FT200/FT-RD Kits Manual

FT200 In-Car Kit

- FT200 Device
- 6' Long Wiring Harness
- GPS Antenna w/6' Cable
- Quick Start Guide - Page 2

FT-RD In-Car Kit

- FT-RD Remote Display w/3' Cable
- FT-RCV Receiver Module w/3' Harness
- GPS Antenna w/6' Cable
- Quick Start Guide - Page 3

FT200 Quick Start Guide

1. Mounting the FT200 Unit

- Install the FT200 device in a location easily visible to the driver. Secure the device firmly; use Velcro only as a temporary solution to help determine placement.

2. **Connecting the Main Harness**

- Connect the main harness cable to the back of the device . Power the device using either the USB plug or the 12V wire leads (Orange for positive, Black for negative).
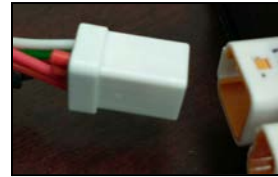
3. **Mounting the GPS Antenna**

- Place the GPS antenna on the roof or dashboard of the car, ensuring a clear view of the sky and no metal obstructions within 6 inches. Route the cable to the device, making sure the GPS faces the front of the car. Plug the GPS antenna into the back of the device.

4. **Powering On**

- The device powers on automatically when power is applied. Press the top front button to manually turn on the device. The device turns off automatically after 15 minutes without external power. To manually turn off the device, hold the top front button for 5 seconds.

5. **Adjusting Brightness**

- The device features a light sensor to adjust screen brightness in low-light conditions. Adjust brightness by pressing either front button, with most drivers preferring Setting 3.
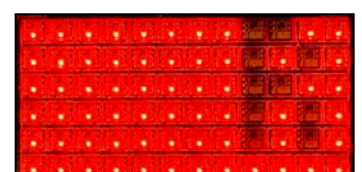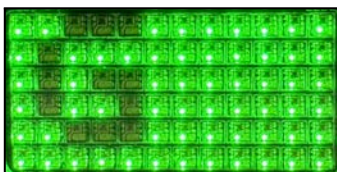
6. **Pit Stops**

- During pit stops, the device displays the current pit time in the color of the current flag. After 10 minutes, only the time in minutes is displayed.

7. Green Flag Display

- Thirty seconds into a GREEN flag, the display dims and shows a green checker pattern to save power. YELLOW and RED flags remain full screen.

FT-RD Quick Start Guide

1. **Mounting the FT-RD & FT-RCV**

    ● Install the FT-RD Device in a location easily visible to the driver. The device can be flush-mounted using VHB double-sided tape. The FT-RCV Module can be mounted elsewhere in the vehicle, ensuring the RF antenna is right-side up and unobstructed. You can mount it with a hole for the RF Antenna to stick through the bodywork or flush mount it to an area where the RF Antenna extends above the bodywork.

2. **Connecting the FT-RCV Harness**

    ● Connect the 4-pin connector of the FT-RCV Harness to the end of the FT-RD cable. Power the FT-RCV using either the USB plug or the 12V wire leads (Orange for positive, Black for negative).
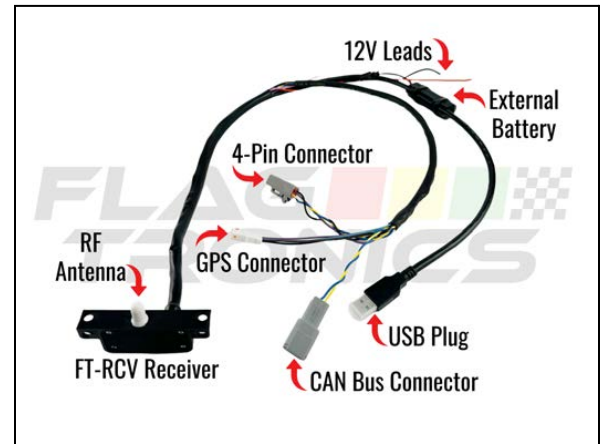
3. **Mounting the GPS Antenna**

    ● Place the GPS antenna on the roof or dashboard, ensuring a clear view of the sky with no metal obstructions within 6 inches. Route the cable to the FT-RCV, ensuring the GPS faces the front of the car. Connect the GPS cable to the GPS connector on the FT-RCV Harness.

4. **Powering On**

    ● The device powers on automatically when power is applied. Press the top button to manually turn on the device. The device turns off automatically after 15 minutes without external power. To manually turn off the device, hold the top button for 5 seconds.

5. **Adjusting Brightness**

    ● The device features a light sensor to adjust screen brightness in low-light conditions. Adjust brightness by pressing either button, with most drivers preferring Setting 3.

6. **Pit stops**

    ● During pit stops, the device displays the current pit time in the color of the current flag. After 10 minutes only the time in minutes is displayed.

7. **Green Flag Display**

    ● Thirty seconds into a GREEN flag, the display dims and shows a green checker pattern to save power. YELLOW and RED flags remain full screen.
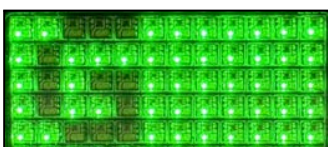
Table of Contents

Introduction

The FT200 and FT-RD are wireless, in-car race flagging devices. They display current full-track conditions, local flag conditions, and can send or receive individual car messages to race control. These devices enhance safety and provide racers with critical information while driving.

FT200 Kit Contents

- FT200 Wireless In-Car Device
- FT200 6' Wiring & Battery Harness
- Standard GPS Antenna w/6' Cable
- FT200/FT-RD Manual
- **Mounting Velcro

FT-RD Kit Contents

- FT-RD Remote Display Device w/3' Cable
- FT-RCV Receiver Module w/3' Harness
- Standard GPS Antenna w/6' Cable
- FT200/FT-RD Manual
- **Mounting Velcro

# Location & Connection Recommendations

For optimal performance, connect the In-Car Kits to 12V power using flying leads or a USB adapter (Type A plug) capable of 10W (5V, 2A) or more. Lower power chargers may result in reduced screen brightness or improper function.

Mount the FT200 horizontally within the driver's direct view or immediate periphery, using screws or rivets for secure mounting. The FT-RD should also be mounted horizontally within the driver's direct view or immediate periphery.

Powered by either 12V or USB	Flagtronics FT200 & FT-RD Wireless Flagging Kits	GPS Antenna

The FT200 and FT-RD are safety devices designed to be highly visible to the driver. Position the display on or above the gauge cluster or center panel, ensuring it is within the driver's direct view or immediate periphery. The FT200's RF Antenna, located at the top, should have a clear line of sight through the vehicle's windows. Similarly, the FT-RCV, containing the RF Antenna, must also be mounted with an unobstructed view through the windows to ensure optimal wireless performance. The FT-RCV can be mounted on or above the gauge cluster or center panel but can be mounted elsewhere in the vehicle so long as it has an unobstructed view.

The GPS antenna should be placed on one of the recommended mounting locations, at least 6 inches away from metal edges and other antennas. The rear of the GPS unit, where the wire exits, should point to the rear of the car.
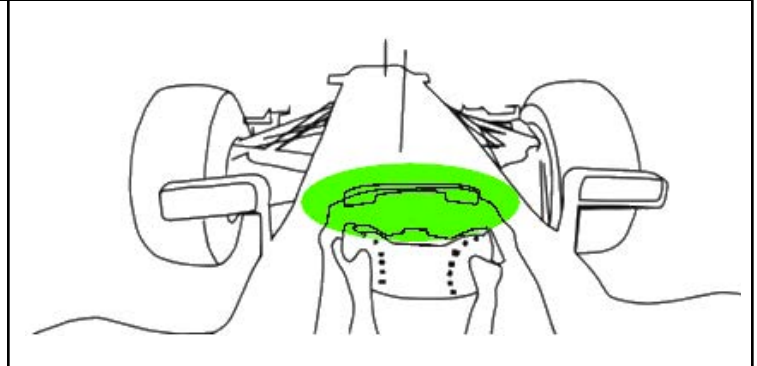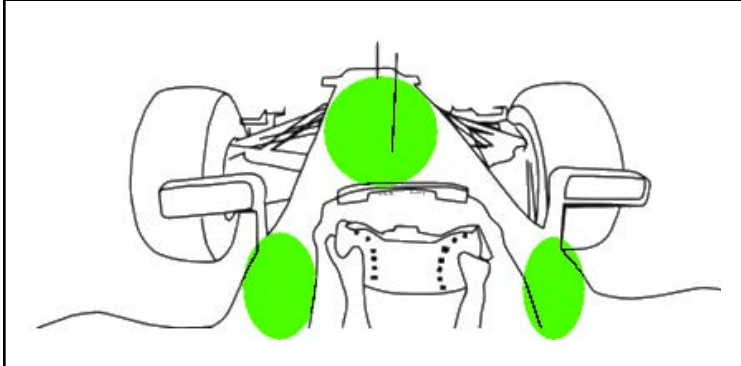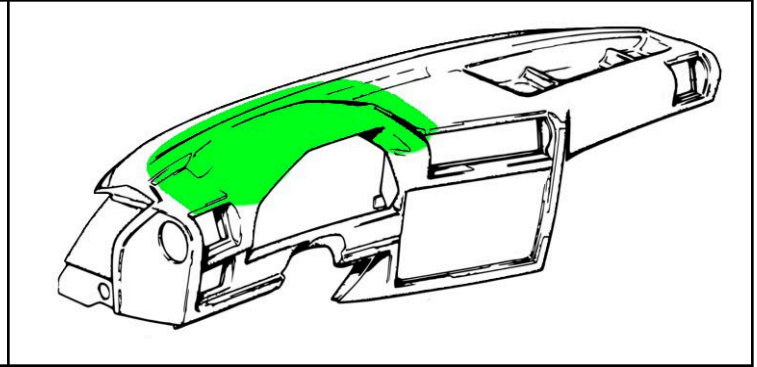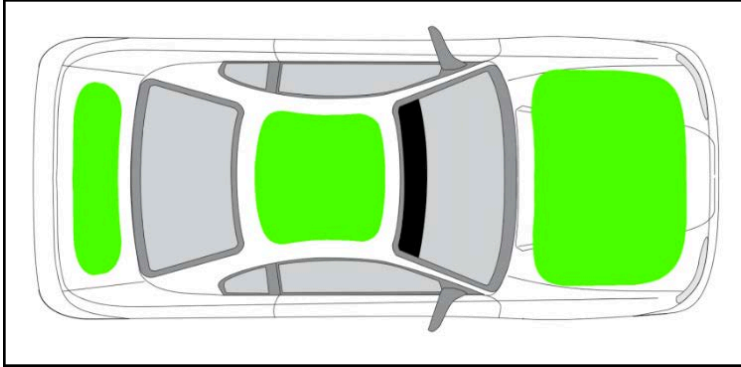
*Green shows recommended GPS mounting locations	*Green shows recommended FT200 and FT-RD Remote Display mounting positions

Please check with your individual Series as many have more specific approved mounting locations.

Installation

Mounting Options for FT200:

- The FT200 has 4 holes on the mounting tabs for screws, bolts, rivets, or zip ties. Ensure secure mounting and connect the wiring harness to the back of the FT200. Do not use Velcro or double-sided tape as the sole mounting method. We also offer several mounting kits on our website:

FT200 Roll Cage Mount Kit (1/4 20 or GoPro)
FT-03650 Suction Cup Mount Kit (1/4 20 or GoPro)

Mounting Options for FT-RD:

- The FT-RD Kit is designed for open-wheel cars and vehicles with tight cockpits. The FT-RD Remote Display Device is intended for flush mounting on the dash or gauge cluster, using VHB Double-Sided Tape. The cable exits the Display on the side, allowing for an upside-down mount if necessary for easier cable routing. The screen orientation can be adjusted via the Flagtronics Device Manager Software.

- The FT-RCV Module can be mounted anywhere in the vehicle, provided the RF Antenna is upright and unobstructed. It can be undermounted with a hole for the RF Antenna to extend through the bodywork or flush-mounted where the antenna extends above the bodywork. The four holes on the mounting tabs (two horizontal and two vertical) facilitate these mounting options.

Wiring & Power

Power Connection:

- Connect the Orange and Black wires (12V Power and Ground) from the flying leads to a fused, dedicated circuit that is not shared with other electronic devices. This power source should operate with the vehicle's Main Power switch and not be controlled by any auxiliary or secondary power source.
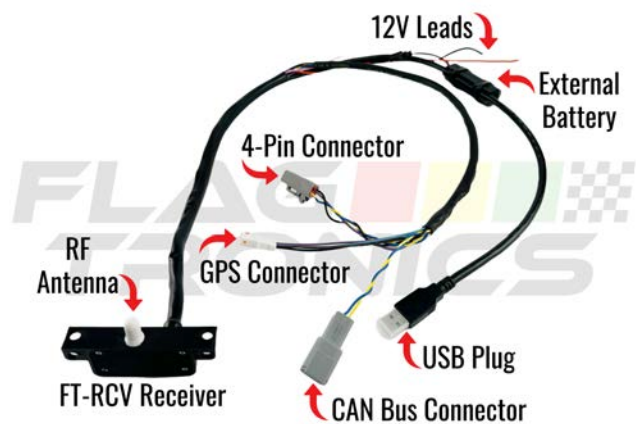
External Battery:

- Ensure the external battery (3.7V) on the FT200/FT-RCV harness remains connected using the included small, black 2-way connector. This battery charges when the device is powered on and allows the In-Car Device to stay on for 15 minutes after the power is cut. This feature enables race control to track the car's location if power is severed during an accident or if the Main Power switch is turned off.

USB Connection:

- A USB Type-A plug capable of 10W (5V, 2A) or more, can be used as an alternative to the 12V power source. WARNING: USB plugs can wiggle free, so please connect securely. Connecting the USB to a laptop is necessary for firmware updates and programming, so place the USB plug in an easily accessible location for connection to a laptop.

CAN Bus Wiring:

- For CAN Bus-equipped wiring harnesses, the yellow wire is for CAN Low, and the blue wire is for CAN High. Both the FT200 and FT-RCV have built-in CAN termination resistors, so no external resistors are needed.

RF Antenna

The RF Antenna is situated on top of both the FT200 Device and the FT-RCV Module. For optimal performance, ensure the antenna remains vertical and has an unobstructed line of sight through the vehicle's window openings. Avoid installations that block the antenna, such as placing the devices in the dashboard or center console, as this can significantly degrade performance or cause the system to fail.

Light Sensor

The FT200 Device features light sensors at the front and rear, while the FT-RD Device has a sensor at the front. These sensors automatically adjust the display brightness, dimming it in low light and brightening it in sunny conditions. To ensure optimal performance, keep the light sensors, as shown in the images below, unobstructed. Each device offers six brightness settings: three that auto-adjust based on the light sensor and three static settings. **Drivers often prefer Setting 3, as it is the brightest and automatically adjusts to ambient light.**
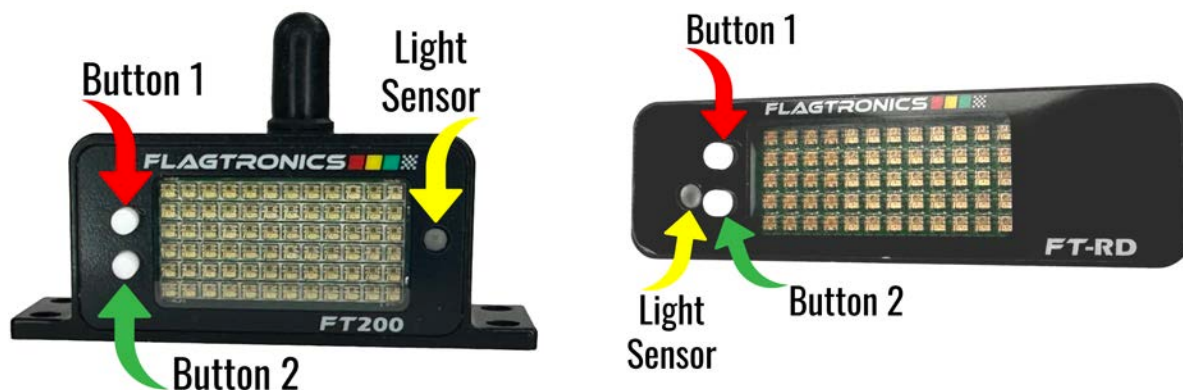
Powering the devices on & off

The FT200/FT-RD will automatically power on when connected to either a 5V USB or 12V vehicle power source. If the FT200 is already connected to a power source (external battery, 5V, or 12V), it can be powered ON by a short press of the top button (Button 1). The FT-RD can only be powered ON by supplying power to the device, for example, by engaging your car's main power switch or plugging the device's USB cable into a laptop. To power off either device, press and hold the top button (Button 1) for 5 seconds, and the screen will display "OFF" in blue text. Alternatively, the device can be turned off by disconnecting the external battery and disengaging the power source, either 5V USB or 12V vehicle power.

Adjusting Brightness

When the FT200/FT-RD is powered on, brightness can be adjusted using the top button (Button 1) and the bottom button (Button 2) to cycle through six brightness settings. The default settings are as follows:

Brightness Settings	
1 (low)	Auto-Adjusts
2 (medium)	Auto-Adjusts
3 (high)	Auto-Adjusts
4 (low)	Static
5 (medium)	Static
6 (high)	Static

- Settings 1, 2, and 3 adjust brightness automatically using the ambient light sensor, with 1 being low, 2 medium, and 3 high brightness.
- Settings 4, 5, and 6 provide static brightness levels, with 4 being low, 5 medium, and 6 high brightness.

Display Function

The FT200 features a 6x12 pixel matrix display, while the FT-RD has a 5x12 pixel matrix display. These displays can show letters, shapes for special flags, custom messages, and scrolling messages, which are especially helpful for color-blind drivers. Refer to our Full Track, Local, Individual, and Device flags for specific display definitions.
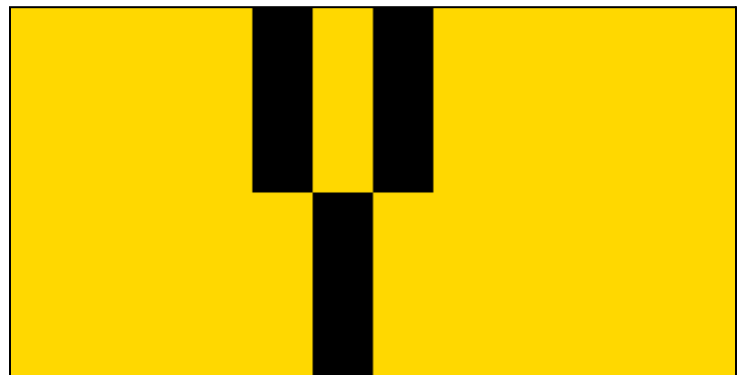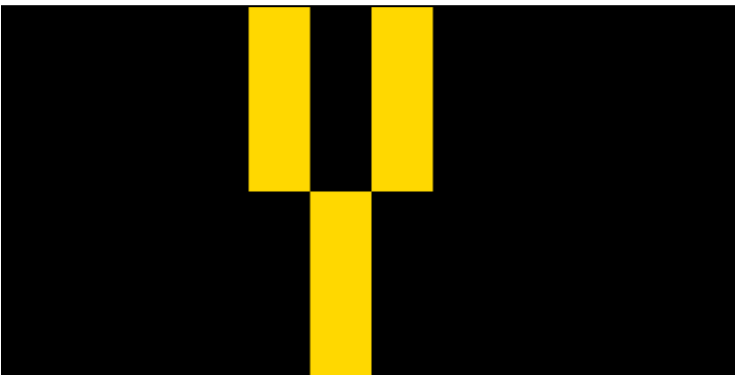
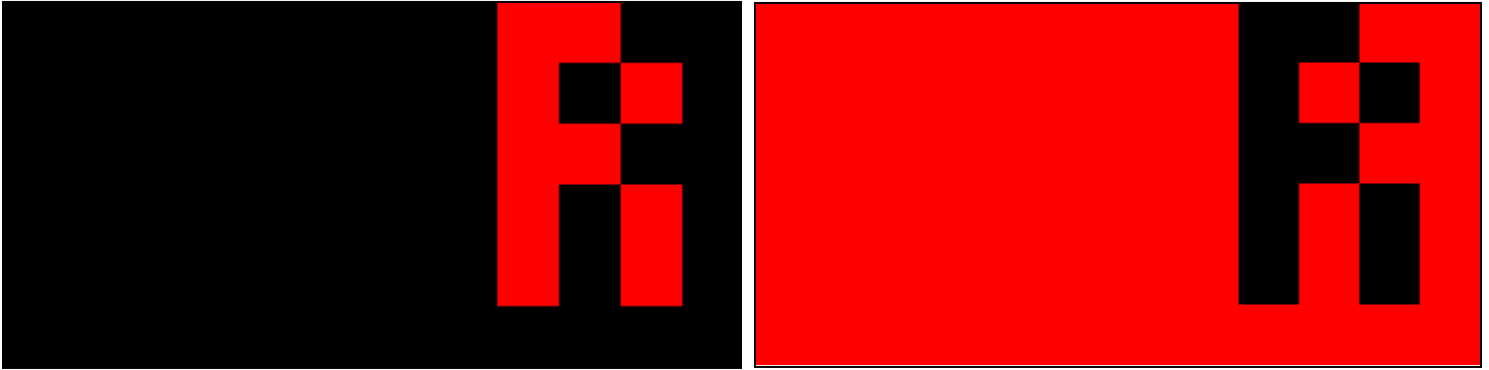# Full Track Flags

Green Flag
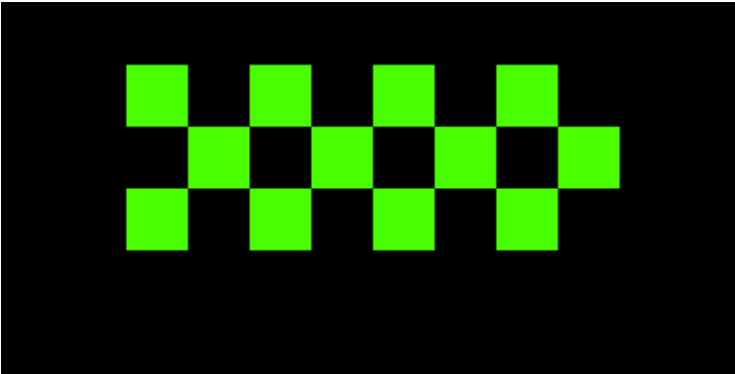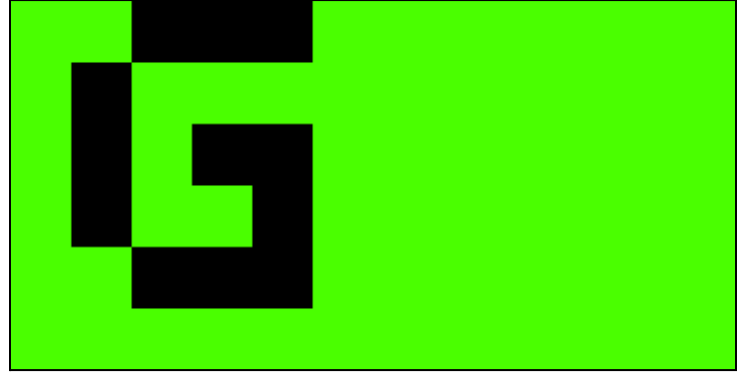
These images illustrate the display states during a Green Flag condition. For the first 10 seconds, the LED Screen will alternate between the top two display states. After 30 seconds, the display will change to a speckled pattern and remain in that state until a different flag condition occurs.
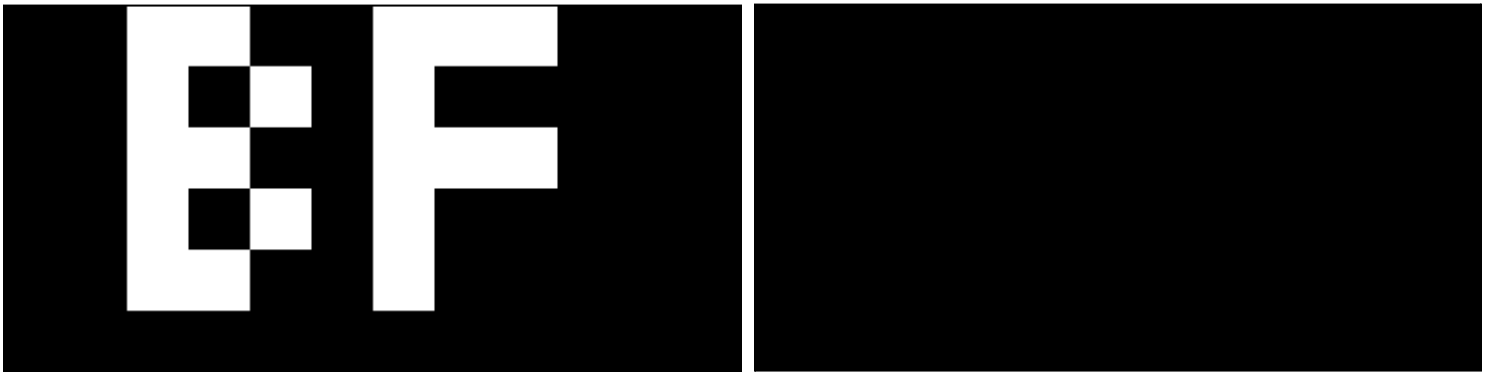
Yellow Flag

The images above illustrate the display states that occur during a Full Course Yellow Flag condition. For the initial 10 seconds, the LED Screen will alternate between these two display states. After 30 seconds, the display will stabilize to show the image on the right, which features a predominantly yellow screen.
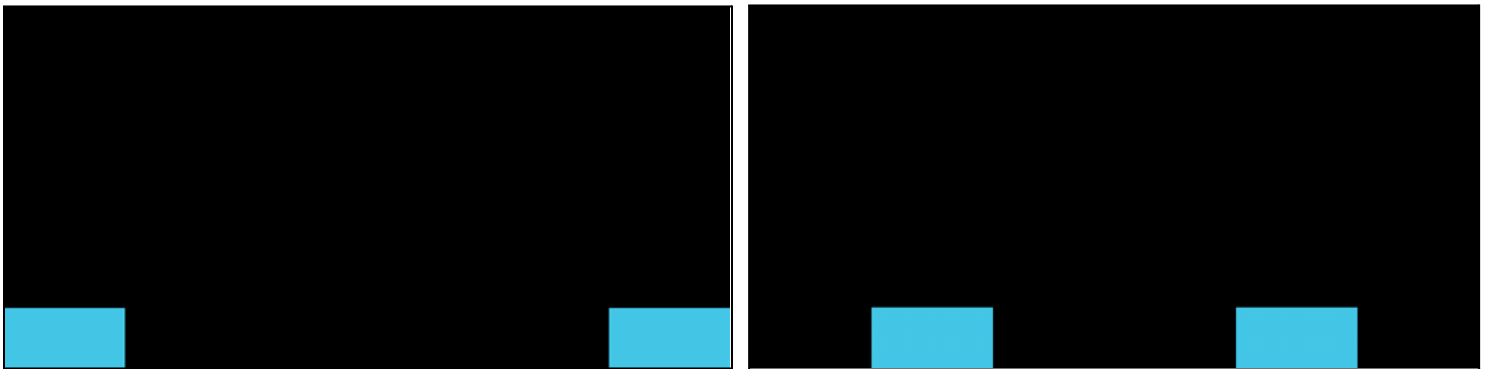
Red Flag

The images above illustrate the display states that occur during a Full Course Red Flag condition. For the initial 10 seconds, the LED Screen will alternate between these two display states. After 30 seconds, the display will stabilize to show the image shown on the right, a majority red screen.
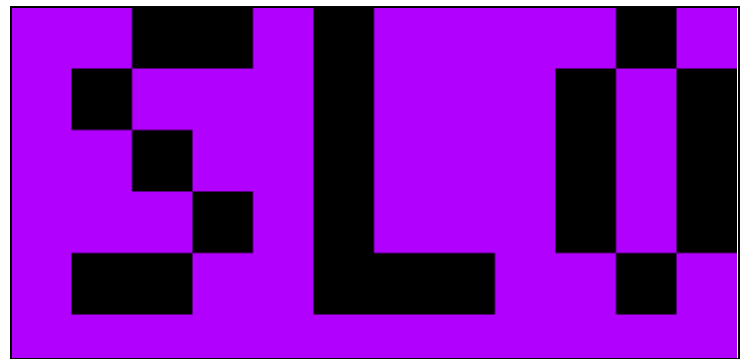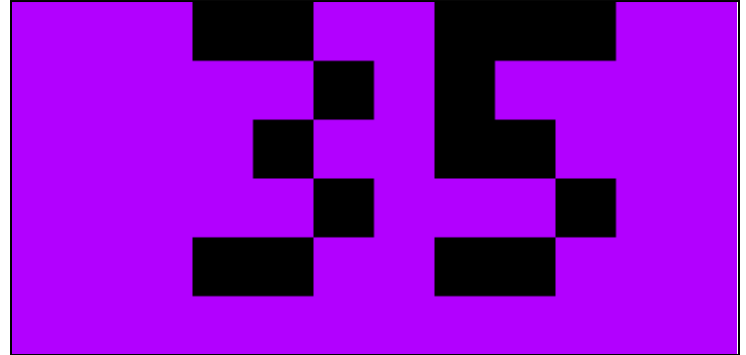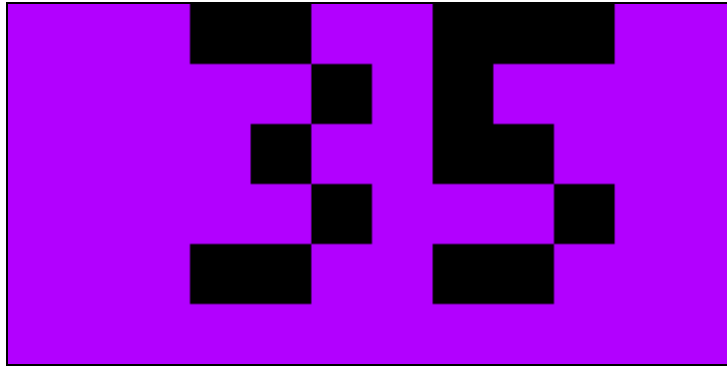
Black Flag

The images above illustrate the display states that occur during a Full Course Black Flag condition. During a Black Flag, the LED Screen will alternate between these two display states.

Blank Flag

The images above illustrate the display states that occur during a Full Course Blank Flag condition. This condition typically signifies the pace car lights have been turned off in preparation for a race restart but may also be used between sessions when no cars are on track. The LED screen will alternate between these two display states.

Purple / VSC / Code 35 / Slow (when over VSC Limit)

(*Note: For this illustration, we shall use 35 mph. However, some organizations may use different speed limits, such as 45 mph or 60 mph. The LED screen will display the appropriate speed.*)
The images above illustrate the display states during a Code 35 Flag condition. If you are traveling at the correct speed, the top 35 image will remain static. If you slightly exceed 35 mph, the screen will alternate between the SLO and 35 mph screens. If you are traveling significantly faster than 35 mph, the screen will switch between the two SLO screens.
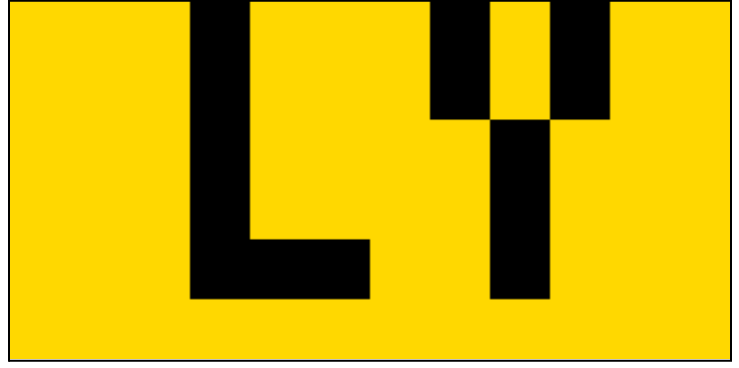
Checkered Flag
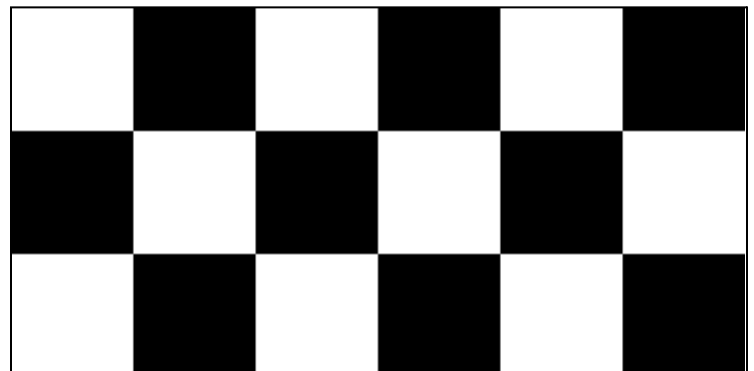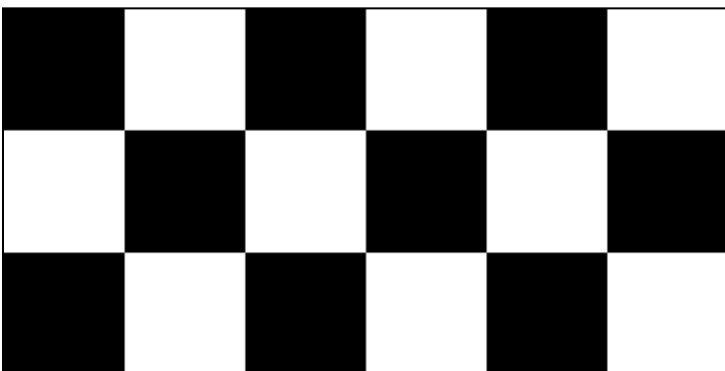
The images above illustrate the display states during a Checkered Flag condition. Congratulations on completing your session!
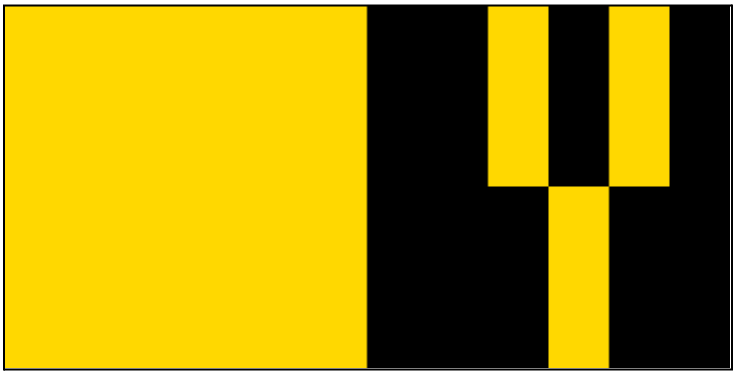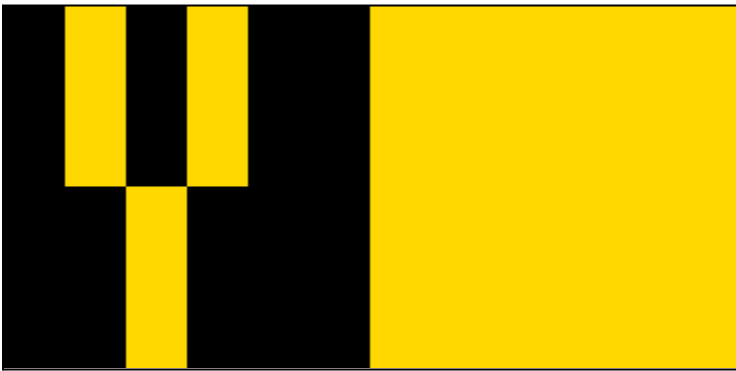
Local Flags

Local Yellow

The images above illustrate the display states during a Local Yellow Flag condition, a local alert controlled by the flag stand. This indicates an issue in your current sector. When the Local Yellow Flag is active, the screen will alternate between the two display states.
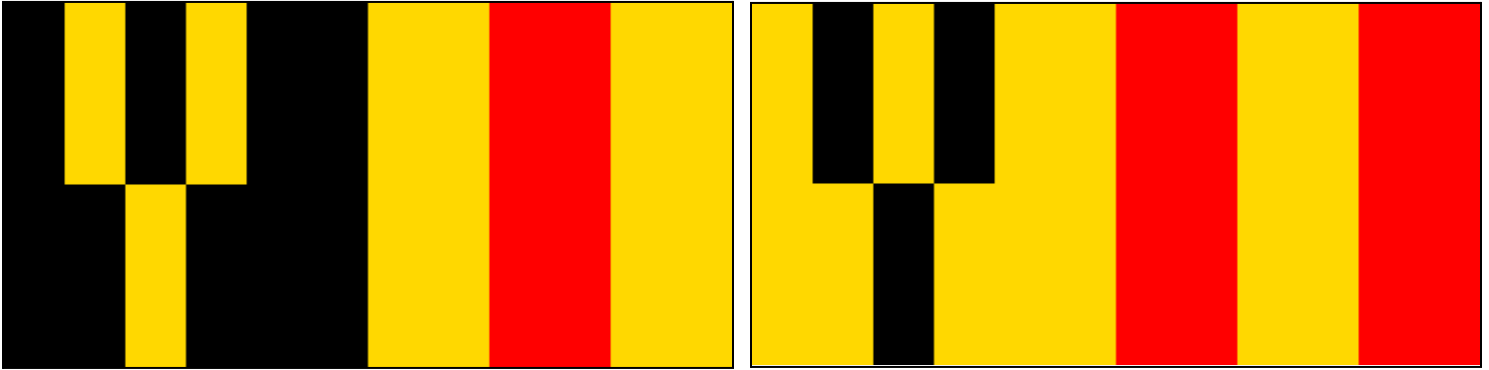
Local Waving Yellow

The images above illustrate the display states during a Waving Yellow Flag condition, a local alert controlled by the flag stand. This indicates an on-track issue in your current sector. When the Waving Yellow Flag is active, the screen will alternate between the two display states.
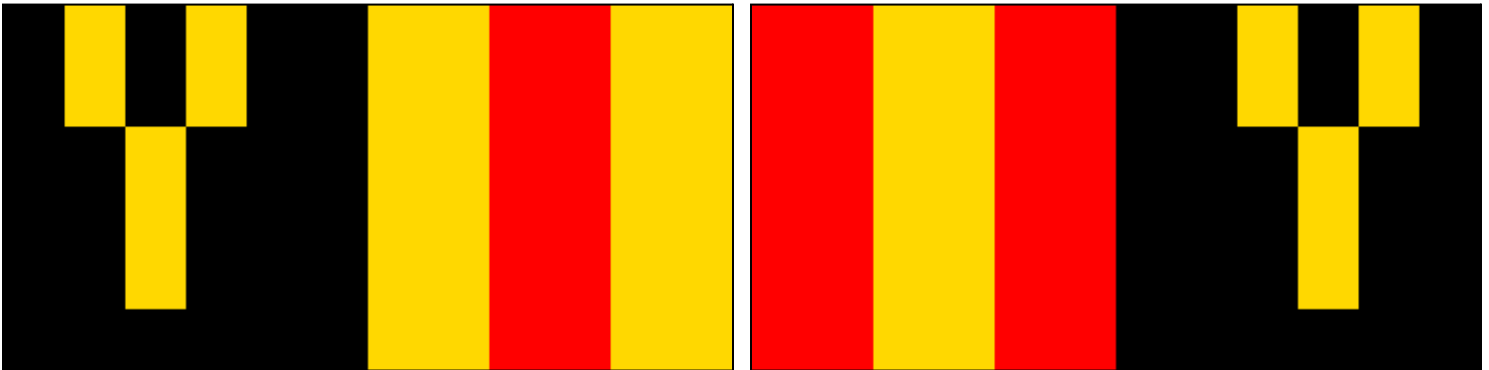
Debris

The static image above illustrates the display state during a Debris Flag condition, a local alert controlled by the flag stand. This indicates a surface issue to be aware of in your current track sector.

Local Yellow + Debris

The images above illustrate a dual display state during a Local Yellow Flag condition and a Debris Flag condition, both of which are local alerts controlled by the flag stand. This indicates issues related to both conditions in your current track sector. When this condition occurs, the screen will alternate between the two display states.

Local Waving Yellow + Debris

The images above illustrate a dual display state for a Local Waving Yellow Flag condition and a Debris Flag condition, both of which are local alerts controlled by the flag stand. This indicates issues related to both conditions in your current track sector. When this occurs, the screen will alternate between the two display states.
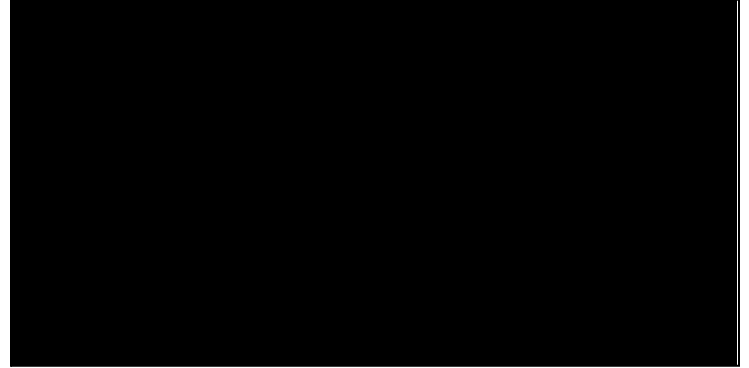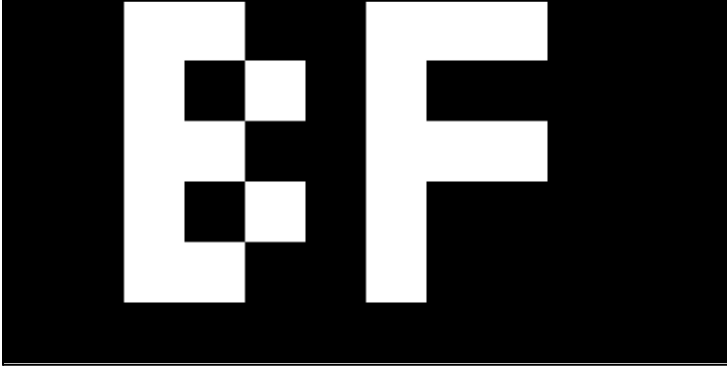
White
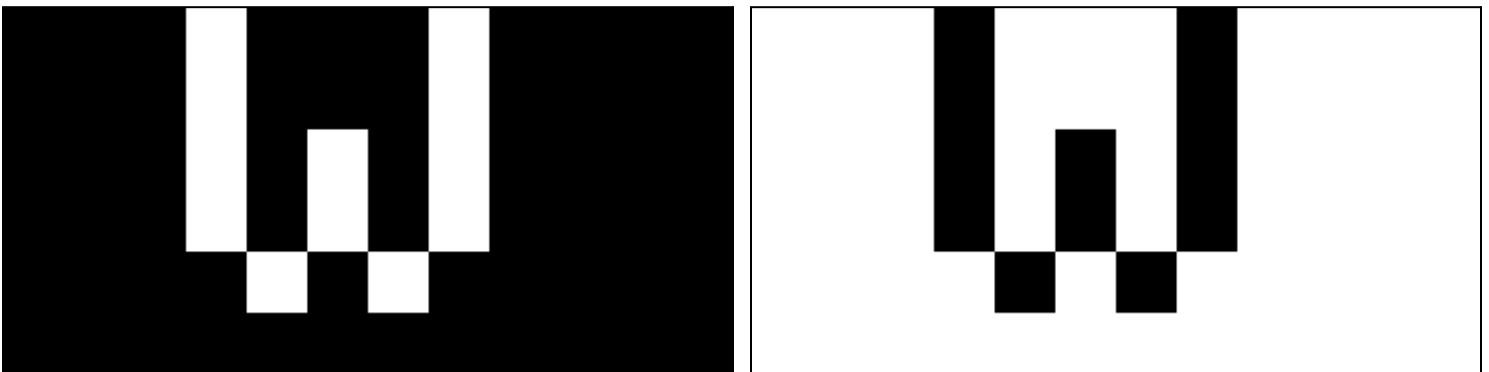
The images above illustrate the display states during a White Flag condition, a local alert controlled by the flag stand. This indicates the presence of a slow-moving vehicle in your current sector. When the White Flag is active, the screen will alternate between the two display states.
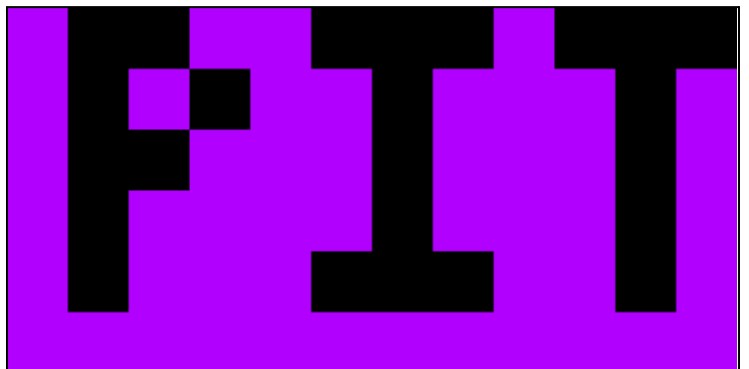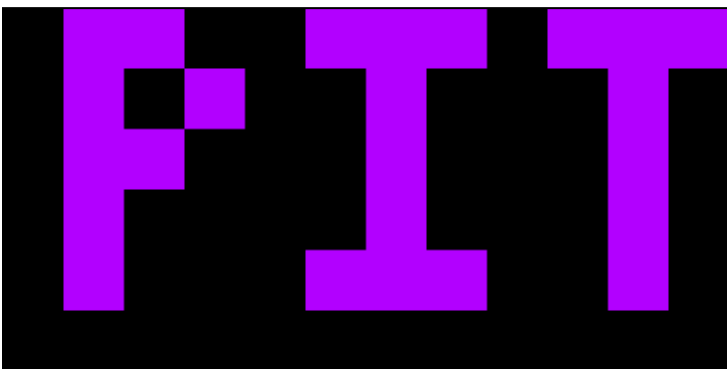
Individual Flags

Black Flag

The images above illustrate the display states during a Black Flag condition. This means that race control is trying to bring you in. While under a Black Flag, the screen will alternate between the two display states. If you see this flag state but don't see Black Flags waving at the flag stands, it is an Individual Black Flag intended to bring you into the pit lane.

Meatball

The images above illustrate the display states during a Meatball Flag condition, indicating a mechanical condition or otherwise deemed unsafe to continue. While under the Meatball Flag, the screen will alternate between the two display states.

Pit

The images above illustrate the display states during a PIT Flag condition, indicating that race control is trying to bring you into the pits. While under the PIT Flag, the screen will alternate between the two display states. This is often provided as a courtesy if race radios have failed.

Accident
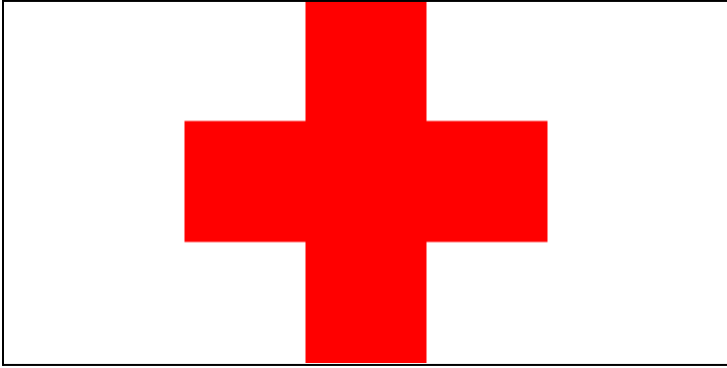
In the event of a high G-force accident, the LED Screen will display a red cross and prompt you to confirm if you are okay. Press either of the two front buttons to acknowledge that you are unharmed or do not require immediate medical assistance, allowing Safety Services to attend to other vehicles if needed.

Device Messages

No Signal

When the device is turned ON in an area without an active Flagtronics network, the LED Screen will display SIG representing that it is not receiving a signal.

OFF (Long press of the Top Button 1)

When the device is turned OFF with a long press of the top Button 1, the LED Screen will display OFF for a few seconds.
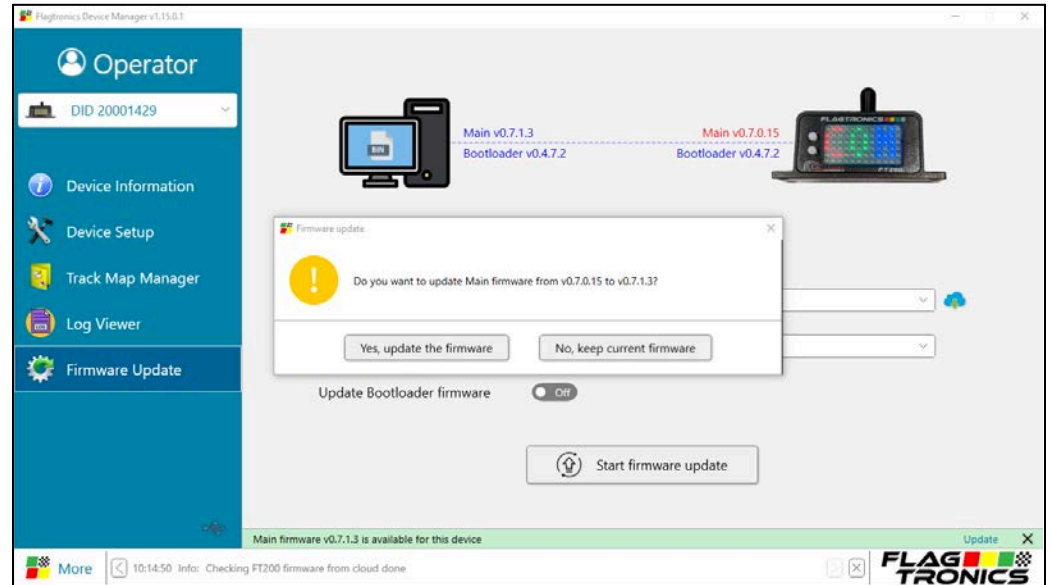
Display "Last 3" of Serial Number

By pressing and holding both Button 1 and Button 2 simultaneously, the LED Screen will display the last 3 digits of the device serial number.

Firmware Update Procedure and Settings

A complete FT200/FT-RD Firmware Updating Guide can be found [here](#).

To update the firmware on your FT200/FT-RD Device, download and install the Flagtronics Device Manager Software from https://flagtronics.com/pages/downloads on a Windows 10 or newer PC. Ensure your PC is connected to the internet, then open the software. The Device Manager will automatically download the latest firmware version from the cloud. Connect your FT200/FT-RD Device to the PC using the USB Type A connector on the end of the Harness. The Unit should power on and appear as a USB drive on your PC.

Within the software, click **Firmware Update**. The Device Manager software will automatically detect the installed firmware version of your device and prompt you to update if a newer version is available. If you need to install an organization-specific firmware version and are prompted to update the main firmware, click **No, keep current firmware** and then select the organization- specific firmware from the **Update Main Firmware** dropdown. For example, you can select "SCCA v0.7.1.8" or other organization-based firmware versions.
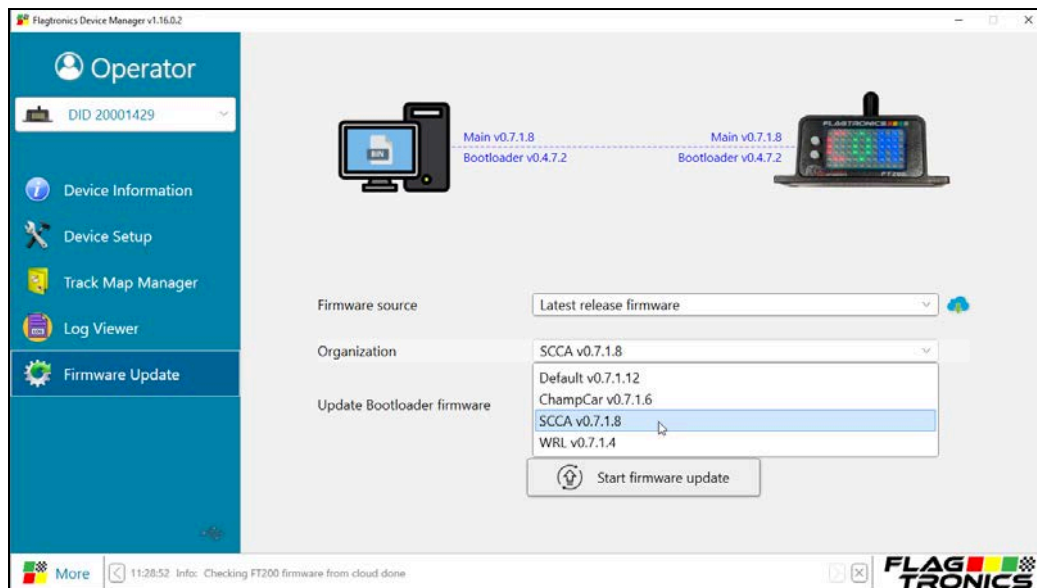
If you are not prompted to update the firmware (meaning you already have the latest version installed), go to the Firmware Update page, turn **On** the **Update Main Firmware** option, and then select the desired organization firmware version from the dropdown. After making your selections, click **Start firmware update** and follow the on-screen prompts.

In the Device Setup section, you can customize items such as inverting the display, adjusting auto-off timing, and changing the CAN Bus settings to suit your needs.

Warranty

The FT200/FT-RD Kits come with a one-year replacement warranty from the date of purchase. Additional charges may apply for intentional abuse, improper use, improper installation, or damage not related to a manufacturing defect.

Liability Statement

Assumption of Risk

Engaging in vehicle racing is inherently dangerous and carries significant risks, including personal injury or death. Users who participate in racing and track events acknowledge and accept these inherent risks. Flagtronics, along with its employees and affiliates, does not guarantee that the use of its products or components ensures personal safety or prevents physical injury. The responsibility for implementing proper safety measures lies with the purchaser and user, including safeguarding themselves and others, such as spectators, other drivers, and event staff.

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