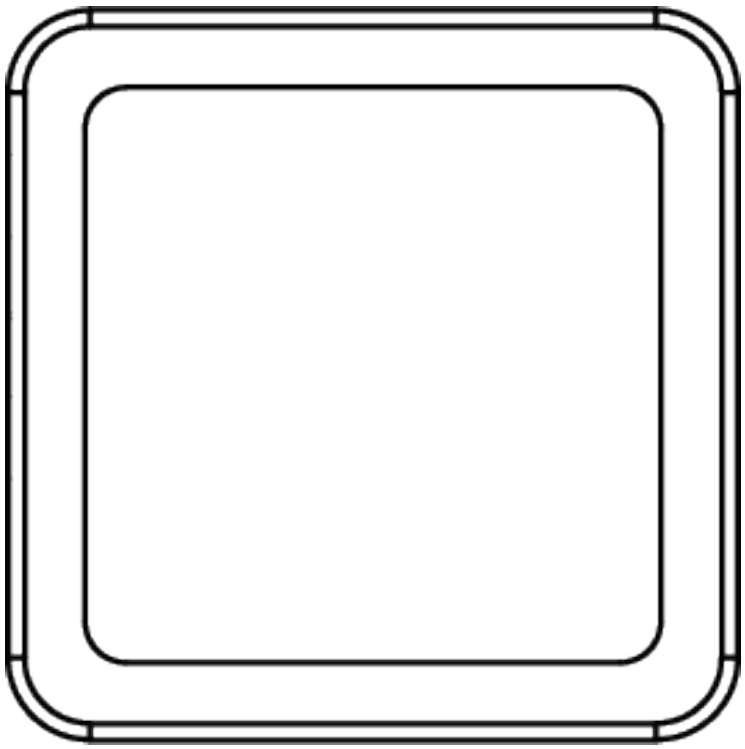
User manual

IFlag Basic

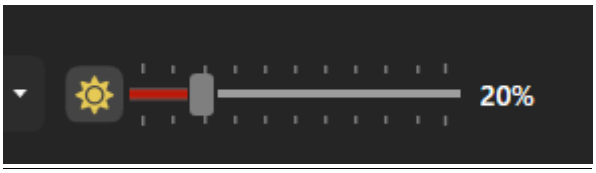
By PixelRaceStore



IMPORTANT SAFETY WARNING – READ BEFORE USE!

Please pay attention to the brightness settings! This product is 3D printed using high-quality PLA (Polylactic Acid). While durable, PLA is sensitive to high heat (above 60°C).

- **RECOMMENDED SETTINGS:** In practice, you will likely find that **5% to 20% brightness is perfect**. The LEDs are very powerful; anything higher is often too dazzling and uncomfortable for your eyes while racing.



- **MAX LIMIT & RISK: NEVER exceed 60% brightness.** Operation above this limit is strictly **at your own risk**.
- **HEAT GENERATION:** Be aware that **White** is the hottest color (it uses all RGB sub-pixels). Also, a full-screen effect (e.g., a full White Flag) generates significantly more heat than a simple digit (e.g., Gear "2").
    - **CONSEQUENCES:** Running the LED matrix at high brightness (especially full white) for extended periods generates heat that can soften and deform the casing.
- **IF OVERHEATING OCCURS:** If the casing feels soft or extremely hot, turn off the device immediately and **let it cool down completely without touching it**. Squeezing the warm plastic may permanently deform the housing.
- **INDOOR USE ONLY:** Do not expose to direct sunlight for long periods (e.g., on a window sill) or keep near heat sources (radiators). Keep away from water and high humidity.

1. Introduction

Welcome to the Grid!

Thank you for choosing the **iFlag Basic** from **PixelRaceStore**. You have just upgraded your sim racing rig with an essential telemetry tool that will help you improve your awareness on the track.

The iFlag Basic is designed as an entry-level, budget-friendly solution that doesn't compromise on functionality. Powered by an Arduino Nano and a vivid 8x8 LED Matrix, it provides real-time visual feedback for flags, gears, spotter warnings, and more.

We are a DIY-spirited shop, and every unit is 3D printed and assembled with care. We hope this device helps you shave those extra tenths of a second off your lap times!

See you on the track, *PixelRaceStore Team*.

A Note on 3D Printing Quality

Please note that this product is manufactured using FDM 3D printing technology. As a result, **visible layer lines** are a normal and inherent characteristic of the process. You may also notice minor cosmetic imperfections, such as a vertical "seam" (Z-seam) on the back or slight surface texture variations, which do not affect the device's functionality or durability.

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2. What's in the Box & Product Overview

Please check the contents of your package. Depending on the options you selected at checkout, your kit may include the following:

Standard Contents

- iFlag Basic Unit
- Housing: 3D Printed PLA (Black body, White diffuser, front plate of your choice).
- Connector: USB-C port.
- Mounting points: 4x M3 metal threaded inserts on the back.
- 2x M3x6mm Screws (for attaching the mount to the iFlag)

Optional Accessories (If Purchased)

- **USB Cable:** USB-C to USB-A cable (1m or 2m).
- **Standard Mounting Kit:**
  - 3d printed 2-part Adjustable Mount (Base + Hinge).
- **3d printed Extension Arm:** Additional ~10cm arm for extended positioning.
- **Magnetic Quick-Mount:** Adhesive magnetic plate with retractable magnetic holder for monitor/desk mounting.

Device Overview

The Back Panel (Mounting Interface) The back of your iFlag Basic is designed for versatility. It features **4x Metal Threaded Inserts (M3 size)**.

- **Custom Mounting:** You can design your own mounts or use existing sim-rig hardware.
- **Screw Limitation:** When using your own screws, ensure they do not go deeper than **9mm** into the housing to avoid damaging the internal electronics.

(Optional) Standard Mount Features:

- **Hole Diameter:** 4.4mm (Fits included 3m screws for mounting the base; can be drilled larger if needed).
- **Mounting Method:** Can be screwed into your rig or attached via strong double-sided tape (e.g., 3M VHB).

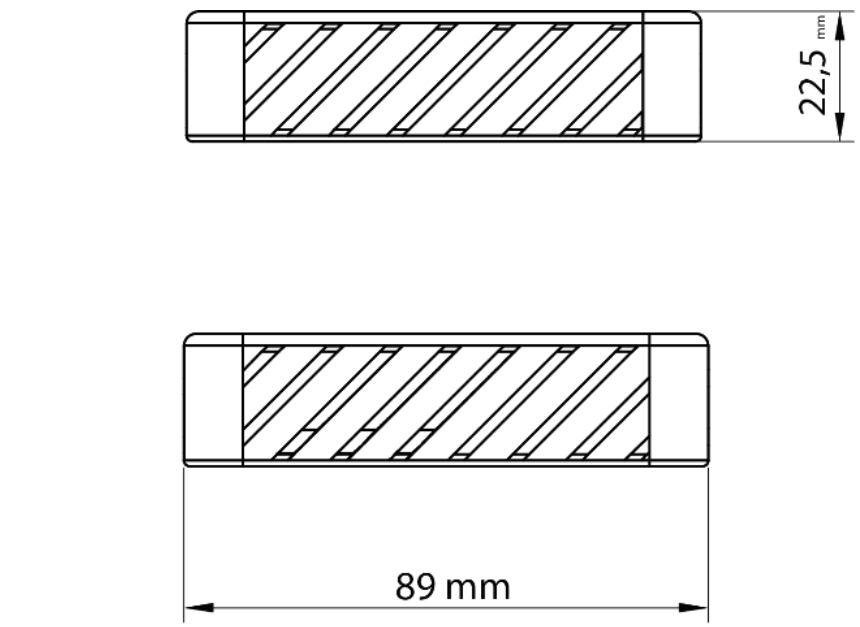
Supported Games

SimHub supports over 60+ racing titles. The iFlag Basic works seamlessly with:

- **Simulators:** Assetto Corsa, ACC, iRacing, rFactor 2, Automobilista 2.
- **Formula:** F1 2020 – F1 24.
- **Rally:** DiRT Rally 2.0, EA Sports WRC.
- **Simcade:** Project Cars 2, Forza Horizon/Motorsport*, Gran Turismo 7*.
- **Trucks:** Euro Truck Simulator 2, ATS.

**Note: Some games (like F1, Forza, or GT7) require enabling "UDP Telemetry" in the game's internal settings menu. SimHub usually provides instructions on how to do this in the "Games" tab.*

The housing features small passive ventilation vents designed to aid heat dissipation. To prevent overheating, please ensure these openings remain unobstructed and are not covered by mounting tape or accessories.


22,5 mm
89 mm
89 mm
70,2 mm
89 mm

3. Installation & Connection

Before using your iFlag, follow these steps to install the drivers and verify the connection.

Step 1: Install SimHub, SimHub is the core software required to run this device.

1. Download the latest version from: **www.simhubdash.com**

Note on Windows Security: *During installation, you might see a blue "Windows protected your PC" pop-up. This is a common check for independent software. Simply click* ***"More info"*** *and then* ***"Run anyway"*** *to proceed with the installation.*

2. Run the installer and follow the on-screen instructions.

Step 2: Install CH340 Drivers, the iFlag Basic uses a CH340 communication chip.

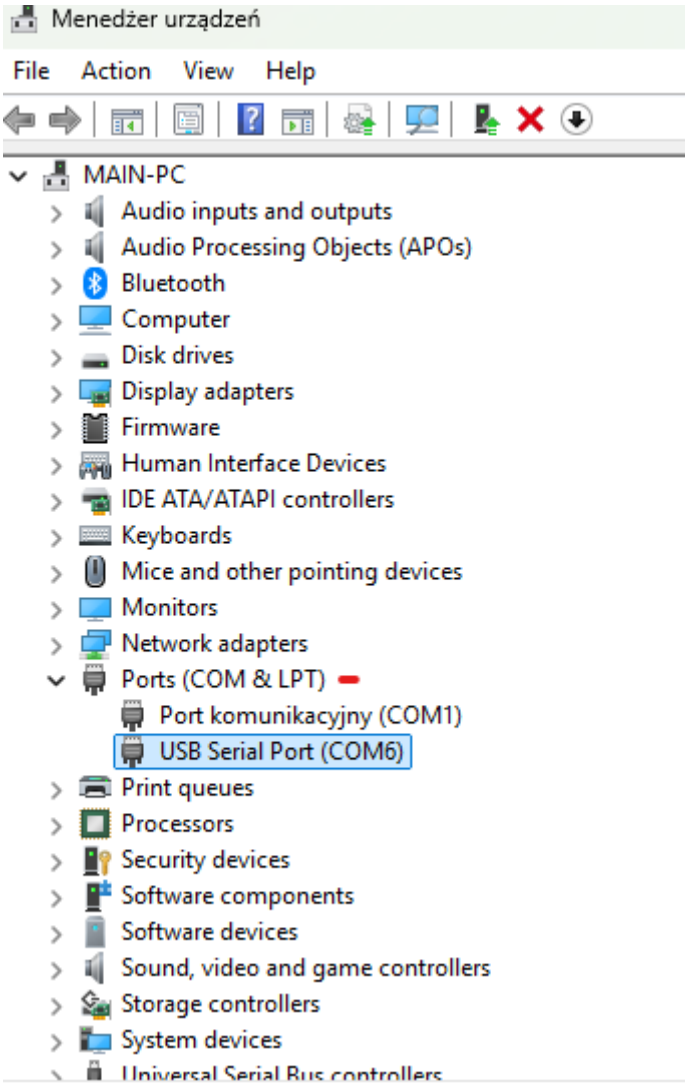
1. Download the CH340 Driver (Windows): https://www.wch-ic.com/downloads/CH341SER_EXE.html or search for **"CH340 Driver"** or **"CH341SER.EXE"**.
2. Run the installer and click **INSTALL**. Wait for the "Driver install success" message.

Step 3: Connect & Verify Now it is time to connect your device and ensure Windows recognizes it.

1. **Plug in:** Connect the iFlag to your PC using the USB-C cable.
2. **Open Device Manager:** Right-click the Windows Start button and select **Device Manager**.
3. **Check Ports:** Expand the list named **"Ports (COM & LPT)"**.
4. **Confirm:** Look for an entry named **"USB-SERIAL CH340 (COM...)"** or **"USB SERIAL PORT (COM...)"**

If you see this, the driver is working. Note the COM number (e.g., COM3). If you do not see it, try a different USB cable/different USB port, reinstall the driver or download it from another source.

It should look like this:



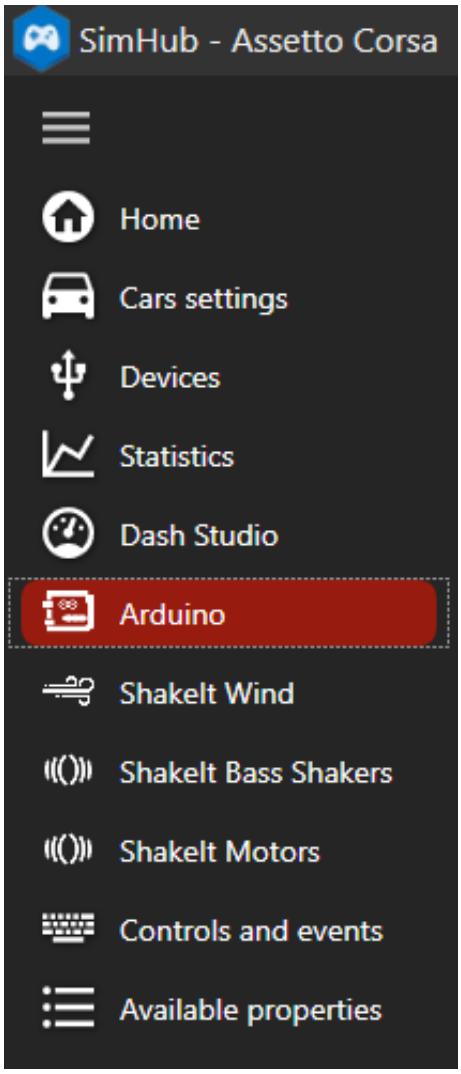
4. SimHub Configuration

Now that your iFlag is connected and recognized by Windows, let's set it up in SimHub.

Please be aware: *SimHub is a third-party software that is frequently updated. The screenshots provided in this manual are for illustrative purposes. Depending on the specific version you have installed, the user interface (UI) may look slightly different from what is shown here.*

Step 1: Open SimHub, Launch the application.

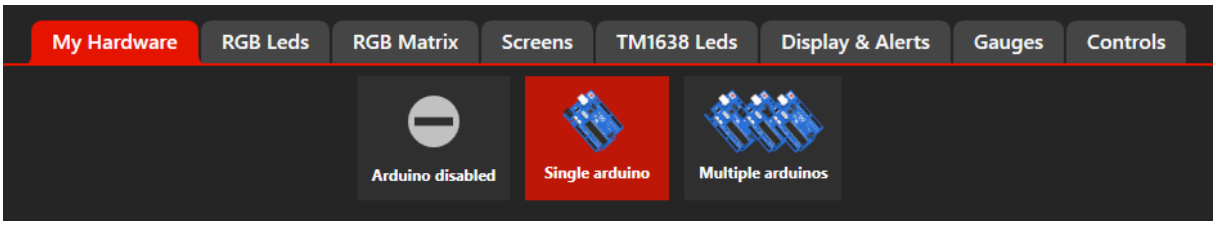
Step 2: Navigate to Arduino Settings



1. Click on the **"Arduino"** tab on the left menu.
2. Select **"My Hardware"** at the top.

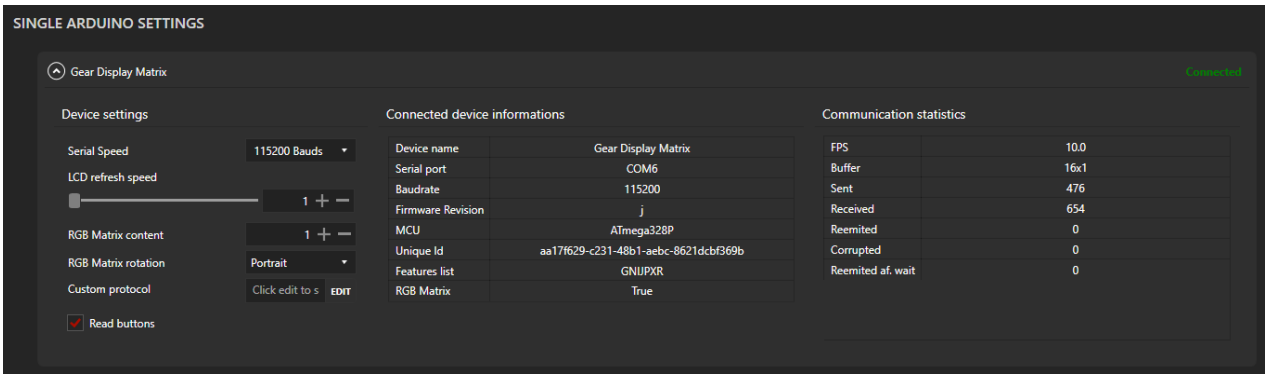
Step 3: Connect the Device

1. Look for the section labeled **"Single Arduino"**.



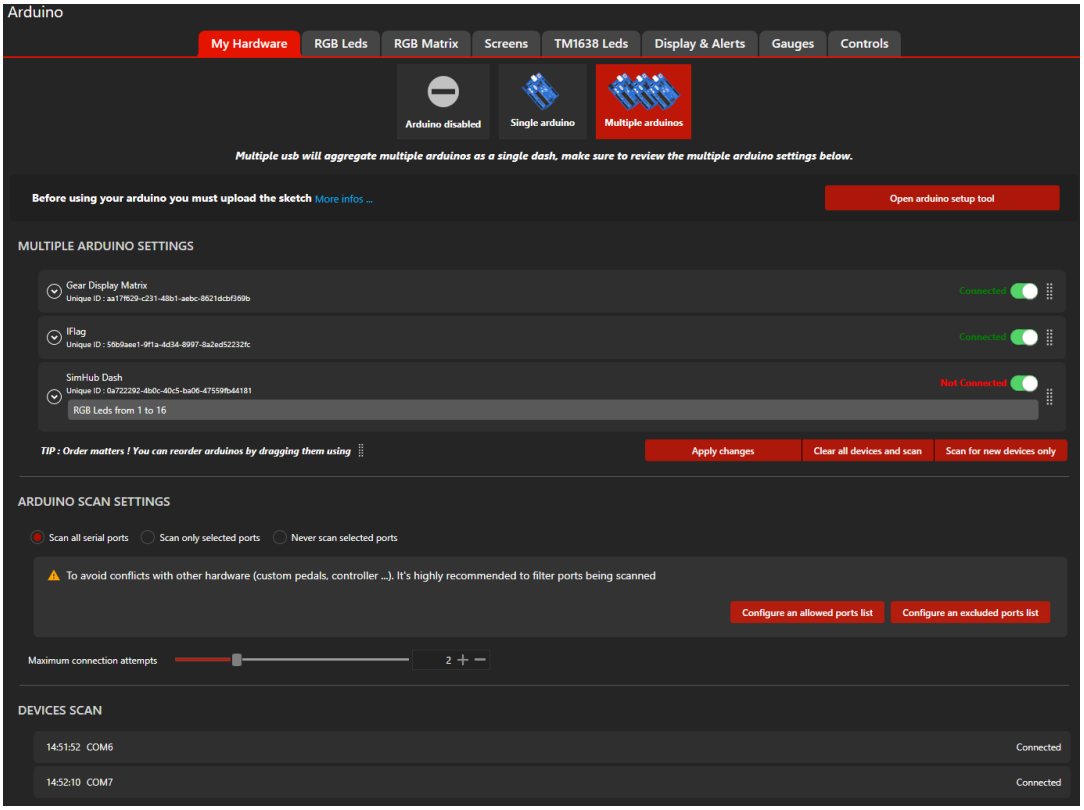
2. In the "Serial Port" dropdown, select the **COM port** you saw earlier in Device Manager (e.g., COM3).
3. If you don't see it, click "Scan serial ports".

4. The status should change to **"Connected"**.



Your iFlag is now active! The matrix might flash briefly to indicate a successful connection.

If using two or more IFlag's in "My Hardware" select "Multiple arduinos" and follow similar instructions.



5. Configuring Visual Effects

Creating Your Own Effects (Tutorial)

If you want to customize the display or create something unique, here is how the RGB Matrix tab works.

The "Layer" Logic SimHub uses a layer system like Photoshop.

- Top Priority: Effects at the bottom of the list cover effects at the top.
- *Example:* If "Spotter" is below "Gear", the screen will show the Gear by default, but when a car is next to you, the Spotter will override (cover) the Gear.

5.1 Understanding the Effect Editor

When you open the **RGB Matrix** tab, you will see a list of layers similar to the screenshot below. Here is what every button does:

(A) The Layer List (Priority Order) SimHub reads this list from **Top to Bottom**.

- **Reordering:** You can grab the **six dots (Handle)** on the far right of any row and drag it up or down to change priority.

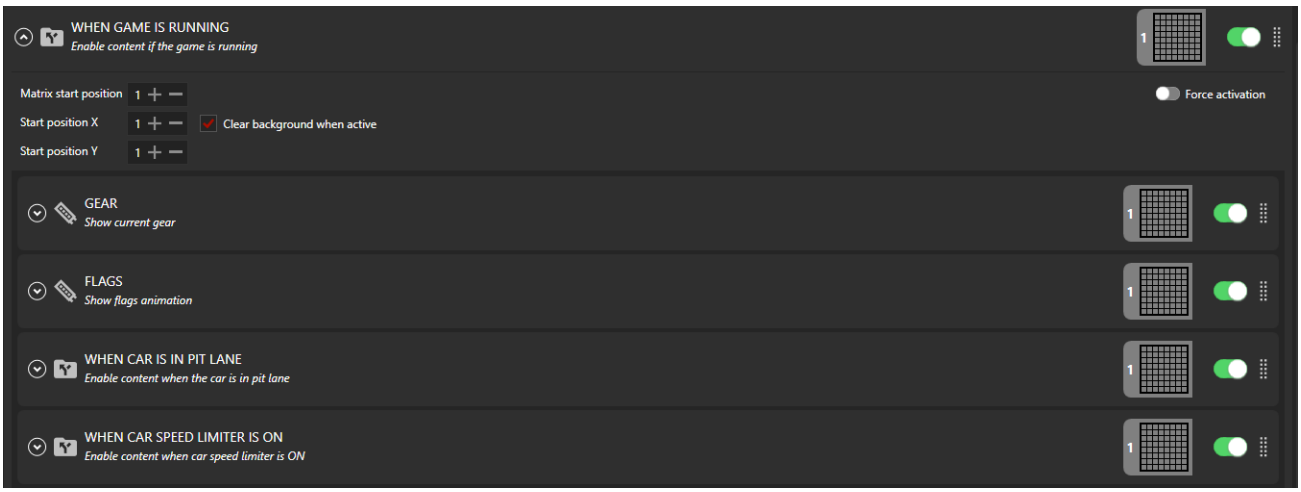
(B) The Elements

- **Folders (Groups):** Items like *"WHEN GAME IS RUNNING"* are containers. They have conditions attached. If the condition is met (e.g., game is paused), everything inside this folder will activate.
- **Effects:** Items like *"GEAR"* or *"FLAGS"* are the actual animations displayed on your iFlag.

(C) The Controls Looking at a specific row (e.g., "WHEN GAME IS RUNNING" in your screenshot):

1. **Arrow (>):** Click this to expand or collapse the detailed settings for this effect (color, animation speed, position).
2. **The Grid Icon [1]:** This indicates the target screen.

3. **Green Toggle Switch:** Turns the effect **ON** or **OFF** instantly. Useful for testing which effect is causing issues without deleting it.



Adding a New Effect

Go to Arduino -> RGB Matrix.

Click the "New effect" button.

Choose a function from the library (e.g., *"Gear"*, *"Speed"*, *"Flags"*).

Configure: Once added, click on the effect name to change its colors, font, animation speed or to add custom animation.

ALWAYS keep the brightness low (we recommend 10-20%).

Avoid creating static, full-white backgrounds, as they generate the most heat.

4. **Testing**, you don't need to launch a game to test. Use the "Test Data Editor" button in SimHub (usually visible on the main dashboard) to simulate speed, flags, and opponents to see how your iFlag reacts in real-time.

6. Hardware Mounting

The iFlag Basic is designed for flexibility. You can use our included mounting solutions or design your own.

Using the Standard Adjustable Mount (If included)

The standard mount consists of two printed parts (Base + Hinge) and allows you to adjust the viewing angle.

1. **Assembly:** Align the hinge part with the mounting holes on the back of the iFlag case.
2. **Secure to Case:** Use **2x M3 screws** (included) to attach the mount to the case.
3. **Adjust Angle:** Insert the locking screw into the side of the hinge. Adjust the iFlag to your desired angle and tighten the screw to lock it in place.
4. **Mounting to Rig:**
    - **Bolts:** The base features 4.4mm holes suitable for standard M4 bolts. Since the mount is made of solid plastic, you can easily drill these holes larger if your rig requires bigger bolts.
    - **Tape:** Alternatively, the flat base is perfect for heavy-duty double-sided tape (e.g., 3M VHB) for a drill-free installation.

Optional Accessories:

- **Extension Arm (+10cm):** If you purchased the extension arm, install it between the base and the hinge using the provided screws to raise the display higher. The arm contains hole which allows you to do some cable management.

- **Magnetic Quick-Mount:** Peel off the adhesive backing from the metal mount and stick it to your monitor or desk. The magnetic plate on the iFlag will snap firmly onto this mount, allowing for quick removal.

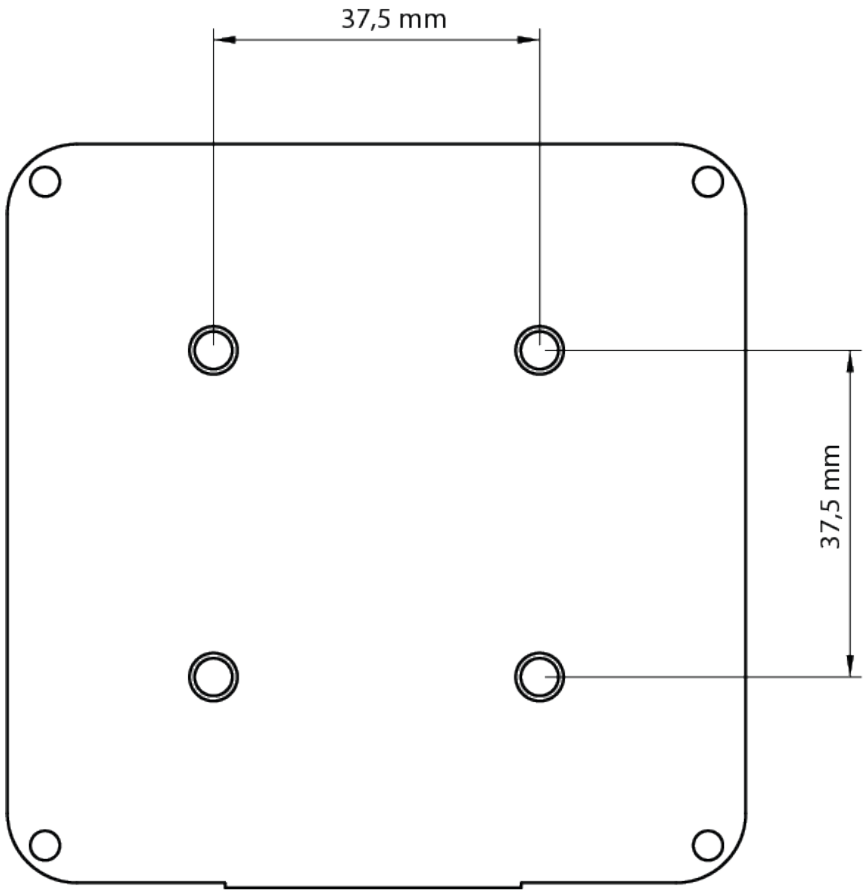
Custom Mounting (DIY)

If you prefer to build your own mount:

Mounting Points: The back of the case features **4x M3 metal threaded inserts**.

CRITICAL WARNING!

When using your own screws, ensure they do not extend more than **9mm** into the case. Longer screws may pierce the internal electronics and **permanently damage the device**.



7. Troubleshooting

If you encounter issues, please go through this checklist before contacting support. Most problems are solved by checking the cable or settings.

The computer does not detect the device *(Device Manager does not show "USB-SERIAL CH340")*

- Check the USB Cable: This is the most common issue. Ensure you are using a high-quality DATA cable. Many cheap cables included with phones are "Charging Only" and cannot transmit data.
- Try a Different USB Port: Plug the device directly into the motherboard (back of the PC). Avoid unpowered USB hubs or front panel ports which may have voltage drops.
- Reinstall Drivers: Uninstall the current driver and install it again (see Chapter 3). If it still fails, try downloading the driver from a different source (search for "CH340 driver").

SimHub does not detect the device *(Windows sees it, but SimHub stays "Disconnected")*

- Verify COM Port Match: Open Device Manager and note the COM number for "USB-SERIAL CH340" (e.g., COM4). In SimHub, ensure you have manually selected COM4 in the "Serial Port" dropdown.
- Scan Again: Click the "Scan serial ports" button in SimHub.
- Update Software: Ensure you have the latest version of SimHub and the CH340 drivers.

Device is connected, but LEDs do not light up *(SimHub says "Connected", but the matrix is dark)*

- Check "Iflag Basic" Toggle: Go to *Arduino -> My hardware* and ensure the main switch at the right is Enabled.
- Brightness Setting: Ensure the global brightness slider is not set to 0% (keep it above 2% for testing).
- Test Data: Use the "Test Data Editor" in SimHub to simulate a gear shift. Sometimes the game is simply paused or sending no telemetry.

- Serial Speed (Baud Rate): In the Arduino settings, check the Serial Speed. It should typically be set to 192000 or 1152000 (depending on the sketch version, but 1152000 mostly). If one doesn't work, try the other.
- Matrix Positioning:
    - Check if your effect “matrix start position” in “RGB Matrix” matches “RGB Matrix content” in Arduino settings “My Hardware”.
    - If using a Dual Setup, ensure the effect meant for the second unit matches “RGB Matrix content” and uses the correct Group/Matrix starting position.
- Power Issue: If the LEDs flicker or cut out, the USB port might not supply enough current. Try a powered USB hub different USB Port or a USB 3.0 port.
- Conflicts: Ensure no other software (like Cura or another dashboard app) is trying to use the same COM port.

The Case feels soft and extremely hot

- ACTION: Unplug the device immediately!
- Do not touch: Let the plastic cool down and harden before handling to avoid deformation.
- Solution 1 (Brightness): Once cooled, reconnect and lower the brightness in SimHub (10-20% recommended).
- Solution 2 (Content): Avoid effects that use Full White backgrounds for long periods.
- Solution 3 (Cable): In rare cases, a poor-quality cable can cause resistance heating at the connector. Try replacing the USB-C cable.

Device lights up (shows Idle/Clock) but does not react to the game *(The matrix is working, but Gears/Flags don't update while driving)*

- Game Configuration: In SimHub, go to the "Games" tab. If you see a banner saying, "Game config not fixed" or "Telemetry not configured," click "Fix automatically."
- In-Game Settings: Some games (e.g., *F1 24, Forza, Gran Turismo, Dirt Rally*) require you to manually enable "UDP Telemetry" or "Shared Memory" in the game's internal options menu.
- Check Active Profile: Ensure the correct profile is active. If SimHub switched to a "Desktop" or default profile, it might not have the game logic programmed.
- Unsupported Game: Verify if the game is supported by SimHub.

An effect is missing or blocked by another *(e.g., You see the Gear, but the Flag never appears)*

- Check Layer Priority.
- Transparency: Ensure your top layers have a transparent background so they don't block the view when they are not active.
- Checkbox for “clear background when active”.

8. What’s Next & Support

We are constantly developing and testing new ideas to make your sim racing experience even better.

COMING SOON: The "Ultimate" Profile We are currently working on a **comprehensive, high-end effects profile** designed to push your iFlag to the limit. This upcoming release will feature:

- Advanced telemetry logic (e.g., Tyre slip/lock-up warnings).
- More dynamic and complex animations.
- *Stay tuned to our Etsy shop updates – we plan to make this available to our community soon!*

⭐ **Feedback & Reviews** As a small DIY creator, your feedback is our fuel. If you are happy with your iFlag, please consider **leaving a 5-star review on Etsy** and sharing a photo of your rig setup! Seeing our products in action on your sim rig is the best reward for us.

Need Help? If you have read the Troubleshooting guide and still face issues, or if you have ideas for new features, feel free to contact us via **Etsy Messages**. We are happy to help fellow racers!

Thank you for supporting PixelRaceStore.

See you on the leaderboard!
