

Schmidt Digital Solutions



RACE CONTROL SYSTEM OXIGEN

Updated until version 1. 0.0.35 Beta of the software

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Introduction and Features

Race Control System oXigen (O2) is a computer software Race Management System (RMS) that has been designed to enhance the functionality of the Slot IT Digital system. The program has been developed by two serious and experienced slot car racers who are also real life race fans and not to forget, the team behind RCS64, the very successful and unique RMS for Scalextric Sport Digital, as it was the first RMS to bring an interactive pit menu and simulation features as tyre wear, damage and weather to slotracing.

Martin Schmidt, who lives in Denmark, is the programmer. Marcel Minnaard, who goes by the name of Minardi on Slotforum, is from the Netherlands.

RCSO2 and LabVIEW

RCS has been developed using LabVIEW. LabVIEW (short for Laboratory Virtual Instrumentation Engineering Workbench) is a system design platform and development environment made by National Instruments. LabVIEW is commonly used for data acquisition, instrument control, and industrial automation. Chrono, the free RMS available from Slot IT, is also developed in Labview. LabVIEW is a very expensive tool originally made for testing electronic parts, but it has become commonly used for testing almost everything. The RCSteam is committed to investigating and implementing it to its full potential. At the same time it has its limitations with regards to the user interface, however new versions of Labview are expected and should have better options in that area. For now we had to make a decision to make RCS suit a dedicated screen resolution, as resizing in Labview is a nightmare.

Tip:

In the race screen with the dashboard you can maximize the window but it will only fill up the screen, the dashboards will not get bigger.

Recommended resolution for 1024 X 768 (Not widescreen).

What You Need to Use RCSO2

To run RCSO2 you will need a Windows PC. So far it has been tested on Windows 7, 8 and 10. You also need a dongle with firmware 2.14 or higher. Please use the Slot IT Bootloader tool to update your dongle and controllers to latest firmware. (tested until dec. 2019 versions). All testing has been done with the SCP-2 controller, although it has been confirmed that the Beta-release of the SCP-3 also worked. It is not recommended (but not impossible) to use an Arc Pro controller as it limits the track call options and scrolling through Pit menu with only one LC button. Note that in the original controller firmware of the SCP controllers a delay of 2 seconds is present when you press the round brake button, on the advice of the RCS team this delay has been removed from firmware version 3.02 however appears to be back in later

firmware versions of the controller. We try to sort this out with Slot IT so that all firmware versions have the option to remove this delay.

Registering your Software

To purchase RCS O2 visit www.rcs64.com

There is a 30 day trial version available. Just download the version, try it and purchase when satisfied.

Contact RCS team via email at rcs64rms@gmail.com

Follow us on Facebook for RCS information and general banter <http://www.facebook.com/RCS64.Scalextric>

or view our YouTube channel which has all of the Video Manual plus other general RCS64 videos. (Note: to be updated with RCS O2 videos in the future)

<https://www.youtube.com/user/RaceControlSystem64?feature=mhee>

If you notice errors or omissions in this manual, or have any comments, please let us know.

DISCLAIMER:

This version of the software is what it is, no updates will be made until there is new Slot IT firmware which can handle the multiple requests of the RCS-software. When and if a new RCS Version becomes available, it will be a new purchase as the heart of the RCS engine needs to be rebuild completely.

Features in RCS O2

The following features are available

- 'Stop&Go' and 'Drive through' penalties
- Fuel load simulation
- Individual car settings for fuel load simulation, max speed, safe speed and pit lane speed.
- APM: Advanced Pit Stop Menu ©
- Practice session
- Qualifying session
- Grand Prix Races
- Endurance Races
- Dashboard for 8 teams
- Marshall screen for 2nd monitor or PC

- Automatic and Manual Track Call
- Tyre wear simulation
- Damage simulation with or without loss of power.
- Auto damage system
- Advanced power control
- Car database
- Multichannel sound options
- Testing environment
- Team racing with up to 6 drivers/team
- Extended results screen after events with tyre and fuel prediction

The RCS team hope you enjoy using RCSO2. We are having fun developing the program and we hope you have fun using it.

We pushed the firmware to its limits with this release, everything more will need new firmware and new software.

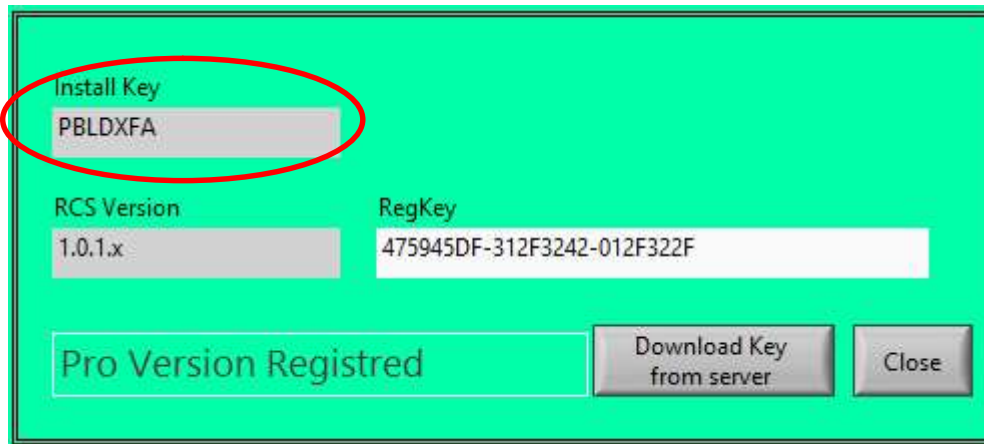
Happy Racing☺

Start Up – Getting Connected

To start using RCSO2, first make sure that the dongle, car(s) and controller(s) are updated and paired. All latest firmware dated not newer than dec. 2019 has been tested and works. At this point a beta of SCP-3 controller is tested and works.

Registration key

Once you decided to purchase RCS O2, the RCS team needs the Install key. You will find the following screen behind the 'Registration' button on the Main Screen.



Send the install key and your e-mail address to rcs64rms@gmail.com, and you will receive the registration key to enter normally within 24 hours after we receive your payment. If connected to the internet, the key will automatically be uploaded.

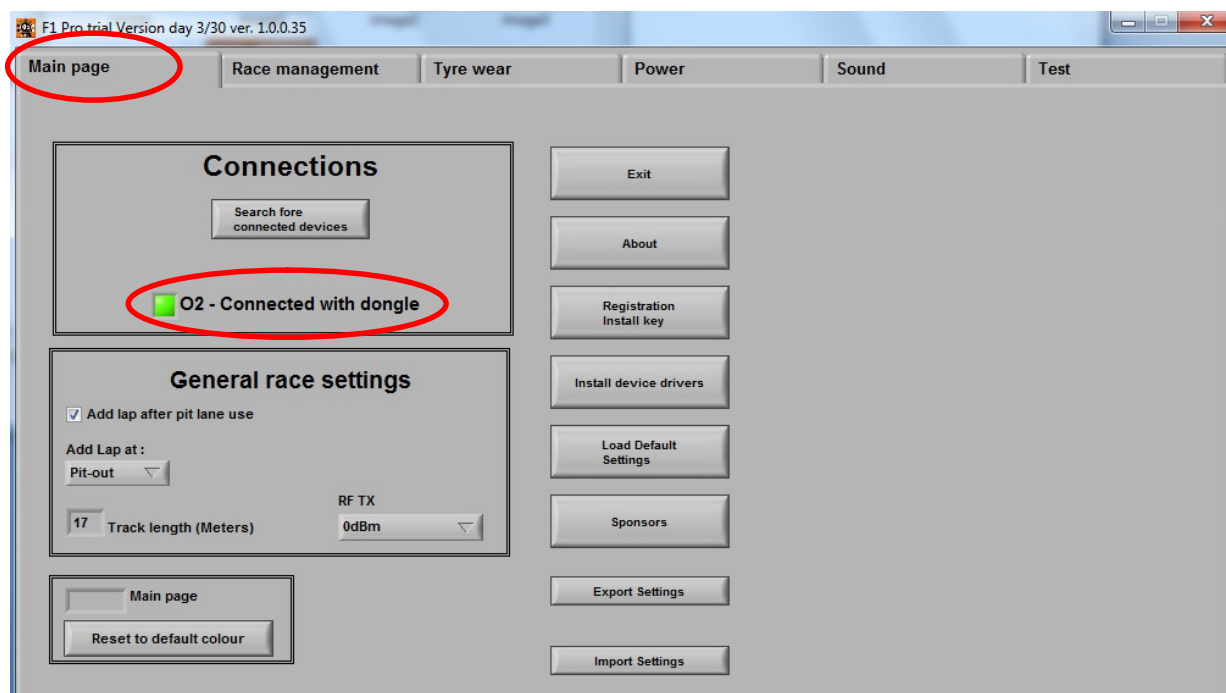
Main settings

There are a few important things to check before you can enjoy RCSO2.

Once installed, the RCS O2 icon should appear on your desktop and/or start menu.

If the dongle has the right firmware and is installed/connected according to the oXigen manual, the Main screen of RCS O2 will appear and a green led should go on (on top left of screen) and a sound should be played. **Note that the dongle cannot be connected when trial period is over or if you use an invalid key.**

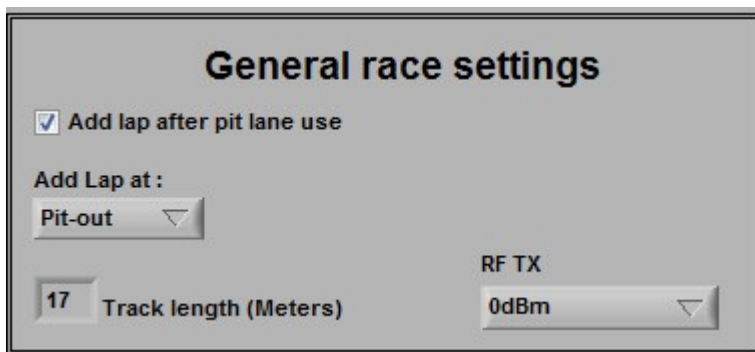
MAIN SCREEN AND CONNECTION



If this is the first time you start RCS O2, or experiencing strange behaviour, go to the 'Load default settings button and load RCS Factory defaults.

If this is not the case than check the installation of your dongle or exit RCS and start the Slot IT Bootloader tool.

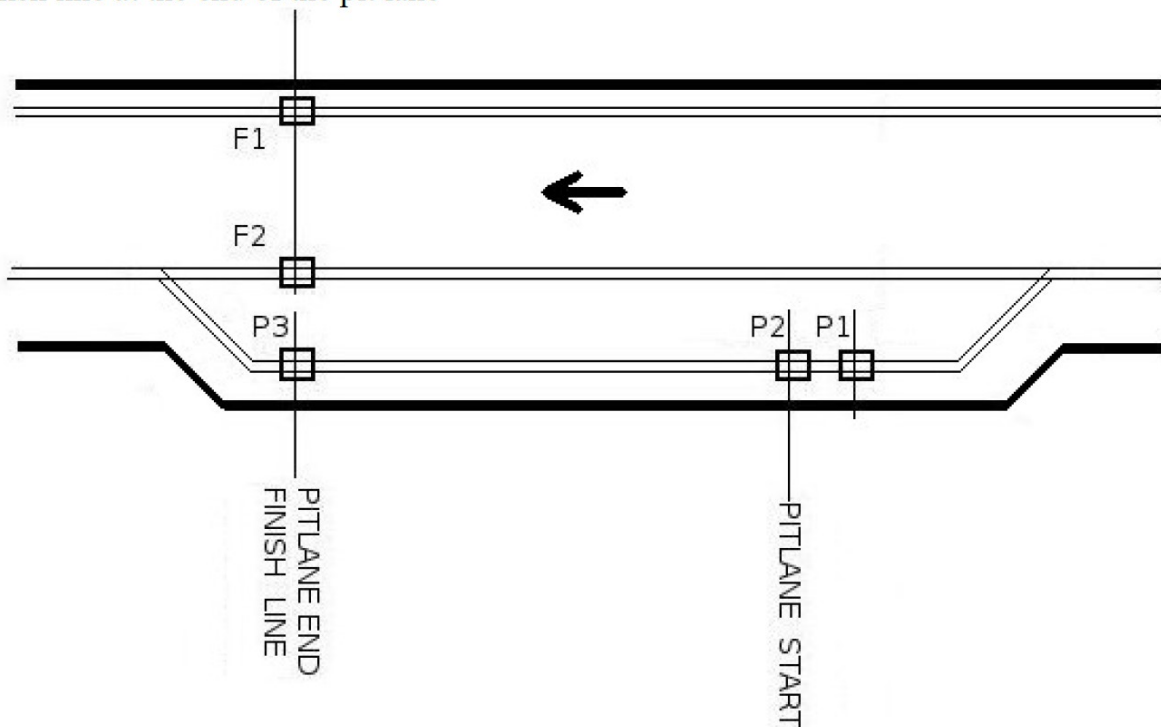
While you are in the main screen it is wise to check the 'General race settings'.



It is important to set your pit lane set up, as RCS O2 can be told to add a lap (or not) when the pitlane is parallel to the Start/Finish straight. When parallel, RCS should add a lap when in pit. To use the pitlane, make sure to place magnets under the track (pit in and out) as indicated in the oXigen manual of Slot IT.

Example of a possible set up form trhe Slot IT manual:

Finish line at the end of the pit lane



Another important setting is the RF/TX, set this to 0 when there is one dongle in the room, set it to different values if you have more dongles in the same area.

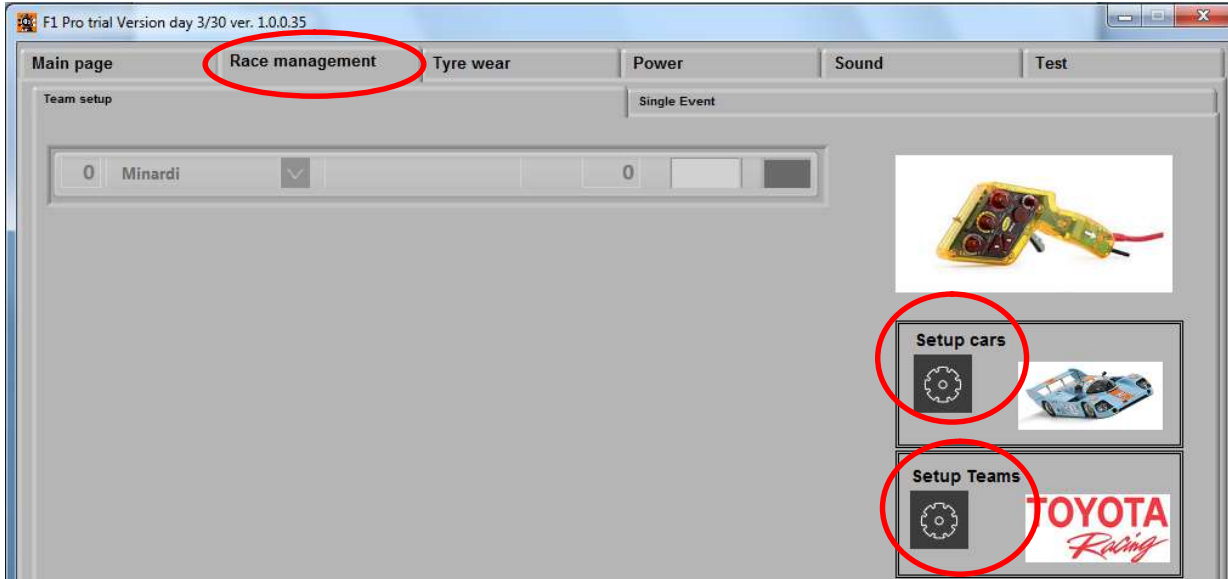
Once you are sure that at least one controller and one car are connected (paired), the dongle is connected and has at least firmware 2.14, it is time to discover RCS O2.

TIP:

Check the 'TEST' tab to see status of your car and controller.

Cars, drivers and teams

RCS O2 interface follows the principle that **Teams** can have 1 or more drivers and of course a team **car**. Now when you start RCS O2 there are default settings available, but it will not take long before you want to use your own team and driver names and add your own cars, including pictures and history.



A short guide:

Go to the **RACE MANAGEMENT** tab and select the sub-tab **'TEAM SET UP'**

On the right side you will find set up **CARS** and set up **TEAMS**. Click the grey icon.

It may be wise to first go to **SETUP CARS**, as you will want to select the right car for your team.

Car setup.vi

Car Setup

Play sound file when chosen **Sort by car name** **Sort by class** **Sort by Brand**

	Car	Picture	Class	Owner	Brand	Mag	Tyre
1.	Alfa Orange	alfa or.JPG	DTM	Me	Slot.it	No	Stock
1.	Audi R18	audir18.JPG	LMP	Me	Slot.it	No	Stock
1.	Audi R8	audi r8.JPG	GT	John	Scalextric	No	Stock
2.	BENTLEY	Bentley.JPG	GT	Frans	Scalextric	No	Stock
2.	Mosler	mosler.JPG	GT	John	NSR	No	Stock
2.	Alfa Red	alfa red.JPG	DTM	Me	Slot.it	No	Stock
3.	Ford GTE	Ford GTE.JPG	GT	Me	Scalextric	No	Stock
3.	Porsche 997	porsche 997.JPG	GT	Me	NSR	No	Stock
3.	Supra	supra.JPG	GT	Me	Revo	No	Stock
4.	Calibra	calibra.JPG	DTM	Me	Slot.it	No	Stock
4.	Lola	lola.JPG	LMP	Me	Slot.it	No	Stock
	MARCOS	Marcos.JPG	GT	Me	Revo	No	Stock

Car

Teams
 BURN OUT ▾
 Push car to team
 Push car to all teams
 Edit Classes
 Delete Car
 Copy Car
 New Car
 Exit

	Tank size	Max Power	Purchase	SF Sound	Safe Speed	Pit Lane speed	Fuel/power Ratio(0..50)	History
1.Alfa Orange	500	100	09-04-2019	V88.wav	35	35	35	
1.Audi R18	650	100	09-04-2019	Audi TDI.wav	35	35	35	
1.Audi R8	650	100	4/9/2019	Jaguar XK.wav	50	50	20	
2. BENTLEY	650	100	4/9/2019	Carrera GT.wav	50	50	20	
2. Mosler	650	100	09-04-2019	Imp (5).wav	35	35	35	
2.Alfa Red	500	100	09-04-2019	V811.wav	35	35	35	
3. Ford GTE	650	100	4/9/2019	Carrera GT.wav	50	50	20	
3. Porsche 997	650	100	09-04-2019	Carrera GT.wav	35	35	35	
3.Supra	500	100	09-04-2019	V85.wav	35	35	35	
4.Calibra	500	100	09-04-2019	V89.wav	35	35	35	
4.Lola	650	100	09-04-2019	Aston Martin Lola.wav	35	35	35	
MARCOS	650	100	09-04-2019	Maserati MC12.wav	35	35	35	

To add a new car, simply select the 'New Car' button on the right of the screen.

Each row represents an existing car and its data. You can edit the values of the cars directly in this overview.

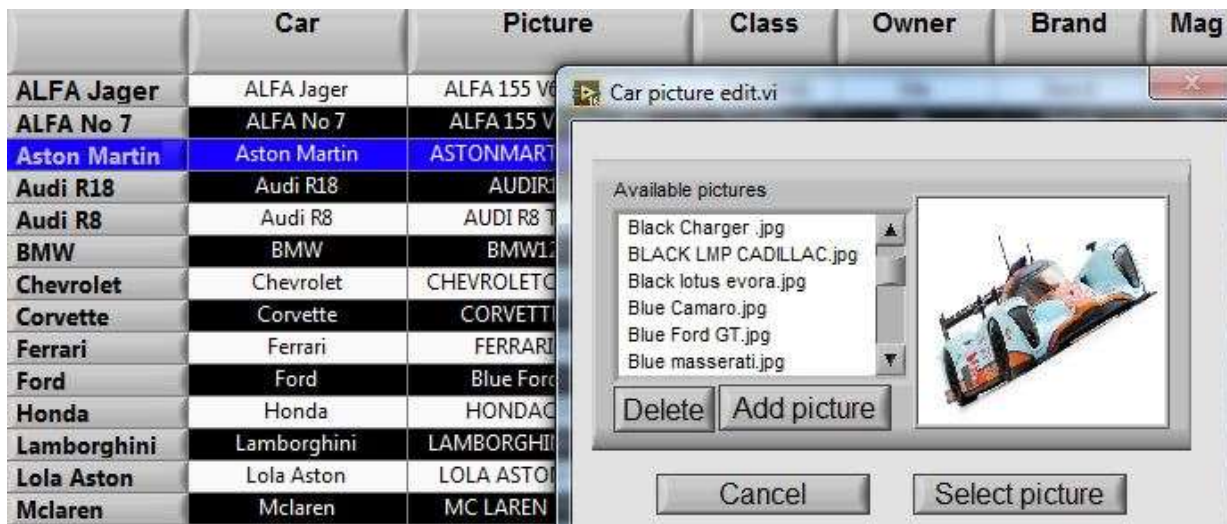
The far left column will always be visible so you can see which car you are editing.

From left to right we have the following columns;

CAR: Car name, usually car brand and type. 'Sort by car name' (top of cars list) will show the cars in alphabetical order.

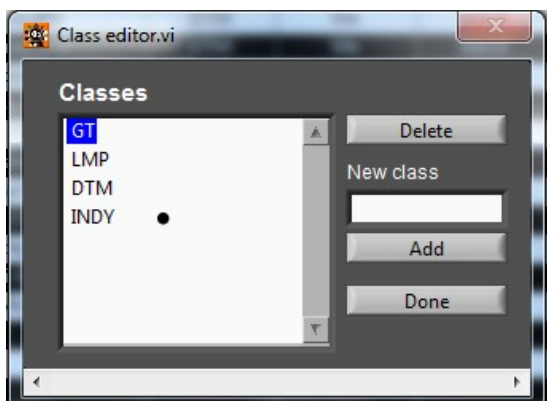
PICTURE:

Here you can select and/or add a picture for the car. If you click on this cell a small window will open. To add a new picture choose 'Add picture'. You can now locate a .JPG picture for your car. Once this is added, it will be visible in the list of available pictures. Click on the picture and choose 'Select Picture'. This picture will now be visible in the race screen dashboards and your team setup.



BRAND:

Used to indicate if the car is Slot IT, Scalextric, NSR etc.

CLASS:

You have to add your car to a class. This class will be visible in results pages. You can add/delete classes on the right of the screen by selecting 'Edit classes'. There are already 3 default classes available. Classes can help you group your cars for example for competitive racing. There is an option to 'Sort by class' (On top of the cars list), the available cars will be displayed grouped by class.

OWNER:

To indicate who is the owner of the car, especially handy under club conditions, where people bring their own cars.

MAGNET:

Does the car have a magnet fitted. Normally you will not mix cars with and without magnet in one race.

TYRE:

Does the car have stock tyres fitted, or aftermarket tyres.

TANK SIZE:

If you want use the fuel (load) simulation feature, it is wise to think about tank sizes. In relation to the fuel burn rate, this will have an effect on how many laps you can race before the tank is empty. A bigger tank will last you longer, however in relation to fuel load simulation, the longer the tank is full, the longer it takes before you get more power. It is advised to try and test tank sizes in the practice sessions, in the result screen after this session, it will show you the % fuel total used and per lap, so you can estimate how many laps you can do before you are out of fuel. Note that a bigger tank size takes longer to fill up!

When racing same class cars, tank sizes will usually be the same, when you mix classes of course tank size can be different.

TIP:

A burn rate setting is available in the event set up to easily increase/decrease fuel burn to adjust to race length.

POWER:

When set to 100, the car will have his full power available, (if main power in power tab is also set to 100). The car power can be used to level out differences in car performance, for instance if you want to race a standard Scalextric car against a standard Slot It car, normally the Slot IT has better performance so you can limit his power to match the scalextric car. This option can also be used to limit car power for rookies and children, 65% power will be sufficient in most cases for a beginner!

PURCHASE:

Date of purchase of the car.

SF SOUND:

Select a car sound for the specific car to be played when passing Start/Finish. The sounds have to be added in the SOUND tab before you can select them. It is possible to link an unique car sound for each car! Besides it is nice to be confirmed that your car is detected at Start Finish, it can add a layer of realism if you have the right sounds and use them well.

Check the box on top of the cars list to be able to hear the available sounds.

SAFE SPEED:

This value represents the power a car will get once safe speed is activated, for example when out of fuel, out of tyres and yellow flag.

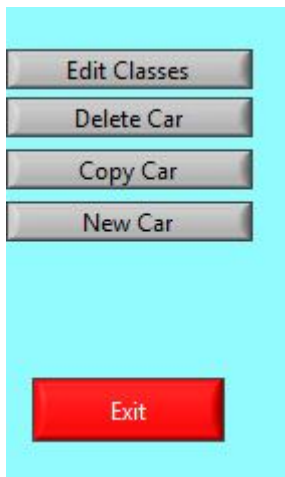
PIT LANE SPEED:

Power the car gets when in pit mode, between pit in and out magnets.

FUEL POWER RATIO

The value you add here will be the power LESS available with a full tank size, so for example if you type in 20, the car will have $100-20=80\%$ power with a full tank.

HISTORY:



Free text field to enter car maintenance history, favourite controller setting for the car, etc etc.

Select 'New Car' to create a new car from scratch, or use copy car to copy the characteristics of an existing car and edit them.

A powerful tool is the ability to select a car and add it to a team;



First select a car, the name will be visible in the grey box above, select a team from the drop down and select 'Push car to team'. The car will now be available for the chosen team.

For quick set up and to be sure al teams have a car with the same characteristics, select 'Push car to all teams'. All teams will now have the same car.

Next step is DRIVERS and TEAMS.

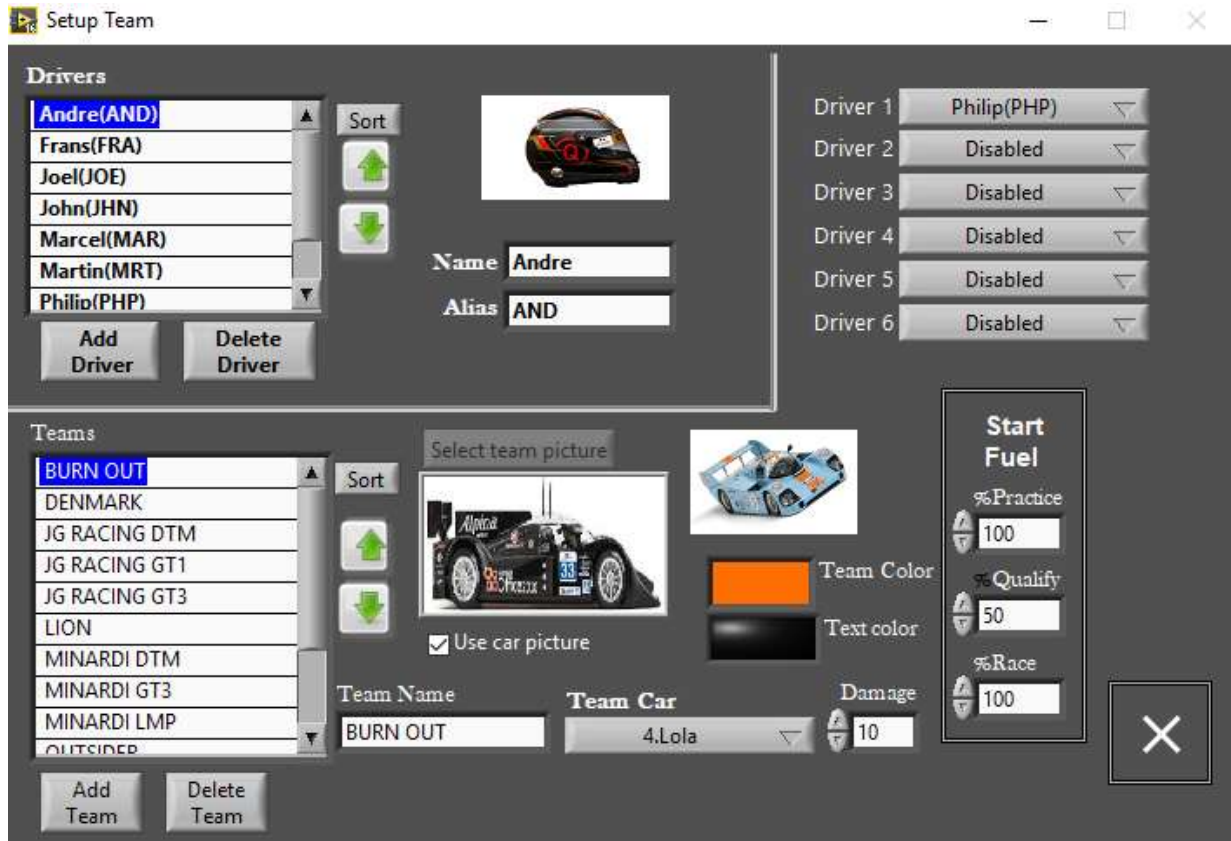
Select the SET UP Teams button.



It works like this. First you create a set of individual **drivers**, add a NAME and an ALIAS (Hamilton/HAM for example) The alias will be used in some result screens and pitmenu, so make sure to make it unique and recognizable.

Next we create **TEAMS**.(Note that you can also edit existing drivers and teams). A team consists of 1 or more drivers and a car.

Add a new team by entering a team name and 'ADD NEW'. You can now edit the values. Choose a team color, this is the color that will be visible in the race dashboard and select the **TEAM CAR**. You can now add a team picture, or choose to use the picture of the selected car.



You can choose the team and the text color for the dashboard.

On the far right you can choose the team drivers. During the race events you can select **the driver for the moment and change in pit stop or at start of an event.**

Next important thing if you plan to use fuel (load) simulation is the **% of fuel at the start of your session.** These values can be changed right before the session but you may want to think about a default value.

The amount of damage points is important if you use this in combination with track call or auto track call, meaning if a car goes off track, the team loses a damage point (and power) and repair costs time. It is also a means of balance between teams if you have more or less experienced teams. All data is saved automatically.

Now we have a team with drivers and car, ready for the track! If you exit the setup you will see an overview of the **connected controllers**, you can select the created team for the desired ID (controller) with the dropdown button in each row.



You will also see the damage points for each team, picture and team color.

Worth to mention is that all connected controllers will be present in the race. If you disable a controller during the race his dashboard will disappear, if put back on it will come back in the race however it can be that power and brake values are reset until after a pitstop.

Time to Race – Single event

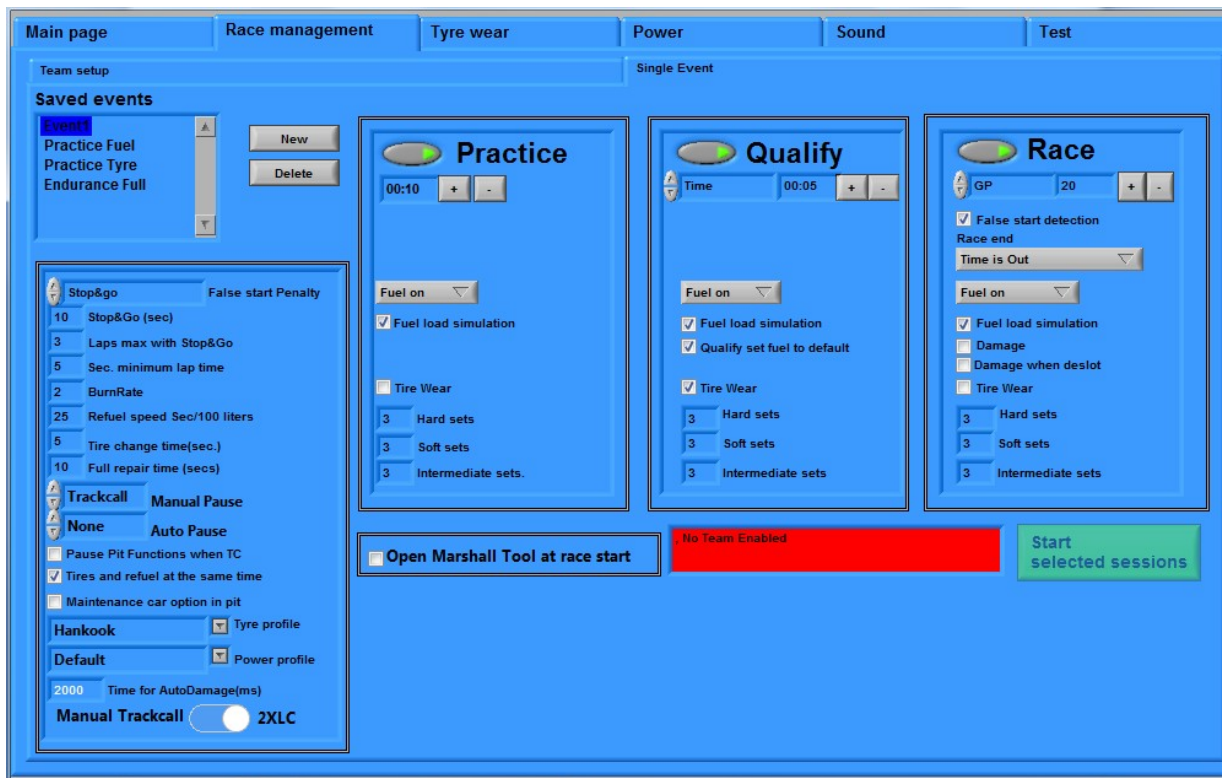
Now that we have a team with driver(s) and car, we can start driving.

In the single event tab (as part of the Race Management) you can prepare your session(s).

In RCS O2 we have sessions as part of an event.

An event can consist of 3 **sessions**, Practice, Qualify, Race.

A session can be turned on or off for the event by clicking on the button next to session, a green led will turn on. So if you want to skip qualify, just select Practice and Race and Start the event.



For each session you can enter your desired settings (fuel, laps, time etc.) and save the data to an event name. The single event tab is divided in 4 columns, **Pitlane, Practice, Qualify, Race**.

To activate a session in the event, simply activate by clicking on the button on the left of each session name. If a session is not activated, it will be greyed out.

First we have to set the **Pit lane settings** on the left.



From top to bottom:

- Choose which **penalty you want at False start**, drive through or stop&go
- Set the **stop&go time**. When in pit, your car can not move for x seconds.
- When received a penalty, it is **allowed to run x laps** until laps are not counted.
- **Minimum lap time**, set this to a value that is impossible to drive, all laps with a lower value will not be recorded. This can happen when you reslot a car just in front of start finish. So for example, if set to 5 seconds, a laptime of 4,90 will not be registered.
- o **Burn rate**: Default setting is 2. You can see this as how fast your car will burn the fuel. With a tank size of 100 and burn rate 2, a burn rate 1 will double the length before the fuel is burned. So you can use this rate to lengthen or shorten the time between fuel stops, if you don't want to change the tank size in car setup.
- **Refuel speed**; how fast does the tank fill.

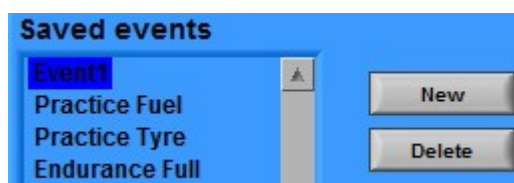
- **Repair time.** This is the time for a full repair. It is possible to repair before you have no damage points left, in that case the repair time will be a part of the full repair time. For example, if full repair = 10 seconds than to repair 1 damage point will take 2 seconds if your max damage points is set to 5.
- **Manual Pause setting:** Track call, yellow flag or none. With track call race pauses and will only restart if all drivers indicate ready, by marshall screen or by space bar (keyboard). Yellow flag will reduce the speed to safe speed.
- **Auto Pause setting:** Same as manual except an auto track call will only occur after x ms no car detected on track. It takes the setting for autodamage ms.
- **Pause pit functions:** If selected, during a track call refuel, repair or tyre change pauses until end of track call. In real life however, cars can do pitstops during yellow flag so than this should not be selected, it is up to you.
- **Tyres and refuel at the same time,** when checked it is possible to do these action in parallel , if not, you have to wait until refuel is ready until you can start tyre change. Repair is never parallel, neither rs Stop and Go or Drive through.
- If you select **maintenance option**, it means when selected in pit you can take the car off **without causing a track call**.



In the tyre tab and power tab you can create and edit profiles for tyre wear and power settings. Select the appropriate one in relation to your event.

- The time for **autodamage ms** is the setting in milliseconds how long it takes before a damage point is deducted or auto track call is initiated.
- The **manual call setting** is to chose between pressing the round brake button or both LC buttons at once to initiate a manual track call.

All pitlane settings and session settings will be saved in the event;



Note:

If you started a tyre change you cannot cancel it, you have to wait until finished, you will see a countdown and hear a noise when finished. To stop refuel if you don't want 100% fuel, just push throttle, this will stop the refuel process.

Next is an example of the race settings. For practice and qualify sessions false start and damage are not available, other settings are the same except that a practice session can only be time, not laps.

TIP:

Use manual call or auto track call if you are racing without marshalls that put the car back on track.

With marshalls, the auto pause function can be turned off but it is advised to keep manual pause as an option. With auto damage on, you still can enjoy the effect of damage without pausing the race!



Choose the type of race, **endurance (time) or GP (laps)**. Next select if you want **False start detection**. A car that presses throttle before lastlight on screen goes out, gets automatically a penalty. With this setting of, cars only get power when lights are off. (Note, only in Race, not in Practice or Qualify session)

You can choose different ways to **end the race**, eg. First car crosses finish, or all cars should finish in same lap.

Next : Select your **simulation features**;

Fuel on/off: means car will burn fuel depending on throttle usage. You can adjust tank size and burn rate for each car in car set up

Fuel load: The car will get more power as fuel level decreases.

Damage: If you check damage, each time the race is paused by a track call or detected by autodamage (Than 'Damage when deslot' should be on), the car that initiated the call will lose 1 point and some % power (if this is selected in power tab). At 0 damage points you have to repair, but you can repair sooner, it will take than shorter to repair.

Damage when deslot: Each time a car deslots, after x ms (autodamage setting) a damage point will be deducted. Note that you can use this feature without auto track call on, a very nice new feature!

Tyre wear: With tyre wear on, you can choose the amount of hard and soft tyres before the race (or practice/qualify -> or even the whole event). When you drive, you tyres will wear depending on travelled distance and related speed. In the tyre tab you can select some settings to influence wear.

What happens is that brake strength decreases as tyres wear. Hard tyres will wear slower than soft tyres but have less initial brake power.

(Intermediate tyres not yet available!)

IN ALL CASES, WHEN RUNNING OUT OF FUEL, TYRES OR DAMAGE POINTS, YOUR LAPS WILL NOT BE COUNTED AND SAFE SPEED WILL BE APPLIED.

Before you start, make sure the desired tyre and power profile are selected for this session. When you want to start the event, press '**START SELECTED SESSIONS**' on bottom right. All connected controllers will be present in the race.

If greyed out it means one or more conditions are not correct, like in this example 'no teams enabled' means no team available because controllers are not connected.



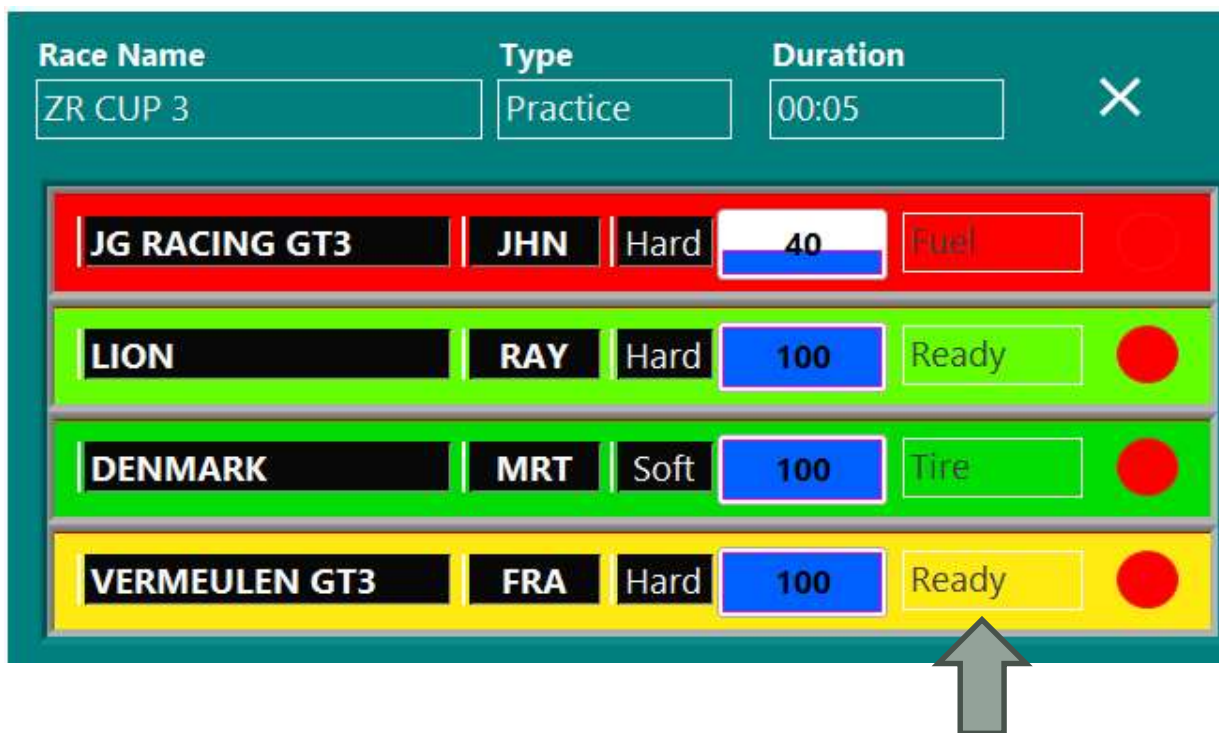
One very important feature is the Marshall tool. This is a 2nd screen which gives an overview of all cars and their dedicated values for power, brake, laps, fuel, tyre and damage. It is advised to use this screen to understand what is happening and for a marshal to control the race as it is possible to award penalties, add laps or damage points, refuel etc from this screen. You can select to always open the marshal screen by checking the box, or open it from race screen. See the 'in depth' section for more information.

TIP:

To get used to the user interface and the effect on your car as a result of the simulations it is wise to try the simulation features one by one and watch the Marshall screen. You will also notice that the dashboard changes depending on the selected features, for example if tyre wear is deselected, the tyre wear bar and values are not visible in the dashboard and neither in the result screen after a session.

Session start& race screens

If you start a session, you will see the pre-race **START SCREEN**;



Change function with LC

The start screen is shown before each session, in this example we are before the start of a 5 minute practice session. The team name, driver and team colors are always visible and so is the red light on the right. On the left of the light is an action box, each driver can scroll through the available options and perform the action with round BRAKE button.

Depending on selected features we can select to:

Change driver; change driver name to start session

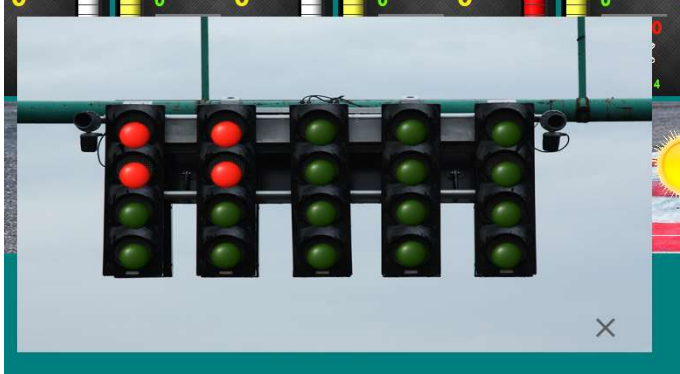
Tyre: select tyre type to start session

Fuel: select amount of fuel to start session, each confirm action increases level 10%

Ready: if you are ready for the session, press brake and light turns green.

In the example above, team JG RACING GT3 starts the session with 40% fuel and Hard tyres, driver JHN.

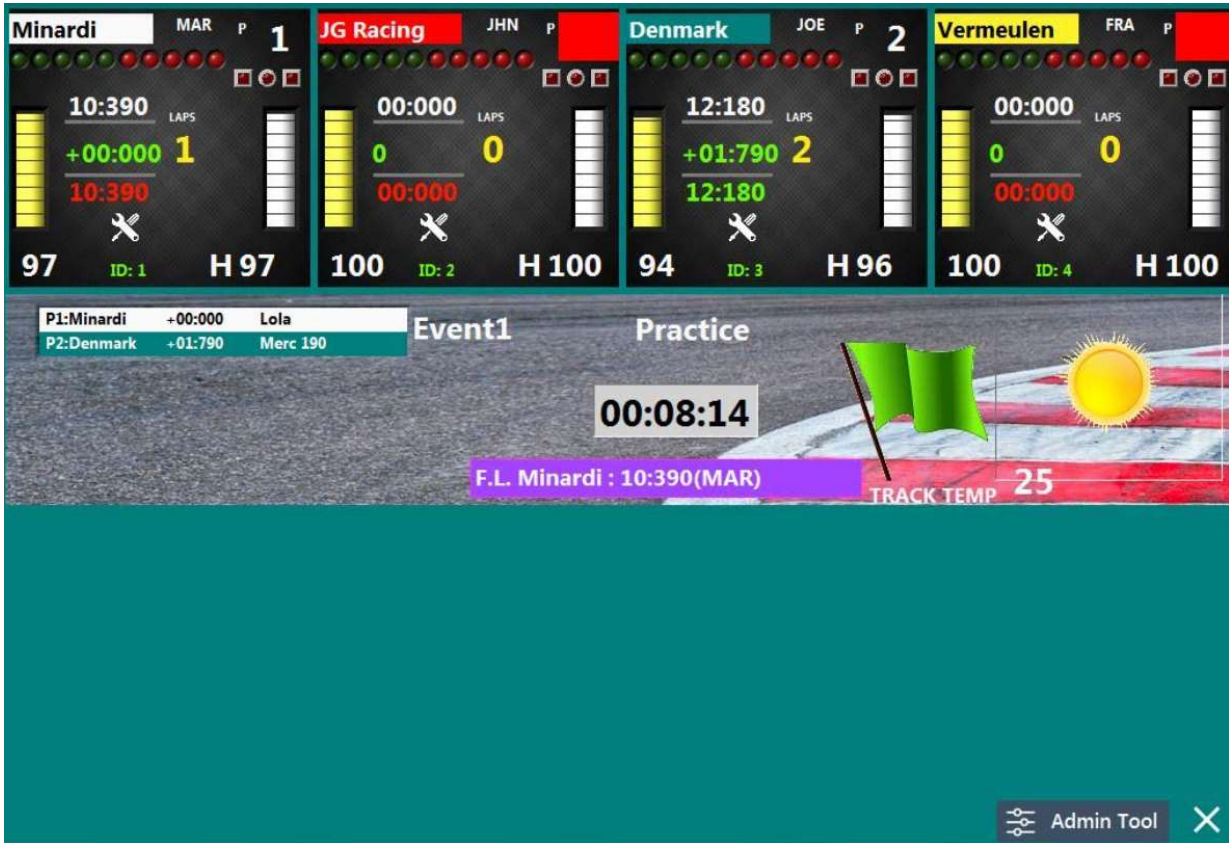
If all drivers selected the green light, the session will start with a countdown of the start lights. It is also possible to start the session by pressing the 'X' on the upper right.

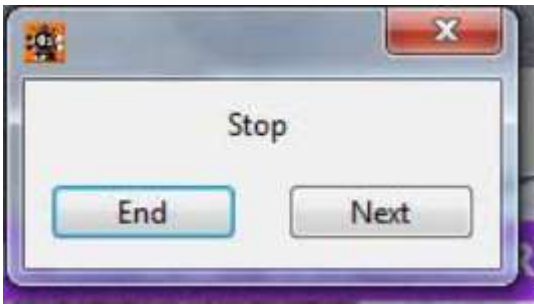


The sounds of the countdown can be changed in the sound tab. Note that when you start a race and selected 'False start detection', you have to wait until red lights are off and green comes on otherwise you will get a penalty.

(You can cancel the start light with the 'X' in right bottom)

When the lights are off you will see the race screen with the dashboards related to the controllers and the general information;





To end the session before time is up (or laps are done), press 'X' in the bottom right. This will allow you to jump to next session (if more than one session selected in the event) or stop and go to the 'single event' screen;

Another option is to open the Marshall screen by selecting 'Admin tool'.

It is important to know that the position of the dashboard of your ID/TEAM **will NOT** change during the race.

Information on the dashboards:

DASHBOARD RCS O2 - PRACTICE SESSION

TEAM NAME & COLOR	DRIVER ALIAS (UP TO 6 DRIVERS/TEAM)	POSITION	RED = OFF TRACK
SCHOUW	PHP P	1	
DENMARK	MRT P	3	
VERMEULEN	FRA P	2	

THROTTLE	FUEL BAR AND LEVEL	CAR ID	DAMAGE (NOT USED IN PRACTICE)	LAPS (UP to 9999)	TYRE BAR AND LEVEL (COLOR = TYRE TYPE)
78	10:660	ID: 2	S 95	8	
61	11:380	ID: 3	H 82	11	
81	10:780	ID: 4	H 91	7	

BEST LAP	10:780
GAP TO CAR IN FRONT	+00:120
LAST LAP (GREEN IF LAP IS FASTER THAN PREVIOUS)	11:390

FOR PRACTICE/QUALIFY

In PRACTICE/QUALIFY Mode, the leader/position is based on **best lap time**. Your personal best is shown on top in white in the dashboard. The difference between you and the car in front leader is shown in the middle with a '+' in front, to indicate the time you have to compensate to get to that position. The time below is your last lap time and helps you get into the *rhythm*. If faster than previous lap, it will turn **green**.

The dashboard does not switch according to positions, in the general information part the positions switch.

FOR GP/ENDURANCE

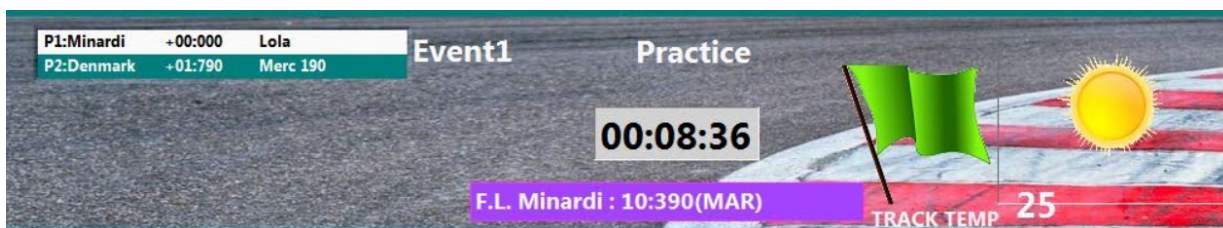
IN GP/ENDURANCE mode, the position is based on **completed laps**, the dashboard will show you the gap to car in front of you AND the amount of laps you are behind the leader. Of course, when you are the leader, these values show as 0/0.



This car is 7 laps behind and has not done any laps. This car has 6 out of 7 damage points left, apparently the car is not on track (RED SQUARE TOP RIGHT)

The dashboard does not switch according to positions, in the general information part the positions switch.

GENERAL INFORMATION



In the **General information** part of the screen in the middle the remaining time is shown, or amount of laps accomplished. On the left side you will see the teams and their position, this switches as the session evolves and positions change. Besides position, also gap is shown. The purple time in the middle is the overall fastest lap, team name and driver is shown. The flag shows the state of the session, it can be green (all normal, race is on), yellow flag (safe speed), red (race stopped) or checkered (race finished).

On the far right is the current weather and track temperature, however in this release of RCS (1.0.0.35) this will not change.

TRACK CALL

If the race is paused by (auto) track call, manual call, space bar or Marshall screen, the **green** flag will turn **yellow** if the yellow flag option is chosen in the Event setup and cars will get safe speed, or flag turns **red** if track call was chosen and cars will stop.

You can recognize the car that deslotted by the red square on the dashboard at the location where the position is shown.

In the general information next to each team name a led will appear. The race will continue after;

- Each led is turned green (controller track call button), or;
- Space bar is pressed on keyboard, or
- Track call is cancelled via Marshall screen.

After a short delay power will be back on.

TIP:

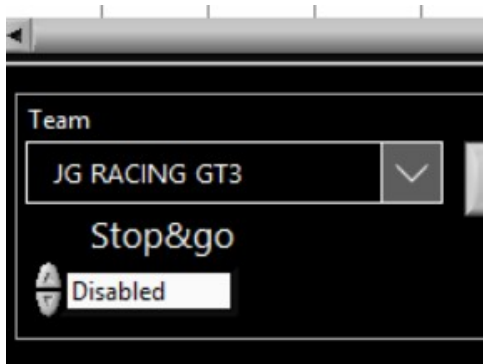
- 1) *Depending on the event setting during a track call, refuel, tyre change or repair will pause also, or continue. If chosen not to pause and yellow flag mode is on, now is the time to do a splash and dash!*
- 2) *During a track call, the Marshall can adjust damage points, refuel etc. via the Marshall screen. He can do that also while racing but when the Marshall is also taking part in the race, a track call is the best moment.*
- 3) *As a driver, use the track call moments to study your data on the dashboard!*

Pit stops& penalties

If there is one feature that makes RCS unique it is the strategy factor and the pitstops that add so much to the realism. If you use RCS, a pitlane is a must because it adds so much fun. Remember to put the magnets under the track at pit in and out according the Slot IT oXigen manual and set a pitlane speed in the car setup.

Penalties:

First we start with penalties, in RCS we know the drive through penalty (drive through pitlane at pitlane speed) and the Stop&Go penalty (stop the car for x seconds in pitlane).



A penalty can be awarded at a false start, and during the race via the marshall screen or the keyboard if marshall screen is not open. Choose the Stop&Go or Drive through in marshall screen and the selected team.

If marshall screen is not open, you can award a penalty by pressing numeric keys 1-8 on the keyboard. 1 press is drive through, 2x press is stop and go.

IMPORTANT: If a penalty is awarded it will show in the dashboard of the team at the location where normally the ID is shown, a flashing DT or SG will show and will blink until the car has entered the pit and served the penalty.



DT or SG will show.

In the event setting can be selected how many laps are allowed before the laps stop counting and in case of a Stop&Go, how long the car should stop.



In this example, a Stop&go lasts 10 seconds and has to be served within 3 laps.

If a team has a penalty and enters the pit, instead of the pit menu a message will show 'Drive through' or the Stop&Go amount of seconds is shown. The seconds start to countdown when the car has stopped in the pitlane.

(Note: stop&go countdown is NOT paused during a track call)

The team can continue the race after pit exit.

PIT STOP:

Depending on the features you selected for your session, when you enter the pitlane and stop the car, you can select the following actions by scrolling through them with both LC buttons (UP/DOWN). Note that fuel and tyre levels start blinking below 25% to help you remind to pit.

FUEL: Add fuel until you press throttle or until full (100%)

SOFT: Change the tyres to a new set of SOFT tyres (better braking, wear faster)

HARD: Change the tyres to a new set of HARD tyres (less brake power, wear slower)

Tyre change time is a event setting, you can not stop tyre change sooner than finished.

DRIVER: If more than 1 driver in a team, you can change the driver alias.

At the end of a race the % of race distance of each driver is shown (amount of laps)

REPAIR: Damage points are repaired until maximum available for the team. It is possible to repair sooner than that you are out of damage points. The less damage points to repair, the shorter the repair will last.

MAINTENANCE: Select this if you want to pick up the car without causing a track call.

Each action will start after pressing the round BRAKE button.

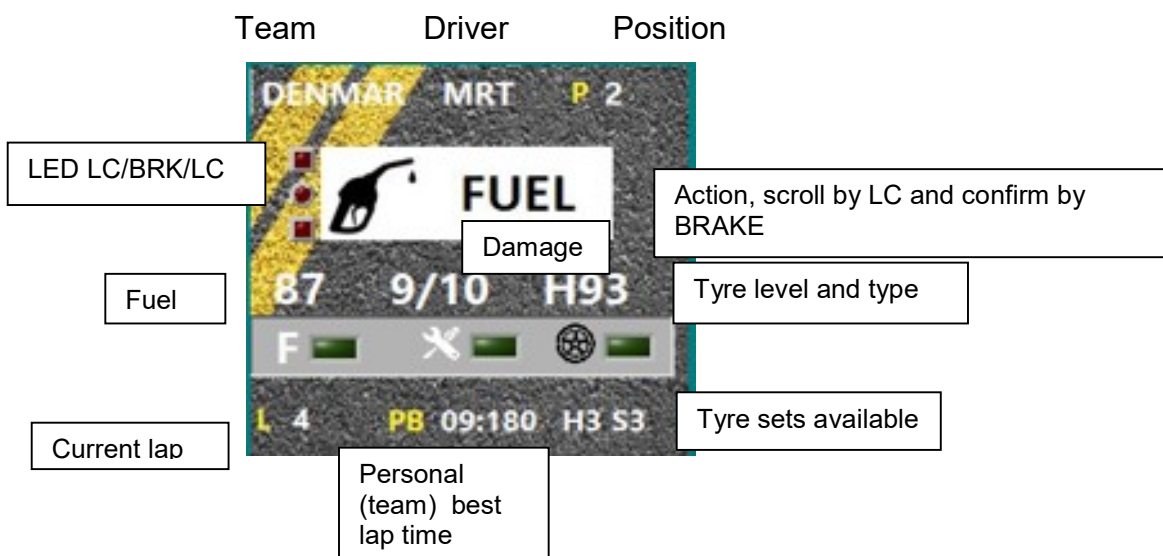
Tyre and repair will show a countdown before finished and a sound is played when ready. Refuel can be stopped by pressing throttle. This allows you to take less fuel than completely full, if needed for your strategy.

Just press throttle and drive away at pitlane speed until pit exit is reached. There full power will be back on, beware!

Pit stop screen:

(opens when entering pit, drive at pitlane speed to your pit bay and stop)

(Back ground picture may differ)




In latest version after ALIAS a percentage is shown of race distance done by this driver, this only works correct in a GP race.

TIP:

*Use the practice sessions wise as they show you the amount of fuel used in total and per lap, as well as the percentage of tyre wear per lap for each type. The longer the practice session, the better the information. With this information you can **plan** your race strategy. Ever thought of starting a race with 50% fuel so it may be so that you can combine the pitstop for fuel with the one for tyres ? This saves time! But...only works if you take damage points into account, or make sure you don't have them 😊*

End of session - Results

At the end of each session a result screen is shown. Be aware that if you keep the Marshall screen open, even more information can be found! On the top right the green boxes show which features have been used, in this case damage was not used, tyres and fuel are. At the start of the session 3 sets of Hard were available and 3 sets Softs. The tyres that you start the session on are NOT in this amount.

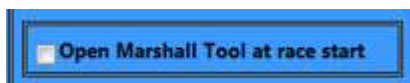
ZR CUP 3	Practice	H:3 S:3 I:3	10:130 LION (RAY)	Tire	Fuel			
1	 LION	14	10:130	12:276	LMP	44%	3.1	H:0(1.06%Lap) S:1(-1.24%Lap) I:0(0.00%Lap) W:0(0.00%Lap)
								RAY(100%)

In this example we see a practice session were drive RAY has done 100% of the laps and set the overall fastest time (10.130). 12.276 seconds is his average lap time. The car is in the LMP Class and has used 44% fuel which is 3.1% fuel per lap. (So in theory can do $100/3.1 = 32$ laps) However, he started on Hard tyres which used 1,06% per lap, while the softs last 1,24% per lap. (Intermediate and Wet are no longer available). Meaning he can do almost 100 laps on hard tyres but you probably want to go in around 20% tyres as you will have no brake force left. With all this information one can calculate the best strategy, a lot of fun if you know what you and your car are doing.

In depth

Marshall screen

The Marshall screen is a very powerful tool for race directors or the responsible behind the keyboard. It is advised to nominate 1 person to control this screen. The marshall screen can be displayed on a second monitor and automatically opened at the start of a race or opened during the race when desired.



The screen will give an overview of each team and all the data that drives the dashboard and result screen and a bit more. In the example below, the race has yet to start but we can see that driver RAY of team LION has less power available (166) than the other 3 teams (205). Since they all have 100% fuel, it must be a car setting for team LION that limits his power. The brake strength is 205 (of 255) as this is a fresh Hard tyre, a soft tyre brake power is 255. If you look further to the right you will see in realtime the fuel and tyre use and the result on brake power and engine power.

ID	Team	Last	Best	Laps	Tyre Lev	Type	Sets	Fuel	S&G	Dam	Driver	Max	Min	Pit	Brake	Fuel usa	Hard use	Soft use	Inter use	V. A
0	JG RACII	00:000	00:000	0	100	Hard	H:/3 S:/3 l:/3	100	Disabled	3 / 3	JHN	205	0	128	205	0	0	0	0	0
1	LION	00:000	00:000	0	100	Hard	H:/3 S:/3 l:/3	100	Disabled	10 / 10	RAY	166	0	90	205	0	0	0	0	0
2	DENMAI	00:000	00:000	0	100	Hard	H:/3 S:/3 l:/3	100	Disabled	10 / 10	MRT	205	0	128	205	0	0	0	0	0
3	VERMEU	00:000	00:000	0	100	Hard	H:/3 S:/3 l:/3	100	Disabled	3 / 3	FRA	205	0	128	205	0	0	0	0	0

Team: JG RACING GT3

Stop&go: Disabled

Master% Race Status: 100

Start: Start

Pause: None

Exit: Exit

The beauty of this screen is that by selecting a team in the black area below, you can perform actions for that team;

Refuel: tank will be filled up to 100%

DAM + -: change damage points

Next driver: Change driver in the team

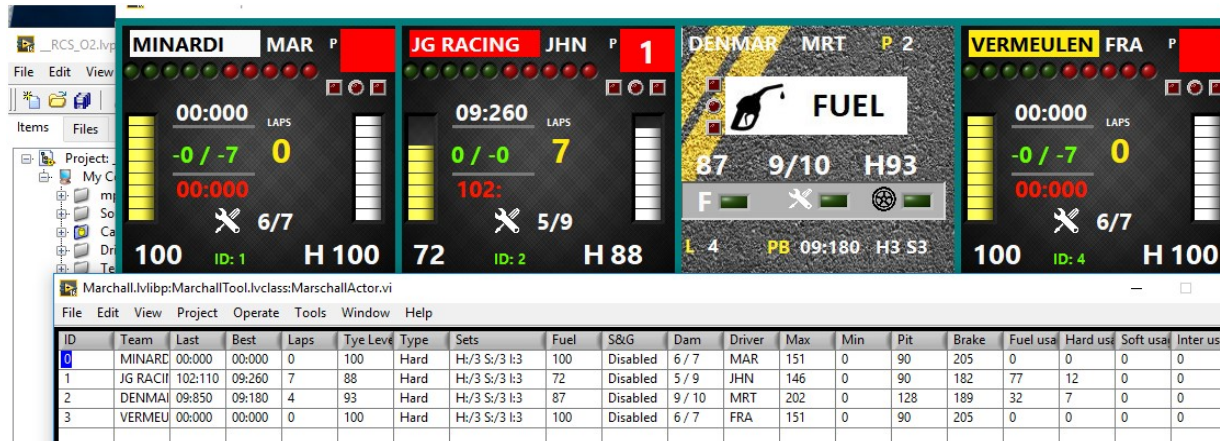
Track call : Pause the race (red flag) (Cancel = space bar)

Yellow flag: All cars safe speed (Cancel = space bar)

Stop&Go: for selected team award stop&go or drive through, or cancel a penalty.

Change tyres: a new set of hard or soft tyres

Another example below with some more data during the race;



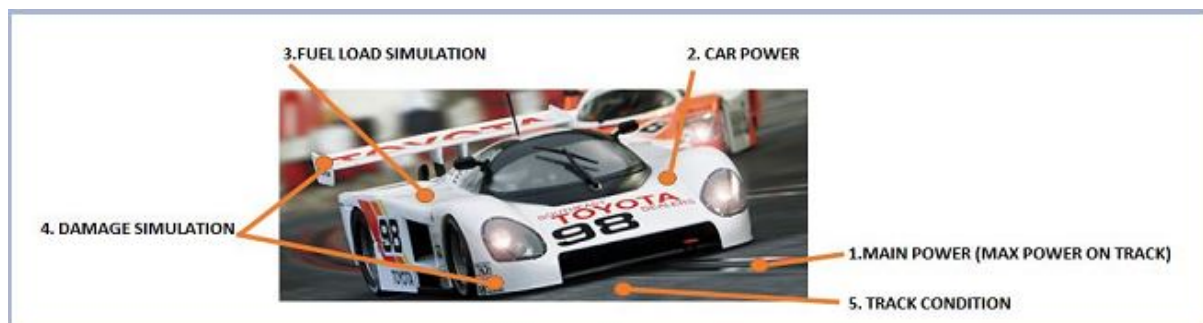
The fuel usage is the complete usage from start of session, meaning that after a pitstop it is not reset to 0 but added up. That is why the values you see compared to the dashboards are not the same. If you look at JG Racing, the fuel usage in marshall screen is 77%, while on screen he has used 100-72 = 28% so he has made a pitstop already. To calculate the average fuel usage per lap, the cumulative value is used. Same applies for tyres and damage. (Damage used is on the far right of the screen but not visible in this screenshot)

TIP:

Leave the Marshall screen open after a session for just a bit more feedback than the Result screen will give you.

POWER Settings

In RCS O2, a lot of the action is calculated using the different settings that influence the actual available power to your car.



There are **5 items** that decide and calculate the power available to your car.

In the power tab you can create and save power profiles based on the following settings;

1. MAIN POWER,

Set the slider to determine the overall main power available for all cars. If you set this to 80%, and your cars have a 100% power setting, they will get 100% of 80% power. See this as the volt regulator of a power supply.

2. CAR POWER.

Individual car power setting in car setup.

3. FUEL LOAD SIMULATION

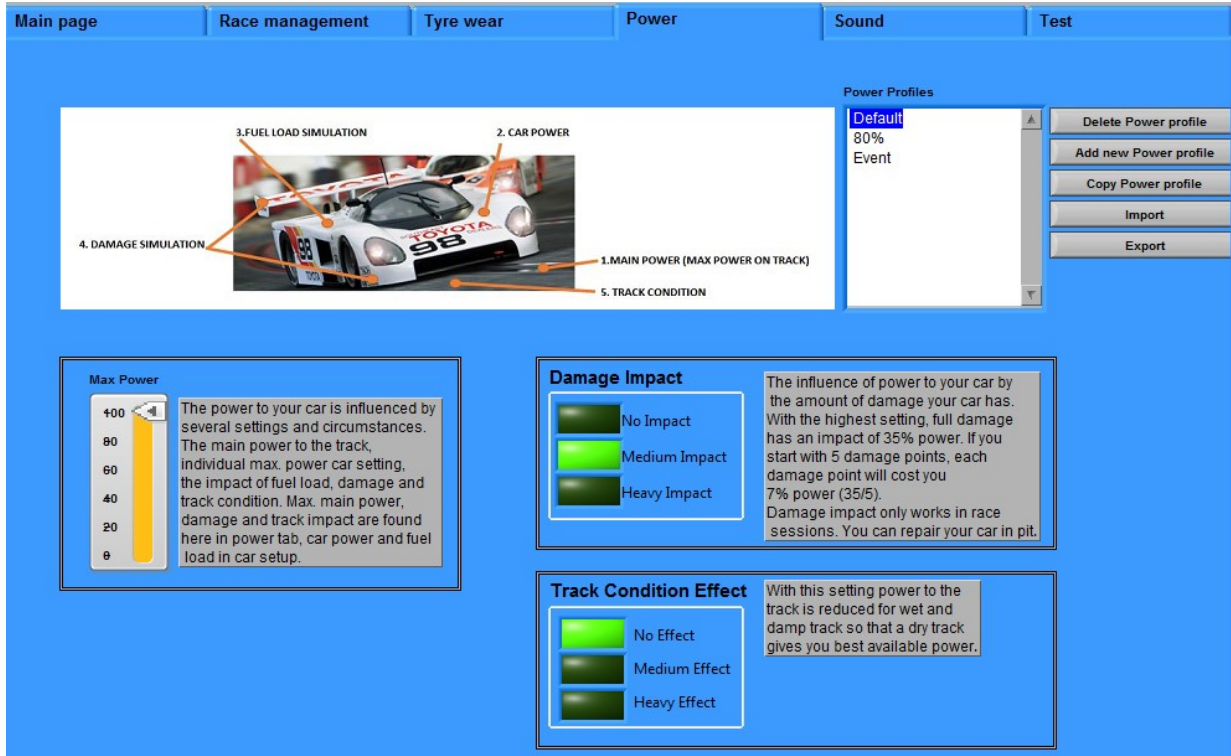
The available power to the car will increase when tank gets empty.

4. DAMAGE IMPACT

When you use the damage feature, you can decide to let the car loose power at the loss of every damage point. If you set it to 'No Impact', damage points will count but will not affect performance. If you choose 'Medium Impact', you will lose a bit of power at every impact. 'Heavy Impact' means that at each damage point you lose serious power.

5. TRACK CONDITION EFFECT. This setting has no influence on version 1.0.0.35

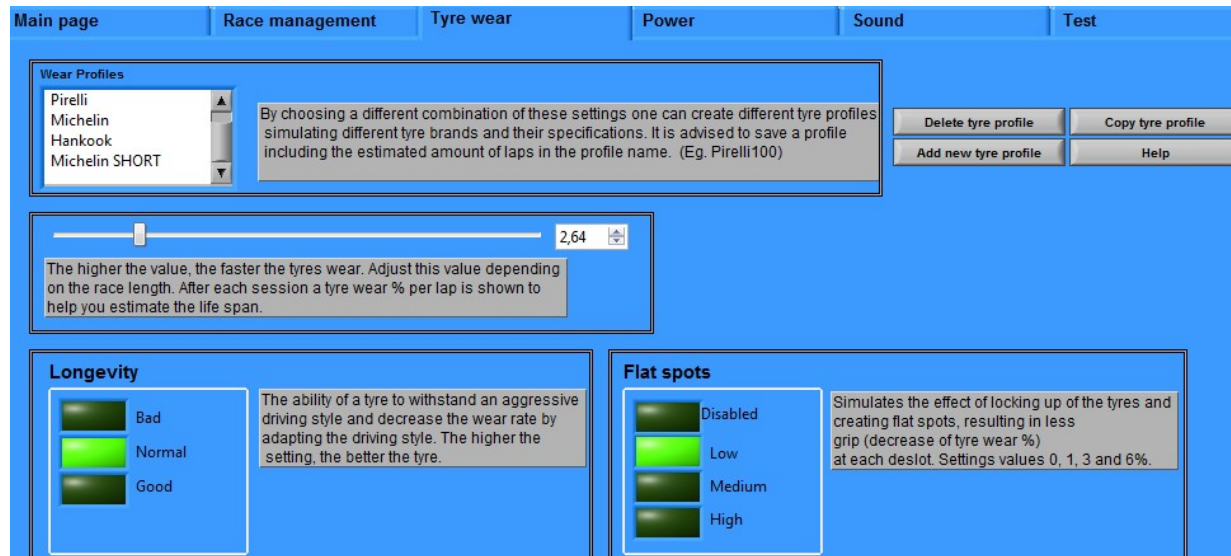
If you are happy with the settings you can save them as a power profile. The power profile can be selected as part of an event. For example, you can make a power profile ROOKIE with MAIN POWER set to max. 65%. This will calm the cars down and will help learn novices how to drive.



In the Marshall screen you can check **IN REAL TIME** the actual power to your car.

Tyre wear

In RCSO2 tyre wear is simulated by decreasing brake power related to tyre wear value. To feel this the best, you should set your brake value on the controller to maximum, as the wear will be a percentage of this setting.



On the top left of the screen you will see the current selected tyre wear profile. You can create new profiles and delete existing profiles by the buttons on the right.

Let's start with the **slider** that increases/decreases the **level of tyre wear**. The higher the value, the faster the tyres wear, adjust this value in relation to the length of the race and how many pitstops you desire for tyres. Use the practice session to see how many laps are possible with a fresh set of tyres.

TIP:*If you name the profiles logically you can then relate them to the race distance, for example '25lapsH' will tell you that with the selected profile a hard tyre will last 25 laps.*

In RCS O2 Beta we know 2 types of tyres, Hard and Soft

Hard tyres normally last **longer** than Soft tyres, but soft tyres offer more brake power. Translated to RCSO2, a hard tyre will wear slower, so lasts longer, but braking will be less effective than soft tyres.

In RCS O2, tyre wear is not per lap (as in RCS64), but based on travelled distance, like in real life. RCS O2 will measure each time loop an average of throttle applied.

With this average, RCS knows if you are pushing or you drive cautious and this has effect on the tyre wear, this makes it possible to spare your tyres if needed. The **Longevity** setting influences the impact on the tyre wear. If set to good, means cautious driving reduces wear.

As soon as a car is detected as deslotted, a certain % of extra wear will be applied, as in real life a deslot will be after a crash or slide and your tyres will not benefit from it. The **Flat spot** setting determines the amount of extra wear. You can set it off (no extra wear) or low/medium/high.

(For RCS64 for SSD users- unfortunately we can not use delay on throttle input because of the slower updatarate between car and PC _ In a possible next release we will implement a feature that will simulate the sliding effect much better-already tested)

With a different combination of settings you can create tyres with different specifications and save them as a profile (Michelin50L), making each race unique.

TEST tab

Another helpful tool is the test tab, which in fact is almost a copy of Chrono. Use this tab to test your car and controller and see if laps are registered. Note that the settings applied here for pitlane speed etc. do not change the values in the car setup, it is only meant for real time testing. All connected controllers will be displayed.



Sound Tab

RCS O2 has a lot of default sounds available, you can change the sounds by selecting them from the dropdown. Note that the car sounds are in car setup!

It is also possible to add your own sounds by selecting the add/remove sound files option, a window will appear to select your sound (WAV or MP3) for the selected category. You can turn on/off sounds for a certain category. Note that in this beta Race information, Penalty and Weather sounds are not yet available.

Background systems can add a sense of realism, make sure to try them.

