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INTRODUCTION

Sim Strata Race Tools is a suite of apps that provide services to drivers and race organisers. The feature set will be expanded over time. Currently the available upon initial Beta test release is:

- **Race Transponder**: The main app that provides the **Pitbox** and **RacePaint** features. In addition, it permits the Race Director to manage the race with various Red Flag and Yellow Flag conditions.
 - **Pitbox**: A team assist utility that will allow another team member or assistant to configure your pitstop settings whilst the driver is driving. This avoiding the need for a driver to race and try to configure their pitstop at the same time. Pitbox is automatically available to Premium Drivers on any ACC server and is always available to all drivers on any Sim Strata hosted ACC server. In addition, Pitbox is also available to any driver on any non-Sim Strata hosted ACC server, so long as at least one of their team members is a Premium Driver. In all other cases, Pitbox will be disabled.
 - **RacePaint**: This utility will automatically ensure you have the latest liveries for an event. It will also pre-compile the run-time liveries so that there is no lag when joining an event. RacePaint is only available on Sim Strata hosted ACC servers and so will be disabled when connected to a non-Sim Strata hosted ACC server.

- **Race Director**: This app provides the ability for the Race Director(s) to issue various full course Red Flag and Yellow Flag conditions as well as managing restarts. This tool provides the necessary contingencies events such flooded track conditions, crashed cars blocking tracks or dealing with technical issues. RaceDirector requires a Sim Strata hosted ACC server.

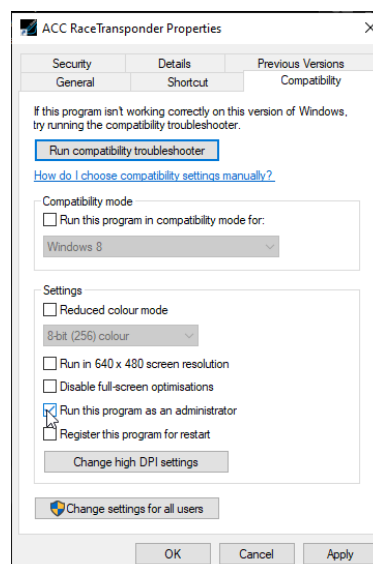
RACE TRANSPONDER

INSTALLATION

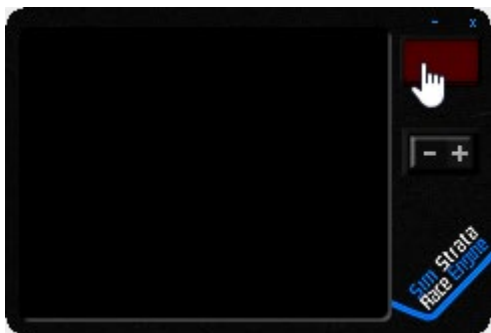
First of all, download and run “ACC Transponder Installer.exe”. If you do not have this file, you can download it from <https://simstrata.com>.

When you run the installer, you will be presented with the license agreement, a readme about the current version. You will also be asked to confirm/select your Assetto Corsa Competizione location in your Documents folder. This is required for reading some aspects for your confirmation (e.g. broadcasting.json) and to know where to put you liveries.

Once the installation is complete, please ensure that ACC Race Transponder is run with Administrator privileges. To do this right click on the ACC Race Transponder shortcut and select “Properties”, select the “Compatibility” tab and ensure that “Run this program as administrator” is selected.



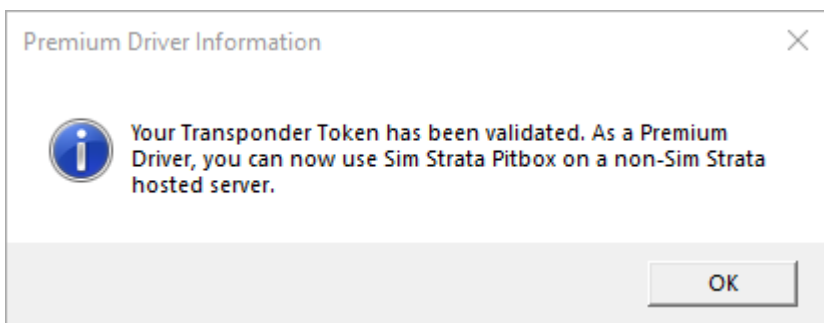
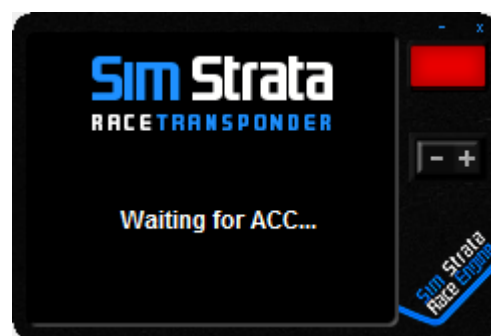
USING RACE TRANSPONDER



When you first start **RaceTransponder**, it will be in the off state.

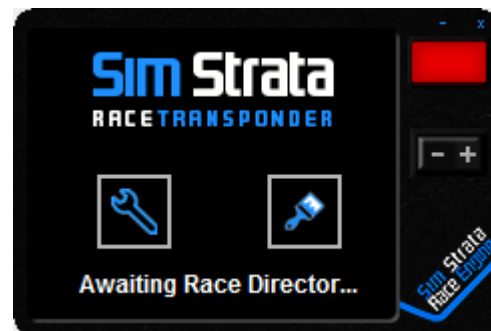
Click the ON/OFF button to turn on the transponder. Once it has been switched on, if ACC is not running you will get this display.

You can click and hold on the screen of the transponder to drag and move to any location on any screen. The transponder will always stay on top. “On top” means that the app overlaps all other windows and apps on your screen, so it is always visible. In some cases, ACC may move to the top and hide the transponder, if that happens then simply press F11 twice and the transponder will then remain on top. The screen location is saved, so when you close and restart the transponder, it will appear where you closed it.



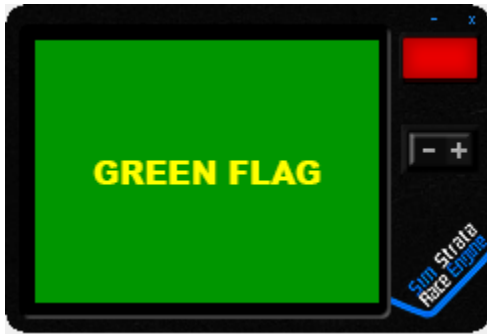
Once you connect to an ACC session, if you are a Premium Driver, you should see this message when you connect to Sim Strata server. This will be discussed later. For now press “OK”.

If you are connected to a Sim Strata a server you should see a display such as this. The spanner icon represents the Pitbox functionality. The paint brush represents the RacePaint functionality. “Awaiting Race Director...” is displayed if you have joined a managed event and the race director has not yet logged in. When the race director logs on, the mode will change to “Managed Event Mode”. This tells you that the transponder will be used to relay race state information and instructions from the race director.



If you join a non-managed event, such as a social race, practice session, etc, then “Unmanaged Event Mode” will be displayed. This means that the transponder can only be used for downloading liveries, Pitbox and as a flag repeater.

Should you join a non Sim Strata server, then the transponder will be in “Independent Mode”. This is very similar to “Unmanaged Event Mode” but Pitbox will only be usable if you are a Premium Driver or if a Premium Driver is in your team.



When you join an active session and press "Drive" the transponder will display the current flag state in ACC. This is an example of a green flag condition. All the ACC flags are supported. In addition for managed events, custom flags are displayed as required by the race director. In such cases, there may be certain conditions required, such as stopping the car or engaging the pit limiter, in those cases the transponder will prompt you to follow the instructions and inform you when you are not doing so satisfactorily.

RACE STATES

The race states are the implementations of the various flag conditions that a race director can call upon during managed events. These help the race director control the race, to manage such events such as undrivable weather conditions, technical issues or crashes that block the track at critical points on a track.

The critical race states will have accompanying audio messages, providing instructions where the transponder is not visible (i.e. using VR without something like OVDrop.)

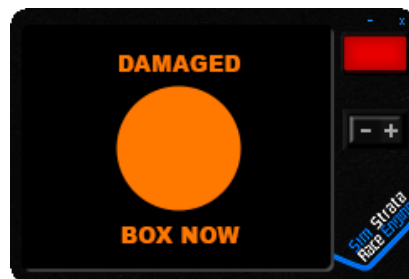
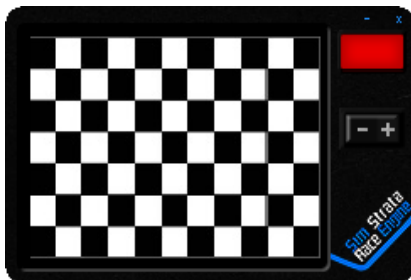
There are three broad categories: Green, red and yellow flags.

GREEN FLAG RACE STATE

Green Flag: This is the default race state is always shown except when a local flag condition occurs such as yellow, white, blue, damaged, chequered etc.



Repeaters: These are examples of flag repeaters for the ingame flags and local flag conditions. These also work in non-managed open events, public events and offline.

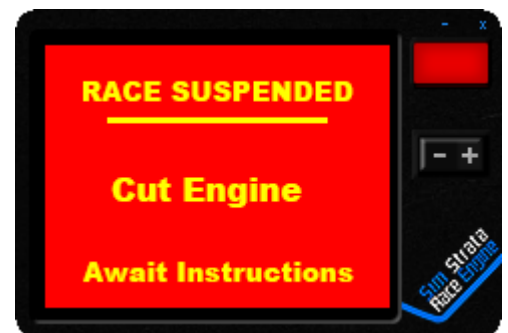


RED FLAG RACE STATES

RED FLAG: This state requires all drivers to come to a controlled stop on the track without changing their position or significantly changing their distance to your opponent ahead of you. If you are in the pitlane during a red flag, you will be instructed to drive to the pit lane exit and wait once your pitstop is complete. Join the queue at the end of the pitlane. Do not enter the track. There will be suitable audio messages accompanying this race state for cases where the transponder is not visible (i.e. using VR without something like OVDrop.)



RACE SUSPENDED: This race state is used when the race director judges that the race will continue, but it might take a while to resolve any issues. Therefore, the instruction is to remain stopped and shut off your engine.



RACE CANCELLED: In this case, the race director has judged that the race cannot continue, or there is no point continuing and that the race will finished under red. The instruction here is to engage the pit limited and continue to cross the finish line. Then you will be expected to stop some distance from the finish line until all other competitors have also cross the line and await the race director's instructions to exit. This gives the race director the opportunity to record the race result for a premature end to the race.



YELLOW FLAG STATES

CODE 50: This is a full course yellow condition. All drivers must comply as soon as safely possible. The driver will slow to 50 km/h and engage the pit limited to ensure that everybody is continuing to drive at the same speed. There maybe differences in speed of 1 kmh between different cars. The car behind is required to maintain the same distance to the car ahead throughout, so if you find yourself catching up with the car ahead, slow down to maintain the required distance.

This is also accompanied by voice audio providing the necessary instructions.



Going Green: This is the transition from a Code 50 to the Green Flag race state. This will initiate a count down from 5 seconds. When the counter gets to zero, the display will change back to the green flag race state. An audio voice will accompany the countdown and also announce the green flag race state.

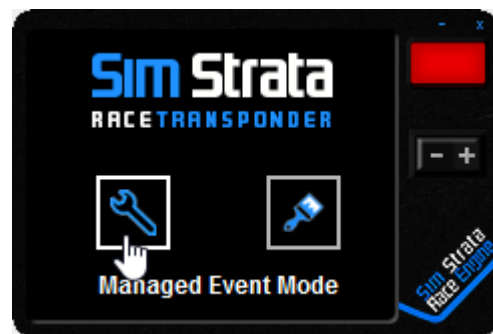
Please note that this countdown is carefully synchronised across all competitors, however it is possible that there may be differences of up to 1/10th of second between updates for different drivers.



PIT BOX

Pitbox is intended for team endurance races or for friends to assist you during your races. It provides the ability for a teammate or stand-in friend acting as a crew chief to set up your pitstops for you. This leaves the driver free to concentrate on meeting target lap times without having to go “heads down” to adjust the various pitstop parameters.

Important: Pitbox is available for free to all drivers when using a Sim Strata hosted server. However, when using Pitbox on a non-Sim Strata hosted server, Pitbox is only available so long as a Sim Strata Premium driver is sharing the same Team Code as you on the same server (see the paragraph below regarding team codes).



Pitbox is only accessible when you are not driving the car and are not out on the track. So, when you are in the pits and in the pause menu or in the garage then the Pitbox icon will be available. The icon maybe disabled if you are non a Premium Driver and are in a non Sim Strata event. Note: The icon maybe disabled for a few seconds, but once the server has validated your credentials, the icon should be available.

Please Note: Pitbox configuration setting access is disabled when out on the track. It is only accessible when not driving and when in the pitlane.

 A screenshot of the Sim Strata Pit Box configuration dialog. The dialog is titled "Sim Strata PIT BOX". It contains several sections:

- Team Code:** A text field containing "ZqgRTV" and a "USE" button.
- Driver Actual:** A table showing current driver data:

Fuel:	62	Fuel/Lap:	3.70
Set:	2	Type:	DRY
FL:	20.73	FR:	20.73
RL:	20.78	RR:	20.78
- Planned Pitstop:**
 - Pit Strategy: A text field.
 - Fuel to Add: A text field with "0".
 - Change Tyres?
 - Tyre Set: A text field with "1".
 - Tyre Type: A dropdown menu with "Dry" selected.
 - FL Pressure: A text field with "25.0".
 - FR Pressure: A text field with "25.0".
 - RL Pressure: A text field with "25.0".
 - RR Pressure: A text field with "25.0".
- At the bottom, there are two checkboxes:
 - Repair Suspension?
 - Repair Body?
- At the very bottom, there are "Send" and "Close" buttons.

Clicking on the icon will bring up the Pitbox dialog.

Team Code: This is a unique code issued to every driver when they start the transponder and connect to the Pitbox server (done automatically). Drivers with the same team code, will be able to send each other pitstop configurations. The best approach to this, is one member shares their team code with their team mates. All the team mates then replace their code with the provided use and press “Use”. You will then be informed that you are now using that code. You can enter your own code too (six alpha numerics). But be careful to use something that will be unique to your team.

Driver Actual: This displays data from the car as it is being driven. This data should help guide you what pitstop settings to use. The data is updated every few seconds.

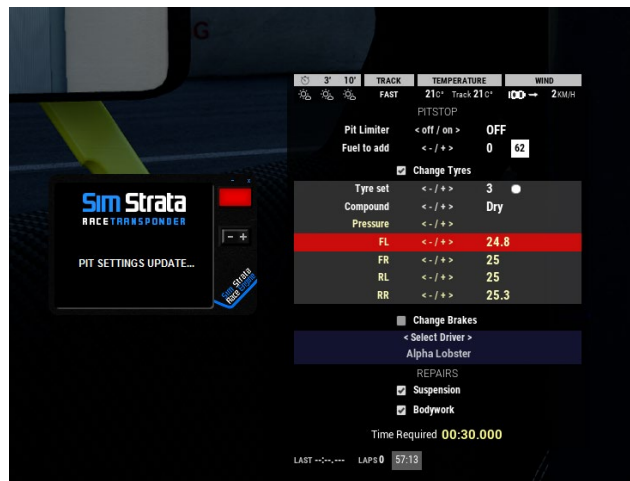
Planned Pitstop: These are the data items you will use to setup the pitstop configuration. Note that all values will be sent. The settings displayed here are the default settings. If you made a mistake and sent an incorrect configuration, after a few seconds, you can send another configuration. There is no limit, but to prevent accidental spamming, there is a cool-off period between sends.

Pit Strategy: This is here for completeness. If you specify a strategy, then the other options will be disabled.

Send: This sends the pitstop configuration to the driver who is driving.

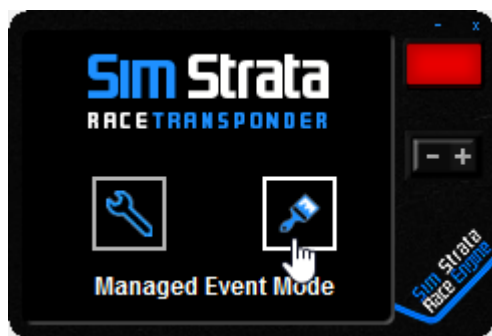
Close: This will cancel the operation and close the dialog. Your settings will be lost.

When you send a pitstop configuration to the driver, he will see the following. The transponder will change from the flag repeater to show a “PIT SETTINGS UPDATE...”. The pitstop MFD will open (if closed or if on another MFD), and the selected options will be updated. Once the process is complete, the pitstop MFD remains open for the driver to review the configuration when he has a second to spare. As can be seen in this animated image.



RACE PAINT

RacePaint refers to the inbuilt functionality to download liveries and automatically prepare those liveries for use in an event. Not only is this much more convenient, but it also eliminates the “join lag” that made custom liveries so problematic for many events. Not only that, but you can choose what texture size you would like. This would be most useful for lower end graphics cards as smaller textures use less memory and less processing power to display. However, you can also upscale your liveries to match liveries that have been created using resolutions of up to 4K.

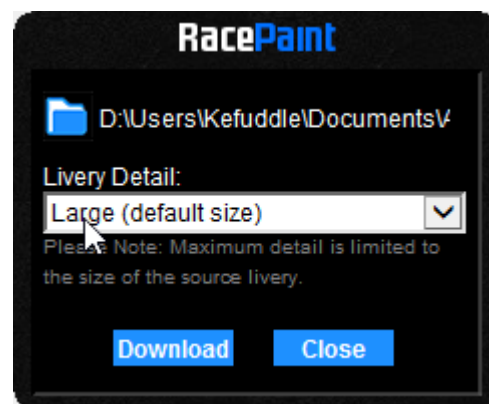


You can access RacePaint by clicking the paintbrush icon. Please Note that RacePaint only works when connected to a Sim Strata event and is only accessible during the practice sessions.

In order to download liveries, first join your event. Then select the RacePaint icon. This will present a new dialog for you to select your livery preferences.

Here you can confirm your livery folder.

Livery Detail: This allows you to specify the size of the resulting compiled runtime livery. “Large” is the default size which is 2K. “Very Large” is 4K. “Medium” is 1080p and “Small” is 720p. The smallest size lacks a lot of detail. But the medium size maybe useful if you are worried about FPS but still want to use custom liveries. The very large size is limited to the resolution of original uploaded livery.





When you then press download, the liveries will be downloaded from the server for the event you are connected to. During this process, the transponder will display “Downloading liveries...”. You might not see this message if the download is very quick. When you can access the transponder again, the liveries will be downloaded and compiled.

Please note that for lots of large liveries, this process may take a few minutes.

Very Important: To use the newly downloaded liveries, you will need to exit the server and reconnect.

In additions, you will only be able to access RacePaint during practice sessions. This is to protect the server performance during qualifying and race sessions. So make sure you leave enough time when the event starts.

KEYBINDS

A number of keybinds have been provided to allow you to move, show and hide the RaceTransponder without the need for a mouse. These keybinds could be mapped to a controller if desired.

POSITIONING THE RACETRANSPONDER

L-CTRL + L-WIN + , - Move left.

L-CTRL + L-WIN + ; - Move up.

L-CTRL + L-WIN + . - Move down.

L-CTRL + L-WIN + / - Move right.

L-CTRL + PAGE-DN - Hide the RaceTransponder.

L-CTRL + PAGE-UP - Show the RaceTransponder.

ADJUSTING THE VOLUME

L-CTRL + [- Reduce volume.

L-CTRL +] - Increase volume.

RACE DIRECTOR

INSTALLATION

Download and run “ACC RaceDirector Installer.exe”. If you do not have this file, you can download it from <https://simstrata.com>.

When you run the installer, you will be presented with the license agreement, a readme about the current version. Unlike the **RaceTools** installation, there are no additional privileges required after the installation is complete.

ABOUT RACE DIRECTOR

The **RaceDirector** app is an optional app intended to help event organisers, admins and stewards running racing Sim Strata managed events hosted on Sim Strata servers to manage those events in the event of unplanned issues that may affect the fair or safe running of the race. This app communicates with the drivers via the RaceTransponder app that each of the drivers in the race should have running.

Once the required details have been entered and the server admin/steward (hereafter known as the race directors) has connected, then several options will be available to help control the state of the race. For example, this app allows the race directors to issue red flags, suspend a race, cancel a race and issue full course yellow events (called Code 50 – explained below). These events maybe required if the weather conditions render the track almost undrivable, if the track is blocked after an accident in a critical part of the circuit or for dealing with any unpredictable technical issues such as mass disconnects or some other event needing the race directors to take control of the race.

The app allows multiple race directors to manage a race together, with each race director having their app running on their PC. If a race director issues race state change (red flag or a code 50), then each of the other race directors will see that race state change appear on their respective apps in addition to each of the driver’s transponders. This means that race directors do not need to run the transponder app.

The RaceDirector app does not require the race director to be in ACC or running ACC. Obviously it is assumed the race director can monitor the race either as a competitor not driving in a team event, as a spectator or via a live stream.

A consideration is that, for the RaceDirector app to be effective, all drivers in an event should be running the RaceTransponder app so that all competitors are viewing the same information and instructions.

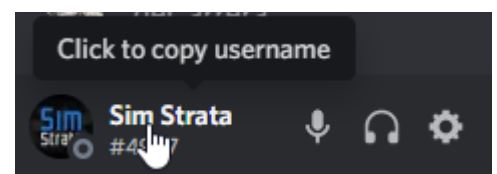
USING RACE DIRECTOR

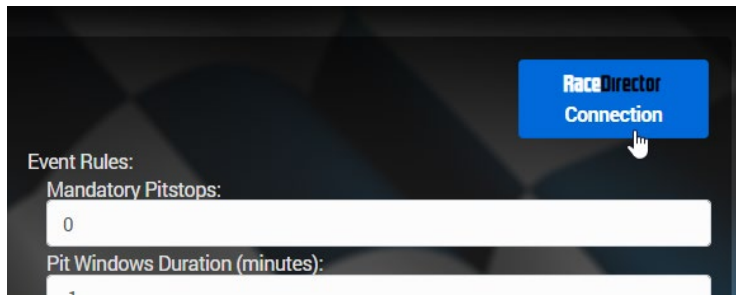
OVERVIEW



When the RaceDirector app is first started, it presents editable fields for the information needed to connect to the RaceTools server.

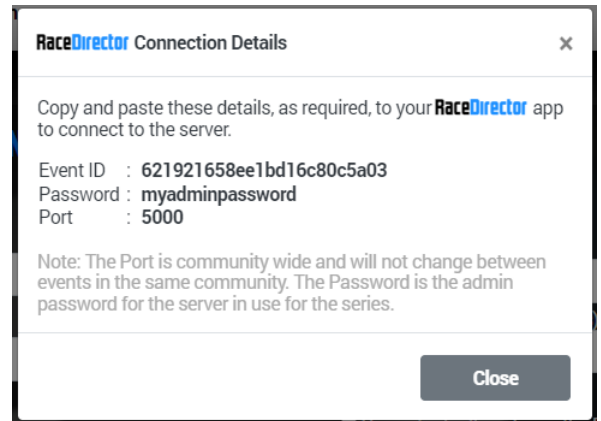
“Full Discord Name” can be found by opening the Discord app, and clicking on your name on the bottom left of the Discord app. This will copy your full Discord name to the clipboard, you can then paste that into the field provided





The remaining connection details can be found by clicking on this button in the Admin "Modify Event" page for the event being run.

This will display a pop-up like this. From there you can copy and paste the required details to the RaceDirector app. Note that within a community, only the Event ID will change from event to event and that the RaceDirector app will save your entered details, so you only have to enter your Discord name, password and port once when you first use RaceDirector for the first time.



Once your details are complete, press the Connect button to connect to the server.

You can click and hold on the screen of the transponder to drag and move to any location on any screen. The transponder will always stay on top. "On top" means that the app overlaps all other windows and apps on your screen, so it is always visible. In some cases, ACC may move to the top and hide the transponder, if that happens then simply press F11 twice and the transponder will then remain on top.

The screen location is saved, so when you close and restart the transponder, it will appear where you closed it.



Once you are connected to the RaceDirector server the display will change to this. Here are the various race states that are available. Each of the blue boxes are buttons. Those with the grey text are disabled as they are not relevant to the current race state. The current race state is depicted at the bottom as a banner, in this case "GREEN FLAG", which is made clear by the associated flag colour as the background.

To change the race state, click on the corresponding button. In this example "RED". This will cause the display to change for you to acknowledge and confirm that is what is intended. Clicking on the confirm button (in this case "!! CONFIRM RED FLAG !!") will set the race stat to a Red Flag condition. This will be reflected immediately on the driver's transponders. Clicking "RESET FLAG" will cancel the selection.



When a race state is confirmed, all options will be disabled for a short time to prevent accidental spamming of race states.



In which case the display will change to reflect the current race state. The race state options will then change to reflect those now available. In this case, you have the option to suspend the race (“SUSP”), issue a full course yellow Code 50 (“CD50”) or to cancel the event “XCAN”.

Clicking any of these options will again ask for your confirmation as above.

As for the drivers’ transponders, how they display the race state depends on whether the you are waiting in the pits, in the garage or are out on track at a standstill with the menu open or out on the track and driving. The following are examples of the transponder display for when not driving (left) and when driving (right).



SETTING RACE STATES

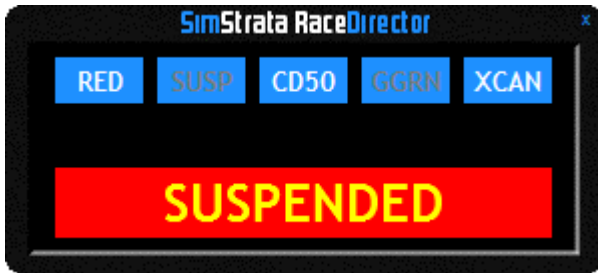
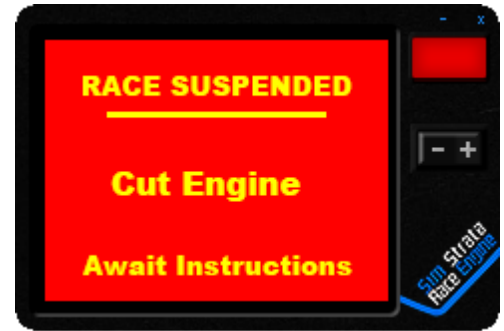
RED FLAG: The red flag race state is intended to temporarily stop the race for undrivable weather conditions, technical issues or any other unplanned event that inhibits safe or fair racing. The transponder states are covered in the RaceTransponder section of this manual above, but in general the drivers will be instructed to come to a stop and maintain their position and also maintain their delta a best as they can.

This provides time to resolve any issues and/or make follow-up decisions such as to restart, suspend or cancel the race.



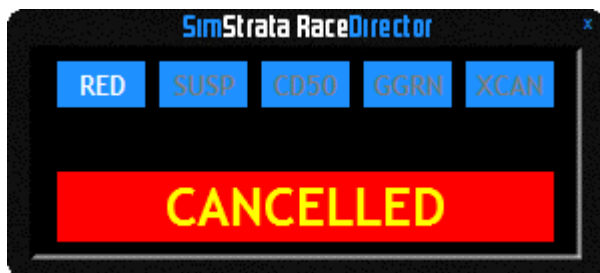
The available race states in a Red Flag state are “SUSP” Suspend, “CD50” Code 50 and “XCAN” Cancel.

RACE SUSPENDED: This race state is used if the race director decides the race will continue, once the solution has been implemented (such as waiting for mass disconnects to re-join) or for a thunderstorm to pass. In this case the drivers are instructed to cut their engines and await further instructions.



The available race states from a Suspended state are "RED" Red Flag (return back to a red flag state to make a different choice), "CD50" Code 50 (to restart the race) or "XCAN" Cancel.

RACE CANCELLED: In this case, the race director has decided to cancel the race. The drivers will be instructed to cross the line with the pit limiter on and maintain their position, cross the finish line. The drivers should be further instructed to wait some distance after the finish line until all competitors have crossed the line. The race director can then make a note of the final finish positions (as a backup) and use the chat command "/next" to close the race and create the final results.



The available race states from a cancelled race are "RED" Red Flag (to return to the red flag state and make a different decision).

Code 50: This is a full course yellow race state. This is intended to be used to slow the race down to a safe speed, mainly for cases such as the when the track is blocked by crashed cars at a critical point that could result in more unnecessary crashes. This also gives a chance for damaged cars to get back to the pit without losing time at race speed (if desired). Other events where it can be useful is letting disconnected drivers join safely taking into account possible join lag.



The available race state options are “RED” Red Flag (if for example, multiple cars have crashed and a restart decision could be made) and “GGRN” Going Green, to restart the racing.

Going Green: The going green state is the transition back to the green flag state. The RaceDirector app will start a countdown from 10 and the RaceTransponder app will show that countdown when it reaches 5. When the counter reaches zero, the race state will change to green flag and the racing resumes.



Please Note: Once a going green countdown has started, it is not possible to cancel it.



KEYBINDS

A number of keybinds have been provided to allow you to move, show and hide the RaceDirector without the need for a mouse. These keybinds could be mapped to a controller if desired.

POSITIONING THE RACETRANSPONDER

R-CTRL + L-WIN + , - Move left.

R-CTRL + L-WIN + ; - Move up.

R-CTRL + L-WIN + . - Move down.

R-CTRL + L-WIN + / - Move right.

R-CTRL + PAGE-DN - Hide the RaceDirector.

R-CTRL + PAGE-UP - Show the RaceDirector.

SELECTING RACE STATES

R-CTRL + R-ALT + , - Focus on the previous race state.

R-CTRL + R-ALT + / - Focus on the next race state.

R-CTRL + R-ALT + PAGE-DN - .Selected the currently focused race state.

R-CTRL + R-ALT + PAGE-UP - Confirm the selected race state.

R-CTRL + R-ALT + END - Cancel the selected race state.