PI-SIGHT GPS RACER SOFTWARE USER MANUAL

Note

Be sure to check and follow the track regulations before using the product.

GPS Racer is an open source DIY project and no warranty is provided.
To use the software, you must install a GPS module.
GPS signals are transmitted from satellites, so they may not be received indoors and must be used outdoors where the sky is not obstructed.

The features of the software may be added or changed depending on the version, and the contents of this user manual may also change.

To use the receiver mode, you need an Android phone or tablet that supports external Bluetooth receiver connection.

1. Software Installation

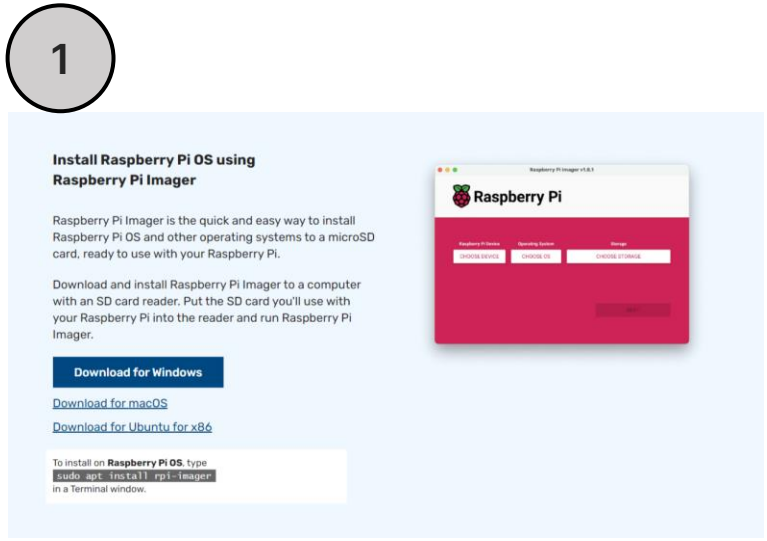
1. Download and install the Raspberry Pi Imager program that matches your PC operating system from www.raspberrypi.com, and then run it.

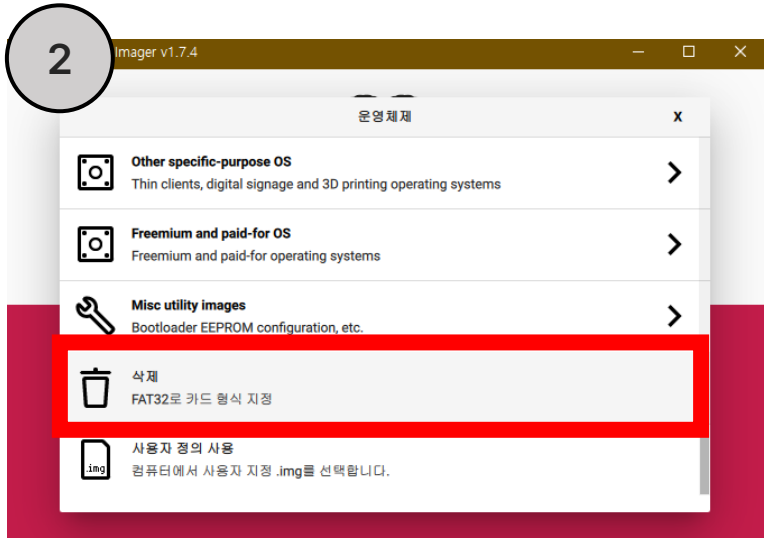
2. Connect the memory card, select Delete in the Operating System tab, click the memory card in the Storage tab, and then click Write to format the memory card.

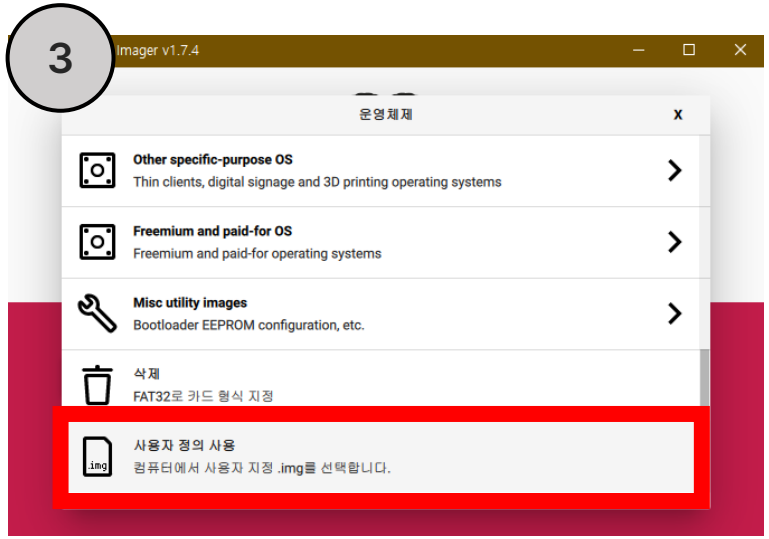
3. Download the img file of the desired software from vudev.net, click Use Custom in the Operating System tab of Raspberry Pi Imager, and then select the downloaded img file.

4. Select the memory card in the Storage tab, and then click Write to start installing the software on the memory card. Once the installation is complete, insert it into the device and use it.

A memory card format error may occur when removing the memory card during a write operation or when the program is terminated. This can be resolved using methods such as diskpart.





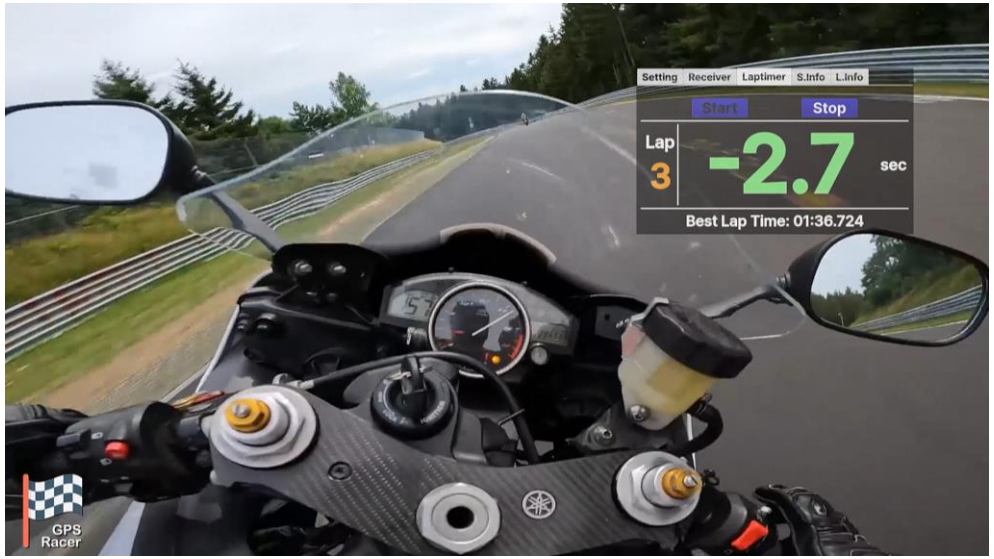


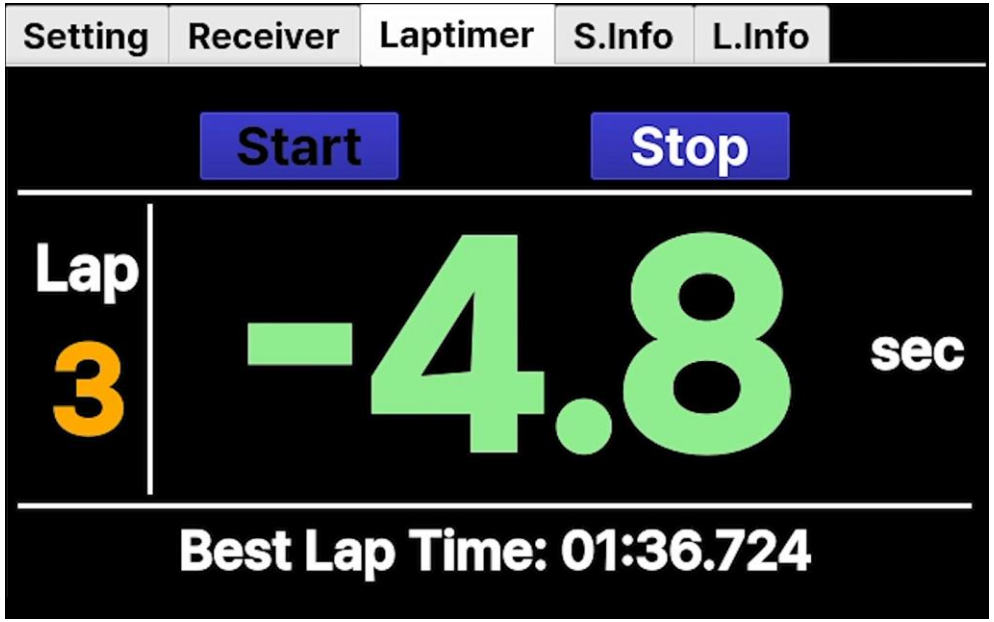
GPS Racer software is a solution that allows you to combine the Pysite with a GPS module to use it as an external GPS receiver or lap timer for track driving.

The device can be connected to an Android smartphone via Bluetooth to be used as a 10Hz external GPS receiver, or as a lap timer that outputs and stores driving information on its own without external device connection.

The user can check various information such as speed, number of laps, and real-time time difference compared to best lap record through the display in front of them, and can store more accurate driving information by linking it with a measuring app such as Racechrono on the smartphone.

The 3500mAh battery can operate for about 5 hours based on medium display brightness.



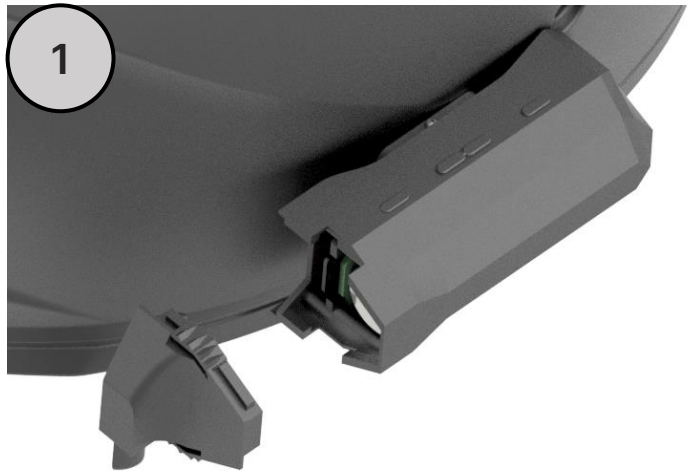


2. Using the GPS Racer Software – Installing the GPS Module

To use the GPS Racer software, you need a GPS module.

1. Remove any other modules that were previously installed.

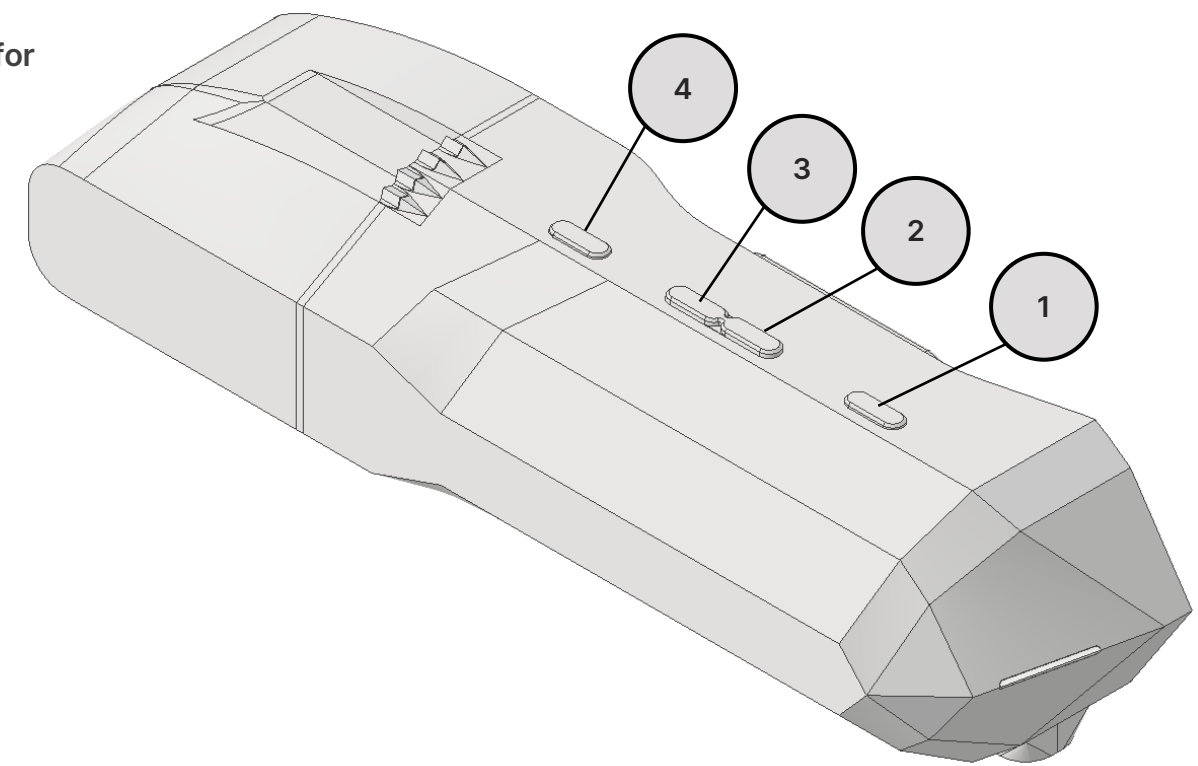
2. Install the GPS module. Be careful not to misalign the module pins and body sockets.

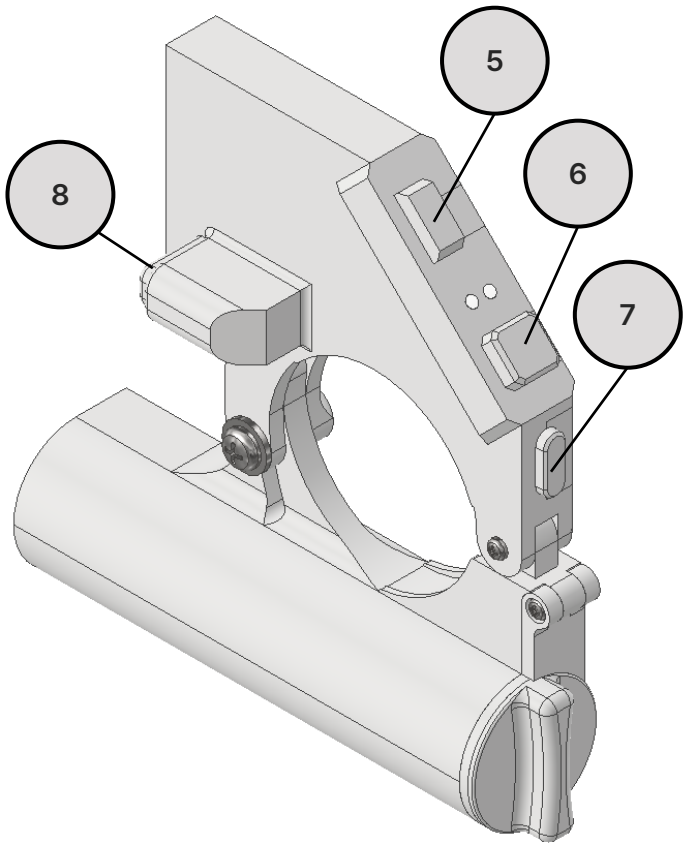


The mic is not used. Insert the detached mic terminal inside the helmet and fix it.

2. Using the GPS Racer Software – Button Guide

1. Power on (press once) / Power off (press twice)
2. Decrease display brightness
3. Increase display brightness
4. Remote control pairing mode (press for more than 2 seconds)
5. Remote control power on/off
6. Up/down/left/right/confirm
7. Turn off the screen (press and hold)
8. No default function



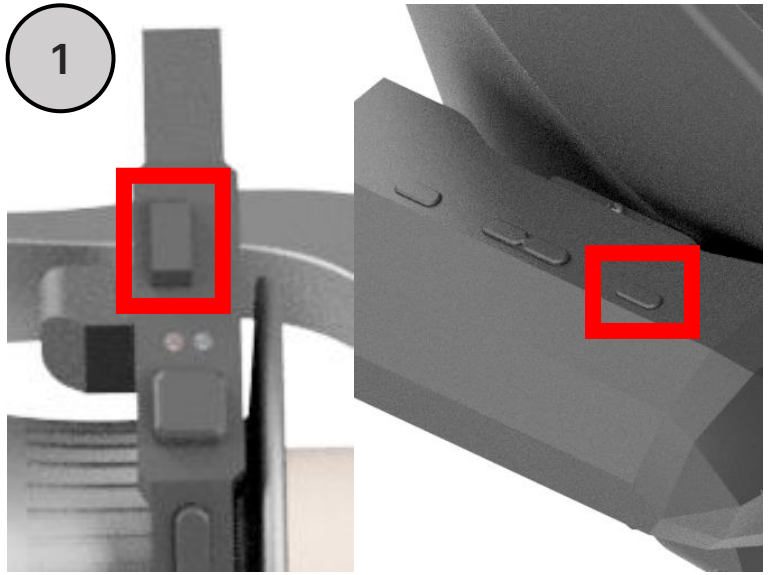


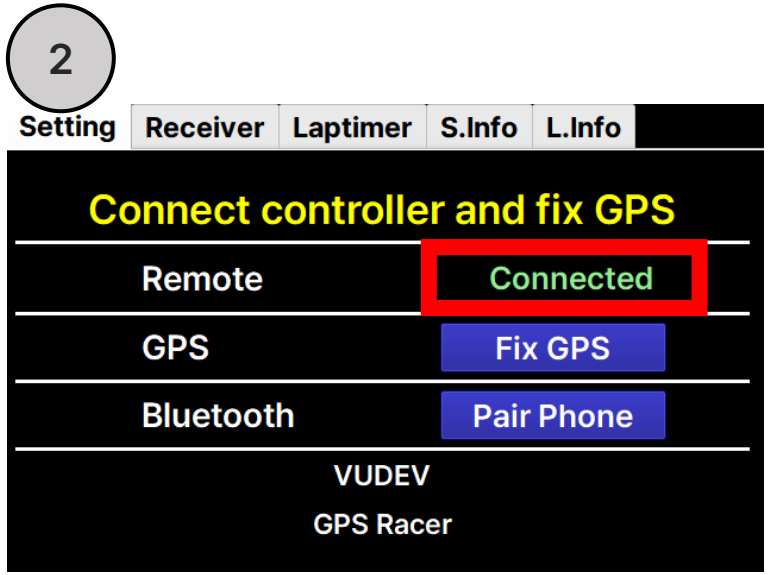
1. Insert the batteries into the remote control, turn the power switch upward to turn it on, insert the batteries and memory card correctly into the main body, and press the power button once to start the device.

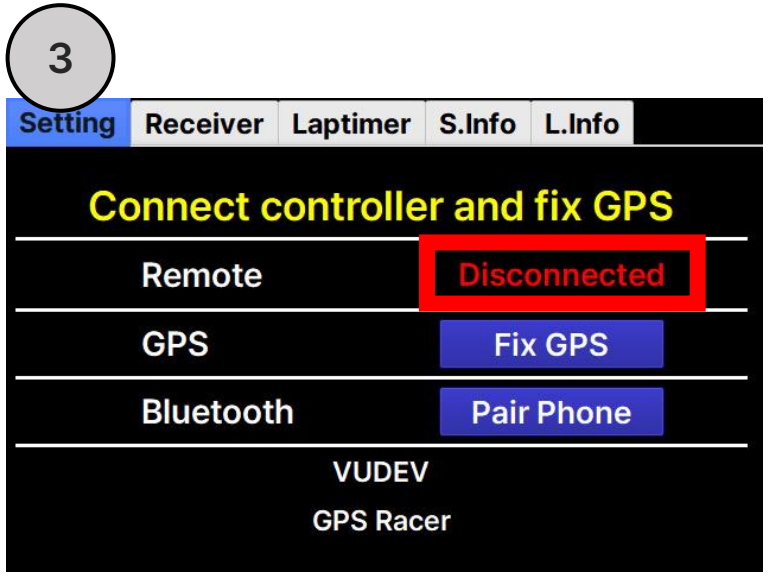
2. If the remote control is connected: The green Connected word is displayed in the Settings tab. Proceed to the GPS signal reception process.

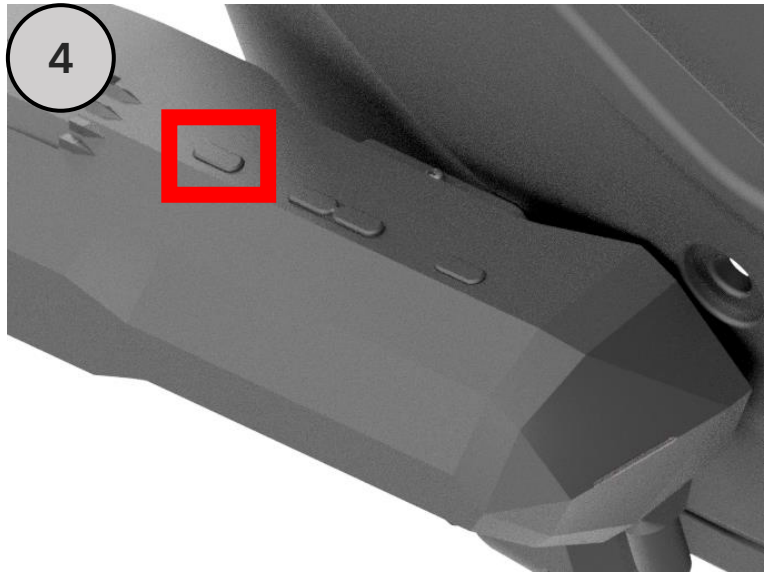
3. If the remote control is not connected: The red Disconnected word is displayed in the Settings tab, or it alternates with the green Connected word. In this case, proceed to step 4 to pair the remote control again.

4. Remote control pairing: With the remote control turned on, place it near the main body, and press the Fn button on the main body for 2 seconds to enter pairing mode. Wait a moment while the device searches for nearby devices and automatically connects to the remote control. If the connection is successful, proceed to step 2.









2. Using GPS Racer Software – Receiving GPS Signals

This is the process of receiving GPS signals and synchronizing software time.

1. Move the button focus with the joystick and press the Fix GPS button.

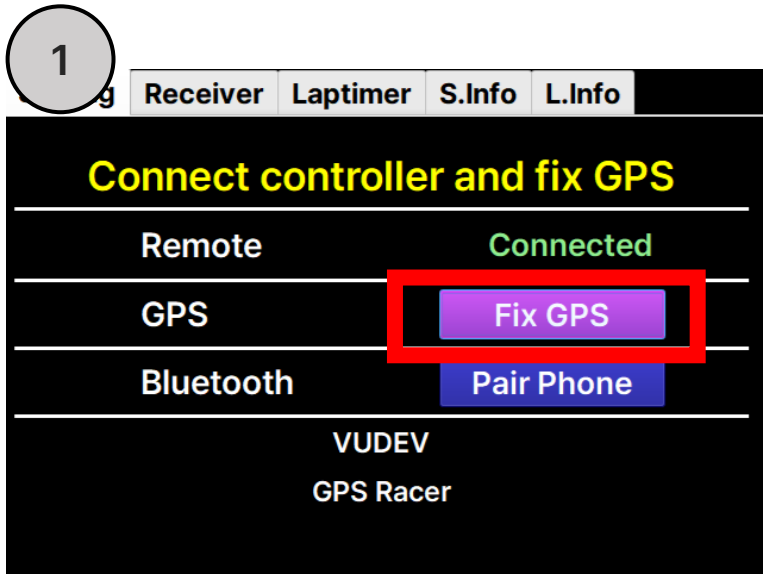
2. The text Waiting GPS appears for a moment and enters the reception standby mode.

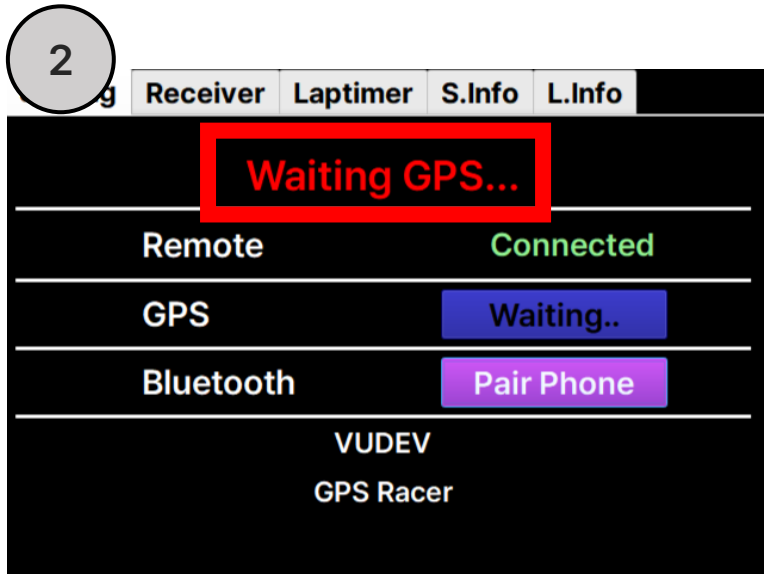
3. The system time is displayed in red and the reception mode continues. The time displayed at this time is before synchronization, so it is displayed differently from the actual time.

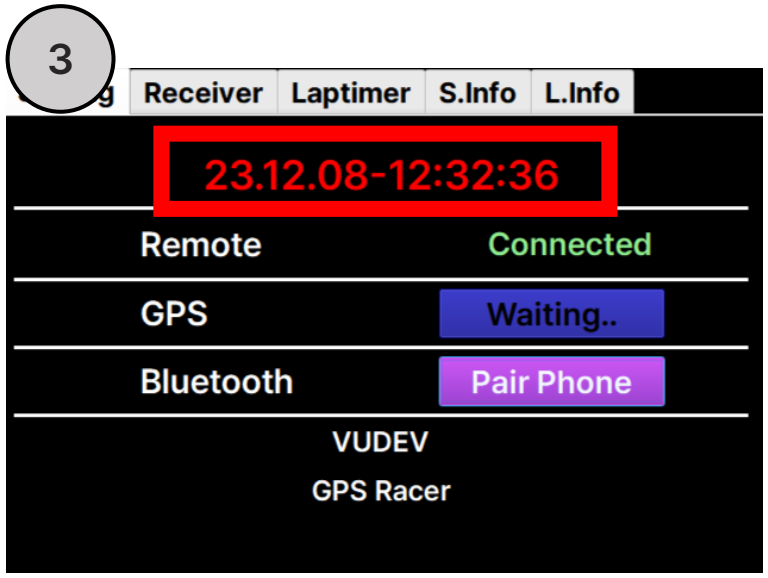
4. When GPS reception is complete, the system time changes to green and is synchronized to the current time.

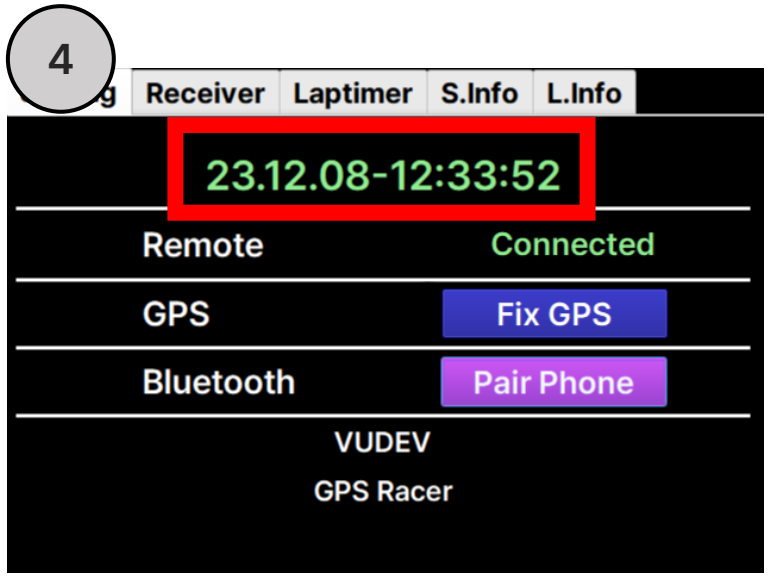
* Use outdoors where the ceiling is not obstructed.

Depending on the location and time the device was previously turned on, the current surrounding radio environment, and weather, it may take from a minimum of 3 seconds to a maximum of 12 minutes to receive a GPS signal.









2. Using the GPS Racer Software – Setting up Bluetooth GPS Receiver Mode

This is the process of connecting the Pysite and smartphone via Bluetooth and adding the device in the Racechrono app as an example.

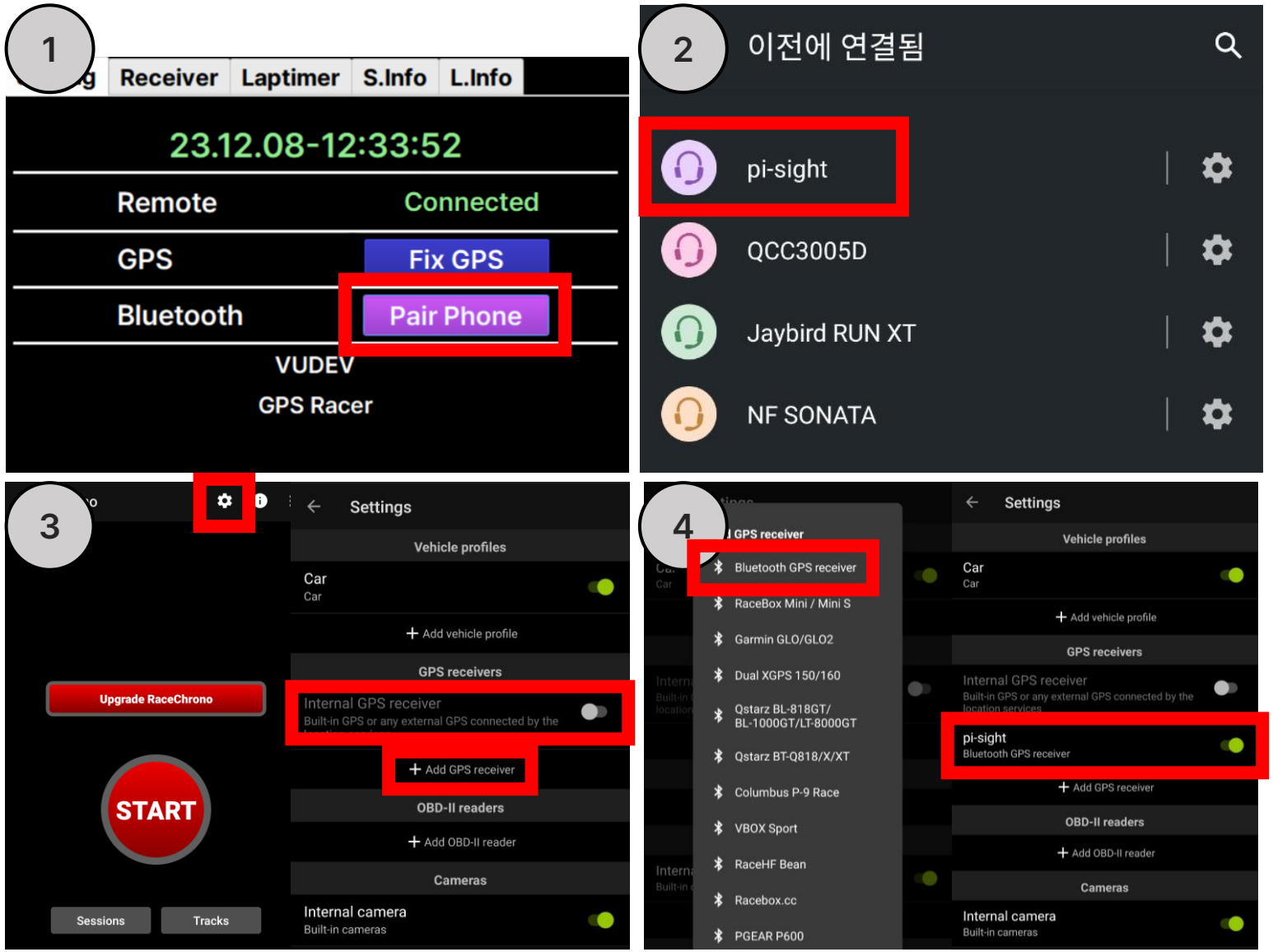
1. Move the button focus with the joystick and press the Pair Phone button. It will clear the list of previously paired smartphones and enter Bluetooth pairing mode for 30 seconds.

2. Turn on Bluetooth on your smartphone and pair it with the pi-sight device. (It is normal for it not to connect after pairing.)

3. Open the Racechrono app on your smartphone and enter the settings menu. Turn off the Internal GPS receiver switch and press +Add GPS receiver below.

4. Press Bluetooth GPS receiver → pi-sight → OK in order to add it as an external receiver.

This process only needs to be done once during initial setup and you will not need to do it again.



2. Using the GPS Racer Software – Using the Bluetooth GPS Receiver Mode

Please refer to the app's manual for app settings such as track designation.

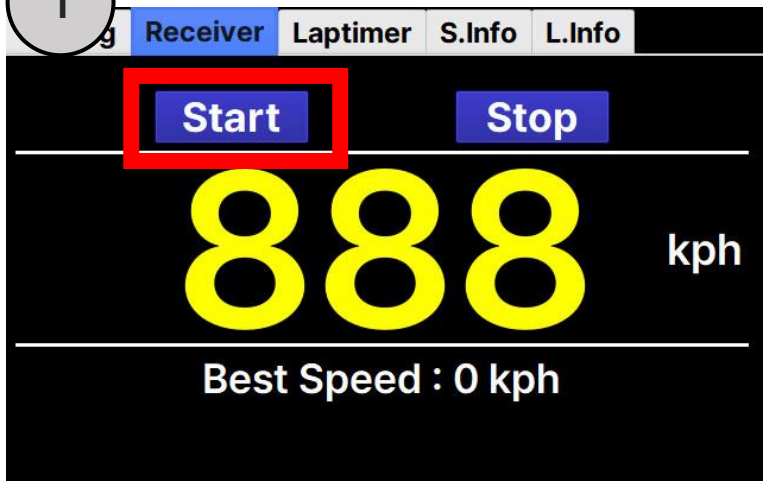
1. Turn on the Bluetooth of your smartphone, go to the Receiver tab of the Pisite, press the Start button, and the Pisite will wait to transmit the GPS signal.

2. Open the RaceChrono app on your smartphone and press the START button to start recording driving data.

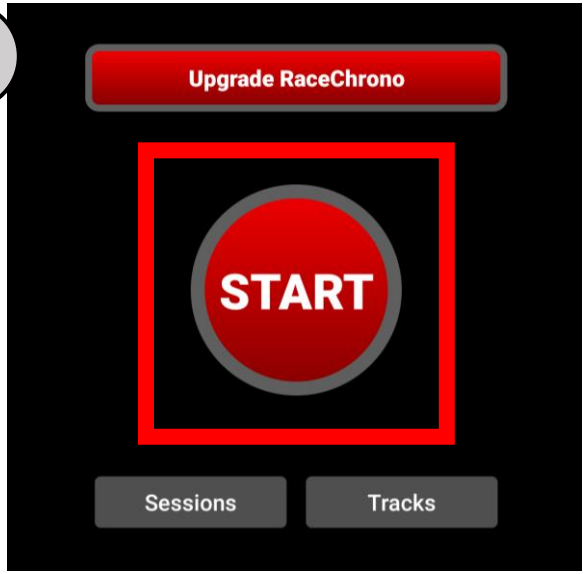
3. You can check the 10Hz GPS data being received from the Pisite within the RaceChrono app.

4. The current speed and maximum speed are displayed while driving, and to exit the receiver mode, press the Stop button.

1

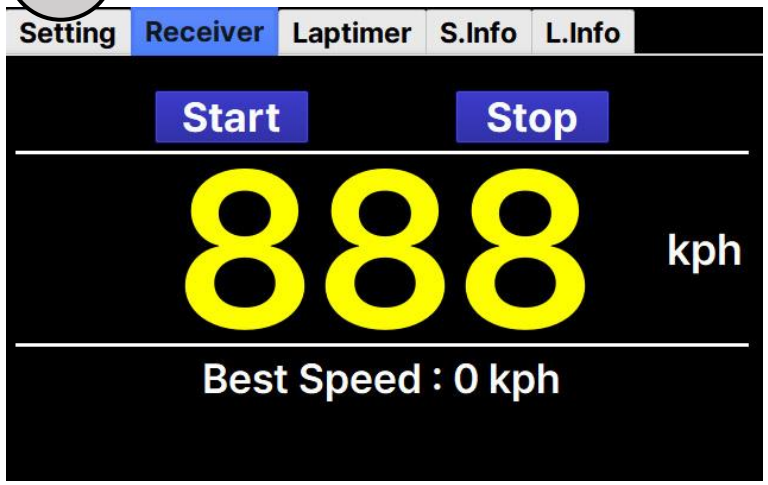


2



3

4

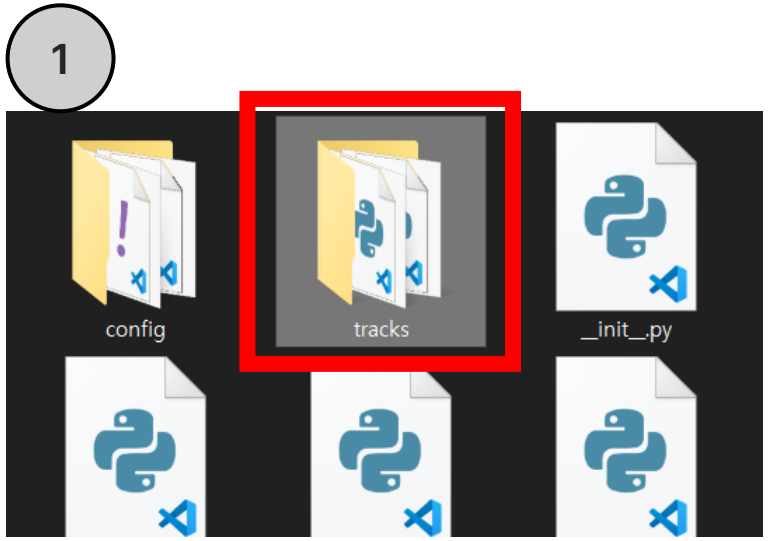


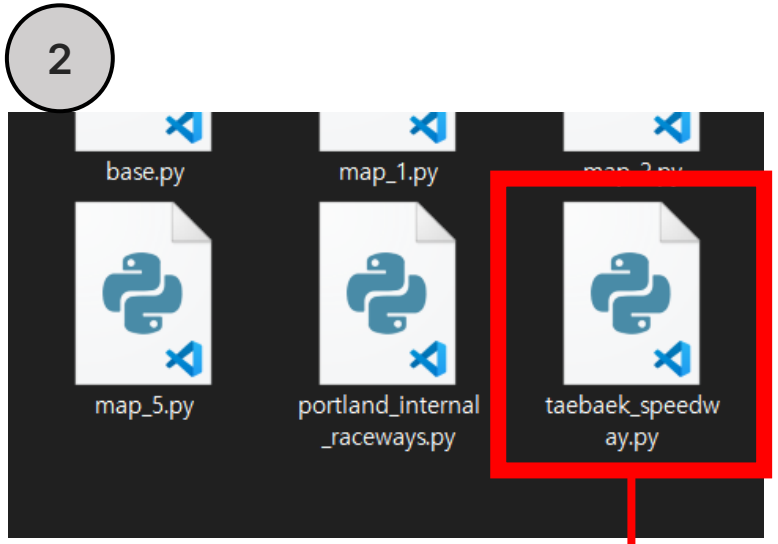
The GPS Racer's Lap Timer mode operates based on the track finish line location information stored on the memory card. By default, the following track information is stored:

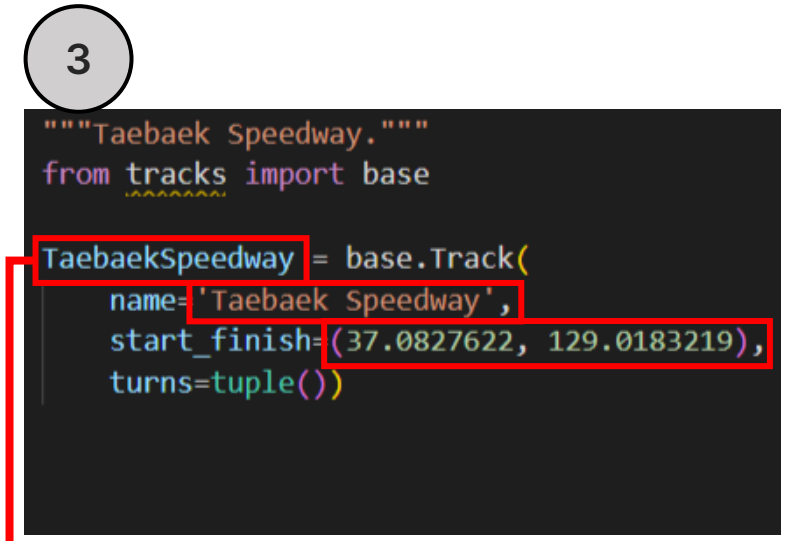
korea
1. AMG Everland Speedway
2. Inje Speedium
3. Yeongam KIC F1/Permanent/Kart
4. Taebaek Speedway
5. Paju Speed Park
6. Pocheon Raceway

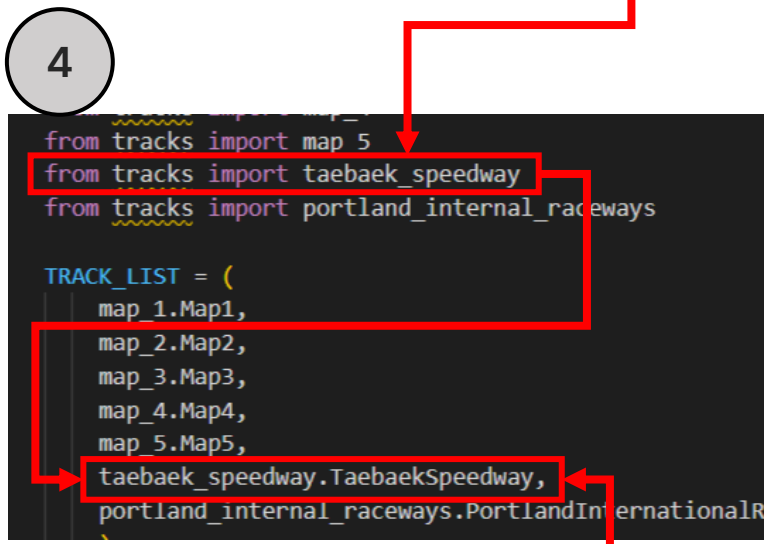
If you want to add other locations other than the tracks that are saved by default, follow these steps to add them:

1. Connect the memory card to the PC and enter VUDEV – tracks.
2. Copy another track file and change it to the desired [file name].
3. Open the file and input [system track name, display track name, finish line coordinates] and save it.
4. Open _init_.py in the Tracks folder and add [from tracks import file name] and add [file name, system track name,] to the Track List item below.







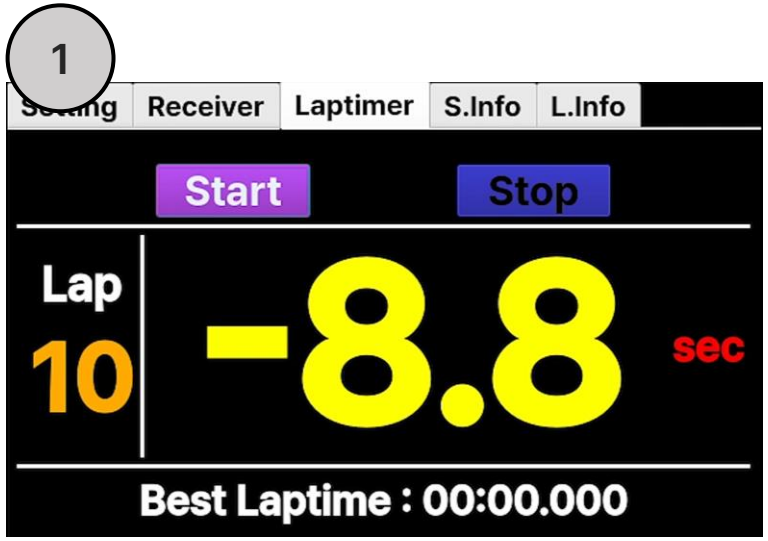


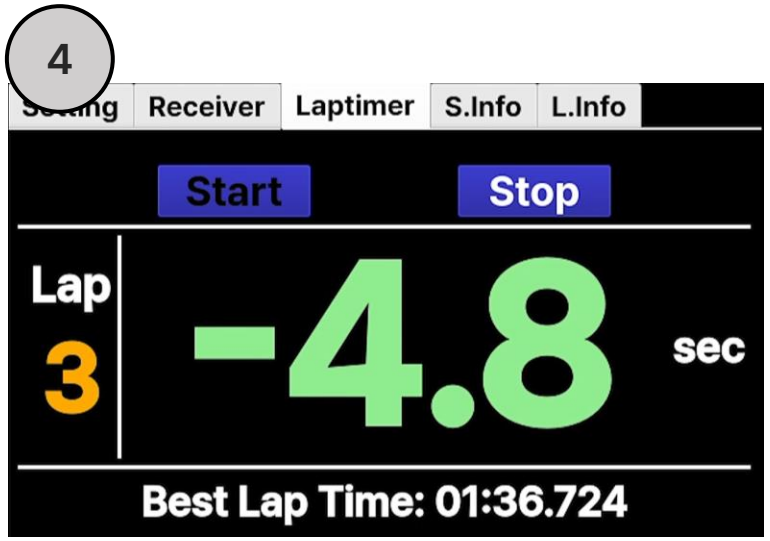
1. Go to the Laptimer tab and press the Start button.

2. The Lap number is 0, the lower lap time is displayed as 01:01, and the GPS signal is received to search for the closest track among the tracks saved on the memory card.

3. When the setting is completed and the preparation is completed for the closest track, the Lap number changes to 1 and the lower lap time is initialized to 0 seconds. Now start driving on the track.

4. When driving 1 or 2 laps, the Lap number on the left increases and the best lap time is displayed. When driving from the 3rd lap, it displays how many seconds faster/slower it is in real time compared to the best lap in the current driving session. When driving is finished, press the Stop button to exit the lap timer mode.



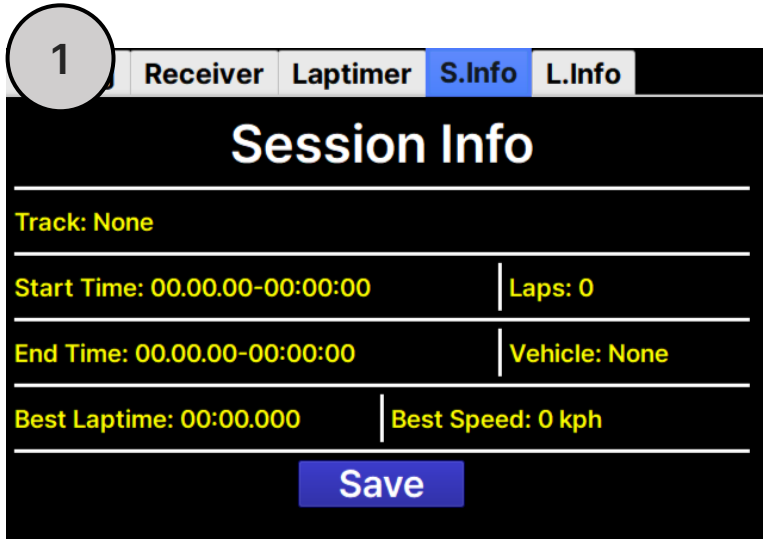


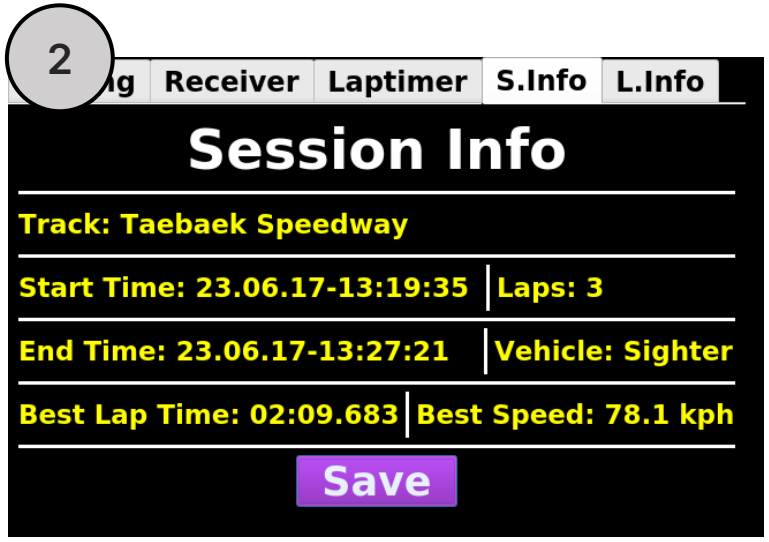
1. Go to the S.info tab to check the current session information.

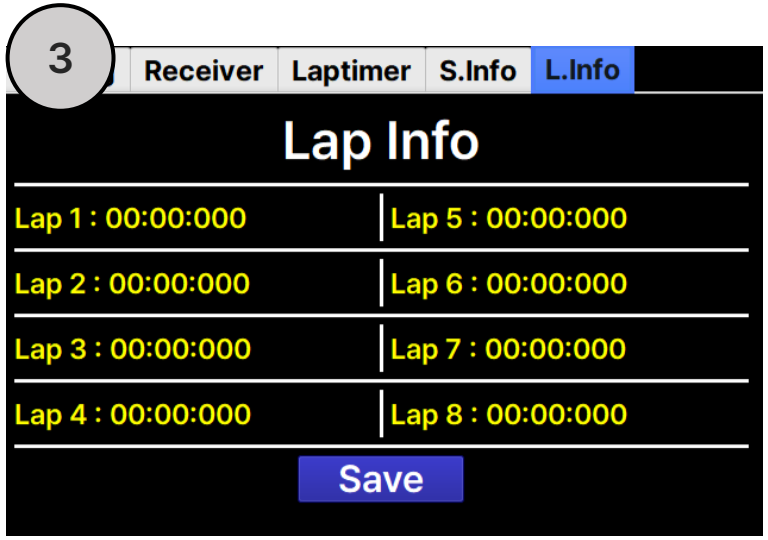
2. When the lap timer mode is started and the track is set, the track and start time are displayed, and the number of laps, best lap time, and top speed are updated during driving. When you press Stop in the lap timer mode to exit, the end time is displayed. You can capture the S.info screen by pressing the Save button and save it to the memory card.

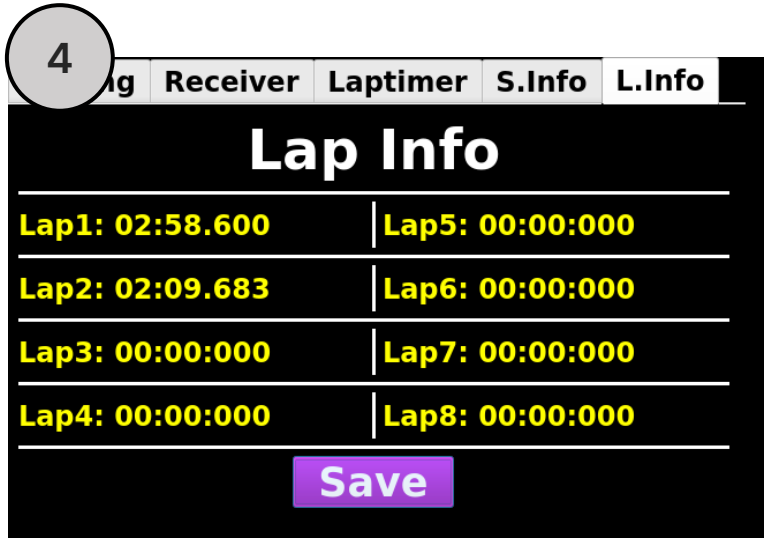
3. Go to the L.info tab to check the lap time of the current session.

4. When you start the lap timer mode, the lap time is updated every time you pass each lap. You can capture the L.info screen by pressing the Save button and save it to the memory card.







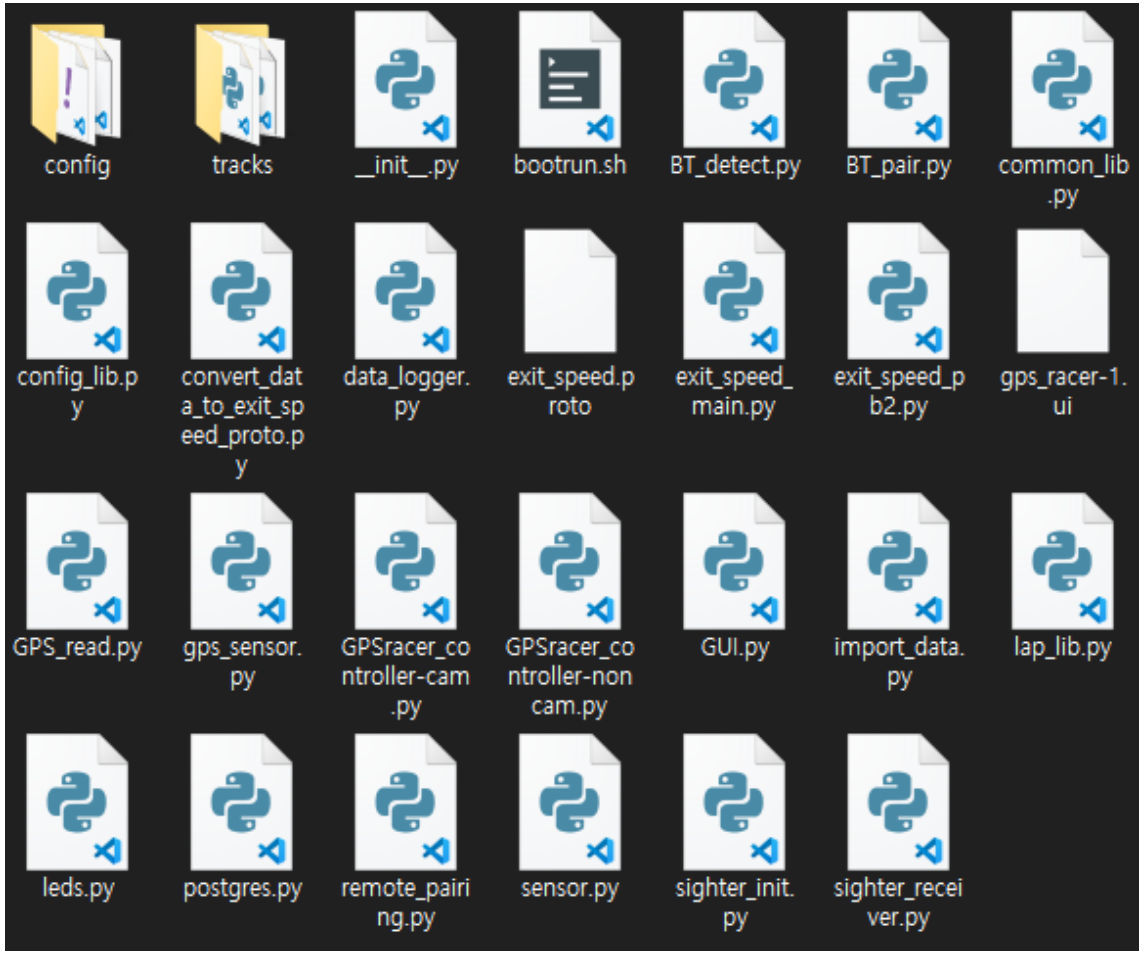


1. There is GPS Racer software code inside the VUDEV folder of the boot disk.

2. The functions of each code are as follows.
   - GPSracer_controller_cam/noncam.py: Key mapping, camera
   - Sighter_init.py: Fix GPS button – GPS signal reception, time synchronization
   - BT-pair.py is Pair Phone button – Smartphone pairing mode
   - sighter_receiver.py: Bluetooth GPS receiver mode
   - remote_pairig.py: Remote control pairing
   - exit_speed_main.py: Lap timer mode
   - GUI.py: Screen configuration, connection to all functions
   - Bootrun.sh: Code auto-run

3. You can freely modify many parts such as GUI, key mapping, etc. by modifying the file. For more information, refer to vudev.net.

Back up the original file and make changes to restore it in case of problems.



3.1 Main Body Operation Problems

- If the battery gauge light comes on but the display does not work, check the connection between the main body and the display terminal.
- If the battery gauge light comes on but the boot screen does not appear, check whether the memory card is inserted properly.
- If the battery gauge light does not come on, check whether the battery is inserted properly.

3.2 Remote control connection problems

- When you turn on pairing mode on the main body, if there is another remote control nearby that is turned on and not connected, a remote control other than your own may be connected. When the pairing mode on the main body is activated, check if there is another PI-SIGHT remote control nearby.

3.3 Remote control charging light problem

- When the remote control is turned on and the battery is fully charged, the red and blue lights may turn on simultaneously or alternately, but this is normal operation.

3.4 Fix GPS not completing issue

- Make sure the GPS module is properly installed, and proceed outdoors with a clear view of the sky.
- If you turn on the rear camera, it may interfere with the GPS and prevent the signal from being received properly. For this reason, the camera is disabled by default.

3.5 Smartphone and Bluetooth connection issues

- After completing the Bluetooth pairing of the Pisite and the smartphone, if you select raspberrypi in the smartphone's Bluetooth settings, the connection may not be made. In the case of GPS receiver mode, since it communicates using the RFCOMM protocol, it is normal for it not to be connected in the smartphone's basic settings window. You can connect through an app that supports the corresponding protocol communication, such as the Laptimer app or the Serial Terminal app.

3.6 Lap Timer Mode Issues

- If you turn on the rear camera while driving after the lap timer is in operation, there may be a difference in the time difference data compared to the best lap at that location due to GPS signal interference.

3.7 Format notification when connecting memory card to PC

- When you connect a memory card to a PC, a notification may appear telling you that you need to format the memory card. This is normal as it occurs due to differences in memory formats. Click Cancel to ignore this notification.