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# Lap Timer Software Users Guide

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# 1 Introduction

LTS02 is a lap timing system designed to be used in rental kart tracks. The system can identify up to 60 different karts and measure their lap time with one millisecond accuracy.

# 2 Installation requirements

The software was tested with following hardware and software configuration:

- CPU: Genuine Intel(R) CPU T2050 @ 1.60GHz
- Memory: 0.99 GB RAM
- Graphics Adapter: Mobile Intel(R) 945GM Express Chipset Family
- Monitor resolution: 1280x800
- Operating Systems: Windows XP SP3, Vista SP1, Win7

# 3 Quick Start Guide

This guide will help you to install and start the LTS02Sw software. The starting point is that you have a working computer with Windows XP, Vista, or Win7 operating system installed, and your LTS02 hardware is installed in your track according to LTS02 installation guide and technical specification.

## 3.1 Install .NET Framework

Install the .NET Framework 4.0 Client Profile. You can download it from <u>http://go.microsoft.com/fwlink/?LinkId=131000</u>. This step is not necessary if you have .NET Framework 4.0 or .NET Framework 4.0 Client Profile installed.

# 3.2 Check serial (COM) port

Check if your system has an available serial (COM) port, where the communication module (LTS02Com) can be plugged. If not, please install the USB-to-Serial converter (the converter is delivered with the LTS02 Base system).

#### 3.2.1 USB-to-Serial converter install

This step is not necessary if you have an available serial (COM) port in your computer.

- 1. Install the USB-to-Serial converter driver. You can use the install CD, or you can download the driver from <u>www.kart-timer.com</u>.
- 2. Plug the USB-to-Serial converter into one USB port. After selecting one USB port, do not plug the converter into another port, because the port settings will be changed.
- Check the COM port number of the USB-to-Serial converter: Start -> Control Panel -> System -> Hardware -> Device manager -> Ports (COM & LPT) -> Prolific USB-to-Serial Comm Port (COM?)
- 4. Disable all power saving and hibernating features of the computer.

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## 3.3 Install LTS02Sw Lap Timer software

Install the LTS02Sw Lap Timing software. You can use the install CD, or you can download the latest version of the software from <u>www.kart-timer.com</u>.

## 3.4 Connect LTS02 hardware to your computer

Be sure that the LTS02 hardware is installed according to LTS02 installation guide and technical specification. Be sure that LTS02 hardware is under power. Connect LTS02Com to the serial (COM) port of your computer.

## 3.5 Start LTS02Sw Lap Timer software

After installed, you can start software from your Desktop or from Start menu by clicking to MWS-KLT Lap Timer icon:



Allow Lap Timer to access the internet if you would like to use Online Race Manager.

### 3.6 Connect to LTS02 hardware

- 1. Select Settings -> Port... from MWS-KLT Control Panel
- 2. Select the LTS02 COM port from the list. You can check LTS02 COM port number according to Chapter 3.2.1, Point 3.
- 3. Click Connect.
- 4. Wait, until the LTS02 hardware is connected:

😌 comport_form		X
Available COM ports:		
COM3 COM1	Refresh list	
	Connect	
COM1 op	ened. MWS-KLT Lap Timer connected.	

## 3.7 Start using software

- 1. Start new round from Race -> Start Race (F5) menu, or by pressing F5. By starting new round, the red flag in Results window changes to green.
- 2. Start to use one of your karts installed with LTS02Tran transmitter. After passing magnetic strip, the result has to be displayed on Results window:

les at the second			Project	LTS02	
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🔗 Result					
ELAPS		1:06			
			C	จบกเ	
REMAI	VING: []	1:54			
POS I	KART (			BEST	LAST
1 4	ŧ5 I	0 00	.000		

Now you are ready to use the LTS02 Lap Timing system, and to fully customize the software, and use the special features.

### 3.8 Troubleshooting

If any error occurred, please restart your computer, and make a power reset to LTS02 hardware.

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# 4 Using the software

MWS-KLT Contr Race Settings	rol Panel View About				120 140 160 km/h 180 220 CO KRRT TIMILE NOT
€Result		00:00 08:00	4	จบุงเ	_I=Y
Pos	KART	∟∧≂	TOTAL	BEST	LAST
1	#5	305	2:00:50.118	818.55	23.129
5	#14	302	2:00:53.154	ror.55	C35.251
З	#10	306	2:00:52.788	22.750	23.446
ч	#15	308	2:00:49.187	121.121	23.596
5	#9	306	2:01:04.495	22.854	23.135
6	#12	302	2:01:10.002	018.55	23.735

The software has two main types of windows:

- Control Panel
- Results Window

# 4.1 Control Panel

The software settings and functions can be reached from the menu bar of the Control Panel. The software can be closed by closing the Control Panel.

### 4.2 Results Window

The race results can be viewed in results window. The order is determined by the event mode. It can be Qualify or Race. In case of Qualify mode, the first has the best lap time, and if more drivers have the same time, the one who was running it earlier, is better. In case of Race mode, the first has the most laps completed, and if more drivers have the same laps completed, the one who has lower total time is better.

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You can set up the content and appearance of the Results Window. You can create unlimited instances of Results Windows, with different content and appearance.

### 4.3 Running races

The order of a regular race is the following:

- 1. The race is started from Race -> Start race, or by pressing F5, or by clicking on the red lights. The lights become green.
- 2. The timing is started by the first driver pass above the magnetic strip. (This setting can be changed.)
- 3. The race can be stopped any time from Race -> Stop race, or by pressing F6, or by clicking on the green lights.
- 4. The software alerts when the set up time or lap is over, and offers to stop the race. Until the confirmation the race is not stopped. (This setting can be changed.)
- 5. After the end of the race the results can be printed. On the preview screen you can decide whether you want to print the page or not. (This setting can be changed.)
- 6. The race is saved automatically for a possible reprint

Result					
ELAPSED: 00:00 REMAINING: 08:00					
Pos	KART	∟∧₽	TOTAL	BEST	LAST
1	#15	308	2:00:49.187	122.767	23.596
5	#10	306	2:00:52.788	22.750	23.446
Э	#9	306	2:01:04.495	22.854	23.135
Ч	#5	305	2:00:50.178	818.55	23.129
5	#15	304	732.101	23.034	23.473
δ	#14	305	2:00:53.154	COC.55	23.267

# 5 Results Window

The race results can be viewed in Results Window. This window has two fields:

- status field with elapsed and remaining time or lap, flag and mode
- data field with header and data

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# 5.1 Results Window settings

The Results Window settings can be reached by Right click on Results Window -> Settings...

Save					
Settings					
Printer Settings					
Print					

#### The Result Settings... window shows:

😂 Result Settings									×
File									
Form settings Header text: Start position: Size: Opacity: Screen: Color:	Result 40 22 770 50 100 1 5 Full		Status setting Show sta Status size( Elapsed stri Remaining s Race string: Qualify string	atus %): ng: string:	20 🔹 Elapsed: Remaining: Race Qualify		Status Visual style	15 🗘 50 🗘	
Number: 0 Start from: 1 Order by: eve rac qua Direction: for	n Datafield Datafield	Data object defi position [Pos] kart name [Ka lap number [L total time [Tott best lap [Best last lap [Last]	rt] ap] a] ]	kart r drive lap n total t best best last la last la	mitter name r name umber time lap lap number ap ap - x x: 0 ler:	Fonts Fonts			
							<ul> <li>✓</li> </ul>	×	]

You can Open or Save your settings to .rfs (results form settings) file from File menu.

File	
2	Open
	Save
ø	Save as

You can Apply or Cancel your settings. If you apply, the Results Window appearance will be changed according to settings. Note that the Apply does not save your settings to file.

|--|

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In next chapters, the effects of the different settings will be explained.

#### 5.1.1 Form settings

- Header text: Header text of the Results Window
- Start position: Start position x and y coordinate in pixels. 0, 0 is the top left corner of the screen.
- Size: Results Window width and height in pixels.
- Opacity: Results Window opacity.
- Screen: number of screen if displayed with multiple monitors.
- Full screen: Results Window is displayed in full screen (start position and size will be ignored).
- Color: Click to select the background color of the Results Window.

#### 5.1.2 Status settings

- Show status: Select if the status field has to be showed or not.
- Status size(%): Size of status field height in Results Window height percentage.
- Elapsed string: This text will be displayed in status, Elapsed field.
- Remaining string: This text will be displayed in status, Remaining field.
- Race string: This text will be displayed in status, Mode field if the mode is Race.
- Qualify string: This text will be displayed in status, Mode field if the mode is Qualify.

#### 5.1.3 Status Visual style

- Header: Select status field header font and color.
- Data: Select status field data font and color.
- Font size min: Minimal font size in pixels.
- Font size max: Maximal font size in pixels. The displayed text is resized according to the available space, but its size will be between minimal and maximal font size.

#### 5.1.4 Data object organization

- Show Round in Datafield: If this box is checked, the data field will display the current round identification number (set by Race Manager software). This setting is useful when you are using Race Manager to organize rounds: the waiting drivers can see the current round number, and can estimate, when their round will start.
- Show Flag in Datafield: If this box is checked, the data field is a big flag, no other results are displayed. This setting is useful if you would like to use electronic flag (e.g. with a big LED TV which is connected to your computer).
- Show headers: Decide if the headers in data field are showed or not.
- Orientation: Decide if the headers and the data are displayed in row or in column.
- Number: Select the number of karts to be displayed. If 0 is selected, all running karts will be displayed.
- Start from: Starting position, from which the karts are displayed. These latter two settings are useful if you would like to display the results in multiple

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screens, in different Result Windows (e.g. position 1-4 in first LED TV, position 5-8 in second LED TV).

- Order by: You can select the round order rule. Actualmode means the order is determined by the current Mode (Race or Qualify). Racemode and qualmode means the order is determined by Race order or by Qual order (regardless of the current Mode). Eventmode means that in the first position is who passed the magnetic strip last. Qualmode can be useful if you would like to show the fastest laps in a race. Eventmode can be useful if you would like to show the lap time result to a driver during the round (e.g. with a LED TV positioned after the magnetic strip).
- Direction: Forward means that first position displayed first. Reverse means first position displayed last.

#### 5.1.5 Data object definition

You can set here what to display in the data field, and what is the header name of this field. Every field that is in the main listbox will be displayed:



The header of the field will be the text in brackets []. You can edit the main listbox with using the following buttons: Clear all, Delete, Copy, Add, Modify.



Example: if you would like to add a new field with transmitter number, select transmitter from listbox, write the header text in Header field (e.g. Tran), then click Add button.



You have to use the x: field only if you would like to display last lap - x or lap x field. If you use x: 0 setting to lap x, it means that all laps will be displayed. Note, that this setting (lap x, x: 0) is designed only for printer display, because in a long race, some thousands of laps have to be displayed, and refreshed. This will result in high computational time and slow application. If you would like to display more laps, please use last lap – x field, and set up as many laps as you want to display.

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#### 5.1.6 Data Visual style

- Header: Select data field header font and color.
- Data: Select data field data font and color.
- Personal best lap: Select personal best lap font and color.
- Overall best lap: Select overall best lap font and color.
- Font size min: Minimal font size in pixels.
- Font size max: Maximal font size in pixels. The displayed text is resized according to the available space, but its size will be between minimal and maximal font size.
- Lines: Select line color. Decide if the border, header, column and row lines are visible or not.

### 5.2 Creating new Results Window

You can create your custom Results Window with following steps:

- View new results window: Control Panel -> View -> New results window... New results window will be displayed with settings of new.rfs file.
- Customize this window according to your needs: Right click -> Settings...
- Save your settings as a new .rfs file: File -> Save as...
- Apply your changes: Click Apply button. The Results Window will be displayed according to your settings.
- If you would like to change the settings, you can do any time by Right click -> Settings... on Results Window. You can save the settings from Right click -> Settings... -> File -> Save..., or by Right click -> Save on Results Window.

## 5.3 Printing Results Window

You can print Results Window any time by Right click -> Print... on Results Window



Before printing, you can use Right click -> Printer Settings... to set up the printer.

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# 6 Settings

## 6.1 Program settings

The main program settings can be reached from Control Panel -> Settings -> Program...

-	settings_form			
	-Default settings		Printing	Startup forms
	Clock starts	after first pass	C:\Program Files\MWS-KLT\	C:\Program Files\MWS-KLT\
	Automatic st	ор		
	Actual mode:	Qualifying		
	Running limit:	Time		
	Time limit:	8 🔅 min	2 × •	2 × 🐁
	Lap limit:	20 🛟	Print automatically	
			☑ Print with preview	
			Insert picture:	

In next chapters, the effects of the different settings will be explained.

#### 6.1.1 Default settings

- Clock starts after first pass: Decide if the clock starts when the first kart passes the magnetic strip, or when the lights become green.
- Automatic stop: Decide if the round is stopped automatically after reaching time or lap limit, or ask a question if the round should be stopped or not.
- Actual mode: Decides the current mode after starting the application.
- Running limit: Decide if the rounds are running on time or lap limit.
- Time limit: Time limit in minutes.
- Lap limit: Lap limit.

#### 6.1.2 Printing

- Printing list: In printing process, the data field of the Results Windows defined in this list will be printed out. You can edit list by Clear, Delete and Add buttons. If you would like to add a new Results Window for printing, first you have to create and save your custom Results Window.
- Print Automatically: Decide if the printing process is started automatically after race stop or not.
- Print with preview: Decide if the print preview should be showed or not during printing process. If the print preview is showed, you can cancel the printing

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process with Close button of the print preview. If the print preview is not showed, the software will print a copy of results for each driver of the round.

- Insert picture: You can insert a picture in .bmp format to print out on the header of the paper. The picture will be resized to 200x100 pixels. MWS-KLT logo will be printed by default if no picture is inserted.

#### 6.1.3 Startup forms

You can define in Startup forms list, which Results Windows should be showed after starting the application. You can edit this list by Clear, Delete and Add buttons. If you would like to add a new Results Window, first you have to create and save your custom Results Window. Note that the Function keys (F3, F5, F6, and F7) are working only in first Results Window in this list.

### 6.2 Port settings

See Chapter 3.6

### 6.3 Kart settings

Kart settings can be reached from Control Panel -> Settings -> Kart...

😫 Kart Settings		
Transmitter : 1 Transmitter : 2 Transmitter : 3 Transmitter : 4 Transmitter : 5 Transmitter : 6 Transmitter : 6 Transmitter : 7 Transmitter : 8 Transmitter : 9 Transmitter : 10 Transmitter : 11 Transmitter : 12 Transmitter : 13 Transmitter : 14 Transmitter : 15 Transmitter : 16	Kart:1 Kart:2 Kart:3 Kart:4 Kart:5 Kart:6 Kart:7 Kart:7 Kart:8 Kart:10 Kart:11 Kart:12 Kart:13 Kart:14 Kart:15 Kart:16	Driver : "Driver 1" Driver : "Driver 2" Driver : "Driver 3" Driver : "Driver 4" Driver : "Driver 5" Driver : "Driver 6" Driver : "Driver 7" Driver : "Driver 8" Driver : "Driver 9" Driver : "Driver 9" Driver : "Driver 10" Driver : "Driver 11" Driver : "Driver 12" Driver : "Driver 13" Driver : "Driver 14" Driver : "Driver 15" Driver : "Driver 16"
	2	× ✓

You can define here the Kart Name and Driver Name for each transmitter. If no Kart Name or Driver Name is defined here, the default names will be used. Default names for transmitter 1 are: Kart: #1, Driver: "".

You can Add, Remove and Clear All definitions with following buttons:

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You can modify an existing definiton by double click on it. The Kart definiton form will open when adding or modifying a definiton:

😂 Define Kart	
Transmitter:	þo 🛟
Kart:	10
Driver:	Driver 10

You can Apply or Cancel definitions with following buttons:

×	×
---	---

### 6.4 External device settings

External device settings can be reached from Control Panel -> Settings -> External Device...

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Sector Settings	
Device	Setup
External LAN	Name: External LAN Address: 169.254.236.81
External COM	Active Port: 22222
	Update (sec): 1 Saudrate: 115200
	Init (Hex): 21
	Data
	Data separator (Hex): 21
	Begin Message (Hex): 21
	Result:         E:\microws\newpjt2\sw\mws-klt\v00         Image: Comparison of the second seco
	Remaining Time or Lap
	20 💲 Seconds or Lap Before Round Stop (hex): 425253
	Round Started (Hex): 47
	Round Stopped (Hex): 52
	End Message (Hex): 21
	MWS-KLT Display
	Rows: 1
	Remaining Time or Lap

You can Apply or Cancel settings with following buttons:

× ✓

The Apply button will save your settings, but they are valid only after application restart.

#### 6.4.1 Device

You can clear all, remove, add new, and save external device with following buttons:

2	X		
---	---	--	--

Please save your current device settings before adding or editing new device.

#### 6.4.2 Setup

- Name: The name of external device.
- Active: Decides if the device is active or not.
- Update: If the device is active, the software will send data in every x second specified here.
- Init (Hex): If the device is active, the software will send the init message once after software startup. Note that the message is in hexadecimal format, and in range of 1- 7FFFFFF. Zero value is defined as none (no zero value will be sent).
- Address: Specify the device IP address if the device is connected into the Local Network. The software will try to connect to device as a TCP Client.

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Write "COM" in this field if the device is connected into the serial port of the computer.

- Port: port of the external device. If the device address is connected into serial port COM5, the port number is 5.
- Baudrate: You have to define it only if the device address is "COM".

#### 6.4.3 Data

If the device is active, the software will send data in every x second specified in Setup -> Update field. The data is built up of Begin message – Data fields – End message. The Data fields are separated with Data separator. If any of the fields is zero (including Begin and End message), the software will not send this field. Note that the messages can be specified in hexadecimal format, and they are in range of 1- 7FFFFFFF.

- Result: you can specify here a result settings form. The datafield of the results form will be sent, with chr(9) as tabulator, and chr(13) + chr(10) as new line.
- Remaining Time or Lap: Remaining time or lap will be sent (depending on running limit) if this checkbox is checked.
- X Seconds or Laps Before Round Stop: The specified message will be sent if this condition is true.
- Round Started: The specified message will be sent if this condition is true.
- Round Stopped: The specified message will be sent if this condition is true.

#### 6.4.4 MWS-KLT Display

You can use MWS-KLT display to display remaining time or lap, and last lap times. The display shows the last lap times in [ kartname space laptime ] format (for example: 5 25.33 is displayed for kart 5, last lap 25.33).

- Rows: Specify the number of rows in display.
- Remaining Time or Lap: Remaining time or lap will be displayed in first row if this checkbox is checked.

### 6.5 Online Race Manager

Race Manager settings can be reached from Control Panel -> Race Manager -> Settings...

😵 Race Manager Settings			
🔲 Use Race	Manager		
Track ID:		]	
password:		]	
×			

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If you are using Online Race Manager to organize rounds, you have to check Use Race Manager checkbox, and specify the Track ID and password (sent to every track registering Online Race Manager). The connection status to the Race Manager is displayed in the status field of the Control Panel.

Next round in the Online Race Manager queue can be started by clicking the Race Manager -> Next Round... button. The details of the next round are synchronized from the Online Race Manager.

😌 Result	
ELAPSED: 00:00 REMAINING: 08:00	Start Round?
POS KART LAP TOTAL BEST	Kart Driver 2 Adame Benő 3 Abrus Borbála, Barbara 4 Adamecz Attila 5 Babincsák Csongor 6 Dreher Orbán 7 Abelsberg Ilona Igen Nem

The results are uploaded back to the Online Race Manager after the end of the race. You can find more details about Online Race Manager in the Online Race Manage Users Guide.

### 6.6 Offline Race Manager

Offline Race Manager can be used where internet connection is not available. The membership database is stored at the local computer. Results are not stored in the Offline Race Manager. You can find more details about Offline Race Manager in the Offline Race Manage Users Guide.

### 6.7 Top Times

Lap Timer software can detect, store and upload top times. There are 3 lists in which the top times are collected:

- Top 24 Hours
- Top 7 Days
- Top 1 Year

You can reach Top Times settings from Control Panel -> Settings -> Top Times... menu.

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💀 Top Time Settings				
🗹 Use Top	Time Show	Clear		
Track:	demo			
Password:	demo			
🗹 Auto Upl	oad [	Upload		
	× (	✓		

If the Use Top Time checkbox is checked, the software will detect and store top times after each round. Add Top Time confirmation dialog is displayed where the driver name can be changed.

🔜 Add Top		
Kart:	55	
Best:	17.364	
Driver:	Driver	
	×	<ul> <li></li></ul>

You can display top times in default browser and clear top times with Show button, or from Control Panel -> View -> Top Times...

You can clear the top times list with Clear button.

Top times can be uploaded to our webserver. Please contact us if you wish to create a storage to your top times list. You can select Automatic Upload when your timing computer is connected to the internet continuously. You can upload top times manually with Upload button.

You can insert these lists into your website by using iframe elements. You can change the default style of the lists to match your website design.

♥ TOP 24 HOURS kart-timer.com		▼ TOP 7 DAYS     kart-timer.com		Y TOP 1 YEAR	kart-timer.com
1 Jelszo	07.481	1 Jelszo	07.481	1 Jelszo	07.481
2 Gábor	07.573	2 Gábor	07.573	2 Gábor	07.573
3 Márton	07.816	3 Márton	07.816	3 Márton	07.816
4 Áron	07.818	4 Áron	07.818	4 Áron	07.818
5 Eszter	08.329	5 Eszter	08.329	5 Eszter	08.329
6 Teszt	08.342	6 Teszt	08.342	6 Teszt	08.342
7 Csongor	08.541	7 Csongor	08.541	7 Csongor	08.541
8 Máté	08.595	8 Máté	08.595	8 Máté	08.595
9 Zsófi	08.603	9 Zsófi	08.603	9 Zsófi	08.603
10 Tünde	08.642	10 Tünde	08.642	10 Tünde	08.642

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# 7 Statistics

# 7.1 Kart Statistics

Kart statistics can be reached from Control Panel -> View -> Kart Statistics...

😸 Transmitter sta	tistics				
Transmitter: 6 Transmitter: 8	Kart: #6 Kart: #8	Laps: 3 Laps: 3	Time: 22.636 Time: 22.642		
2 X	]			× [	<ul> <li></li></ul>

You can see here the running laps and running time for each transmitter. The laps and time can be cleared by Clear all (clearing all transmitters) or by Remove (removing only the selected transmitter) button. The clearing is completed only after clicking Apply button. Note: If you are swapping the transmitters between different karts, you have to clear statistics by each transmitter change to get reliable kart statistics results.

# 8 Race menu

## 8.1 Start race (F5)

You can start the race from Race -> Start race (F5), or by pressing F5, or by clicking on the red lights. The lights become green. You can start race only when it is currently stopped.

## 8.2 Stop race (F6)

You can stop the race from Race -> Stop race (F6), or by pressing F6, or by clicking on the green lights. The application asks if the race should be stopped, if the Automatic stop is not checked in Program settings (see Chapter 6.1.1). The printing

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process is started automatically if the Print automatically is checked in Program settings (see Chapter 6.1.2). The lights become red. You can stop race only when it is currently started.

# 8.3 Mode (F7)

You can switch current mode between Race and Qualify from Race -> Mode (F7) or by pressing F7 or by clicking the Mode field of the first Results Window.

# 8.4 Edit race (F3)...

You can edit race from Race -> Edit race (F3)... or by pressing F3. You can split or unite laps of the current round.

🕏 Edit race					
Lap:	Racer:				
Lap: 1 Time: 06.880 Lap: 2 Time: 10.420 Lap: 3 Time: 05.336 Lap: 4 Time: 6:04.322 Lap: 5 Time: 05.364 Lap: 6 Time: 07.073 Lap: 7 Time: 05.223	Tran = 6 Tran = 8	Kart = "#6" Kart = "#8"	Driver = "Driver 6" Driver = "Driver 8"		
Split Split: Lap 7 [05.223] Into: [02.612] and [02.611]					
Unite Unite: Lap 7 [05.	223] with Lap 6 [07.073] In	ito: [12.296]			

### 8.5 Load race...

You can load race from Race -> Load race... All races are saved with following file format: yyyymmdd\_hhmmss.asv. If the system is crashed for any reasons, the last round is saved with date and time of the next software startup.

### 8.6 Print race...

You can start the printing process any time from Race -> Print race...

### 8.7 Export race

You can export race results to Clipboard. Then you can paste it (Ctrl+V) into an excel sheet.

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# 9 Notes

This document may contain preliminary information and is subject to change without notice. Check the updates at <u>www.kart-timer.com</u>.