



The REAL SlotRace Experience

with

**the RaceManagment Solution
from**

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SCX Digital to PC Interface goes DIGITAL



The REAL SlotRace Experience

Introduction

This Quick Guide is having the intention to take the first "hurdles" for SCX Digital

Chapter 1 is providing a quick summary of the SCX manual and explains the basic functions. The chapter is not having the intention to replace the original manual and should only be seen as an additional help and a summary of the manual.

Tip: As the usage of each button of the terminals is not straight forward during the first few trials of the system, I printed the pages for myself on one sheet and put this beside my track.

That allowed me to have a quick view without searching the "whole" manual for the information I was looking for.

After a while you will recognise that this help is not required anymore ;-)

Chapter 2 describes the SCX Digital System with the usage of PCLC from Guy and the SCX Digital Interface from Ole.

Note: the usage of the information in this summary is at one's own risk and I am not taking any responsibility for any damage or problems caused by the usage of the information provided.

The information in this document has been proven to be working and I am using this information as well.

If there are any outstanding questions/problems, which the manual is not answering, please try the homepages from PCLC and the developer of the SCX Digital Interface first. Contacts are provided in Chapter 2.

The information in Chapter 2 is based on my personal experiences and knowledge I gained during the tests of the different PCLC Versions.

Special thanks to Guy and SEB who made this SCX Digital <-> PC Interface working. Since April 2008 there is a new interface hardware version available which provides new and enhanced options to extend the real race experience.

Any feedback is welcome to improve the information !

Have Fun !

Sven



A SCX Digital Fan

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Contents

1.SCX Quick Guide	4
1.1.Race Type.....	4
1.2.Racing Car configuration (for each car).....	4
1.3.Fuel tank size for all cars the same	4
1.4.Using of the Digital SCX Chronometer	5
1.4.1.Display Race Information after a race.....	5
1.4.2.configuration of the qualifying mode.....	5
2.SCX Digital with PCLC and SCX Digi Interface from SEB.....	6
2.1.General Information.....	6
2.2. Release description mode 2	6
2.3.Start Window from PCLC.....	7
2.4.Configuration of the Interface.....	8
2.4.1.Definition of the SCX Digital Interface.....	8
2.4.2.Debug Window.....	12
2.4.2.1.The SCX Data stream.....	12
2.4.2.2.Saving a Logfiles.....	13
2.4.3.Throttle Data window.....	13
2.5.Track Definition and configuration.....	13
2.6.Driver definition.....	15
2.7.Team definition.....	16
2.8.Car definition.....	17
2.9.Race definition and start of the race.....	18
2.9.1.New race definition.....	19
2.9.2.Race type definition.....	20
2.9.3.Race start	21
2.9.3.1.Start the race via the Parallel interface	22
2.9.4.Race Start window and Traffic light.....	24
2.9.5.Single/Team race with Segments.....	24
2.10.False Start recognition function	26
2.10.1.Recognition of a false start.....	26
2.10.2.Stop & Go Penalty process description.....	27
2.10.3.Disqualification.....	27
2.11.Race Statistic.....	27
2.11.1.Example of a race analysis.....	29
2.12. Championship and race series.....	30
2.12.1.Championship setting.....	30
2.12.2.Championship classification.....	32
2.12.3.Race series definition, load and save.....	33
2.13.Zoom function.....	34
2.13.1.Zoom function on one PC.....	35
2.13.2.Zoom function with 2 PCs via a LAN.....	36
2.13.3.Zoom configuration	37
2.14.Fuel management function of PCLC.....	38
2.14.1.Fuel Management in the Options menu.....	38
2.14.2.Calibration of the fuel level.....	39
2.14.3.Possible Pit Stop designs	43

1. SCX Quick Guide

1.1.Race Type

- a) Race with PitTerminal and increased lap counting
 - press for 2 sec **MODE** + 2 x **SELECT**
 - display shows (...), start race : press for 2 sec **START/STOP**
- b) Race with PitTerminal and decreased lap counting
 - press for 2 sec **MODE** + **SELECT** + **MODE** + **SELECT** (Choose amount of laps) + **MODE**
 - display shows (...), start race : press for 2 sec **START/STOP**
- c) Race without PitTerminal and increased lap counting
 - press for 2 sec **MODE** + **MODE** + 2 x **SELECT**
 - display shows (...), start race : press for 2 sec **START/STOP**
- d) Race without PitTerminal and decreased lap counting
 - press for 2 sec **MODE** + **MODE** + **SELECT** + **MODE** + **SELECT** (Choose amount of laps)+ **MODE**
 - display shows (...), start race : press for 2 sec **START/STOP**

1.2.Racing Car configuration (for each car)

(Note: only working with PitTerminal)

- a) Fuel level
 - press for 2 sec **MODE** + 3 x **MODE** , 2 x **SELECT**(Fuel level) + **MODE** then display jumps automatically to brake intensity
- b) Break intensity
 - press **SELECT** (brake intensity) + **MODE**
 - display shows (**CAR**)

put car into the Pitlane and press the L/C button on the throttle

1.3.Fuel tank size for all cars the same

- press for 2 sec **MODE** + 4 x **MODE** + 2 x **SELECT**(Fuel level) + **MODE**
- display shows (...), start race : press for 2 sec **START/STOP**

1.4.Using of the Digital SCX Chronometer

1.4.1.Display Race Information after a race

- press for 2 sec **MODE** , 5 x **MODE**
 - display is showing **RES**
 - press **SELECT** , display shows fastest lap of each driver
 - press **SELECT** , display shows average lap time of each driver
 - press **SELECT** , display shows the duration of the whole race
 - press **SELECT**, display shows the time, lap distance for each driver to the winner of the race
-
- press for 2 sec **MODE** to start the race with the same setting again
 - on the display you will see (...)

1.4.2.configuration of the qualifying mode

- press 2 sec **MODE** , 2 x **MODE**
- display is showing **QUA**
- press **SELECT**
- display is showing **LAP**
- press **SELECT**
- display is showing **001**, choose now the amount of qualifying laps
- press **SELECT**
- display is showing **PLA**
- press **SELECT**
- display is showing **001**, choose now the amount of driver
- press **MODE**
- display is showing (...) and the Chronometer is showing **M-1**
- press **START/STOP** to start the qualifying session

Note: further functional details can be found within the original manual

2. SCX Digital with PCLC and SCX Digi Interface from SEB

2.1. General Information

This introduction should help to take the first hurdles for the SCX Digital Interface from SEB and PCLC Guy.

The following chapters are explaining the first configuration steps to take and points where the user have to take care of to ensure that the interface and PCLC are working without any problems.

Additional information which is not explained in this document can be found via the homepage from PCLC and SEB



Detailed Information about PCLC http://www.pclapcounter.be/scx_digital.html



Detailed Information about the Interface from SEB: <http://www.virklund.dk/scx/>

2.2. Release description mode 2

Since April 2008 a new interface from SEB has been released. The hardware solution has been redesigned which provides more functionality then the former interface. Following function were added:

- Start the race via the MCU by pressing the Start Button of the MCU
- Pause/Resume a race via the Light-Button of the MCU
- Presenting the SCX Digital Time within PCLC. Especially for interest for users of the SCX Digital Chronometer which allows to SYNCH the SCX Digital time with the SCX Digital time

Pos	Driver Picture	Driver	Lap	Lap time
1		Philip	1	6.76
2		Holger	1	7.09
3		Jürgen	1	14.70
4		Chris	1	24.10
5		Sven	1	27.50
6		Freddy	1	30.50



In the pictures above you will recognise, that PCLC is taking the SCX Time from the SCX Digital System. It provides an additional view for the time display which is now in synch with the SCX Chronometer. All statistics, calculation etc are based on SCX Time when the appropriate option has been chosen (see chapter 2.4.1)

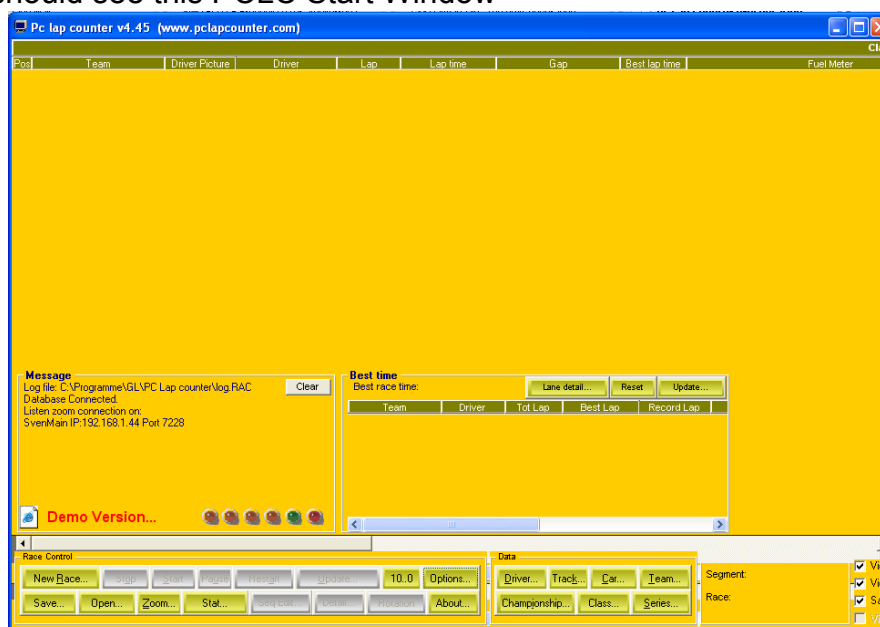
Note: it was possible to extend the “Start-the-Race” via the MCU Startbutton for the former interface (called mode 1) as well and is available since PCLC Version 4.47

2.3.Start Window from PCLC

If you have installed/connected the interface as described in the enclosed guide and PCLC is successfully installed , you will be asked to choose language and enter your registration code.

Note: If you chose "CANCEL", then PCLC runs in demo mode. It is fully functional but it will stop counting after 10 laps.

Then you should see this PCLC Start Window



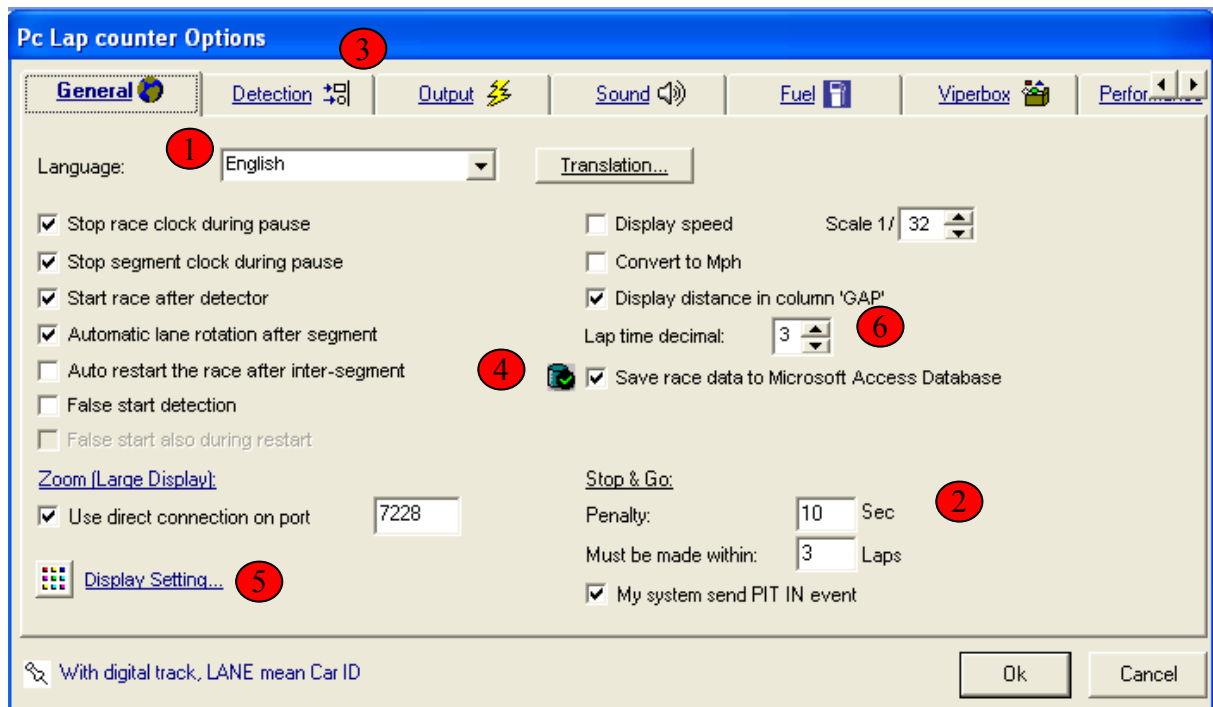
I will explain the configuration of the interface and the appropriate parameters in the next few chapters to ensure that the solutions will work without a problem and allow the user to trouble shoot themselves to isolate possible problems.

The first step is to configure the SCX Interface

2.4. Configuration of the Interface

2.4.1. Definition of the SCX Digital Interface

If click in the Main PCLC window the Options button, you will get the following window being displayed.



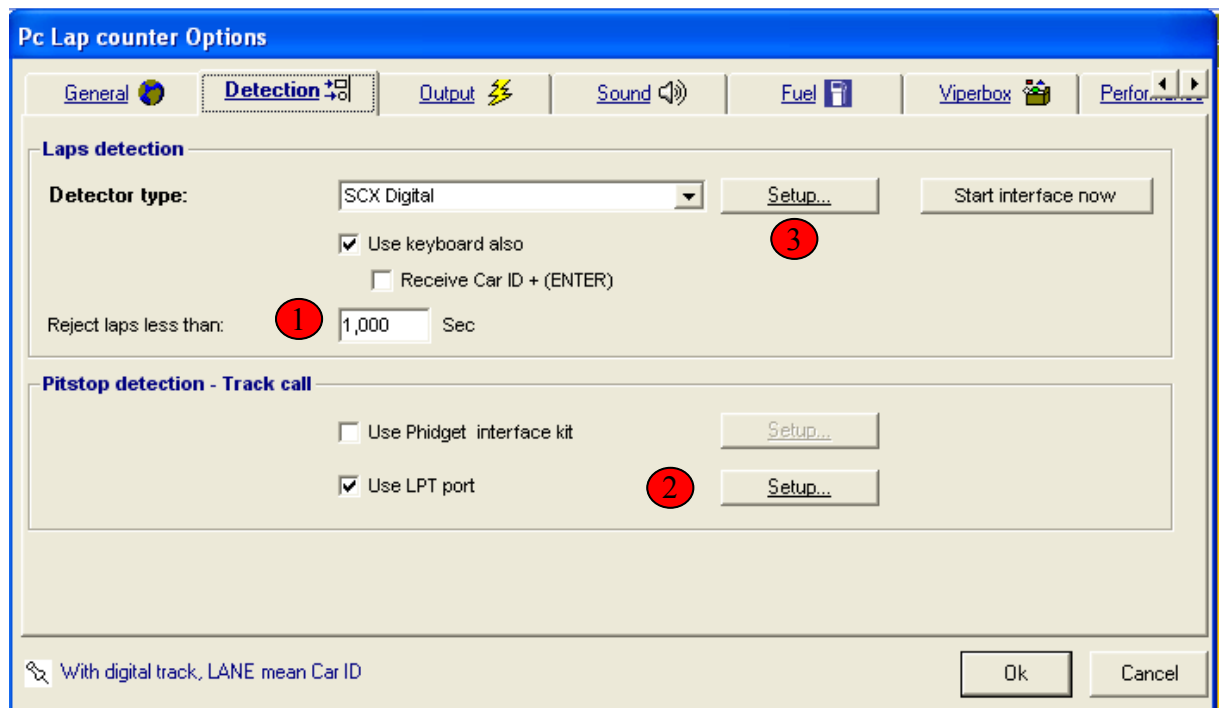
- ① Definition of the language (if you have not done already on the first start ;-)
Note: You can change each word or translation by clicking on the "Translation" button
- ② Definition of the Stop & Go Penalty for "False Start" recognition
 - Penalty: time, the driver have to wait in the pit
 - Must be made within: numbers of laps where the drive has to get into the pit to have his penalty. If laps are decreased to "0", the driver will be disqualified

Further information about the false start recognition function and how these parameters should be read, will be explained in chapter 2.10 !

- ④ **Important !** If a race should be recorded in the race database to allow detailed statistical investigations, you need to activate it here.
- ⑤ If you want to change the colours of the main window, you can access the configuration menu by clicking this link.

To get into the Interface configuration menu, you need to click on the "Detection" Tab **3**

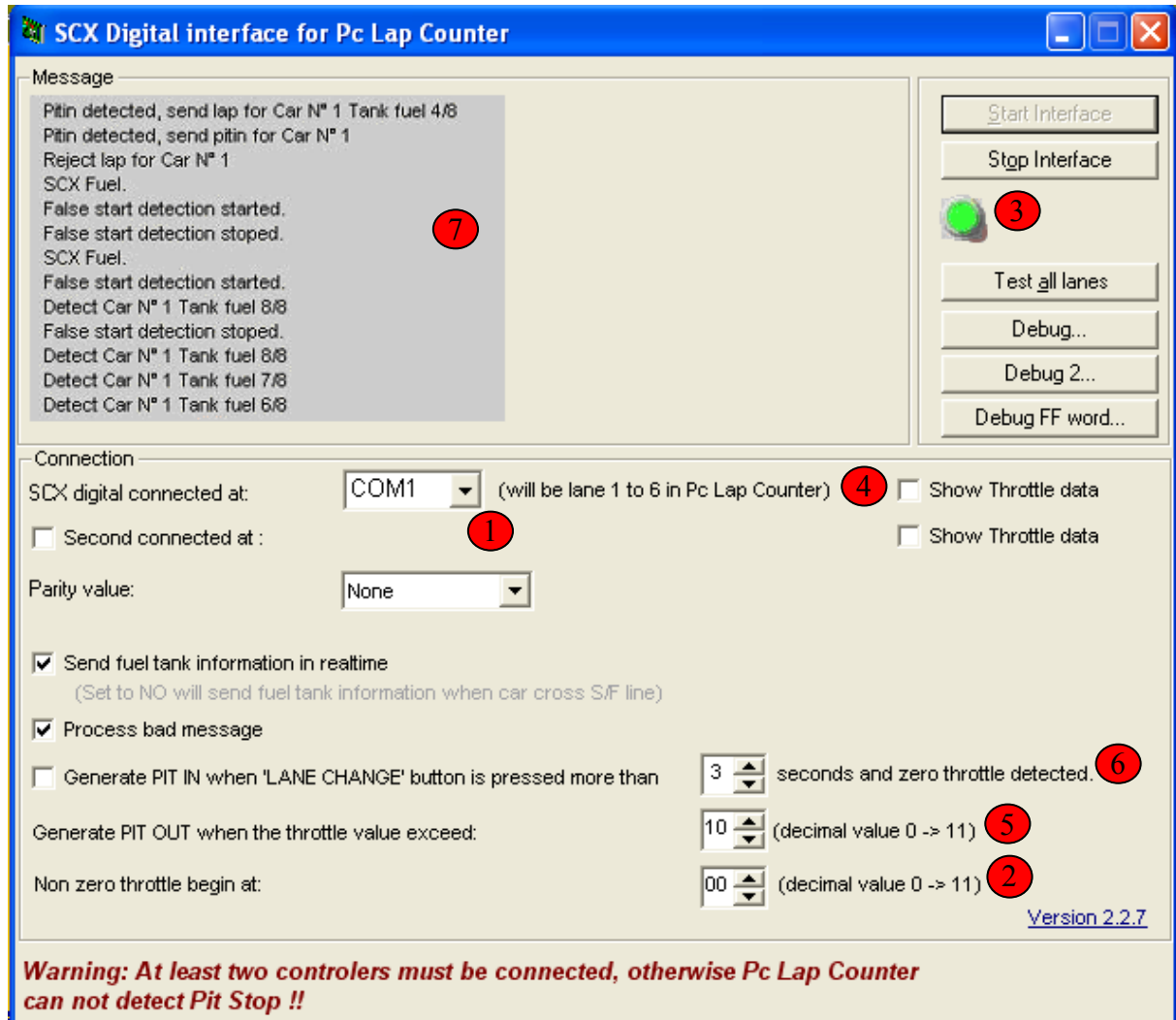
Details of the interface and further specification are defined via this window.



- 1** Via this time, you define the time where PCLC accepts a valid lap.
Why is this important ? It has been experienced that incorrect very small lap times can occur for different reason.
i.e. the driver is cheating :-) and after the driver left the track, the driver puts the car back close to the S/F line, creates a very small lap time and suddenly has an unrealistic lap record. Or a defective reed can cause an incorrect, unrealistic time. Although this is very, very rare
Note: I have defined the time 1 sec below the lap record.
In the chapter 2.4 (Track definition) another minimum lap is defined.
The difference will be explained in that chapter.
Note: for the SCX Digital System these times should be the same
- 2** PCLC offers a very comfortable solution to Start/Stop/Pause a race remotely via an external box connected to the parallel interface. By clicking setup, you will get to the appropriate config window (see chapter 2.9.3)
Since Version 4.47 the race can be started directly via the Start button of SCX Digital MCU.
- 3** Via this "Setup" button you will access the detailed SCX Digital Interface configuration

Explanation next page.

The SCX Digital Interface window below is taken for MODE 1 and almost the same view will be available in mode 3. 2 additional items have been added which are described below



- ① Via this Drop Down Menu, you can choose the appropriate serial port, where the Interface is connected to. If PCLC is recognising the interface, the control button ③ is changing to green.
In case it is not working, you can experiment with the different Parity Values. It is **VERY** important that there are **NO** errors on the interface to support all functions which are delivered by PCLC.
If no option is solving the issue, there is no way around it and you need a serial to USB Interface.
Note: the serial Interface is configured by PCLC to 115k Baud, 8 bits, no parity, 1 Stop bit, so no config necessary by the system control.
Note: I am using the USB/Serial Adapter from Vivanco (www.vivanco.de), Product ID 10752 as I wasn't able to get a stable connection with my PC.

PCLC provides the possibility to connect to 2 SCX Digital Interfaces to one PC. That will allow us to have a race with 12 drivers on 2 same tracks at the same time :-)

Car numbering for Interface 1 is: 1 - 6

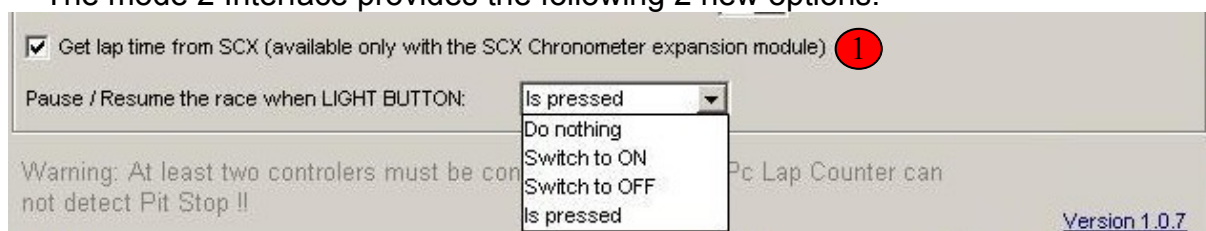
Car numbering for Interface 2 is: 7 - 12, whereby Car ID #1 of the 2nd track represents the Car number 7 within PCLC, Car ID #2 equals to 8 etc

Process bad message should be always ticked. That will allow PCLC to recognise lap counts even if the interface is not working correctly (incorrect data format)

Note: PCLC is counting if the data stream is not correct, but you would recognise errors when driving into the Pitlane.

- ② **Non Zero Throttle** should be always "0" and is used for the false start recognition function. Meaning as soon as somebody is touching the throttle during the traffic light phase even very carefully, it will be recognised as an "false start"
- ⑤ **Generate PIT OUT** : this value defines which level of the throttle value needs to be reached the PCLC is recognising that a car wants to leave the Pit after refuelling. Values between 3-5 has been recognised to be good values.
Note: if the values are to small, PCLC generates directly after the car drives over the Pit In Track piece a PitOut Signal and the Pitstop is not recognised correctly.
- ⑥ This value is necessary if PCLC is used to calculate the fuel usage. It defines how long the LC button needs to be pressed to recognise a Pit Stop request.

The mode 2 Interface provides the following 2 new options.

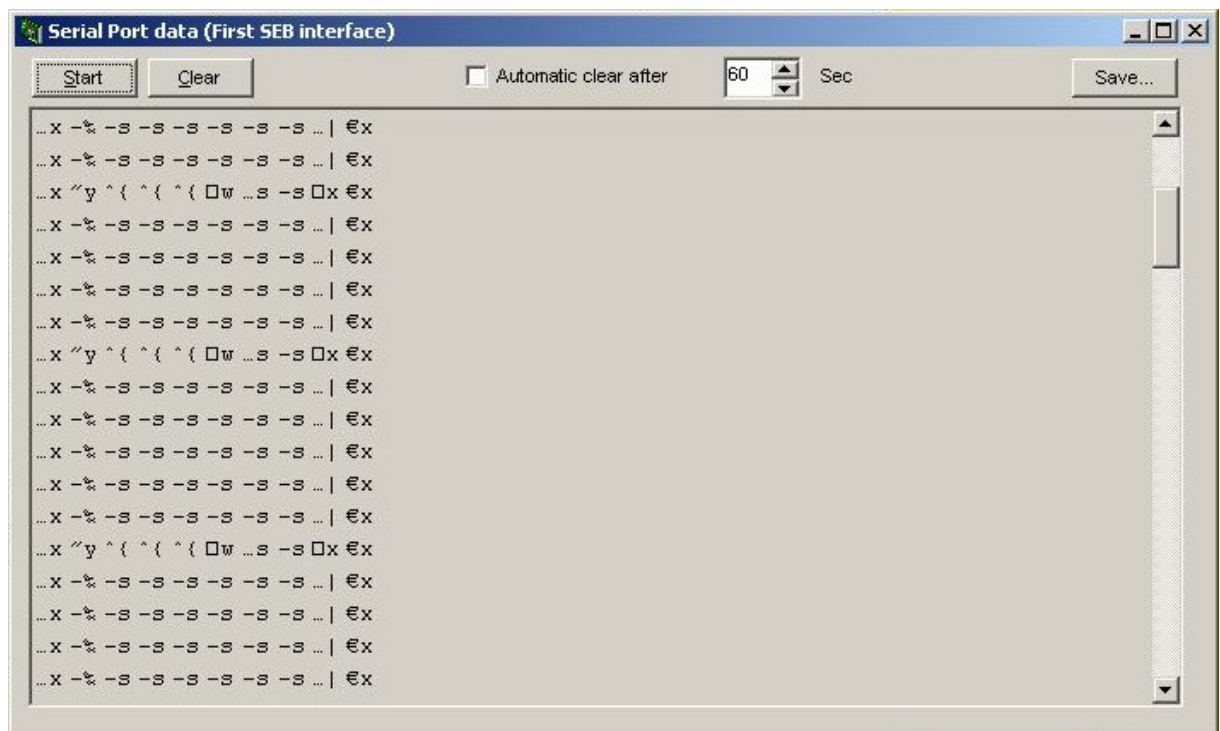


- ① If you activate that option, PCLC is not measuring the real time anymore and takes the information from the SCX Digital system.
Tip: If you choose the SCX Digital Option, you should change the lap time decimal value ⑥ (see page 8) to 2 as SXC Digital provides only 2 digit after the comma.
- ② If you choose this Option, you are able to pause and resume the race by pressing the LIGHT button on the MCU.
If you choose the option is pressed, the race will be paused or resumed. This function is especially for interest to combine it with the false start function by activating the "False Start during Restart" function as it supports a controlled restart when the race was paused.

2.4.2.Debug Window

The debug window is playing a very important rule in isolating possible setup mismatches and to isolate the fault.

It can be used to see whether the interface is working correctly and in case an error has been recognised to save a logfile for the programmer to reproduce the fault.



If you click on the "Start" button, you will recognise a data stream even if no car is running on the track.

2.4.2.1.The SCX Data stream

As the data stream is complex to read and analyse it was decided to provide the information only in an encrypted way to allow the customer to focus only on the data stream format.

In the example of the window above you can see a correct working interface with the appropriate data stream.

Every data word has the same length and should look similar to the pattern above. If you receive error messages in the status window of the SCX Digital (see **7** page 10) or a strange format of the datastream above, you have an error on the interface and PCLC would not work correctly.

The interface problem might be only solved by using a serial/USB interface adapter.

2.4.2.2. Saving a Logfiles

If you do recognise a reproducible error, you can help the developer to improve the interface. A feature has been implemented to save the data stream and allows you to capture the problem.

In case you are able to reproduce a fault, the best solution would be to tick the "Automatic Clear after" 60 sec (default value). By doing this, a running log file is created continuously and the buffer is cleared every 60 sec. That means you can have your race and as soon as the fault occurs, you quickly access this window, click the "Stop" button and save the log file.

This information can now be send with an explanation to the programmer of PCLC, who is able to reproduce your fault to isolate a potential problem.

2.4.3. Throttle Data window

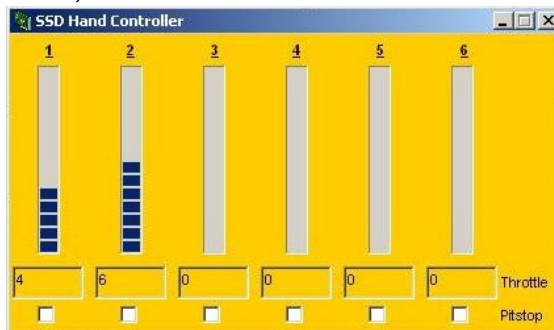
If you click point ④ , page 8 in the SCX Digital Interface config window, a throttle data window is being displayed.

It is showing the throttle values of each throttle in real time.

This function was heavily used for the development of the Pit stop Penalty function and it was decided to keep this option in the final version.

You can use this function to check the functionality of each throttle now to see whether a throttle is broken or needs cleaning.

If now throttle is pressed, all values HAVE to be "0".



If the guide has been followed and the interface has been configured as described, the interface should work now without any problems :-)

Note: Normally these configuration steps need to be performed only one time. Every new version or update of PCLC can be "just" reinstalled over the existing PCLC version. All configuration parameters will not be overwritten.

In the upcoming chapters I will now explain the track definition, driver and team definition and finally able to start our 1st race.

2.5. Track Definition and configuration

In order to allow PCLC to correctly display the times and speed in the correct scale, you have to define your track one time.

You can access the track setting function via the Main PCLC Screen (chapter 2.2) by clicking on the "Track" Button.

Track	Length (Meters)	Min laptime (Sec)	Alert Laptime (Sec)	Best lap Time
Spa	20,00	2,000	20,000	

New Delete Print Best lap time... Reset best lap... OK Cancel

If you click on "New", a new line will be displayed and you can enter the name, the length, minimum lap time.

The "Alert Lap time" can be defined if the user wish to be alarmed in case the lap time is above a certain value.

Only an alarm tone will be heard in case this happens.

Note: the "Best lap time" will be automatically stored during a race with the drivers name and the appropriate lap time. In case you would like to delete the save lap times, you can use the "Reset best lap" button to delete.

More detailed explanation of Min lap time (not important for SCX Digital !):
As mentioned in chapter 2.4.1 there are 2 options in PCLC where the user can define the "Min lap time ". This is just to quickly explain the reason but for SCX Digital they should be the same.

Min lap time available via Options:

is the driven lap time smaller then the defined min lap time, the lap is not counted/ignored and NO alarm tone is generated.

Min lap time in the track setting:

is the driven lap time smaller then the defined min lap time, the lap is not counted and an alarm tone is generated.

Why 2 Options ? There is other Interface Hardware (not the SCX Interface), which provides incorrect lap information (i.e. 1 good lap and directly after it another one due to malfunction of the Hardware). There were customers who did ask for both Options to hear the difference via an alarm tone.

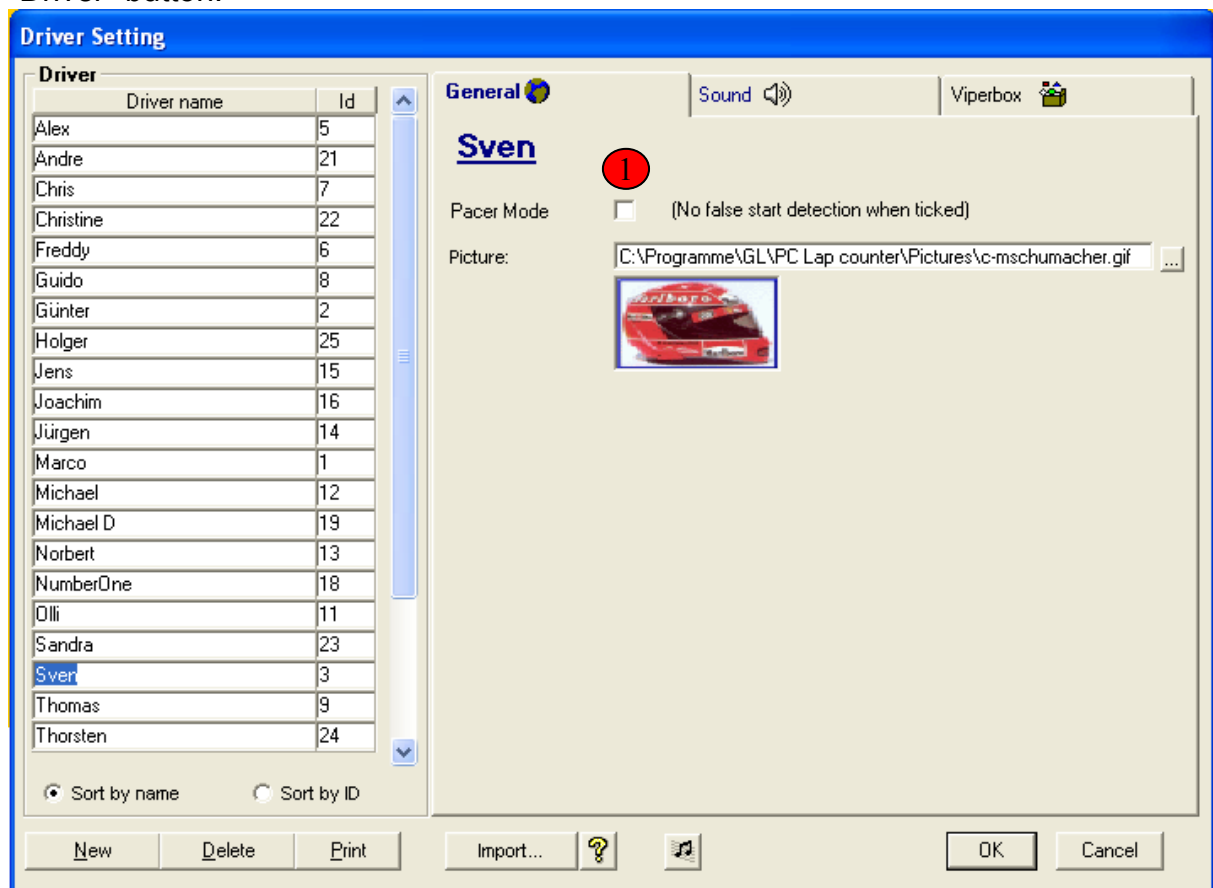
Don't ask me why ???? ;-) Anyway, not relevant for SCX Digital, just keep them the same.

Tip: If you are not aware of the length of your track, then you have to calculate the length by yourself or use a track designer. I can only advise "Trackpower" to be a very good track designer for SCX Digital which is available via www.trackpower.net

2.6.Driver definition

If you have defined your track , you need to define the drivers.

The Driver Setting window is available via the Main PCLC Window and clicking the "Driver" button.



You create a new driver by clicking the "New" Button.

Tip: The INSERT key can be used to add a driver also. It is quicker ;-)


You can assign different scenarios tone, i.e. pit stop entry and leave etc, a different tone for each driver and the setting window can be accessed via the "Sound" tab.

I am using the standard values and have never changed it. As if you drive with 6 drivers, I bet that you switch off the tones anyway ;-)

Via "Picture" Option you can assign a picture to each driver, but make sure that the file size of the picture is kept as small as possible as to large picture caused delay in

lap counting. Doesn't mean that the lap might not be counted but the increased lap number can be displayed 2 sec later.

The ID is not relevant for SCX Digital as the driver ID is associated with the Car ID and is fix.

-  This Option is very important if you don't want a false start detection for this car. This is important if you use the Safety Car from SCX.

2.7.Team definition

If all drivers are defined, you have the possibilities to setup different teams with the drivers to allow team race events.

The Team Setting window is available via the Main PCLC Window and clicking the "Team" button.

PCLC offers different solutions for team racing:

- a: you define a fix segment time whereby the race is paused after the Segment has elapsed. The driver can change now and the race is restarted.
- b: you can have a race coordinator who could use the update function during a race and change the driver accordingly.

For SCX Digital the following scenario would be possible:

Driver is driving into the pit, new driver is taking the throttle and announces the name to the race coordinator.

The advantage of the 2nd Option is that a team can decide the time when a driver change will take place and remains full flexibility

Team Setting

Team name	Id
Team 1	1
Team 2	2
Team 3	3

1

New Delete Print

Import... ?

Driver list for Team 1

Driver	Shift Driver
Fahrer 1	Fahrer 2
Fahrer 2	Fahrer 3
Fahrer 3	Fahrer 1

2

Each driver must drive at least (HH:MM):

Min: 00:01 Max: 00:02

New Delete

OK Cancel

3

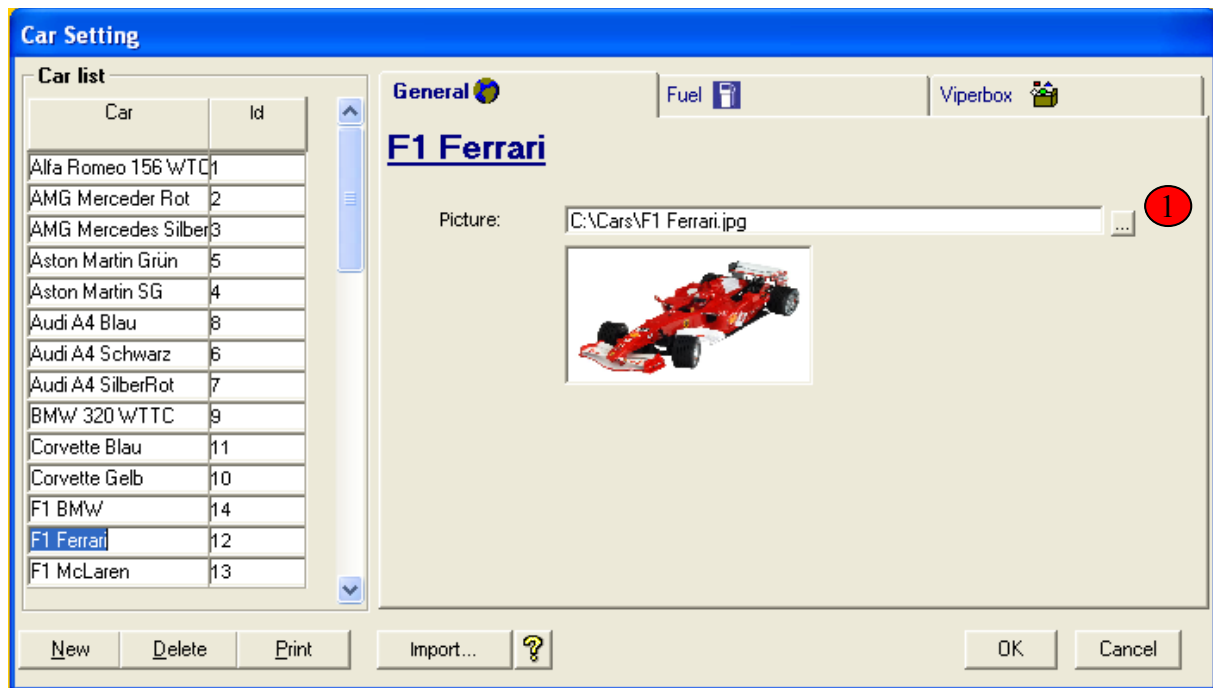
- 1 Via "New" you create a new team
- 2 Via "New" you add a new driver to the team by choosing the driver from the drop down menu. All drivers defined via the previous chapter are listed. If all drivers are defined, the shift order can be defined via 3

In the "New Race" Setting later on , the team and the start driver can be chosen.

2.8.Car definition

Now you can define your available cars and you can assign a car later to a driver.

The Car Setting window is available via the Main PCLC Window and clicking the "Car" button.



Via "New" a new line will be create where you can enter now the name of the new car.

If you would like to add a car picture, you can choose a picture my using the drop down arrow ❶

Tip: I have made picture from all my cars, but there is an easier way to get a car picture. Just browse to an online store and save the appropriate picture. The big advantage is that the pictures do have in most of the case the correct picture size already :-)

Since Version 4.45 PCLC is able to do the fuel usage calculation whereby the fuel level and configuration for each car can be configured via the "Fuel" tab. This function is particularly a big advantage for users without the pit terminal as they do have now the opportunity to have race and pit stop simulation as well. Even for users with the Pit Terminal this function is very convenient for training purposes. Just switch off the fuel mode on the SCX Terminal. Set 3 or more "Ghost Car" with a fixed speed (tape to fix the throttle level ;-)), no fuel usage defined in PCLC and have your own car defined to use fuel.

This subject is described in details in chapter 2.14

2.9.Race definition and start of the race

So, now you are ready to start your first race :-)) but before we can start, you need to define the race type, i.e. lap limited of time limited

2.9.1.New race definition

The Race Setting window is available via the Main PCLC Window and clicking the "New Race" button.

Lane	Driver	Team	Rotation Lane	Car	Color	Pitstop laps	Fuel	Tank limit
1	Alex	(none)	1	Ferrari	1	0		100
2	Andre	(none)	2	Lola	2	0		100
3	Christine	(none)	3	Porsche	3	0		100
4	Freddy	(none)	4	Ferrari	4	0		100
5	Guido	(none)	5	Ferrari	5	0		100
6				Ferrari	6			
7				Ferrari	7			
8				Ferrari	8			
9				Ferrari	9			
10				Ferrari	10			
11				Ferrari	11			
12				Ferrari	12			
13				Ferrari	13			
14				Ferrari	14			
15				Ferrari	15			
16				Ferrari	16			
17				Ferrari	17			

- 1 In this column you define the driver for the race.
If you click on the name, you can choose the appropriate driver from your driver list.
Note: the lane is the appropriate Car ID
Note: the Safety Car has to be always defined on lane 6 if you have the car running in the Safety Car mode.
- 2 If you are planning to have a team race, you should choose the team BEFORE the driver. As only driver will be displayed in the driver window which you have assigned to the chosen team. In the initial definition you are choosing the start driver.
- 3 Via this Option you can choose now the car of the driver for the race.

Note: If you have chosen the Option to save the race in the database, these information will be stored in the database.

Via 4 you define now the race type !

2.9.2.Race type definition

The screenshot shows the 'Race setting' dialog box. At the top, there are tabs for 'Driver/Team', 'Race type', and 'Fuel'. The 'Race type' tab is active. Below the tabs, there are fields for 'Track' (Geisenhausen), 'Length' (20 M), 'Min lap time' (2 Sec), and 'Alert lap time' (20 Sec). Below these, there are 'Option' fields for 'Start after' (05 Sec) and 'Auto pitstop length' (10 Sec). The 'Race' section has a 'Championship' checkbox (checked) and a 'Grand prix' dropdown (F1 - Race No 1). Under 'Lap limited', there are fields for 'Nb laps per segment' (100) and 'Number of segments' (1), with a checkbox 'All driver must make 100 laps'. Under 'Time limited', there are fields for 'Duration', 'Segment of', 'Number of segments', and 'Inter-Segment of', all with time input fields. There are checkboxes for 'Qualifying session' and 'Practice session'. A 'Race name' field contains 'Testrace'. A 'Segment options' section has checkboxes for 'At all segment end, all the drivers must finish their lap' and 'At the race end, all the drivers must finish their lap' (checked). A checkbox 'Change serie at each end of segment' is also present. At the bottom, there is a note 'With digital track, LANE mean Car ID' and 'OK' and 'Cancel' buttons.

- 1 Here you are choosing now your own track !
- 2 In the Race setting you define the type of the race and decide whether the race is Championship race and whether it will be lap or time limited.
- 3 My advise would be to have this Option ticked and the race is stopped after all cars finished the lap when the winner passed the S/F line.

If you want to drive a championship race , you need to tick the appropriate box. And then your are able to choose the cup and the race.
Lap limited or Time limited settings and Segments Settings will be set automatically as defined.

Note: More details regarding Championship definition and setting can be found on Chapter 2.12.

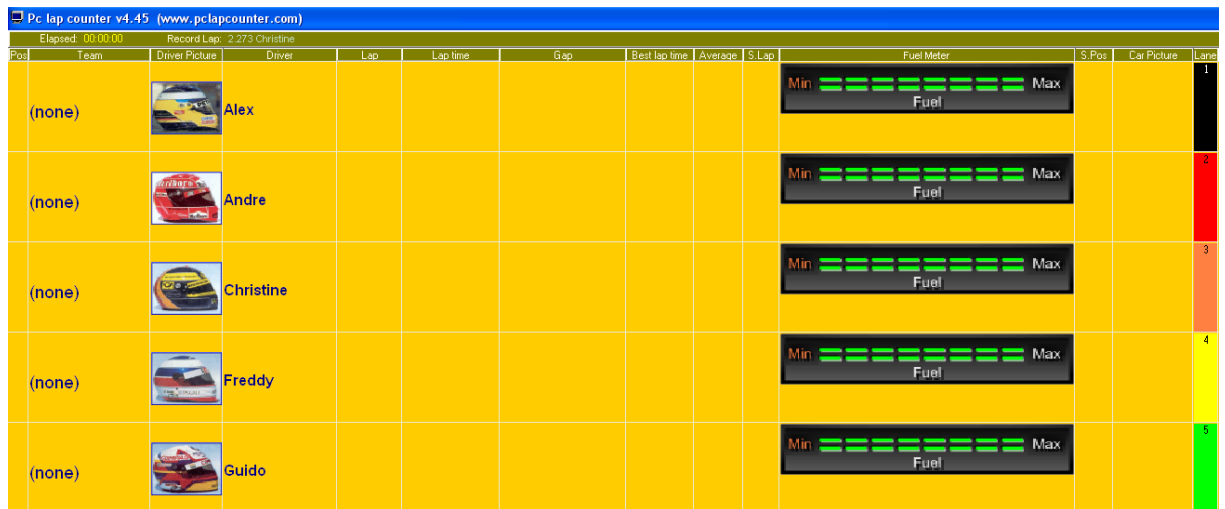
Note: In case of have the “Practice session” Option activated the points will not be saved in the Championship.

Under “Race name” you can enter a unique name which will allow you to identify your race later in the statistic function.






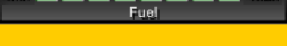




By pressing the “OK” button all setting will be saved and the race could begin.

2.9.3.Race start

Now where the race type is defined , the race window from PCLC should look similar to the picture below.



The screenshot shows the PCLC software interface with a race window. The window has a blue header bar with the text "Pc lap counter v4.45 (www.pclapcounter.com)". Below the header is a table with the following columns: Pos, Team, Driver Picture, Driver, Lap, Lap time, Gap, Best lap time, Average, S.Lap, Fuel Meter, S.Pos, Car Picture, and Lane. The table contains five rows of data for drivers Alex, Andre, Christine, Freddy, and Guido. Each row has a corresponding fuel meter graphic in the Fuel Meter column. The background of the table is yellow.

Pos	Team	Driver Picture	Driver	Lap	Lap time	Gap	Best lap time	Average	S.Lap	Fuel Meter	S.Pos	Car Picture	Lane
(none)			Alex							Min  Max Fuel			1
(none)			Andre							Min  Max Fuel			2
(none)			Christine							Min  Max Fuel			3
(none)			Freddy							Min  Max Fuel			4
(none)			Guido							Min  Max Fuel			5

Note: The column setting, background colour, font size etc can be changed via choosing Option in the Main PCLC window and you will find in the left bottom corner a “Display setting” link.

You can start the race by just clicking the green “Start” button and the race will be started.

Tip: PCLC provides the possibility to remotely start, stop or pause a race via push button box which is connected to the parallel interface.

You “just” need to build a box with push-button and shorten the appropriate Pins of the Parallel Interface with GND (Pin 25).

NOTE: Since PCLC Version 4.47 you can start a race by pressing the START Button on the SCX Digital MCU. This will start the traffic light function automatically, which means no remote box or clicking the “Start” button in PCLC is required.

The start function is available in mode 1 and mode 2.

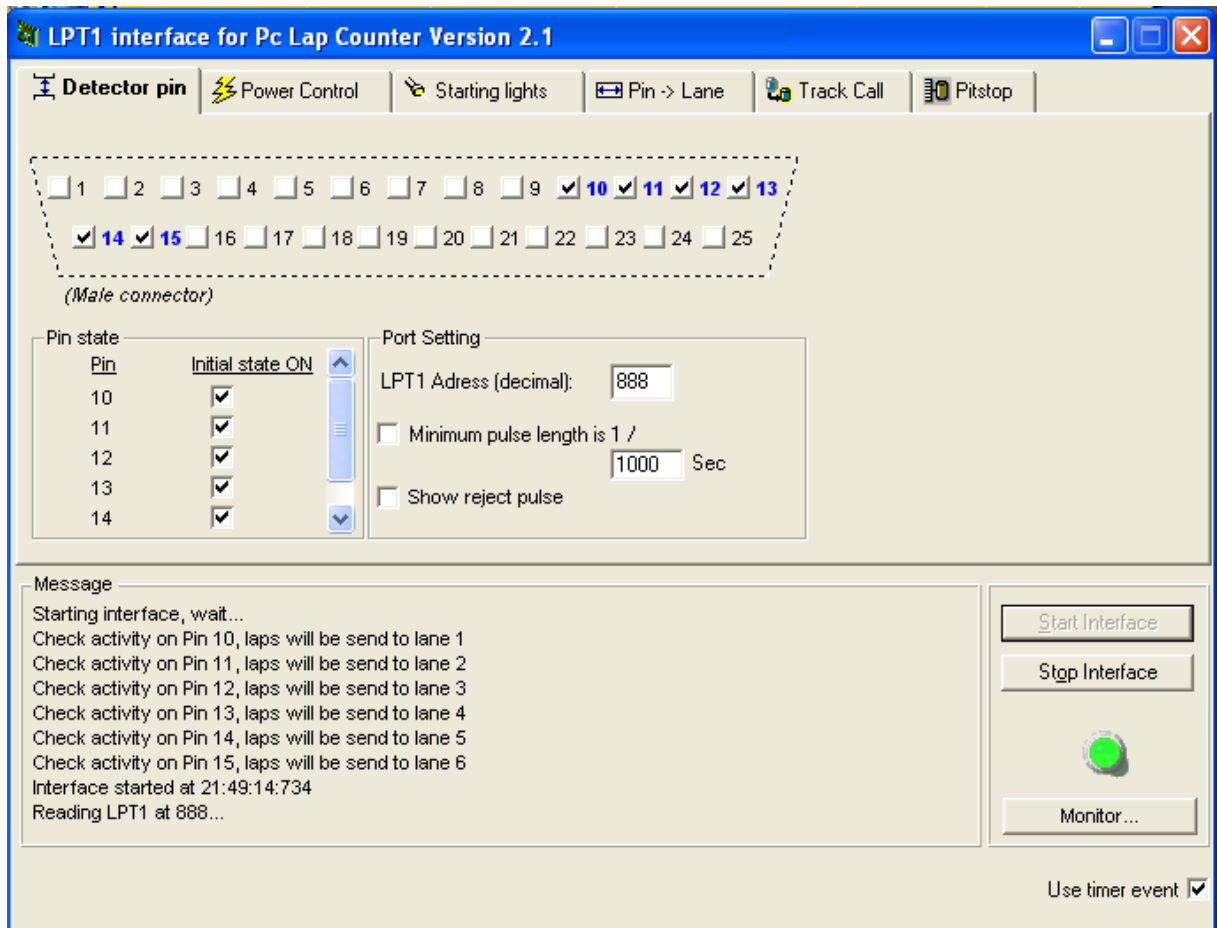
The race can be paused and resumed by pressing the light button if configured in the Interface menu correctly. The pause/resume function is only available with the mode 2 interface.

However if a customer wishes to continue the remote start/pause/resume solution via the parallel interface, the description below remains in the manual.

2.9.3.1. Start the race via the Parallel interface

I will now describe what you need to do to allow PCLC recognising signals via the Parallel interface and how the configuration needs to be performed.

You can reach the Parallel Interface setting window by choosing Option on the main window (see Chapter 2.2), then choose the “Detection” tab and click the “Setup” button besides the Parallel Interface option.



Via “Pin state” you are choosing the Pins where you want to associate an action.

Under “Port Setting” you provide the Parallel Port ID where you have connected the box.

Normally LPT 1 is always dec 888, hex 378

Note: if you choose LPT2 the values are dec 889, hex 379 (no guarantee !)

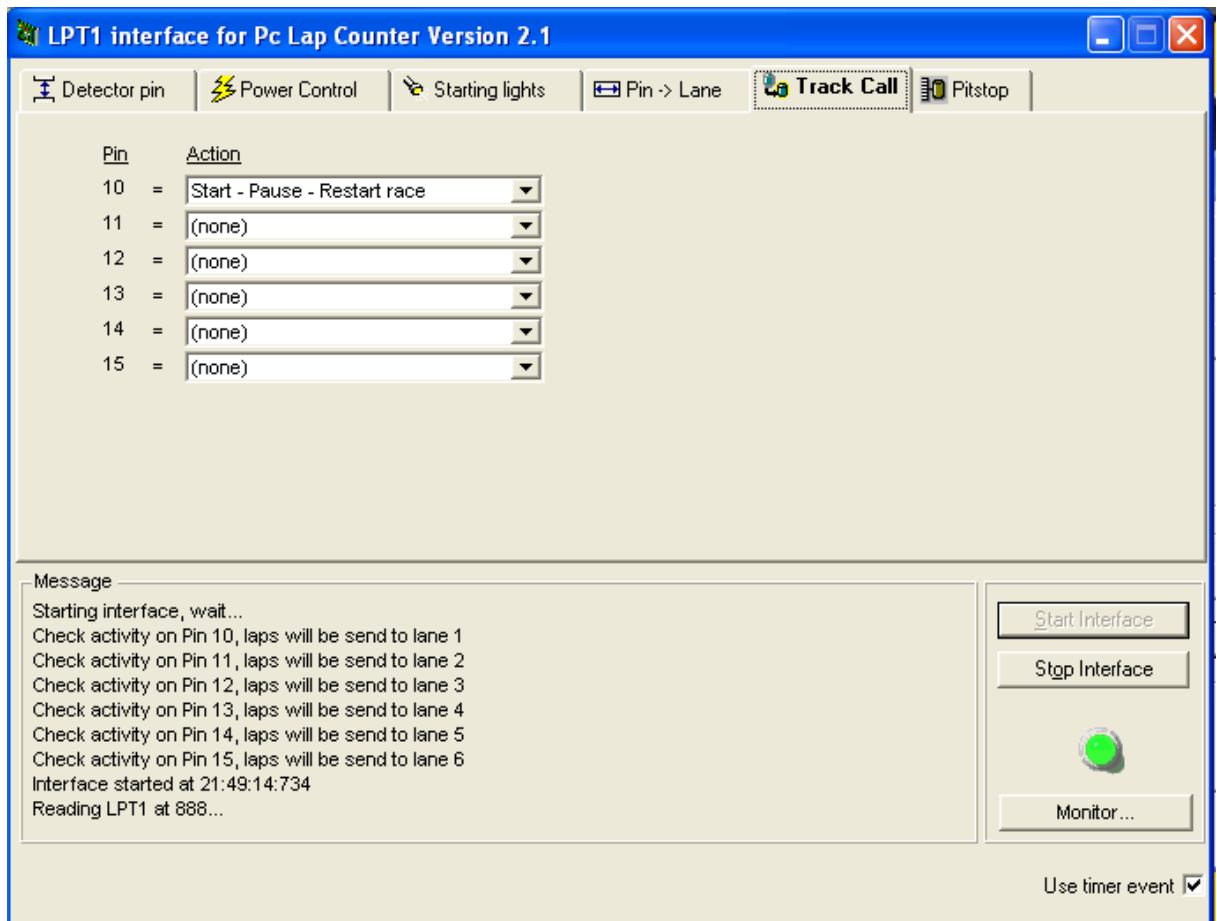
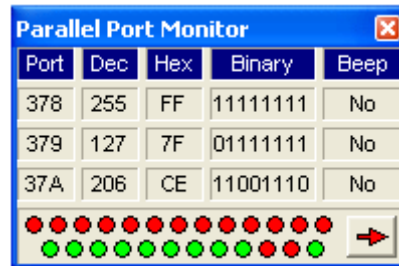
Note: Pins 10 - 15 can be used as Input for a Remote control function.

Note: PCLC provides a Parallel Port Monitor (available via the Program path) which you can use to test the function.

For my setup I can't not use Pin 12-14 for whatever reason. Perhaps somebody can help me ☺

I assume it depends on the type of the parallel Interface you have.

This is a picture of the Parallel Port Monitor !



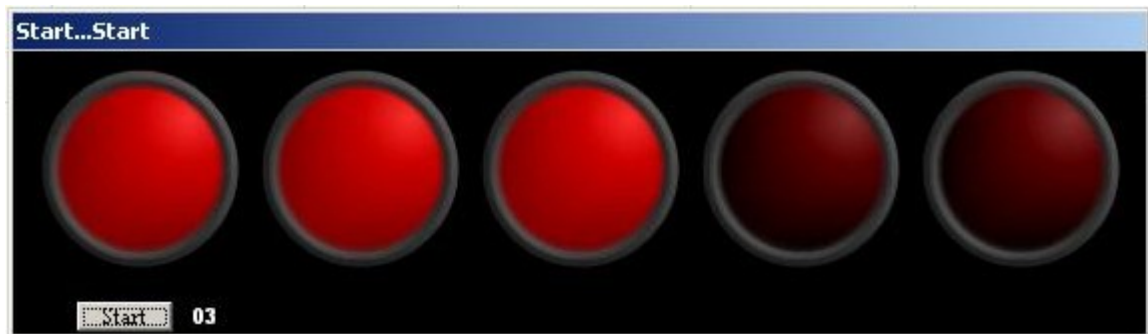
Via the “Track Call” Tab you can assign now an Action for each Pin which you want to use. The green Button represents the status that PCLC has recognised a connected device.

If everything has been configured correct, you can test the function with the Parallel Port Monitor and see if the “LED” colour are changing.

From now on you can easily start a race by just clicking on the push button 😊

2.9.4.Race Start window and Traffic light

After you have pressed the push button or clicked the green “Start” button on the main screen a traffic light will pop up.



I guess I do not need to explain the functionality of the traffic light.

What will happen if you press the throttle BEFORE the traffic lights disappears , you will get to know in the next chapter 2.10. ☺

2.9.5.Single/Team race with Segments

As mentioned in chapter 2.9.2. you have the possibility to drive a lap limited and time limited Championship race (more details see chapter 2.12)

Segments are nothing else then a time period during a race. Meaning you have the opportunity to define i.e. a 2 hours race with 4 segments and each segment is 30 min.

The race will be paused after 30 min and can be restarted when you have finished your break.

You have the option to define the duration of the break by choosing the appropriate intersegment-time in the race setting window.

If you have a team race running, you can use the segment option as well. When the race is paused the next driver of the team is automatically presented in the driver window.

This function is well known in the analogue race driving community, but as we are digital, we can have a more realistic team member changing.

We can change the driver while we are in the pit. So, personally I have not used the segment time for my team races.

Tip: If you are in the pit, you can choose the “Update” button in the main PCLC window and choose the next driver (see next page !)

Update Track/Driver/lap during race

+ [00:00:00] (hh:mm:ss) to race + [00:00:00] (hh:mm:ss) to segment

Lane	Pitstop	Team	Driver	Penalty (laps)	Car	Pitstop laps	Out of fuel	Stop & Go
1	<input type="checkbox"/>	Team 1	Fahrer 1		Ferrari	0	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	Team 2	Fahrer 4		Lola	0	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	Team 3	Fahrer 7		Porsche	0	<input type="checkbox"/>	<input type="checkbox"/>

Cancel segment... ID of the entering driver: Ok Cancel

You can use the Update function during a race (perhaps performed by a race coordinator) who performs the update of the driver.

After you have pressed the "Update" Button the window above will appear. Now you can choose the driver and if you wish the car as well via the Drop Down Menu.

By clicking the OK button the new driver can start the race.

Tip: If you have a 2nd Monitor or you are using the Zoom function, the update can be performed on a separate window and the updating will not disrupt the race.

Unfortunately the window above appears above the main race window and while the updating is performed, the other drivers are not able to see their race result. Hence I strongly advise to use a 2nd Monitor or use the Zoom function on a separate PC or Monitor as then you have the opportunity to split the views.

2.10.False Start recognition function

Since Version 4.44 PCLC provides a real false start recognition solution for SCX Digital as every throttle is monitored during the traffic light phase.

As soon as a throttle is pressed during the traffic light phase and the value is above the defined “Non zero throttle” in point 2 , page 8, the appropriate driver is penalised.

This can happen to EVERY driver who is recognised and not limited to only one driver.

The false start recognition can be activated via Option -> General and ticking the “False Start Detection” box

It is activated by default !

2.10.1.Recognition of a false start

As described a false start is recognised as soon as the throttle is pressed during the traffic light phase.



If recognised, the appropriate driver is marked with this sign and you will hear an alarm tone.

Note: if more then 1 driver pressed the throttle, ALL drivers who are recognised will be marked.

The driver(s) has/have no a few laps time to drive into the pit for the “Stop&Go” penalty. The amount of allowed laps before the driver has to get into the pit can set in the Option window (see chapter 2.4.1)

By default there are 3 laps defined and you have the option to choose more. After you have reaches 3 remaining laps, the remaining laps will be shown in the sign



Here you see that the driver has 2 laps left !!!!

If the number is decreased to “0” and you see an empty black circle, the driver is having just one lap left. If he still misses to get into the pit, a black flag will appear and the driver is disqualified.

Tough luck ☺

2.10.2. Stop & Go Penalty process description

If a driving drives into the pit to start his “Stop & Go” Penalty, you will recognise that the sign changes into a “Wait” sign.



Now the defined Timer start counting down and is changing to the Go-Sign when the driver is allowed to leave the pit.



2 important notes which you need to know:

- If the driver is leaving the pit BEFORE the Go-Sign showed up, PCLC is recognising it and changing the sign to the previous figure. So, be careful that you don't leave the pit too early !!
- During a Penalty Stop Phase you are NOT allowed to refuel. Every try to refuel, will result in a disqualification.

2.10.3. Disqualification

If a driver is not following the rules as described above, a driver will be disqualified which is shown with a black flag.



2.11. Race Statistic

PCLC provides a possibility to save the race in a data base which is saving details about lap time, average lap time, fuel usage etc. This allows a detailed analysis of the race later.

A driver is able now to understand his driving style and can optimise his own driving performance. Furthermore this function is great for car tuning as you can compare race results of different cars in a very comfortable way.

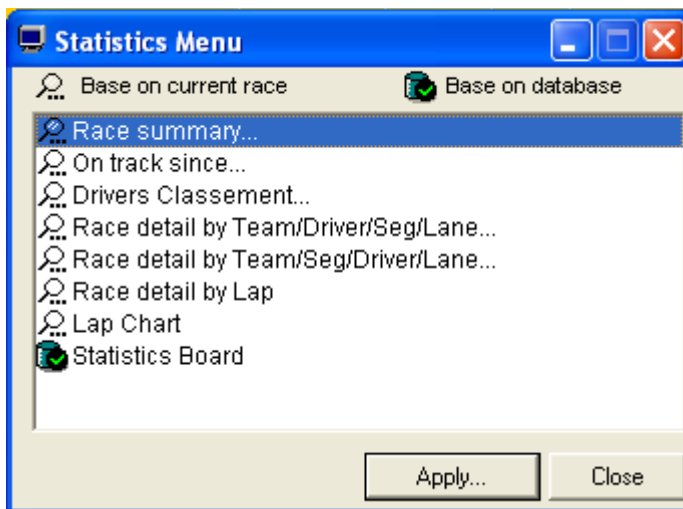
Or you can use it to identify your best car etc.

You have so many different opportunities and it is like Telemetriefunction ☺

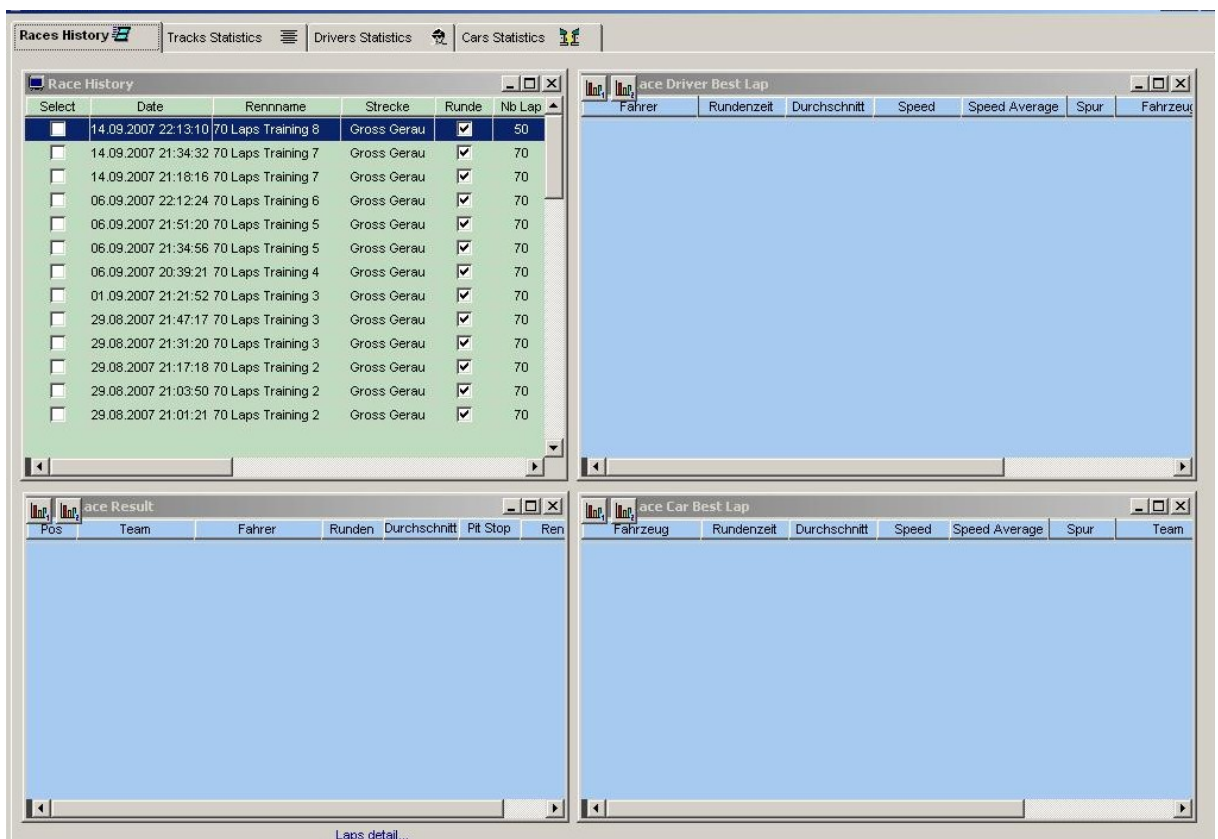
If you want to use this function, you need to activate this like described in chapter 2.4.1. , Point. 4

Now every race is recorded (even a practice race) whereby the name of the race in the database is the name which you gave in the Race Type definition.

The statistic function can be called via the "Stat..." Button in the main PCLC screen.



Now you need to choose the "Statistic Board" and the following screen will appear.



Under the item Race History you can choose the race which you want to analyse in more details.

Tip: Just play with the function to learn about all possibilities. There are so many different options that I could spend my time to write a whole book on this topic 😊

There are Track-Statistics, Driver-Statistics and Car-Statistics.

2.11.1. Example of a race analysis

This is an example of a possible analysis !



In the top screen you can see the result of the driver Sven (myself ;-)) and the fuel usage and pitstops during the race

In the bottom screen lap times of 2 different drivers are presented to compare the results.

Tip: If you want to compare different results of different race, you have the opportunity to open a separate window for each race. If you have one graph open, keep the window open and choose the one which you want to compare with. A new window will be opened and you can compare it.

2.12. Championship and race series

As championship racing is one of the key features of PCLC, I decided to have an own chapter for it!

With the Championship function , users do have the possibility to run "real" Championships with automatic assignment of race results (points) to the appropriate driver.

That means you can focus on racing and enjoying a race evening with your friends without using pen and paper to track the points after each race. PCLC does it for you

In order to be able to run a championship, you need to spend some time to define the frame of a championship, i.e. different race type etc

The Championship setting can be accessed by clicking on the "Championship" button on the main screen of PCLC.

2.12.1.Championship setting

Championship setting

Championship: Europe Champion Select a existing championship to change is setting OR enter championship name to create a new one.

Grand prix

Number of 'grand prix': 4

N°	Grand prix name	Track	Laps	Duration	Segment of	Point by Seg.
1	GP Frankfurt	Gross Gerau	10	00:00:00	00:00:00	<input type="checkbox"/>
2	GP Amsterdam	Gross Gerau	60	00:00:00	00:00:00	<input type="checkbox"/>
3	GP London	Gross Gerau		00:20:00	00:15:00	<input type="checkbox"/>
4	GP Madrid	Gross Gerau		00:30:00	00:15:00	<input type="checkbox"/>

Points

Pos	Points	Delay laps
1	10,	0
2	8,	0
3	6,	0
4	4,	0
5	2,	0
6	1,	0

Point by laps completed: 2

After clicking the appropriate button , this window appears and allows you know to definier your championship.

On the next few page, I will explain you how to define a championship with 4 different type of races.

Note: in order to be able to choose the track, you have to ensure that you did already the definition as described in chapter 2.5

I will define 2 lap limited races with 50 and 60 laps each and to time limited race with 20 min and 30 min, with a segment time of 15 min.

① First you need to click into this field and enter the name of the Championship.

After you pressed enter , 16 different race will be listed by default, which you can change by entering a number in ②

In our example , I have entered 4 and the screen should look like this now.

Championship setting

Championship: European Grand Prix Select a existing championship to change is setting OR enter championship name to create a new one.

Grand prix

Number of 'grand prix': 4

N°	Grand prix name	Track	Laps	Duration	Segment of	Point by Seg.
1				00:00:00	00:00:00	<input type="checkbox"/>
2				00:00:00	00:00:00	<input type="checkbox"/>
3				00:00:00	00:00:00	<input type="checkbox"/>
4				00:00:00	00:00:00	<input type="checkbox"/>

Points

Pos	Points	Delay laps
-----	--------	------------

Point by laps completed: 0

Add Delete

Delete Print OK Cancel

Now you can define each race separately!

If you have entered each race and provided in the example above, you screen should look like this now.

Championship setting

Championship: Europe Champion Select a existing championship to change is setting OR enter championship name to create a new one.

Grand prix

Number of 'grand prix': 4

N°	Grand prix name	Track	Laps	Duration	Segment of	Point by Seg.
1	GP Frankfurt	Gross Gerau	10	00:00:00	00:00:00	<input type="checkbox"/>
2	GP Amsterdam	Gross Gerau	60	00:00:00	00:00:00	<input type="checkbox"/>
3	GP London	Gross Gerau		00:20:00	00:15:00	<input type="checkbox"/>
4	GP Madrid	Gross Gerau		00:30:00	00:15:00	<input type="checkbox"/>

Points

Pos	Points	Delay laps
1	10,	0
2	8,	0
3	6,	0
4	4,	0
5	2,	0
6	1,	0

Point by laps completed: 2

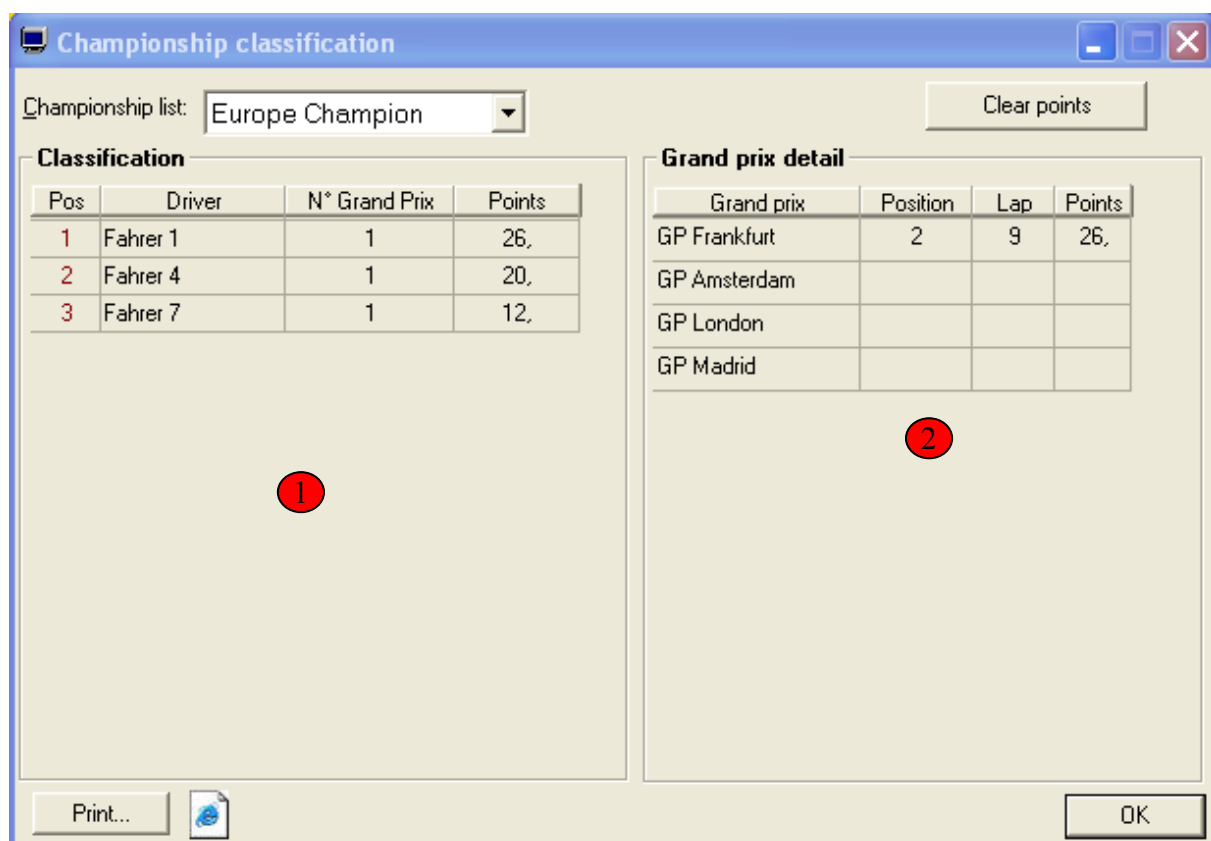
Add Delete

Delete Print OK Cancel

The point definition can be defined as you want it to be.
In my example I have chosen the F1 Formula rules.

You can assign points for each completed lap , but normally I have left it to "0"
for my races and the points can increase very quickly.

2.12.2.Championship classification



If you click on the "Class" button on the main screen, you can access the information about the current driver order and find out who leads the championship..

- ① Current classification with the information on how many races were performed.
- ② Within the Grand Prix detail window, you are able to recognise which race of the Championship were performed already. By clicking on the driver in classification window, you can see the position, laps of the driven races.

Important ! If you restart a race without changing the race type or a different race, the current result will be overwritten by the new race.

Note: If you are looking for a championship with 6 drivers but only 3 drivers can drive at one time, you can drive the races in 2 groups with 3 people.

The classification will automatically being updated with the driver who drove the race and added. No driver will be deleted.

So you can have different types (series) and finally you are able to identify who won the most races and the points will always accumulated.

Note: Team Championship is currently not implemented and planned in the future.

2.12.3.Race series definition, load and save

Currently I have not real experience with this feature as I have not used it. The championship mode is all I need, hence no further details are available.

Nevertheless, if somebody is going to write an explanation, I can easily include the information in my guide.

What I know and understood so far is that you can define a detailed series racing plan. PCLC will execute this plan on the racing day.

2.13.Zoom function

This chapter will cover the zoom function which allows an improved race view as the normal main PCLC screen and you can decide on how you want to see it.

You can use this function when

a) you want to run your races and just want to see the most important information

or and this is the real strength of this function.

b) have a computer with 2 screens

b) have 2 computers and both are connected to the same LAN (local area network)

I am describing the zoom function in the next few pages and if you want to use the examples you can download the examples via the German SCXMagazin.de or if you want to have more examples, you can find them on the homepage of PCLC.

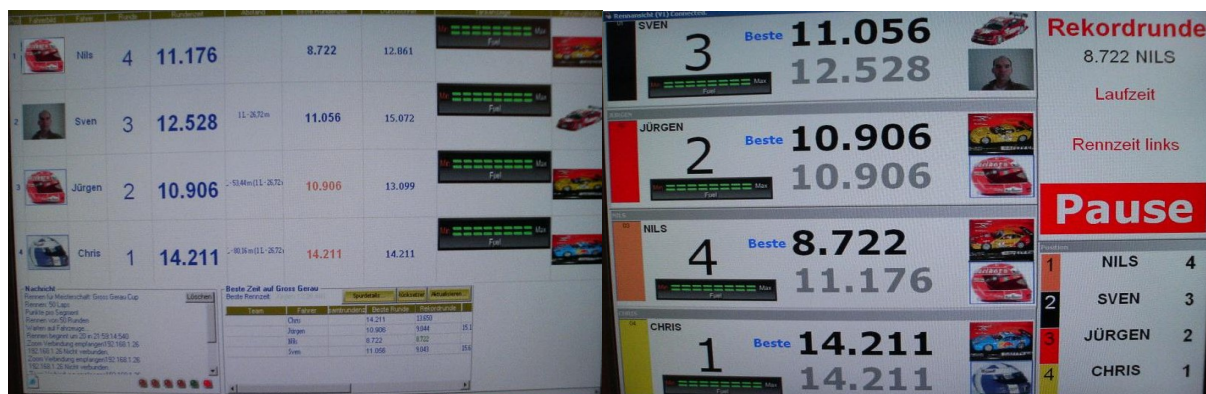
Via this URL www.scxmagazin.de/download/PCLC_config.zip you can download the described configfiles

There are views for 4 and 6 drivers available.

Note: you can't define more then 6 drivers on the Zoom window but you have the option to run more then one Zoom client on different PCs. But I will explain it later.

An example for a possible configuration could look like this.

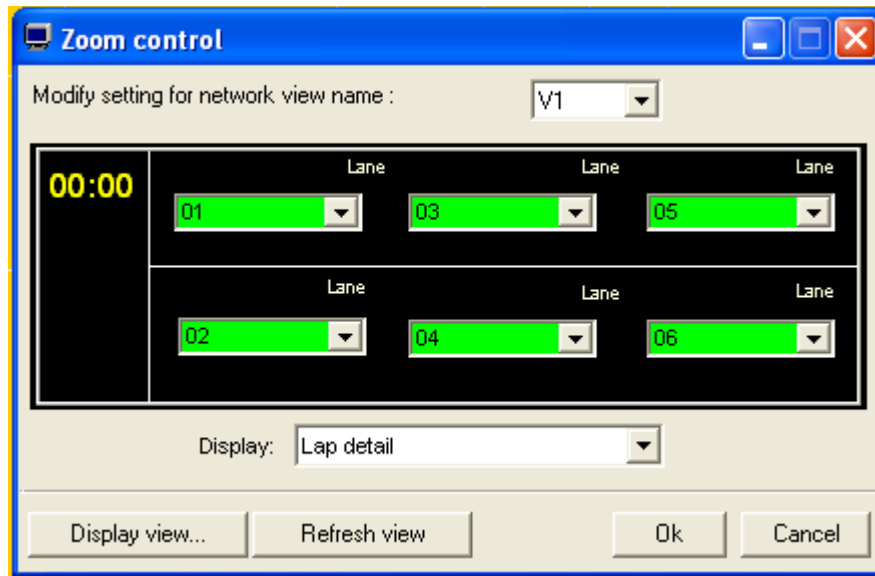
On the left side you see the race screen of PCLC and on the right side you can see the Zoom window.



2.13.1.Zoom function on one PC

If you want to run the Zoom function on one PC, there isn't really anything which you need to take care of.

The function can be accessed via the "Zoom" on the main PCLC screen. After you have clicked it, you will see the Zoom Control window.



Here you choose now the lanes which you want to have presented in the zoom window.

Lap Detail is the default setup which I have never changed for myself.

Note: If you have defined already a race view , you should never touch the "Restore display" in the Zoom window as it will deleted your current setting and overwrites it with the default view. So, be careful !

With the "Display view" button you will access the Zoom window directly .

If you have 2 screens connected to your PC, then you have the option to move this window on the other screen

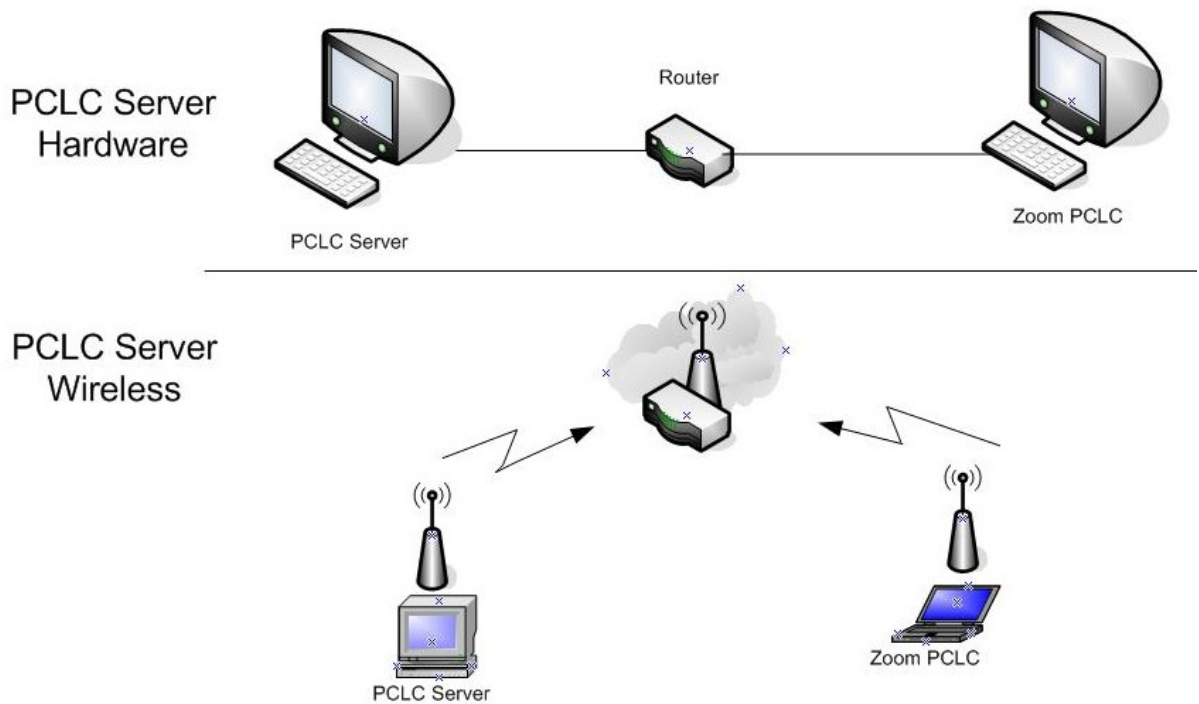
Note: the definition which lanes you want to have shown, will always be defined via the main screen. This is important to now when you use the raceview program (Zoom Client) on a PC within a LAN environment.

Finally, if you want to make your own Zoom views, you can find a good video made by Guy on the Forum from PCLC which can be accessed via the PCLC homepage.

2.13.2.Zoom function with 2 PCs via a LAN

The best solution to run the zoom function is when you have the PCs connected via a LAN or WLAN Network.

Here are 2 possible setups:



On the PCLC main server you need to have a registered PCLC version and to use the race view function on the client server a trial version is good enough.

On the Zoom client you just need to enter now the IP address of the main PC (Port 7728 by default) and the race data will be presented on the Zoom client PC. The next chapter will explain it in more details.

Note: if you use pictures for your drivers and cars, you have to store the same pictures on the zoom client PC in the same path and folder as on the main PC. Otherwise the pictures will be left blank.

2.13.3.Zoom configuration

Before PCLC Version 4.45 it was not possible to store different zoom views. Now you can load and save zoom configuration file.

I have used a batch solution for previous versions which is not required anymore.

But you still can use the config files which are available via www.scxmagazin.de/download/PCLC_config.zip .

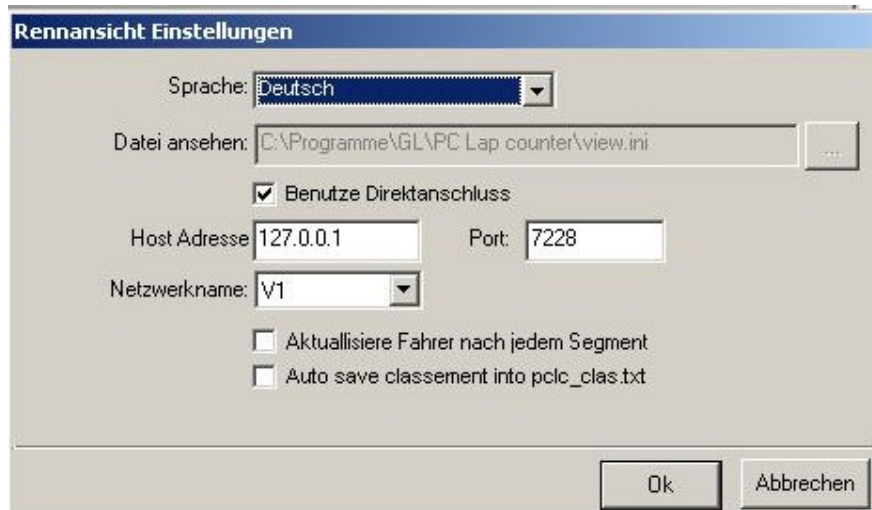
The Zip File contains:

- zoom_6cars.txt - Zoom configuration for 6 cars
- zoom_4cars.txt - Zoom configuration for 4 cars
- RaceView6cars.bat - Batchfile for 6 cars
- RaceView4cars.bat - Batchfile for 4 cars

If you want to use the config file, just rename it to zoom.ini, copy it into the main PCLC folder, go into the zoom window and save it as ZOO-file.

configurations step on the zoom PC:

Start the race view program which you can find in the install folder. As mentioned above you have to enter the IP address of the main PCLC PC the first time.



You should see that the zoom window is trying to connect and if successful, you will see "connected" in the top bar. Of course, you need to have PCLC running on the other PC as well.

configurations steps on the PCLC Main PC:

Just choose the drives as described in chapter 2.13.1 and press OK, the "Display view" doesn't need to be called now.

When you start the race, you should see now the race data on the zoom window as well

2.14. Fuel management function of PCLC

Since version 4.45 PCLC is able to perform the fuel usage consumption and calculation.

This function is particularly interesting for users who are not having the pit terminal with the fuel feature and it is interesting for training purposes for users with the pit terminal.

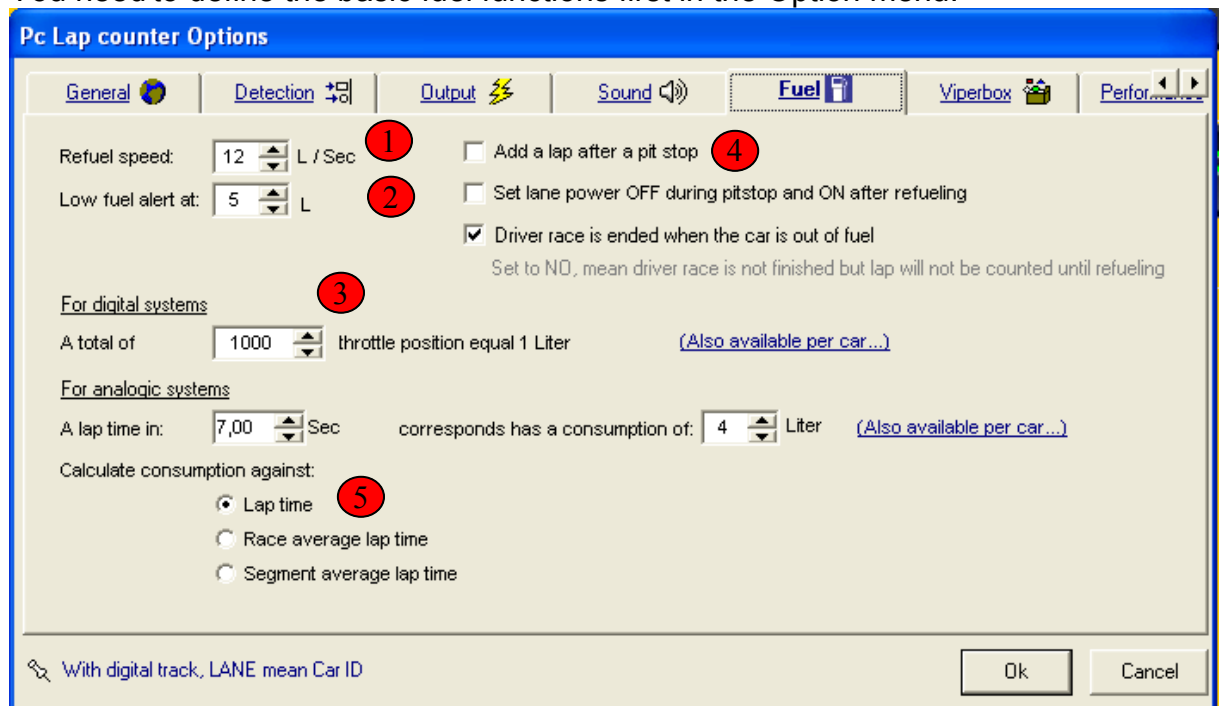
Meaning users with the pit terminal could just switch off the fuel function and let "GhostCar" run with a fixed speed (tape to throttle), define no fuel consumption for them and use the fuel management for the car which you drive.

Now you have a constant opponent and as you have to refuel, you will become under pressure to win the race.

I will explain how to calibrate and configure the consumption for each car and at the end present them possible pit stop designs for users without the pit terminal as those users are not limited to the function that they can not change a lane when the entered the pit.

2.14.1. Fuel Management in the Options menu

You need to define the basic fuel functions first in the Option menu.



- 1 Here you define the speed of the refuelling. Meaning how many litre per second will be "shot" into the tank :-)
- 2 Here you defined when an alarm signal will appear close to an empty tank.
- 3 Now it becomes complicate ! ;-)
By default the throttle position is set to 1000 (value X in the following description) and the consumption per lap is calculated with:

Fuel consumption per lap = $(1/X) * T$
T = Accumulation of all throttle values in one lap.

For an example of the value 1000 and a sum of 3950 throttle value during one lap is, the fuel consumption would be 3.95 l per lap.

Note: this value is valid for ALL but it will be overwritten if you define the value X for each car, which means you can define different fuel consumption for different cars.

On my track this standard value caused a fuel consumption of 1 l per lap. This sounds very complicate and indeed it is, if you would have to calculate this now for each car separately. But PCLC provides an easy to use calibration function.

- ④ This tick box need to be activated if you build a pit box whereby the car is not driving across the SF line (see examples 2.14.3)
- ⑤ This tick box can be ignored as for SCX Digial the consumption is base on the throttle values.

2.14.2. Calibration of the fuel level

You need to start a race as described in chapter 2.8

This known window will appear

Race setting

Driver/Team | Race type | Fuel

Lane	Driver	Team	Rotation Lane	Car	Color	Pitstop laps	Fuel	Tank limit
1	Fahrer 2	Team 1	1	Ferrari	1	0	80	100
2	Fahrer 4	Team 2	2	Lola	2	0	100	100
3	Fahrer 7	Team 3	3	Porsche	3	0	40	100
4				Ferrari	4			
5				Ferrari	5			
6				Ferrari	6			
7				Ferrari	7			
8				Ferrari	8			
9				Ferrari	9			
10				Ferrari	10			
11				Ferrari	11			
12				Ferrari	12			
13				Ferrari	13			
14				Ferrari	14			
15				Ferrari	15			
16				Ferrari	16			
17				Ferrari	17			

Clear all | Load series: | Heat edited | Edit heat

With digital track, LANE mean Car ID

OK | Cancel

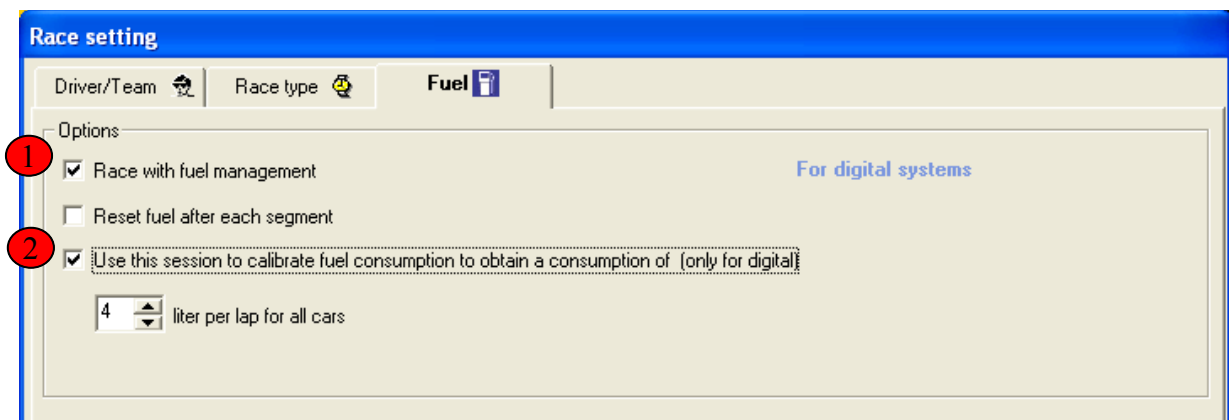
Tip: For the calibration of different cars, I would advise to "start" a race with max allowed cars as you can calibrate 3 or 6 cars in one go.

In order not to loose the overview, I have defined 2 cars only

Steps to take:

- choose the driver, whoever you want
- choose the cars which you want to calibrate
- define under point ① the start fuel level and the tank limit. In this example I have defined 100 l as a limit. But you can choose what ever you like. If you have big tank that means you won't have to stop so often.
- now you choose the "Fuel" Tab ②

You will see the following window !



① **Important ! This box need to be ticked, if you want PCLC to do the fuel management.**

In case it is not ticket, the fuel information is taken from SCX Digital but only if you have the pit terminal of course.

② This box need to be ticked if you want to calibrate your cars.

Now you need to defined the wished fuel consumption per lap and press OK to confirm.

Start the race as usual

Following calibration window will appear when you start the race.

Fuel consumption calibration (to obtain a consumption of 4 liter)							
Pilote	Car	Actual car throttle	Laps	Actual fuel consumption	Total Throttle received	Calibrated throttle will be	Fuel consumption after calibration
Sven	Ferrari	216	5	4,65	5024	251	4,00
Nils	Lola	1000	6	1,13	6806	284	4,00

1
2

Now you drive 5-10 laps with each car to calibrate the correct level.

How should you read the table ?

After each lap the actual fuel consumption is presented and calculated based on the action X-value as we have learned in the previous chapter, the sum of all accumulated throttle values, the calibrated X value and the fuel consumption based on the new X-value.

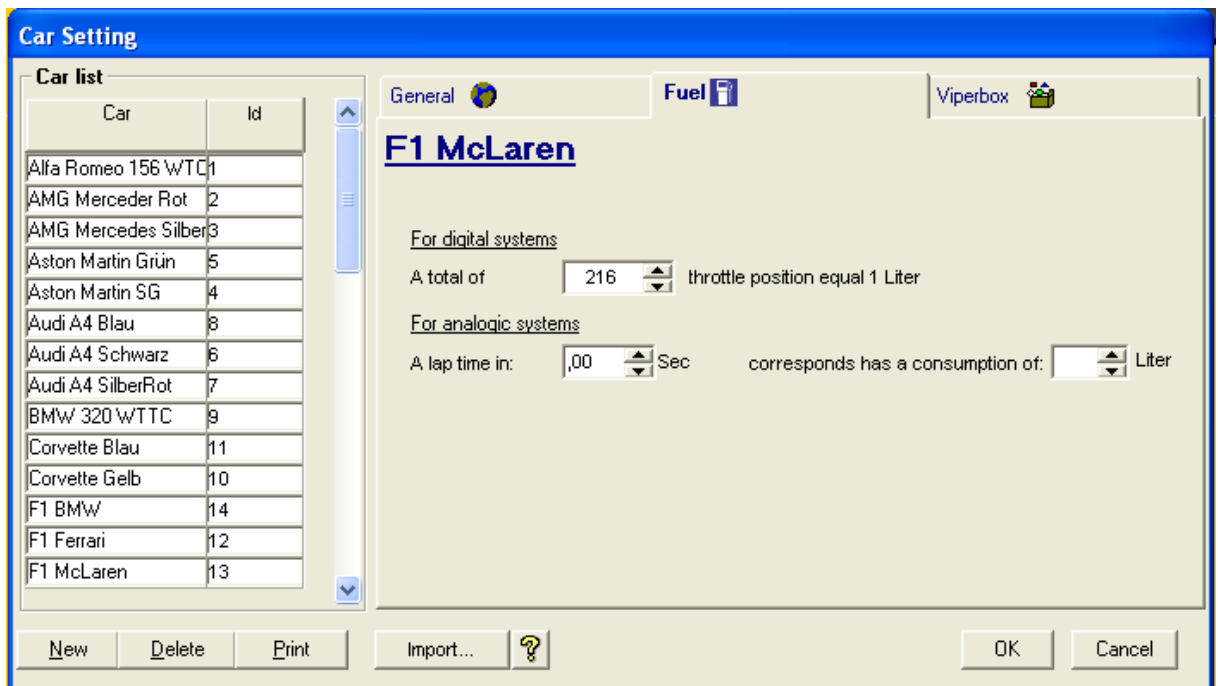
The "Lola" drove 6 laps, the "Actual fuel consumption" for the last 6 laps based on X=1000 was 1.13 l !

(Formula: $(1/1000) * (6806/6) = 1.13$).

The accumulated Throttle values for the 6 laps were 6806. The new calibrated X-Value to achieve 4 l consumption is now 284

If you have finished now the calibration for all cars, you can click the "Apply calibration for car setting" and the new values will be directly stored with the car setup.

If you now look into the car setup and choose the fuel tab, the new X-Value has been automatically assigned to the car



That is all and now you can start races where PCLC is doing the fuel consumption.

You just need to setup the race as described on page 37 **1** to activate fuel consumption calculation from PCLC.

The calibration tick box can be cleared now.

Note: If you have a pit terminal and want to use this function and pit entry via the pit in track piece is recognised in the same way as before.

If you don't have a pit terminal, you can ask the "pit crew" for a pit stop by pressing the LC button for 3 sec. This duration can be chosen (see SCX Digital Interface Option menu (see **6** on page 8)

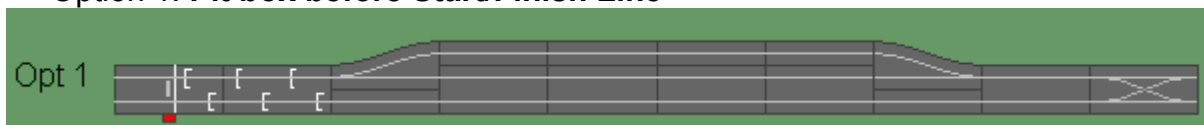
2.14.3.Possible Pit Stop designs

As described several times, now users with the normal terminal and without the fuel functionality of SCX have additional possibilities for Pit box designs

Note: User with pit terminal can not use these examples below as when entering the pit, the car can not change the lane to choose the correct pit box, as the first press on the LC button will activate the fuel function.

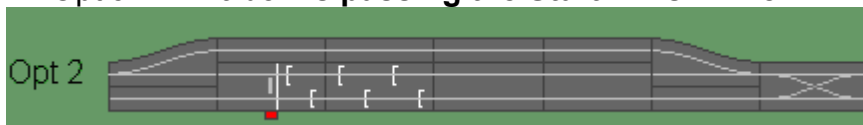
Here are 4 different example and I describe how you need to configure PCLC.

Option 1: Pit box before Start/Finish Line



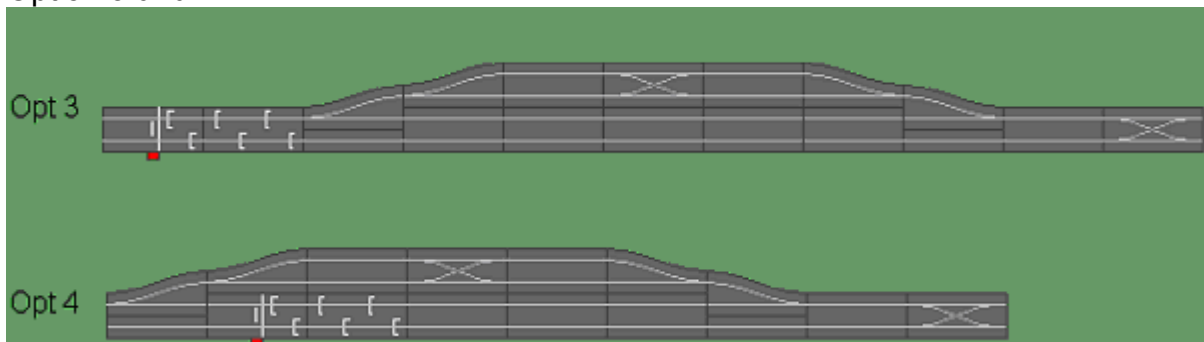
The driver can drive into the pit and by pressing the LC button for a longer time, he activates the re-fuel function. The car is re-fuelled and when the car accelerates the pit out signal is generated.

Option 2: Pit box is passing the Start/Finish Line !!



Pit stop process as in Option 1. But as the car is not passing the SF line when leaving the pit, we would miss a lap count. You need to make sure that PCLC adds a lap in this case. This can activated as described in chapter 2.13.1 point 4

Option 3 und 4:



These box options are working the same as the previous one, but now you can have separate Pit Boxes for each car, like in the reality.

Now the race can start ! Have fun !

I am closing my introduction and description now and I hope you have as much fun as I have with SCX Digital.

I hope I was able to provide you with the information you required to enjoy your SCX Interface - PCLC solution and experience real race events.

If you have any feedback, improvement proposals etc, you can contact me via

quickguide@slothobbysolutions.de

Regards !
Sven



Document History

Chapter	Page
2.3.1	8
2.5	13
2.12.1	32
2.13.1	37

Chapter	Page
2.2	6
2.4.1	10-11
2.4.2	12
2.4.2.1	12
2.9.3	20

Update 03.11.2007

Note
Changed note regarding serial interface config
Add Tip regarding adding drivers
Changed note regarding the Zoom Restore
Changed description for Point 5

Update 02.03.2008

Note
Release description of mode 2
Update of SCX Digital Option Interface
Update of Debug Window
Update of SCX Data Stream Information
Update of Race Start function