

Quick Guide

Unipro Laptimer

6002 / 7002

Version 1.32

Go faster faster

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Introduction

Thank you for trusting us to deliver the most advanced Laptimer on the market.

The Unipro Laptimer has several unique features and will measure every piece of information with a speed and accuracy you have only dreamt about! It really enables you to use your Laptimer as a tool to go faster, faster.

We did all we could to make your investment as future proof as possible and you should be able to enjoy it in many years to come. With the unique possibility to expand it later, with accessories like G-force sensor, telemetry, tire temperatures and more, your investment is even safer.

If you have a special request either for new accessories or for a new feature, please let us know. We constantly try to develop our products with the most useful features so you can use the Laptimer to go faster, faster but we always appreciate good ideas from the users of our products.

If you have any problems or questions regarding your Unipro Laptimer we will make sure to give you the necessary support.

Please e-mail your questions to support@uniprolaptimer.com or contact your local dealer.

Good luck on the tracks!

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Get ready to go!

In this chapter, we will give you the most necessary information about what to do before you can start using your Laptimer. If you are an experienced user, looking for exact information, you may want to jump to the reference manual.

Do you have the necessary accessories?

If you have bought the basic package you should have following parts to your Laptimer:



Main Box



Display Unit



Receiver – Loop, Magnet or IR



RPM Sensor

You may also have bought any of these extra accessories:



Cylinder Head Sensor



Water Sensor



T-Junction



Exhaust Sensor Kit



Speed Kit



USB Cable

The Unipro Laptimer can work with three different temperature sensors at the same time.

Installation

Your Laptimer is a precision instrument and you should take the necessary time to ensure correct installation. A basic rule is to start from the sensors and go back to the Laptimer, never the other way. If cables are too long, they should always be looped at the end near the Laptimer. Use plenty of strips to fix the cables to the frame.

DISPLAY UNIT

The Display Unit is mounted on the steering wheel. Due to the ultra thin Display Unit, you will not have any problems with regulations.

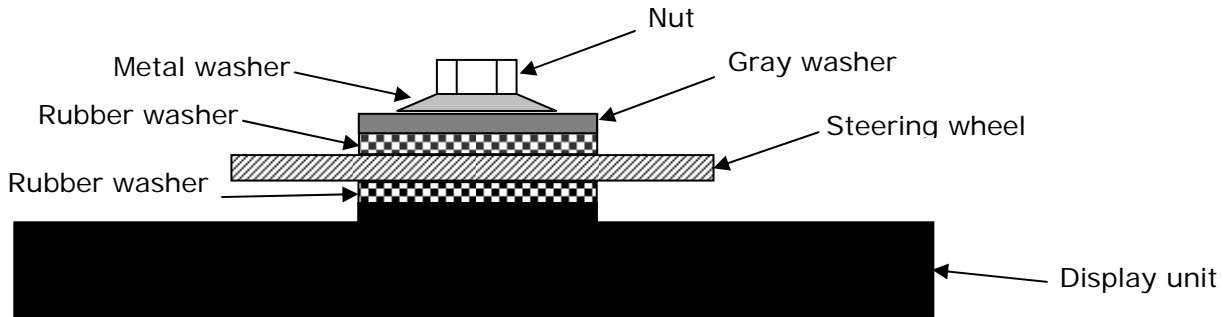


Figure 1. Display unit mounted on steering wheel



First, the Display Unit is mounted on the steering wheel. Choose a hole that gives a good placement at the top of the steering wheel. On some steering wheels, it is necessary to make the hole a little bigger. Remove the nut, the gray washer and *one* of the two black rubber washers. These parts are mounted on the back side of the steering wheel, as shown in figure 1.

It is important to keep the right order of the washers.

Please follow this sequence:

Nut – metal washer – gray plastic washer – black rubber washer – steering wheel – black rubber washer – Display Unit.

Tighten the nut when the display is straight and centered in the steering wheel. This picture shows the correct mounted Display Unit.



MAIN BOX

The main box is mounted behind the front cover. The following picture is showing the main box and its components.

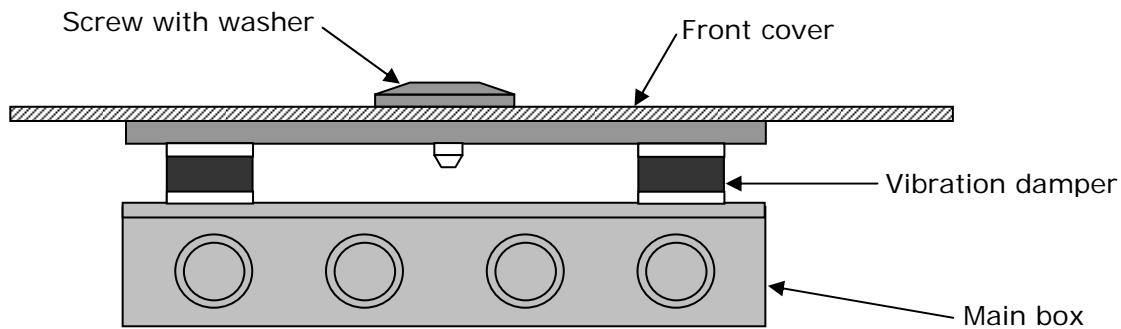


Figure 2. Main Box with fittings



The main Box is mounted behind the front cover.

First, a 6.5 mm hole is drilled in the cover. Some karts have a recess in the coat suitable for drilling the hole in. If you press hard on the sticker, you can see where to drill the hole. It is a good idea to look from the back before drilling!

Use the enclosed umbracho screw

The enclosed screw is screwed through the front coat to ease the mounting of the main box. Use a 5 mm umbracho.





Make sure that the cable for the Display Unit is pointing upwards.

The Main Box is held with one hand and the umbracho screw is tightened with the other hand. The cable for the Display Unit must be pointing **upwards**. Make sure the box is placed straight before tighten the screw hard.

The picture shows the Main Box after it is correctly mounted behind the front cover. With the Display Unit and the Main Box correctly mounted, you connect the Main Box and the Display Unit, and start to install the different sensors.

Cable from the Main Box to the Display Unit.

The cable for the Display Unit is now routed from the Main Box, along the steering column, to the connector on the Display Unit. Tighten the connector hard, but only use your fingers.



Make sure the cable isn't squeezed.

It is very important that the cable cannot be squeezed, even at full swing of the steering wheel. Make a loop on the cable and strip it to the steering column. Test by turning the steering wheel all the way to both sides and feel if the cable at any points feels tight.

RPM SENSOR

The RPM sensor comes standard with every Unipro Laptimer. We use an active sensor to ensure the best possible signal from all kind of engines. Mount the sensor with care. You do not want it to fall off during a race. If that happens, the Laptimer will turn itself off after 5 minutes and you will no longer be able to see your lap times.



Mount the sensor with at least two strips.

The RPM sensor is mounted at the end of the ignition cable, near the spark plug cap, with at least two strips.

The ignition on a gokart is the worst source of electrical noise and it is therefore a good idea to keep the RPM cable away from the ignition cable.

Please do not let the RPM cable touch the cylinder or the cylinder head because it can tear the isolation and shield and cause disturbance. The most important issue is to separate the RPM cable from the ignition cable just after the sensor. This is clearly shown on the picture. Do **not** let

the two cables run together!

The cable is mounted in the connector marked **RPM** on the main box. Tighten the connector hard with your fingers.

RECEIVERS

The Unipro Laptimer supports all kind of receivers. The different receivers are good for different things. If the track has a loop, we recommend using the Loop Receiver.

AMB Loop receiver



Mounting the Loop receiver.

The Loop receiver is mounted as low as possible on the left side of the seat. Drill a 6.5 mm hole from the inside of the seat. The distance from the underside of the Loop receiver to the asphalt must not exceed **100 mm**.

The Loop receiver is mounted parallel with the seat and needs to point backwards against the rear axle. Make sure, that nothing comes between the receiver and the track.

Use plenty of strips to secure the cable to the Main Box.

When the receiver is mounted, the cable is fixed to the middle of the kart, all the way to the Main Box. Use plenty of strips to secure the cable.

The cable is mounted in the connector named **RECV 1** on the Laptimer. Tighten the connector hard with your fingers.

Magnet receiver



Mounting the magnet receiver.

The best place to mount the magnet receiver is lengthwise on the bottom plate. Measure and drill the hole from the backside. The most important issue is to minimize the vibrations to the receiver. The most common placement of the magnet receiver is at the very front of the bottom plate, with the cable facing forward.

The distance between the receiver and asphalt **must not exceed 50 mm.**

Make sure that the cable is fixed properly.

Lead the cable up on the back side of the front cover and into the Main Box. It is important that the cable is fixed properly. We recommend that you use strips to fix the cable to the front cover.

The cable is mounted in the connector marked **RECV 1** on the Main Box. Tighten the connector hard with your fingers.



Infrared receiver



Mounting the Infrared receiver.

The best place to mount the infrared receiver is behind the front cover. Measure and drill the hole from the side. The most important issue is to mount the receiver horizontal.

Remember to place the infrared transmitter at the same height as the infrared receiver at least 3 meters from the track.

Make sure that the cable is fixed properly.

Lead the cable up on the back side of the front cover and into the Main Box. It is important that the cable is fixed properly. We recommend that you use strips to fix the cable to the front cover.

The cable is mounted in the connector marked **RECV 2** on the Main Box. Tighten the connector hard with your fingers.



TEMPERATURE SENSORS

On the 6002/7002 it is possible to use up to three temperature sensors. Two of them (Temp 1 + 2) are using a standard which is limited in the temperature range, but has a very high precision. These inputs are used for the cylinder head sensor and water sensor. The last input (Temp 3) is able to measure very high temperatures, and can therefore be used for the exhaust sensor.

Cylinder head sensor

This is the cylinder head or plug sensor. There are different types, depending on your engine type. The cylinder head sensor must be use with the temperature 1 or 2 input.



Remove the washer on your spark plug before mounting

The ring for the sensor is mounted between the cylinder head and the spark plug. Use plenty of strips to secure the cable from the cylinder head to the Main Box. You may need different types if you use different engines. Ask you dealer or contact Unipro if you are in doubt.

Mount the cable in the connector marked **TEMP 1** or **TEMP 2** on the Main Box. Tighten the connector hard with your fingers.

Exhaust sensor

The exhaust sensor is used to measure the temperature of the exhaust gas from the engine. It is important to mount it correctly, at the right position. If you mount the sensor to far away from the piston, you will measure temperature of the flame instead of the gas! **Use only the TEMP 3 input for the exhaust sensor!**



Weld the bush on the exhaust pipe 12-15 cm from the piston.

The bush is mounted on the exhaust pipe. The distance should be 12-15 cm from the backside of the piston. Do not drill a hole in the exhaust pipe before you have welded the bush on the pipe.

After the bush is welded on the exhaust pipe, drill a 4.1 mm hole in the middle of the bush through the exhaust pipe. Be careful not to damage the pipe on the other side when you drill through the pipe.



Mount the sensor in the bush.

After the hole is drilled, the sensor is pushed all the way in and tightened. Fix the cable to the seat, and all the way to the Main Box, so it is well protected.

The cable is mounted in the connector named **TEMP 3** on the Main Box. Tighten the connector hard with your fingers.



Water sensor

This is the sensor for measuring the water heat. Use either **TEMP 1** or **TEMP 2** for the water sensor. When you drive a kart with water cooled engine, the heat of the cooling water is of course important for the performance of the engine.



Mounting the water sensor.

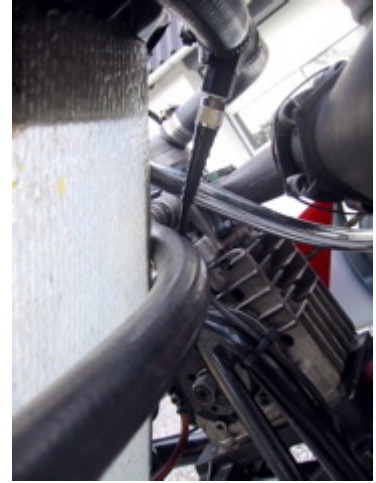
The water sensor is mounted on the hose that goes from the cooler to the engine. It is best to mount the sensor on the hose so the sensor sits near the seat, pointing downwards.

Cut the hose in the right place and remember to put the two hose clamps on the two ends of the hose before inserting the T-junction in the hose.



Tighten the two hose clamps to secure the T-junction in the right place.

Mount the cable on the sensor and tighten it hard with your fingers. Then fix the cable with strips to the frame and lead it all the way to the Main Box.



Mount the cable in the connector marked **TEMP 1** or **TEMP 2** on the Main Box. Tighten the connector hard with your fingers.

WHEEL SENSOR KIT

The wheel sensor kit is used for many of the advanced features in the Laptimer. For instance speed, splits, tire wear counters, lap length and more.

The sensor disc

The sensor disc is mounted on the front wheel with pressure on in most of the corners on the track. On most tracks this will be the left front wheel. But it is always best to count the corners of the track, and then choose the appropriate wheel.



Dismount the wheel and put the centering bush in the inner ring of the bearing.



The sensor disc is placed over the centering bush and it is held firmly down. Then tighten the three small screws that fix the sensor disc to the wheel. Tighten the three screws hard, so the



sensor disc doesn't go loose when you're driving. After the sensor disc is mounted, the centering bush is removed again. The wheel is now ready for mounting again.

The wheel sensor



The sensor fitting is mounted in a suitable hole in the stub axle. Depending on the kart model, it can be necessary to drill a hole in the stub axle.

If you mount the fitting so the edge is 35-40 mm from the sensor disc, you will be able to make some adjustment on the sensor without having to move the fitting.

Mount the sensor in the fitting so the distance between the sensor and the sensor disc is between 3 and 10 millimeters.

If you experience problems with the speed, this distance is the first thing to check!





The cable is fixed to the frame in a nice large curve so the wheel can turn without the cable being caught or tightened.

Remember to make the loop large enough to allow adjustment of the sensor when you change the front width of the kart.

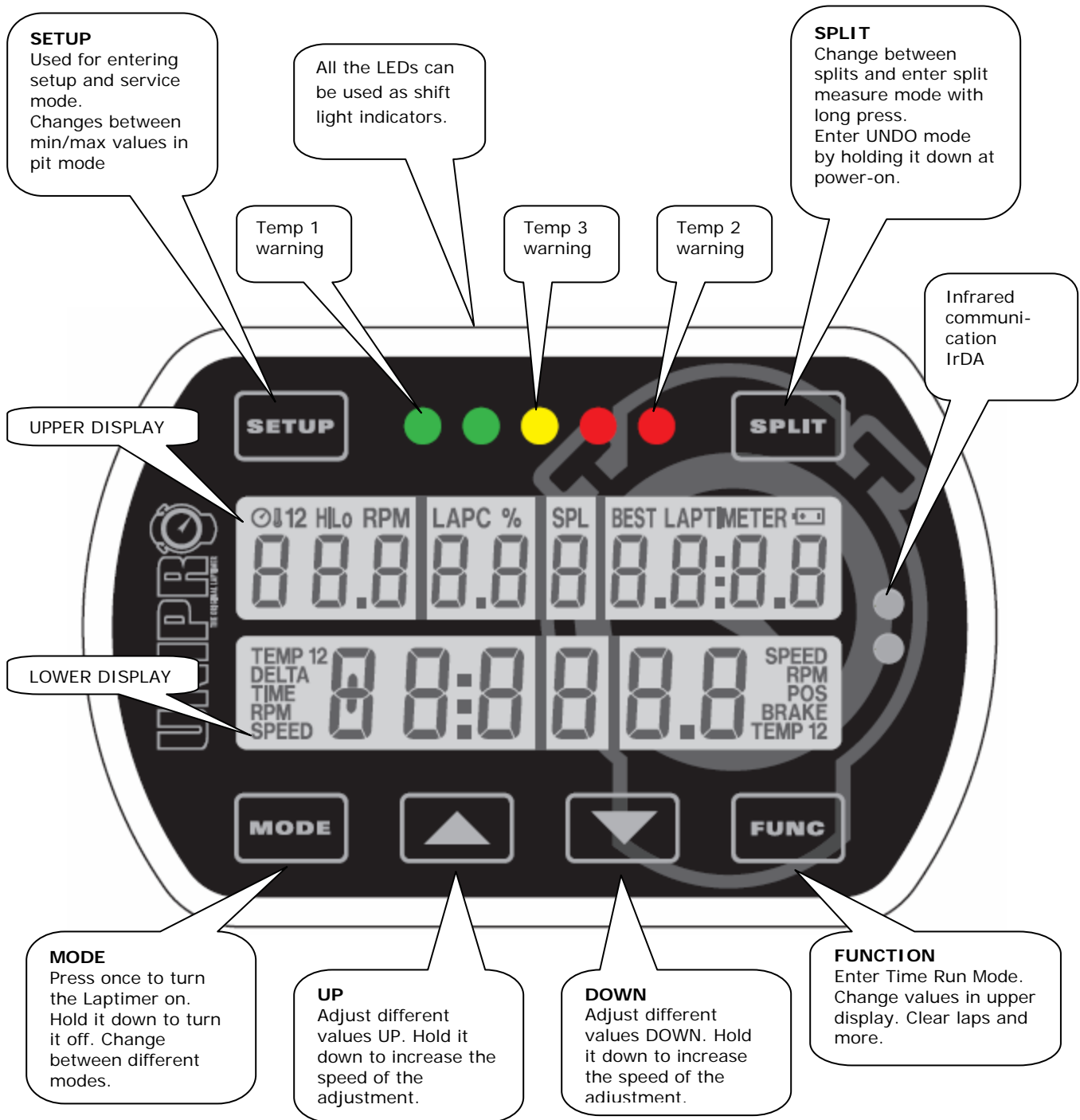
Fix the cable to the frame with strips all the way to the Main Box. The cable is mounted in the connector named **WHEEL** on the Main Box. Tighten the connector hard

with your fingers.

Basic functions and setup

We have put a lot of experience and effort into making the Display Unit very easy to operate on the track and in the pit. The feed back we get from drivers and teams using the Unipro Laptimer tells us that we have succeeded. Here you can get an overview over the functions on the Display Unit.

DISPLAY BUTTONS



BASIC SETUP

Go to setup mode, and make sure that the basic settings match your actual setup. You enter setup mode this way:

1. Press MODE to turn on the Laptimer
2. Press SETUP to enter setup mode
3. Press SETUP again to browse through the different setup screens



You can read about all the setup screens in the reference manual. Here we will introduce you to the ones you need to know to get started.

Receiver type



This is the receiver type screen.

The Unipro Laptimer can use all types of receivers. You can choose between IR (infrared), Loop (AMB active loop) and Stripe (magnets).


Use the  and  buttons to choose the receiver type connected to the Laptimer. **If you use a loop receiver, you can skip the explanation about stripe setup!**

Stripe setup



This is the stripe setup screen.

If the receiver type is set to Stripe (magnets) this is the next step. It is the most important setup before you start driving on a new track. You need to set two values. The number of magnets from the pit to the finish line (2 in this example) and the total number of magnets on the track (3 in this example).

Press  to set the two values (see the next two screens and the example with a typical track).

Magnet count



Set the total number of magnets on the track.

When you press **FUNC** from the stripe setup screen, you can edit the total number of magnets on the track. You can choose between 1 and 8 magnets. If you don't know the number of magnets, you can set the Laptimer to use only one magnet and then drive one lap. Then you can see how many times the Laptimer triggers.

Use the **▼** and **▲** buttons to adjust the total number of magnets.

When the correct number of magnets is entered, press **FUNC** to edit the number of magnets from the pit to the finish line (See the next screen).

Magnet delay



Set the number of magnets from the pit to the finish line.

This is the number of magnets you need to delay when going from the Pit to the finish line. In this example, you need to pass two magnets when going out from the Pit. This means, that on the out lap (or first lap) the Laptimer ignores the first two magnets and then start the Laptimer when passing the

third one.

Use the **▼** and **▲** buttons to adjust the magnets delay.

Press **FUNC** to save and return to the stripe setup screen.

More settings

If you want to get the full benefit of your Laptimer, we recommend that you use some of the more advanced features and accessories. The most used accessories are:

- Temperature sensors for cylinder head, exhaust and / or water
- Speed kit, which enables you to use split times and speed
- Data Analyser and PC Analyser to view and analyse your data

We will get back to this later in the Quick Guide, and you can read all about it in the Reference Manual. With the settings mentioned above, you can start to use your Laptimer, getting precise lap times and RPM values.

Practice and race using the basic functions

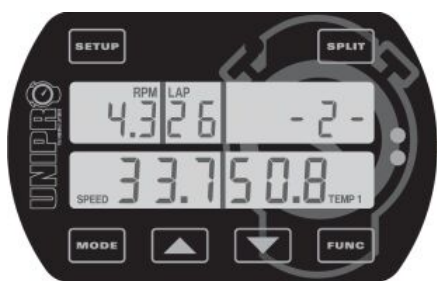
Now you can start using your Laptimer. The Laptimer have some different operating modes. We have already told you about the setup mode. To use the basic functions of the Laptimer, you need to know these three modes:

- First lap mode – the Laptimer always starts in this mode
- Running mode – the Laptimer shifts to running mode when passing the finish line
- Pit mode – Enter pit mode by pressing MODE from First lap or Running mode

After reading the information about the three modes, you can use the basic functions of your Laptimer in practice and race. When you are familiar with these functions we recommend that you start to take advantage of the more advanced functions – these will really help you to improve your lap times.

Operating modes

FIRST LAP MODE



When the Laptimer is turned on with the **MODE** button, it starts up in first lap mode. This is the part of the race going from the pit to the finish line for the first time.

It will always start from the last lap shown in the Laptimer, so you will never “overwrite” anything when turning the Laptimer on.

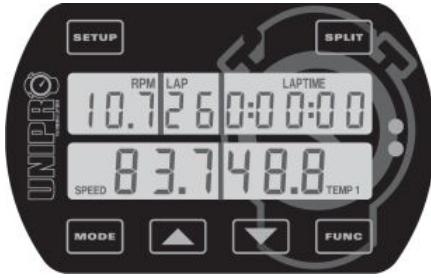
If you are not in first lap mode when the engine is started, the Laptimer will automatically change to first lap mode when it detects a signal from the RPM sensor. This way, you cannot drive around in pit mode, and think you are getting lap times. It is however possible to change back to pit mode when the engine is running!

The “-2-” is telling how many magnets you need to pass before the finish line. This is the so-called stripe delay. It is possible to manual adjust this delay in first lap mode. If driving with Loop or IR receiver, this part of the display is blank.

When passing the finish line for the first time, the Laptimer change to running mode.

RUNNING MODE

The Laptimer will automatically turn to running mode when you pass the finish line.

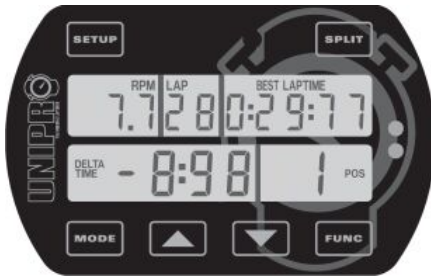


When the finish line is passed for the first time, the display shows 0:00:00 to indicate that the timer is started.

All data are updated in the display every 0.5 seconds. In the display set-up you can define which values you want to show in the lower part during the race. You can choose which data to show in the upper display with the **FUNC** button.

The upper part of the display will always show one of the data not shown in the lower display, lap number and lap time. Small icons will help you identify the value shown. Indication of the best lap is done with the **BEST** icon above the lap time.

Difference between current lap time and best lap time (Delta time) / High value



When the Laptimer is passing the finish line, it is showing the difference between the current lap and the best lap and its position. In the shown example, the current lap is 8.98 seconds better than the previous best lap and the current lap is the best lap (in position 1) This information is shown for 5 seconds before changing back to data display.

It is possible to turn this feature off in service mode, where you can also choose to show the highest values for the current lap instead of the delta time. You can also turn both features off.

PIT MODE



Pit mode is for analysing the data stored in the Laptimer.

Press **MODE** from either first lap mode or running mode to enter pit mode.

When entering pit mode, the Laptimer jumps to the best lap. In this example, the best lap is lap #18. From this point, you can go two ways: If you press **▲** you will go to the next

lap (19 in this example). If you press the **▼** button, the Laptimer jumps to lap # 1.

The **BEST LAPTIME** icon at the top indicates the best lap time. The **FUNC** button changes the data shown in the upper display. **SETUP** changes between the high (maximum) and the low (minimum) data values stored.

CLEAR ALL LAPS



Clearing all laps and data in the Laptimer is easy!

Pressing and holding the **FUNC** button for two seconds, clears all the data stored in the Laptimer. You have to confirm it by pressing the **FUNC** button again.

If you clear all laps by accident, you can use UNDO mode to undo it again!

After doing clear laps, the Laptimer starts in firstlap mode ready to drive again.

No settings are cleared, only the laps and the logged data! We recommend clearing the Laptimer after each run. If you have too many laps in the Laptimer, it will get harder to analyse your data. Transfer the data to the Data Analyser or a PC before you clear the laps. Please remember, that the logged data can only be transferred to a PC, and not to the Data Analyser.

Take advantage of the advanced features

When you are familiar with the basic functions of your Laptimer, it's time to really use the Laptimer to improve your lap times.

The most important of the advanced features are:

- Split times / Split points
- Temperature sensors
- Data Analyser and PC Analyser

We will explain you how to use these features in this chapter.

Split times / Split points

Dividing the track into smaller sections is one of the most important features of the Laptimer. It will enable you to see all data in the Laptimer for each section of the track. There are two ways of using splits with your Unipro Laptimer:

1. Splits with magnet stripes
2. Splits with wheel sensor

SPLITS WITH MAGNET STRIPES

If the track has more than one magnet stripe, it is possible to use the rest as split points. When you have made a correct stripe setup, as mentioned above, you just need to set the Laptimer to use the stripes as split points. The only problems are that you may not have enough split points, or you may want to have the split points in the right places. You can solve these problems by using the wheel sensor to set the split points.

Defining the split points with magnet stripes

Make sure, that you have downloaded all data from the Laptimer before changing the split points. All laps will be cleared when you change the split points.



This is the split stripe screen.

Press **SETUP** until you get to the split point viewing screen.

Then press **FUNC** to go to the split point editing screen.

Press **SPLIT** until you get to the split stripe screen (shown

here). Then press **FUNC** to leave the editing screen, and save

the setup. Press **FUNC** again to accept all laps are cleared.

Undo Clear split points!

If you by accident clear all laps by changing the split points you can undo the action this way:

1. Turn the Laptimer off by pressing **MODE** down for 1 second.
2. Press and hold down **SPLIT** while pressing **MODE** once.
3. When the display turns on, let go of the **SPLIT** and you will be in Undo mode.
4. Use **▼** or **▲** to change between YES and NO.
5. Leave the text on YES and press **FUNC** to undo the action. The display will now turn off, and you are ready to start all over again.

SPLITS WITH WHEEL SENSOR

Using the high precision wheel sensor, you can define up to 8 points on the track as split points. This will divide the track in up to 9 segments giving you the possibility to optimize your kart setup and driving style for each segment of the track individually. You can set the splits in setup mode, during the first lap, wireless from the Data Analyser or using the USB cable from the PC Analyser program.

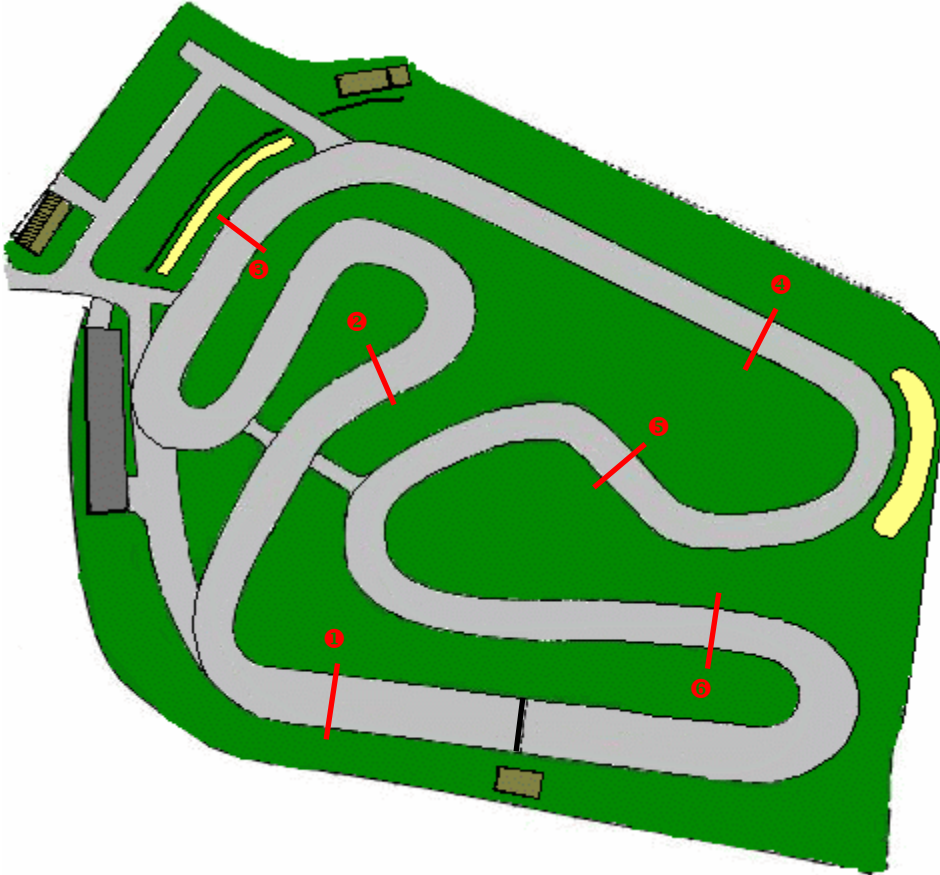
Defining the split points with the use of the wheel sensor

When you define split points for a track the first time, the easiest way is to do as follows:

1. Make sure that you have downloaded all data from the Laptimer. All laps will be erased when you set new split points.
2. Decide where on the track you want to have the split points. It can be a good idea to start with just two or three split points, and then set more points when you have become familiar with analysing the data.
3. Get the kart and driver ready for driving a first lap where the split points are set.
4. Turn the Laptimer on by pressing **MODE**
5. Press and hold down **SPLIT** until the message "Clear Spls YES" is shown in the display.
6. Press **FUNC** to accept all laps are cleared.
7. Now all laps and split points in the Laptimer are erased and you are ready to drive out and set the new split points.
8. Every time you come to a split point, press **FUNC** to set the split point. When the first lap is driven, the Laptimer will automatically change to running mode.

Each split point is measured in distance from the finish line, and stored in the Laptimer. You can use the stored data in different ways to make the exact same setup next time you come to the same track – or to copy the exact settings to other Laptimers in the team. Using the split function you will be able to view all the data in the Laptimer for each segment of the track. If you have a team with more than one driver you can compare each drivers split times and let the drivers learn from each other.

Typical track with 6 split points





Please be aware though, that the split function with the wheel sensor will **not** work well on a kart with four-wheel brakes because the sensor needs to be on a free running wheel! In that case, you can use a magnet receiver and the magnet stripes as split points.

Measure and set the wheel circumference

When you use the speed kit, you must measure and set the wheel circumference. Press SETUP until you see the wheel circumference screen.



Wheel circumference screen. The wheel circumference is entered in millimetres and you need to measure this quite often to keep the system accurate. The best is to use a soft tape measure and do it every time you go out from the pit. It will have influence on the speed, the tire wear counters, and most important the split points. Adjust the circumference by using the  and  buttons.

Temperature sensors

The Unipro Laptimer can work with up to three temperature sensors. You can choose between the following sensors:

- Cylinder head temperature
- Exhaust gas temperature
- Water temperature (on water cooled engines)
- Tire temperature sensor will be available in the near future

Besides the three temperature sensors the Unipro Laptimer has a built in thermometer measuring the environment temperature. This temperature is stored with the lap times and other data. This can be a good help when analysing your results.



The temperature sensors can give you important information about the performance of your engine, enabling you to see the effect on both engine performance and lap times.

SETUP THE TEMPERATURE INPUTS

When you have installed temperature sensors you need to setup the Laptimer. Turn on the Laptimer and press SETUP until you see the temperature input screen.



This is the temperature input screen. It is here you define how many temperature inputs you are using. Choose the right combination of the 3 temperature inputs. The reason to turn the inputs on or off is to save battery power and to adjust the user interface to the real setup.



Use the  and  buttons to select the combination of temperature inputs you are currently using. You will only

have to do this again if you add or remove temperature sensors.

TEMPERATURE WARNING POINTS



This is the temperature warning point screen. Here you can define a warning point for each active temperature sensor. The picture shows the setting of temperature point 1.

Use the  and  buttons to adjust the temperature point. Temperatures are shown in either degrees centigrade or Fahrenheit. If you have activated more than one temperature sensor, you will go to the next warning point by

pressing .

Temperature **point 1 is the left green LED**, temperature **point 2 is the right red LED** and temperature **point 3 is the middle yellow LED**. They start to blink when the temperature rises above the warning point set.

Analyse your data

You can learn a lot about your performance on the track just from viewing the data on the display of the Laptimer. However if you want the full benefit of the Laptimer you should export the data from the Laptimer to a Data Analyser or to a PC. This will give you the possibility to print or store all data electronically, and to make advanced analysis of the data.

DATA ANALYSER

The Unipro Data Analyser is the perfect companion for your Laptimer. It is the fastest way to getting data out of the Laptimer, with the possibility to print the data, or view them while the driver is on the track.

Transferring data from the Laptimer to the Data Analyser is easy



1. Turn the Laptimer on.
2. Press **MODE** to change to pit mode
3. Press **MODE** again to change to PC mode
4. Press **FUNC** to enable the infrared communication
5. Press OK on the Data Analyser to turn it on
6. On the Analyser go the main menu with "Transfer" as the top point. Just move the cursor to "Transfer" and press the arrow to the right to start transferring the data



Now the communication is started and all the data from the Laptimer (except the logged data) is transferred to the Data Analyser in a few seconds. The green LED to the left is blinking when the Laptimer is receiving data and the red LED to the right is blinking when the Laptimer is sending data.



After the data is transferred to the Data Analyser they can be viewed, stored, printed and transferred to a PC using the USB connector. It is possible to store data from at least 20 Laptimers before transferring them to a PC.

You can change the connection settings in service mode. Read more about service mode in the reference manual.

PC ANALYSER

Unipro supplies a free software program called PC Analyser. This is a common platform to analyse and manage data and sessions from a Laptimer and the Data Analyser.



Receive data from the Laptimer

The basic idea of the PC Analyser program is to receive data from the Laptimer and then view, store, print and analyse the data on the PC.

The use of the PC Analyser program is straight forward. Just connect the USB cable to the Laptimer (it is perfectly okay to do while the Laptimer is turned on). The Laptimer is then changing to PC mode and is ready to transfer the data.

From the Transfer menu in the PC Analyser program, choose "Receive" and the data from the Laptimer will be sent to the PC program. This will only take a few seconds and all windows are updated and ready for further analysis.

The PC Analyser program offers you basic table viewing of the lap and split data as in pit mode and more advanced graph for deep analysis of setup and driving style.

Split time table

The quick overview is from this table. Here are only lap times and split times shown. The best times are marked with green and the best rolling lap is marked in blue. The best theoretical lap is calculated from the best split times. It is possible to sort the table from each of the column headings.

Lap no.	Run no.	Lap time	Split 1 time	Split 2 time	Split 3 time	Split L time
18	1	0:43:50	0:12:48	0:14:37	0:09:31	0:07:34
19	1	0:43:43	0:12:44	0:14:41	0:09:30	0:07:28
20	1	0:43:38	0:12:51	0:14:30	0:09:28	0:07:29
21	1	0:43:43	0:12:43	0:14:35	0:09:33	0:07:32
22	1	0:43:39	0:12:50	0:14:30	0:09:29	0:07:30
23	1	0:43:29	0:12:41	0:14:40	0:09:22	0:07:26
24	1	0:43:58	0:12:56	0:14:39	0:09:32	0:07:31
25	1	0:43:46	0:12:40	0:14:29	0:09:36	0:07:41
26	1	0:43:62	0:12:50	0:14:35	0:09:32	0:07:45
27	1	0:43:80	0:12:58	0:14:58	0:09:37	0:07:27
28	1	0:43:40	0:12:58	0:14:46	0:09:16	0:07:20
29	1	0:43:35	0:12:46	0:14:36	0:09:30	0:07:23
30	1	0:43:35	0:12:50	0:14:41	0:09:22	0:07:22
31	1	0:46:22	0:12:48	0:14:36	0:09:23	0:10:15
Theo. best lap		0:42:94	0:12:40	0:14:29	0:09:16	0:07:09
Best rolling lap		0:43:18	0:12:46	0:14:36	0:09:16	0:07:20

Lap no.	Run no.	Lap time	Min. RPM	Max. RPM	Min. L/s	Max. L/s	Lap length	Engine no.	Tire no.	Env. Temp	Min. Temp1	Max. Temp1	Min. Temp2	Max. Temp2	Average RPM
4	1	0:47:42	6980	19796	42,6	119,5	1005m	1	1	11,4°C	46,6°C	50,2°C	69,3°C	80,9°C	12419
5	1	0:44:73	3415	20009	39,9	121,9	1007m	1	1	11,4°C	50,2°C	52,4°C	77,2°C	86,3°C	13292
6	1	0:44:11	7414	20045	45,7	121,3	1002m	1	1	11,4°C	52,4°C	53,8°C	79,4°C	86,5°C	13569
7	1	0:43:84	7262	20139	45,9	121,3	1002m	1	1	11,2°C	53,4°C	54,1°C	81,1°C	87,5°C	13466
8	1	0:43:64	5664	19796	47,3	120,7	1005m	1	1	11,2°C	53,1°C	53,6°C	81,9°C	87,8°C	13618
9	1	0:43:45	7624	20107	46,0	122,8	1002m	1	1	11,0°C	53,1°C	54,1°C	82,1°C	88,5°C	13684
10	1	0:43:45	6882	20110	47,1	122,6	1002m	1	1	11,0°C	53,7°C	54,4°C	82,0°C	88,6°C	13713
11	1	0:43:45	6217	20122	45,7	122,5	1006m	1	1	11,0°C	53,9°C	54,6°C	82,3°C	88,0°C	13651
12	1	0:43:20	7100	20326	45,9	124,9	1006m	1	1	10,8°C	54,9°C	55,9°C	83,4°C	90,5°C	13650
13	1	0:43:41	8397	20296	45,3	123,7	1008m	1	1	10,8°C	56,0°C	56,6°C	83,3°C	90,9°C	13731
14	1	0:43:86	8122	19833	45,1	120,7	1004m	1	1	10,8°C	56,6°C	57,6°C	84,3°C	93,5°C	13485
15	1	0:43:66	6271	20353	44,1	123,7	1007m	1	1	10,8°C	53,0°C	57,8°C	83,7°C	91,7°C	13546
16	1	0:43:32	7336	20290	46,0	123,7	1007m	1	1	10,8°C	49,0°C	52,7°C	81,4°C	87,1°C	13699
17	1	0:43:51	8190	20254	46,2	121,4	1008m	1	1	10,8°C	47,4°C	49,2°C	78,0°C	84,2°C	13723
18	1	0:43:50	8744	20598	47,6	121,4	1011m	1	1	10,8°C	46,4°C	47,4°C	78,1°C	83,0°C	13771
19	1	0:43:43	6736	20359	46,9	122,0	1010m	1	1	10,8°C	46,2°C	47,0°C	78,8°C	82,5°C	13706
20	1	0:43:38	5092	20107	47,6	121,4	1009m	1	1	10,8°C	46,1°C	48,4°C	77,2°C	83,4°C	13688

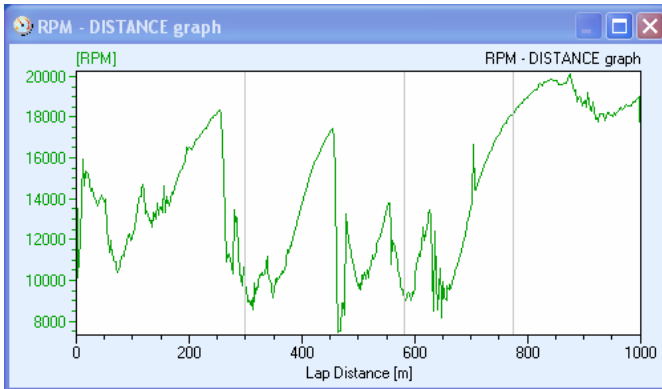
Lap data table

The next step is data per lap. Here is information like lap time, run number, lap length, environment temperature, min/max. RPM, speed and temperatures. Even information about the engine number and tire wear counter is in this table.

Split data table

Most information can be seen in this table. Here we have the same information as in the Lap Data table, just shown per split instead of per lap. From this information, you can read entry speed, exit speed etc. on each segment of the track.

Lap no.	Split no.	Run no.	Split time	Min. RPM	Max. RPM	Min. L/s	Max. L/s	Lap length	Engine no.	Tire no.	Env. Temp	Min. Temp1	Max. Temp1	Min. Temp2	Max. Temp2
25	1	1	0:43:46	5763	20244	45,7	120,7	1011 m	1	1	9,8°C	52,7°C	53,2°C	83,9°C	87,7°C
1	1	1	0:12:40	5763	19290	44,8	118,3	298 m	1	1	10,0°C	52,9°C	53,1°C	85,9°C	87,7°C
2	1	1	0:14:29	7992	17976	48,7	107,9	289 m	1	1	10,0°C	52,9°C	52,9°C	83,3°C	87,3°C
3	1	1	0:09:36	9550	17955	51,3	108,4	194 m	1	1	9,8°C	52,8°C	53,1°C	85,3°C	86,1°C
Lap 1	1	1	0:07:41	16211	20344	109,4	120,7	236 m	1	1	9,8°C	52,9°C	52,9°C	86,3°C	87,2°C
26	1	1	0:43:62	4998	19987	43,9	121,3	1014 m	1	1	9,8°C	52,7°C	53,5°C	83,9°C	86,4°C
1	1	1	0:12:50	7100	18575	44,8	115,1	298 m	1	1	9,8°C	52,7°C	53,0°C	83,9°C	87,4°C
2	1	1	0:14:35	4798	17544	43,9	107,8	283 m	1	1	9,8°C	53,2°C	53,5°C	85,4°C	86,4°C
3	1	1	0:09:32	9243	17880	52,3	108,3	194 m	1	1	9,8°C	53,1°C	53,5°C	86,1°C	86,9°C
Lap 1	1	1	0:07:48	15778	19987	109,3	121,3	239 m	1	1	9,8°C	53,0°C	53,1°C	87,3°C	87,3°C
27	1	1	0:43:80	6499	20380	41,2	123,1	1011 m	1	1	9,8°C	52,9°C	54,1°C	82,1°C	87,5°C
1	1	1	0:12:58	6958	18528	42,1	113,5	298 m	1	1	9,8°C	52,9°C	53,1°C	82,1°C	87,4°C
2	1	1	0:14:58	6499	17538	41,2	107,8	283 m	1	1	9,8°C	52,6°C	53,6°C	82,8°C	86,3°C
3	1	1	0:09:37	9304	18244	48,8	111,0	194 m	1	1	9,8°C	53,0°C	53,7°C	84,1°C	85,2°C
Lap 1	1	1	0:07:27	16208	20380	112,2	123,1	236 m	1	1	9,8°C	53,7°C	54,1°C	86,1°C	87,5°C
28	1	1	0:43:40	3892	20675	45,1	122,5	1009 m	1	1	9,8°C	54,1°C	54,9°C	82,9°C	88,2°C
1	1	1	0:12:58	3892	18468	45,5	117,5	298 m	1	1	9,8°C	54,2°C	54,9°C	82,9°C	87,9°C
2	1	1	0:14:46	8333	17556	45,1	107,3	283 m	1	1	9,8°C	54,1°C	54,7°C	83,3°C	87,8°C



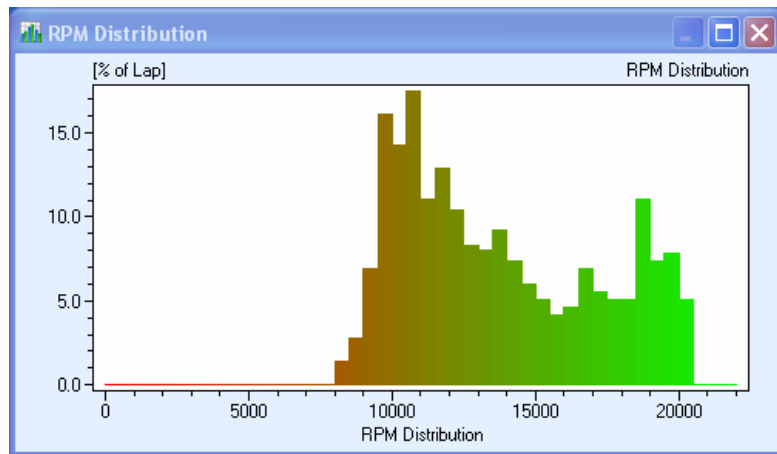
RPM graph

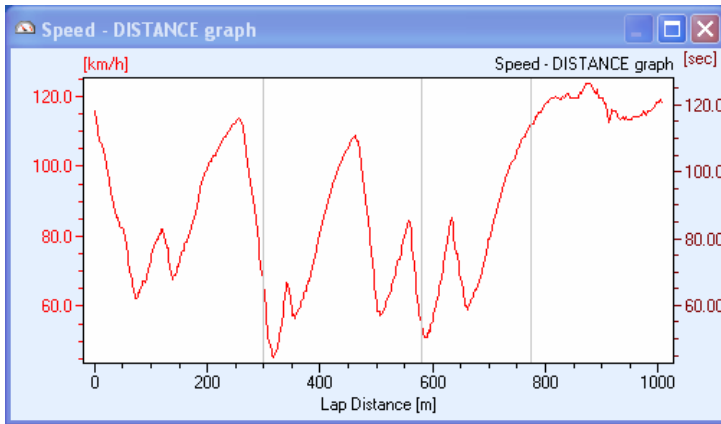
The RPM graph is showing the evolution of the engine revolutions. All RPM values are logged 10 times per seconds, and it is worth to mention that the RPM is filtered in the Laptimer. Therefore the measurement is very precise. Look at the "spike" on the RPM curve to the right. This is the driver jumping in the seat! This shows the fast response of the Laptimer. The x-axis can

show either lap time or distance from the finish line. The vertical gray lines are the split points.

RPM distribution graph

The RPM distribution graph is showing how many percent of the total lap the engine has been in a certain RPM range. This gives a fast overview in which range the engine is working most of the time, and it will be easy to see how the gearing and setup affects this. You can choose a resolution of 50, 250, 500 and 1000 RPMs per bar.





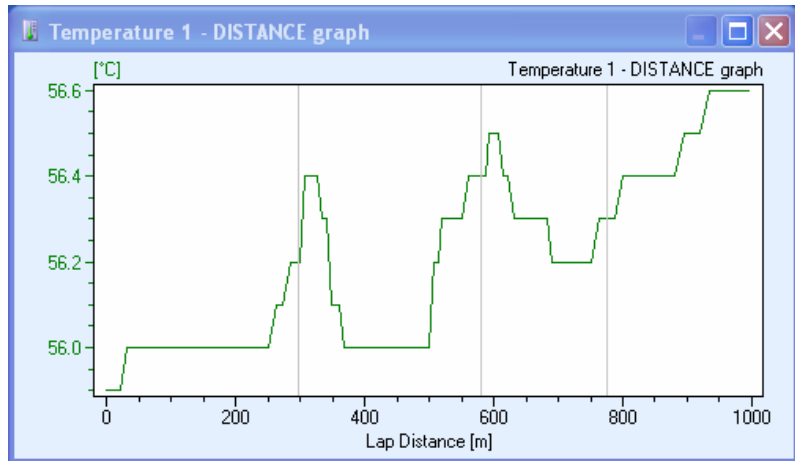
Speed graph

The speed graph is showing the evolution for a complete lap. The speed is logged 10 times per second and because of the very high precision, the speed graph is often telling more about the driving than the RPM graph. The benefit of the speed is, it is not affected in the same way as the RPM with blocking and things like that. This

graph can also show you the best places to put the split points.

Temperature graph

It is possible to see graphs for temperature 1 – 3 and the environment temperature. These data are logged 1 time per second and that is the same frequency as the are measured with. Try to see the swing of the temperature in the example shown. The temperature is changing between 55.9°C and 56.6°C (132.6°F and 133.9°F) indicating the high precision the Laptimer offers.



Compare Drivers

A fast and easy way to compare two drivers or two different laps. See exactly where and how much the slower driver is lacking and analyse the data to see why.

You can even simulate the lap in real-time to review it again and again.

There are even more functions in the PC Analyser program, and it's free to download from our website – unipro.laptimer.com.