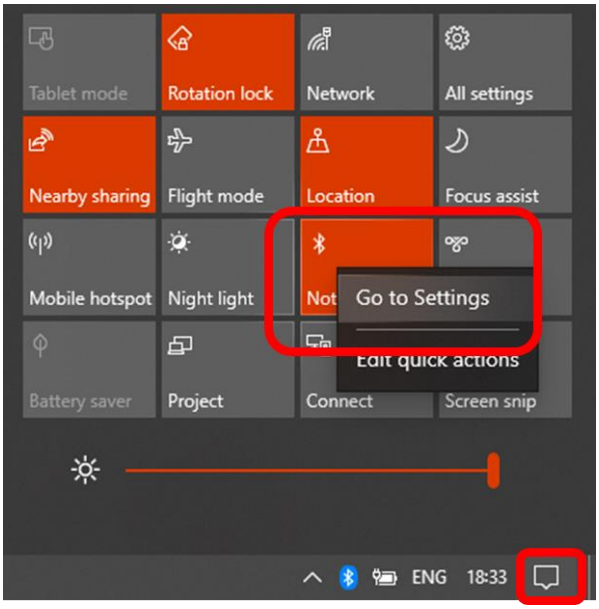
NB. The fingerprint ID is unique to your PC, if you upgrade or reconfigure your device it may become invalid. In this case, we will provide you with a new key free of charge. If this is the case please email your new fingerprint ID, username and email address (as per steps 2 and 3) along with evidence of your upgrade such as a copy of your proof of purchase of your new device, photo of the packaging or old PC component.

If you require additional licenses for a second device, you can purchase an additional key from thevo2project.co.uk]

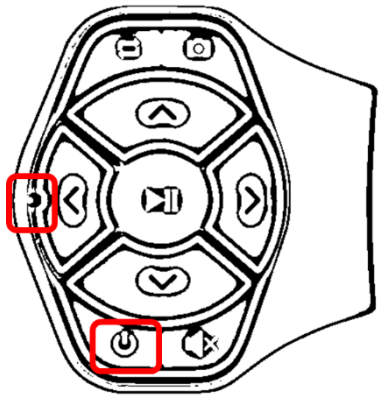
PAIRING THE CONTROLLER

Before you use the controller for the first time, it is necessary to pair and connect it to your PC via Bluetooth.

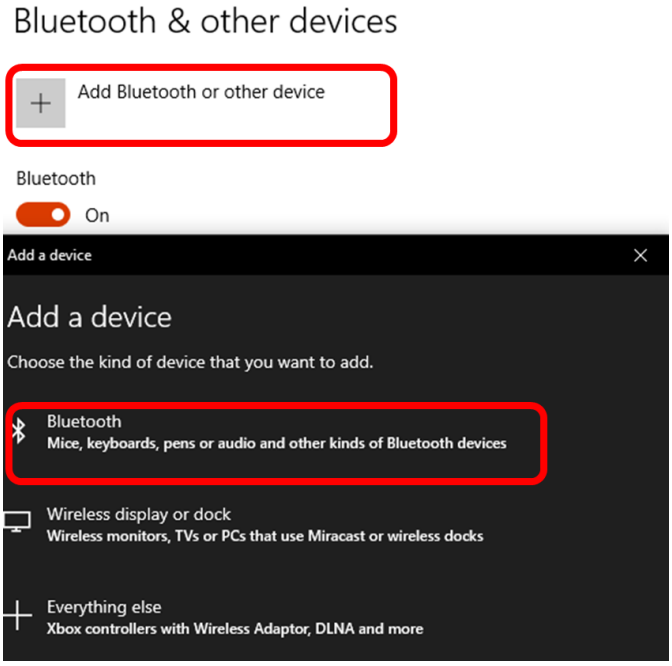
1. Check that you PC Bluetooth is turned on, this can be done by clicking on the notifications area of your taskbar.
2. Right click on the Bluetooth icon and go to settings.



3. Press and hold the power button on the E-Controller media button for a few seconds, a blue flight should start flashing.



4. Click “Add a Bluetooth or other device” in the Bluetooth settings for your PC, then press “Bluetooth”.



5. Select the E-Controller media button (Usually listed as “X09”)
6. Once it has confirmed connection your E-Controller is fully set up.

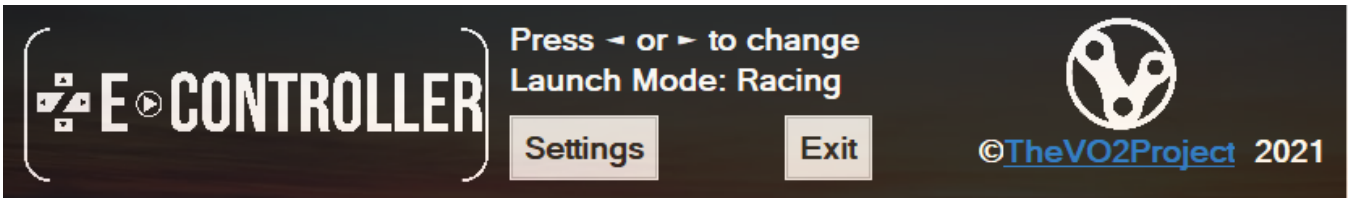
NB. We recommend only pairing your E-Controller media button to one device to ensure maximal reliability. You should only ever have to pair your E-Controller media button to your PC once, but you may find it helpful to remove it and re-pair it if you are experiencing connection problems.

LOADING SCREEN

LOADING ZWIFT

1. LOADING THE ZWIFT LAUNCHER

The E-Controller software is designed to automatically load Zwift, but Zwift will not automatically load the E-Controller Software. If you wish to use your E-controller whilst Zwifting, you will need to load Zwift via the E-Controller Software. When Loaded, the E-Controller software appears as window at the top of your screen.



2. BLUETOOTH CONNECTION CHECK

Wake up your E-controller media button by pressing one of the buttons. Once a connection is detected, the controller logo will turn blue. You can also confirm a connection using the notifications in the windows system tray.

We advise against using the power button to wake and connect your E-Controller media button, as holding the power button for too long will cause it to enter pairing mode rather than connecting to the PC.

3. SELECTING A MODE

You can set the E-Controller to launch in one of 4 modes (see Modes section) by pressing either the left and right on the E-controller media button or on your keyboard.

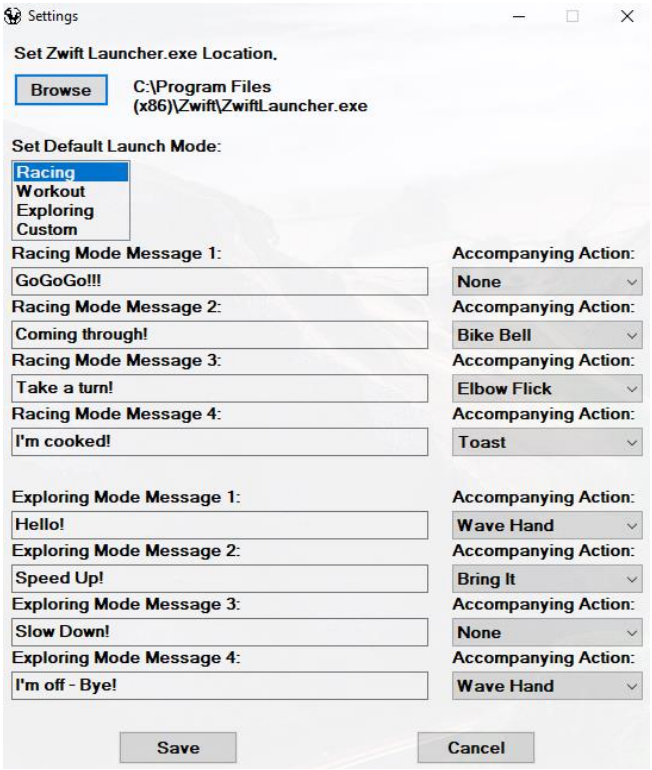
4. READY TO LAUNCH

If you are planning on using Discord voice chat or listening to music on your PC, it is recommended to load these prior to launching Zwift.

You are now all set to press “Let’s Go” and launch Zwift. The E-Controller Software will now no longer be visible on your screen.

USER SETTINGS

The Settings menu allows you to configure the E-Controller software. From this menu you can select the location of Zwift Launcher on your PC if it has not been installed to the default location (**C:\Program Files (x86)\Zwift**). You can also select the default mode for the E-Controller software to launch to and edit the pre-set messages and actions that the E-Controller can send via the in-game messaging function.



RUNNING ZWIFT ON STARTUP

If you are using a dedicated Zwift PC, you may wish to set the E-controller software to run on startup. This can be done going to run > shell:startup then pasting a shortcut to the E-Controller software in the folder that appears. Because the E-Controller Software waits until you have an internet connection before launching Zwift, it can run on startup reliably on Wi-Fi connections.

IN GAME MODES

E-CONTROLLER MODES

The E-Controller Software comes with three pre-written modes and a fourth custom mode for users who wish to write their own AutoHotKey script. You can select which mode is activated on the loading screen or using your computer keyboard after Zwift has launched (see Key Map section). When a mode is activated, your PC will make an audio announcement to tell you which mode has been activated.

GENERAL PRINCIPLES

The software works by replicating keyboard actions. Most keys are set to trigger an action when they are released. This prevents keys being accidently pressed multiple times when they are held down and reduces the risk of commands being missed if the E-Controller Media Button enters sleep mode. If you have not pressed a button for several minutes, we recommend pressing and holding the button you wish to press for around a second to ensure the device is awake and sends the command on the first attempt.

MEDIA MODE

The volume mute button on the E-Controller Media Button toggles between media mode and a Zwift mode. This enables you to change the volume, play pause and skip music tracks and also press the “escape” button to end your ride. These buttons (and any keys which perform the same role on your keyboard) will not send their original commands whilst you are in a Zwift mode.

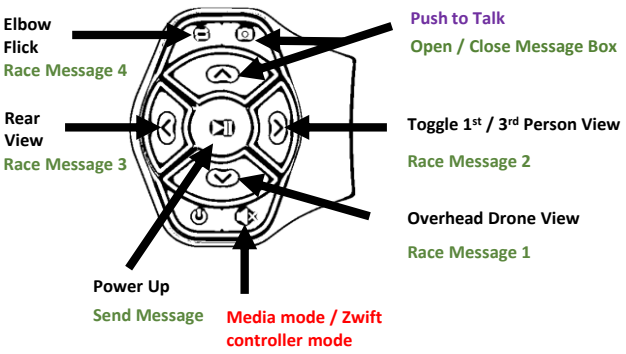
COMMUNICATION MODES

The E-Controller software has two modes of communication which can be used in Racing Mode and Exploring Mode. If you are running Discord prior to launching Zwift, Discord mode will be automatically enabled. This transforms the “up” and “camera” buttons into a keybind that can be used for push to talk (see Setting up Discord). If Discord is not running, these buttons open the in-game message dialog. Once the message dialog is open, the “volume down”, “next track”, “previous track” and “escape” buttons load messages 1-4 respectively(see user settings). Pressing the “play/pause” button sends the messages and accompanying actions, and pressing the “volume up” or “camera“ button cancels the message. You can toggle between Discord Mode and Message Mode by pressing “F11” on your keyboard.

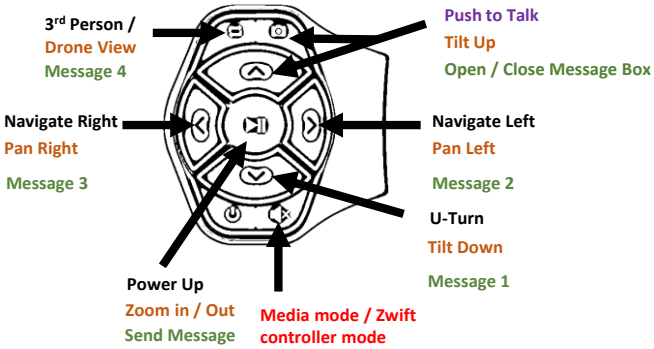
KEY MAP

You may wish to print this page when you first start using the E-Controller to help you learn the functions of the different keys.

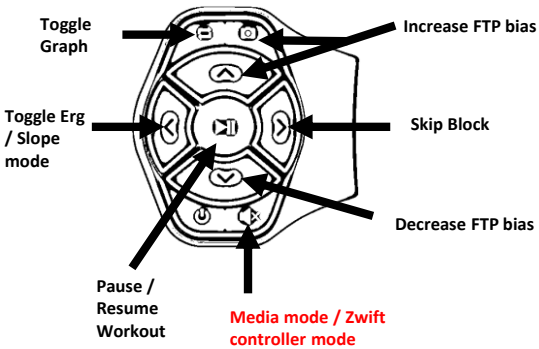
Race Mode



Exploring Mode



Workout Mode



This mode should only be used during workouts and will malfunction if used in other situations

In Game Keyboard Shortcuts

Shift + F1	Switch to Racing Mode
Shift + F2	Switch to Workout Mode
Shift + F3	Switch to Exploring Mode
Shift + F4	Switch to Custom Mode (requires autohotkey script writing knowledge)
F11	Toggle messaging / Discord (exploring and racing mode only, set keybind to F12) Discord mode is automatically selected if discord is already running

Custom mode is designed for advanced users to write their own scripts (we can also produce custom scripts – contact us for pricing). A template is provided in the installed directory (named “custom mode.ahk”). Once written, name your compiled script “custom mode.exe” and overwrite the file of the same name.

SETTING UP DISCORD

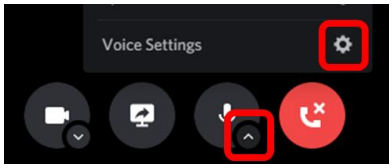
DISCORD REQUIREMENTS

The windows version of Discord has a number of advantages over the mobile version but does have compatibility issues with some types of Bluetooth headsets. Generally speaking, Bluetooth 4 devices can be used only as an input or output but not both, Bluetooth 5 has a higher bandwidth and overcomes this problem. Such earphones are available from around £10-15 online. Wired and 2.4 ghz wireless headsets generally also work with Discord for Windows.

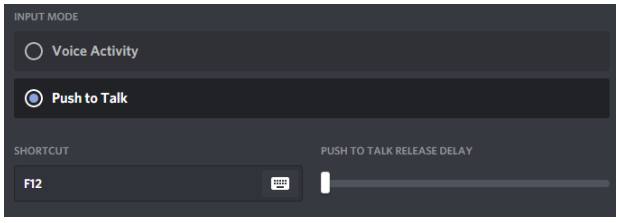
SETTING UP PUSH TO TALK

Note the instructions provided here are limited to setup for your E-Controller, please refer to instructions from Discord for more extensive information.

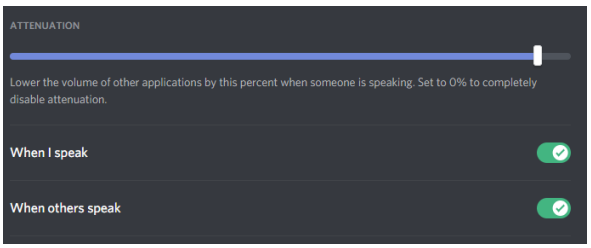
1. Join an audio channel and navigate to the voice settings.



2. Set input mode to push to talk and the keybind to “F12”



3. We recommend setting the attenuation to at least 80%. This will make any music you are listening to quiet enough so that you can hear others speak on the channel.



4. If running Zwift on Full Screen mode, we recommend using discord as an overlay in the bottom left of your screen. This can be done in the user settings menu.

FREQUENTLY ASKED QUESTIONS

Can you use the E-Controller on Apple TV or Mac OS?

No. At current the E-Controller software is Windows only.

Can you use the E-Controller to give Ride Ons?

The E-Controller does not yet have this functionality as this is easier for riders to do using the companion app by tapping your avatar's triangle on the map than any PC based alternative. Note the keyboard shortcut (and ride on button on the companion app) do not give a Ride On, they just make your avatar say "Ride On!". If Zwift change this feature, we will update our software accordingly.

Do different media buttons work?

We tested several types of media buttons and found the type we use to be the most reliable and only one capable of running all aspects of the software.

How long does the battery last?

The E-Controller Media button comes with a CR2025 lithium battery. Our test device lasted around 2 months of heavy use when we developed this product. We would expect it to last significantly longer during normal use. As the battery nears the end of its life, you will find pairing becomes less stable. Batteries can be replaced by sliding out the compartment on the side of the E-Controller Media button.

I am experiencing dropouts whilst using my E-Controller.

Like all wireless devices, your E-controller and power meter / smart trainer rely on a good wireless environment. Running your Zwift Log files through Zwiftalizer.com will provide you with a measure of your trainer's Ant+ signal strength and some useful advice on how to improve it.

I am having problems connecting my Bluetooth Devices.

Bluetooth devices should connect quickly and maintain a good connection. If this is not the case, ensure you have a good wireless environment and up to date Bluetooth drivers on your PC. If you are finding the signal strength is weak, it may be worth using a Bluetooth 5 USB dongle and USB shielded extension lead (usually around £5 each).

My E-Controller keeps going to sleep.

Bluetooth media buttons automatically go to sleep when they are not used for several minutes. The type we use for the E-Controller wake quickly, but still have this limitation. Most of the buttons in our software are set to trigger when you release them. By holding down a button for around one second, this should give enough time to wake up and send the command to your PC.

My Headphones do not work when I use Discord.

The Windows version of Discord requires high bandwidth headphones. Wired, 2.4 ghz wireless and Bluetooth 5 headsets generally work with Discord, Bluetooth 4 generally do not. If using Bluetooth 5 headphones, ensure you have Bluetooth 5 connectivity on your PC.

My Anti-Virus Software blocks the E-Controller.

Certain anti-virus packages block software from unknown software manufacturers, including ours (We are really a coaching and nutrition company after all!). It may be necessary to set up an exemption for our software to run on your PC.

My E-Controller tells me I need to register.

Each device and user require a unique key to unlock the software which is contained within a file named SafeSW.ini. This file needs to be in the same folder as the E-controller software (see Activating The Software for more detail)

How do I switch between modes?

You can switch between modes both on the loading screen using your controller (see loading screen), and during the game by using your keyboard (see key map)

I want to make a custom mode script but can't write code.

Nor could we until we made this! Luckily, there are some excellent tutorials available at http://autohotkey.com/. We are also able to modify and write custom codes (price available on request).

I have a different question

If, having read the instruction manual, you are still in need of assistance, please contact us at info@thevo2project.co.uk.