

MYCHRON4E-BOX

EXPANSION BOX FOR MYCHRON4 SYSTEMS



www.mychron4.com



MYCHRON4 e-BOX

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MyChron4 eBox is the new instrument projected by AIM to enlarge further on the high performances of the innovative MyChron4.

This manual is to be considered as an integration of MyChron4 user guide: for the arguments that are not explained in this book, please take a look at it.

We kindly suggest you to check periodically our www.mychron4.com website to download new software and firmware releases for your MyChron4 eBox.

MYCHRON4 EBOX GOLD

Connections to MyChron4

1) Temperature inputs

It's possible to connect up to 2 temperature inputs to MyChron4 eBox.

Those inputs can be Thermocouple as well as Thermoresistance sensors.

2) Lap Timer input

After installing MyChron4 eBox, the finish-line sensor can be connected either to MyChron4 or to MyChron4 eBox through the Lap Timer input.

This sensor can be optical or magnetic.

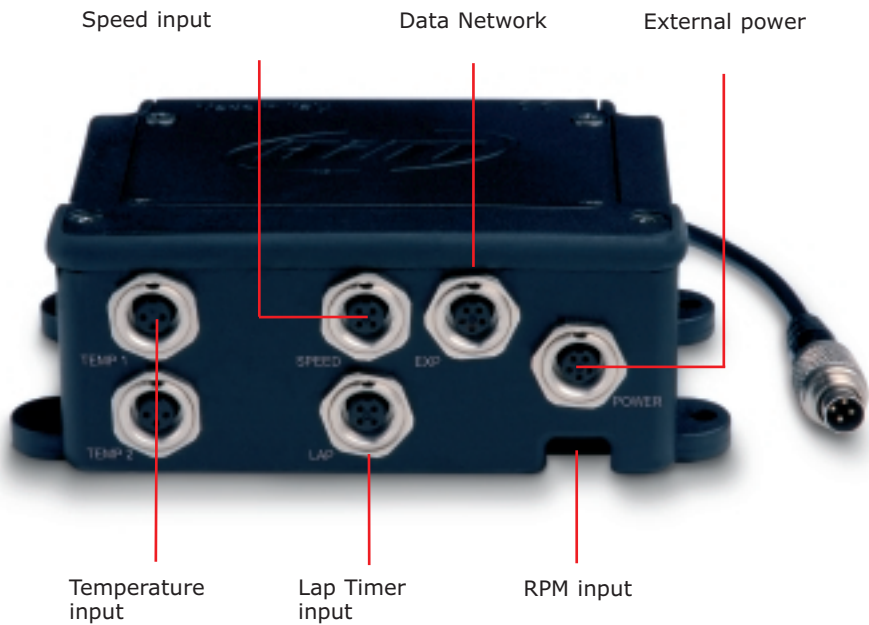
3) External power

Input used to power the MyChron4eBox through an external source.

4) Speed input

Input used to connect the Speed sensor.

It can be used for front wheels or rear axle.



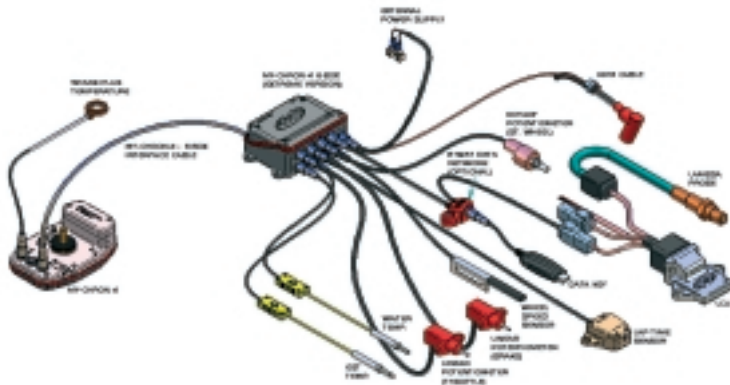
EBOX GOLD

5) RPM input

RPM signal cable must be fastened to the MyChron4 eBox eyelet.

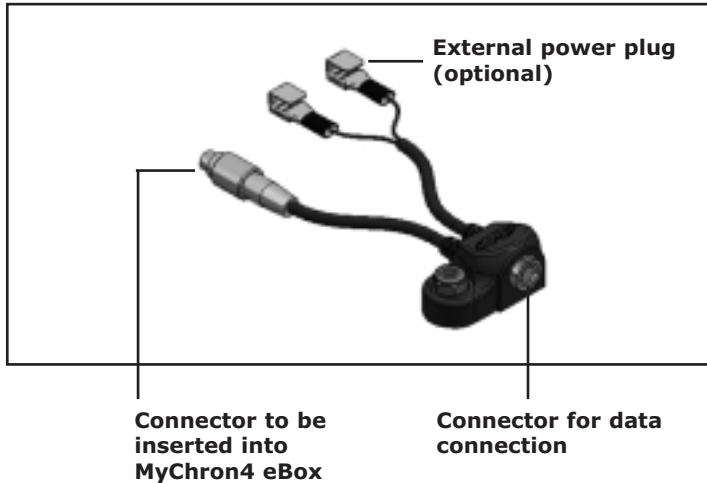
6) Data network

Thanks to this connector it's possible to download data through the DataKey and add further sensors on the MyChron4 eBox itself.



EBOX GOLD

As a further optional it's also possible to have a special y-cable, to remote the data-download plug with or without external power for MyChron4 eBox.



EBOX GOLD

The connection of MyChron4 eBox to your MyChron4 unit requires a custom made cable.

It's possible to connect a Temperature sensor to MyChron4 in addition to the Temperature input present on MyChron4.



MyChron4 eBox

CONNECTION TO MYCHRON4

Temperature input



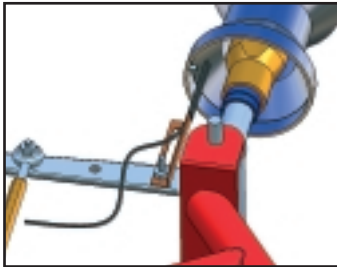
Mychron4 eBox
input

Mychron4

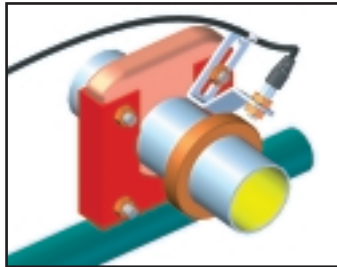
EBOX SPEED SENSORS

There are two types of Speed sensors available:

- 1) Front wheel sensor
- 2) Rear axle sensor



Front wheel Speed sensor



Rear axle Speed sensor

Front wheel Speed sensor

To get a correct value it's definitely important to orient the Speed sensor as showed in the picture and to keep it at a distance of 5mm from the magnet.

EBOX SPEED SENSORS



Rear axle wheel Speed sensor

This sensor is usually installed on the bearing housing of the axle and can be provided with a magnetic ring.

The distance between the sensor and the magnet must be from 3 to 5mm.



Once the Speed sensor has been installed, it's necessary to set the wheel circumference value and the number of impulses per lap.

This operation can be made in two different ways:

Through the initial configuration Wizard

Pressing the MENU button, choosing the CONFIGURATION icon and entering the SPEED SETUP menu

EBOX SPEED SENSORS

Wheel circumference

This value indicates the measure of the wheel circumference on which the Speed sensor has been installed. It can be expressed in millimeters or inches, according to the unit of measure chosen (Km/h o Mph).

Wheel impulses

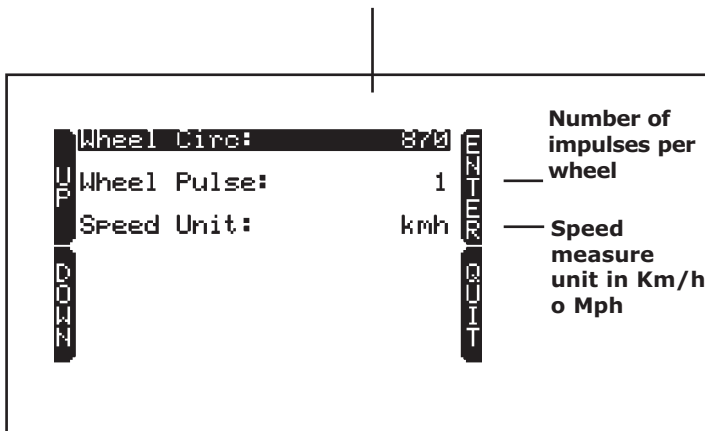
This entry represents the number of installed magnets that is equal to the number of impulses the sensor receives on every lap of the wheel.

Speed unit

Speed can be measured in Km/h o in Mph.

EBOX SPEED SENSORS

Wheel circumference in mm. o inches.

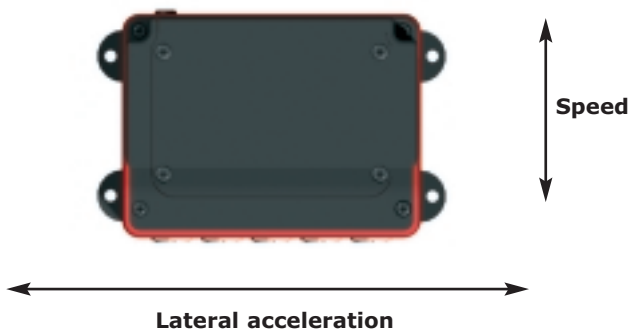


EBOX INSTALLATION

The installation of MyChron4 eBox represents a very important phase to get a correct calibration of the internal accelerometer, of the Speed channel and the RPM value.

MyChron4 eBox is provided with an internal accelerometer that measures the lateral accelerations of the kart.

The main function of this sensor is to draw the map of the circuit, as a consequence the correct way to mount it is the following:



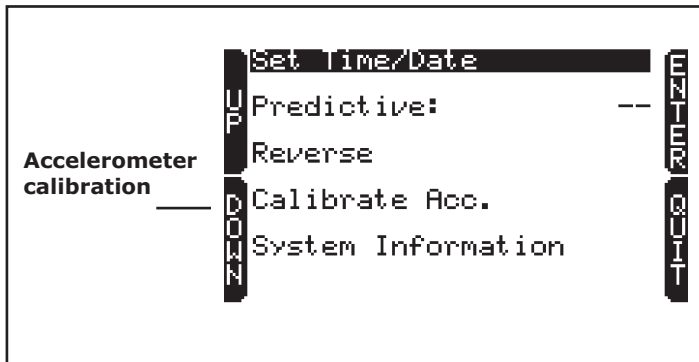
EBOX

Once it has been mounted, the accelerometer must be calibrated.

To calibrate the accelerometer just press the MENU button, select the CONFIGURATION icon and then SYSTEM SETUP.

N.B.

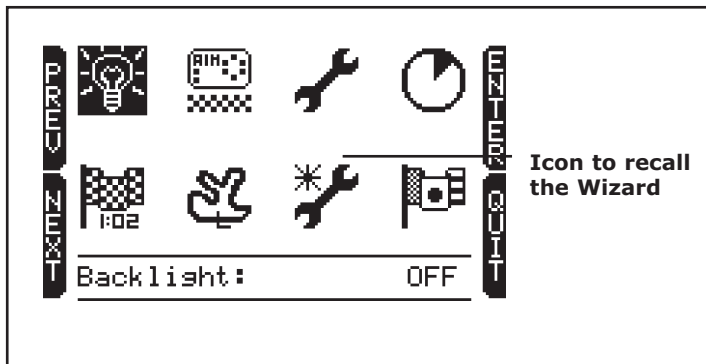
Before starting the accelerometer calibration process, please keep your vehicle on a flat surface.



EBOX CONFIGURATION WIZARD

When MyChron4eBox is connected for the first time to MyChron4, the configuration Wizard in the main menu automatically starts, allowing the settings of all the parameters needed to make the instrument work properly.

It's also possible to restart the Wizard manually just pressing Menù/Configuration Wizard as shown in the picture:



To complete the configuration process properly you need to set the following information:

EBOX CONFIGURATION

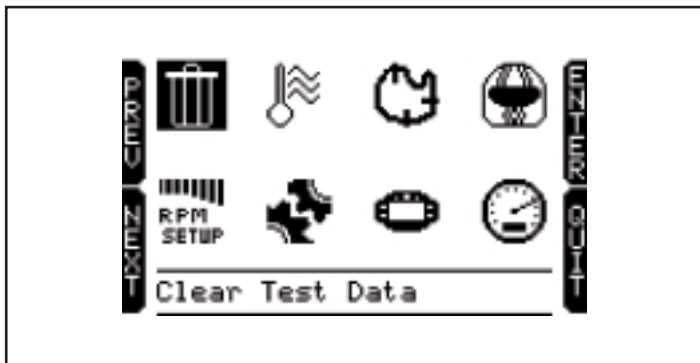
- Language
- Drive type
(and number of gear in case of gearbox karts)
- Temperature Unit (Fahrenheit – Celsius)
- Speed unit
- Maximum RPM
- Shift Light
- Wheel circumference
- Impulses per wheel
- MyChron4 T1 alarm
- MyChron4 T1 alarm threshold
- MyChron4 eBox T1 alarm
- MyChron4 eBox T1 alarm threshold
- MyChron4 eBox T2 alarm
- MyChron4 eBox T2 alarm threshold
- Date/Time

After installing MyChron4 eBox and connecting the Speed sensor, it's possible to visualize the current gear number.

EBOX CONFIGURATION



After pressing the MENU button and selecting the CONTROL PANEL icon the display will show the following screen:

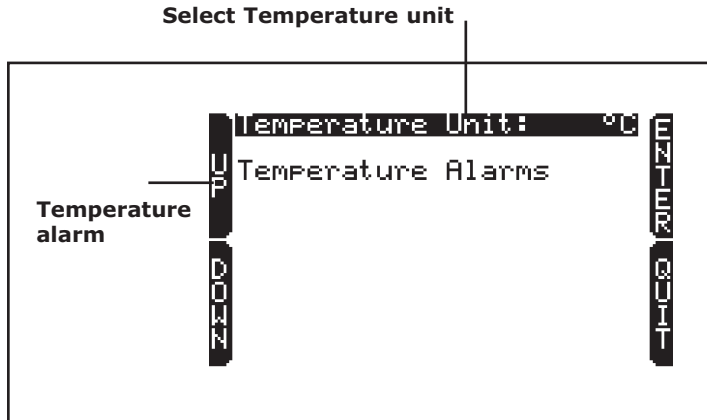


EBOX CONFIGURATION



Temperature Setup

In this section it's possible to set the Temperature unit and set the alarm activations:



EBOX CONFIGURATION

Temperature unit

This function offers the possibility to visualize the Temperature in °C or °F scale.

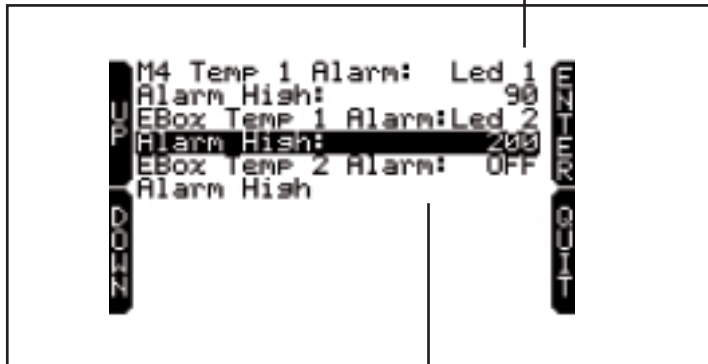
Temperature Alarm

Once connected to MyChron4 eBox, MyChron4 can visualize the input temperatures connected to both MyChron4 eBox and MyChron4.

As a consequence it's possible to configure 3 temperatures, while there are just 2 activable temperature alarms, both related to MyChron4 or to MyChron4 eBox.

EBOX CONFIGURATION

MyChron4 T1 alarm



MyChron4 eBox T2
alarm and threshold
value

MyChron4 eBox T1
alarm and threshold
value

EBOX CONFIGURATION



System setup

Activation/Deactivation Predictive Lap Time

This function provides the Predictive Lap Time value the system automatically calculates using the Speed channel (in case Split times are not requested).

As for the Splits, Lap Times can be visualized in absolute or differential mode.

Reverse

This button activates the visualization on display in reverse mode.

Accelerometer calibration

The MyChron4 eBox lateral accelerometer must be calibrated in order to indicate the "stand by" mode of the system properly.

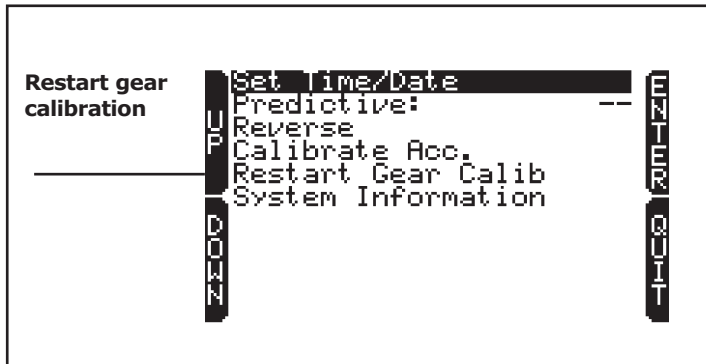
For this operation it's necessary to install the instrument on the kart, put the vehicle on a flat surface and select the CALIBRATION function.

EBOX DATA VISUALIZATION

Gear calibration

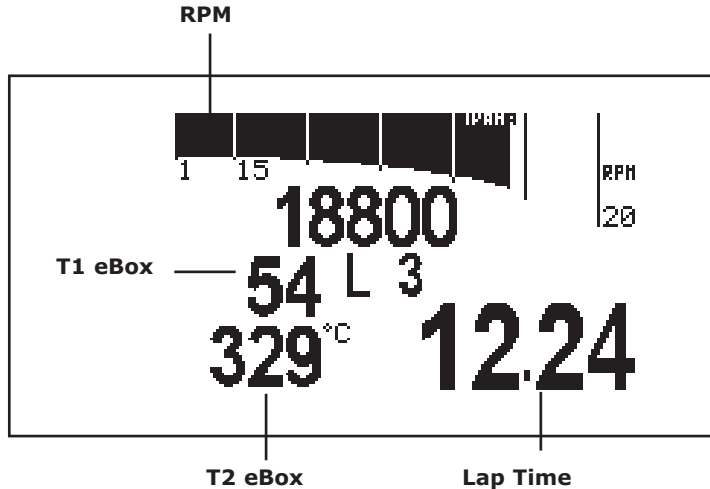
In case of gearbox karts the display shows the entry "Restart gear calibration".

When the Speed sensor is installed, this function allows the gear calibration in order to visualize the gear number. When the final transmission ratio changes the calibration procedure must be reactivated.



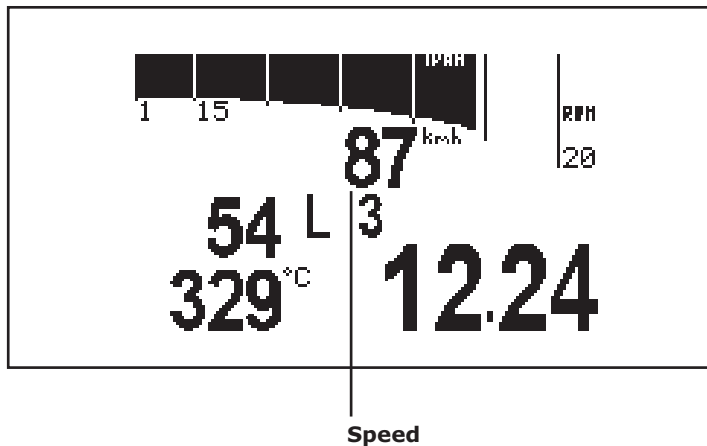
EBOX DATA VISUALIZATION

While running on the circuit the display shows some values:



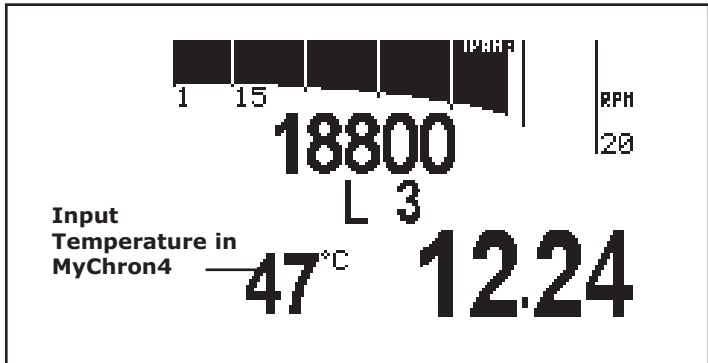
EBOX DATA VISUALIZATION

Pressing the button "ON/VIEW" the Speed will be showed in the same RPM field:



EBOX DATA VISUALIZATION

Pressing the button ">>/OFF" the display shows the input Temperature in MyChron4 (the other Temperature values are stored into MyChron4 eBox).



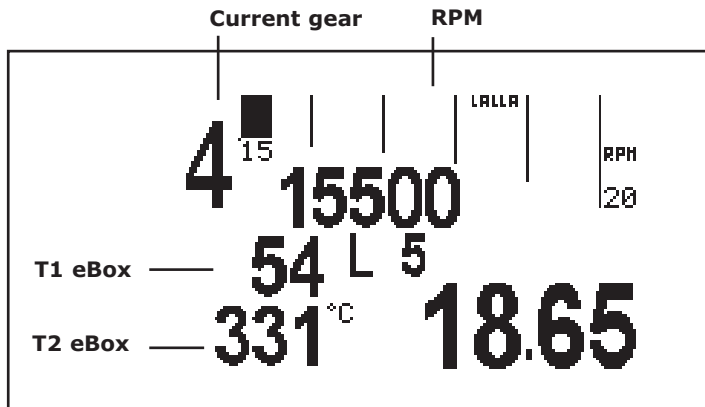
Data can be displayed in different ways:

- 2 MyChron4 eBox Temperatures + RPM
- 2 MyChron4 eBox Temperatures + Speed
- 1 MyChron4 Temperature + RPM
- 1 MyChron4 Temperature + Speed

EBOX DATA VISUALIZATION

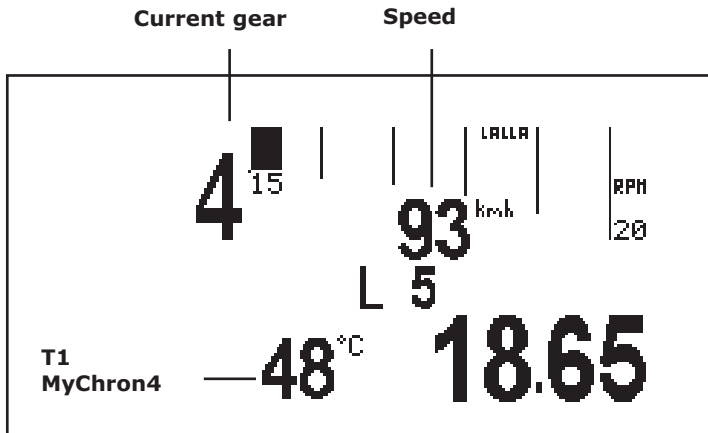
The same visualization is shown also in case of gearbox karts.

After the software processes the gear visualization (see **MENU>CONFIGURATION>SYSTEM SETUP**), the display will show:



EBOX DATA VISUALIZATION

Pressing the button ">>/OFF" the display shows the input Temperature in MyChron4 (the other Temperature values are input into MyChron4 eBox).



MY4 DATA ANALYSIS

To review the stored data and shift through the different screens, press MEM/OK button.

Session summary

The first screen shows the following:

Session date Session number Session total laps

07/26/06		Test10		Laps 13	
MAX	RPM	SPD	ET1	Max. values of the channels for the current session	
	14558	139	67		
LAP	TIME	RPM	ET1		
11	0:43.99	14315	8737	66°C	
7	0:44.10	14460	8780	66°C	
12	0:44.10	14394	9483	67°C	

3 fastest laps of the session

Min and max RPM per lap

Max value of the first measuring of the three fastest laps

MY4 DATA ANALYSIS

This screen represents a summary of the data collected in the first session, and it's divided into three parts: the upper one shows the date, the session number and the number of laps; the one in the middle shows the maximum values of the acquired channels, and eventually in the lower section the display shows the three fastest lap times, the max and min RPM and the top value of the first Temperature connected, according to the following order:

- T1 MyChron4 eBox;
- T2 MyChron4 eBox;
- Temperature MyChron4

It's possible to shift among the sessions pressing "<<" or ">>" button.

Lap Time histograms

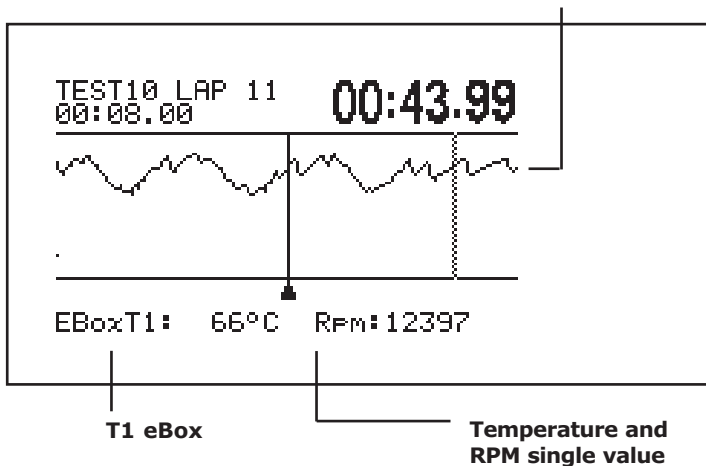
Pressing "MEM/OK" button again, the display shows the Lap Time histograms (the same as MyChron4).

MY4 DATA ANALYSIS

RPM Graph

After selecting a lap, pressing the MEM/OK button the display shows the RPM graph.

Flow of RPM during the session



MY4 DATA ANALYSIS

Pressing the "<<" and ">>" buttons the cursor moves to show the different Temperature and RPM single values.

To visualize all the Temperatures in the same screen, just press the "ON/VIEW" button.

In this way the system will show:

EBoxT1-EBoxT2-M4 T1

MY4 DATA ANALYSIS

Split times

Pressing again the MEM/OK button, the system shifts to the following screen, showing a summary of the data referred to the single lap:

- Lap Time
- Split time
- Temperatures (ET1, ET2, M4T1)
- RPM
- Speed

Pressing "<<" or ">>" button the system shifts to another lap.

MY4 DATA ANALYSIS

Track name,
date, time

Total time and lap
splits

TEST10 LAP 11	00:43.99	
LONATO	1# 00:14.18	
07/26/06	2# 00:08.94	
03:55PM	3# 00:20.87	
<hr/>		
RPM	SPD	ET1
14315	138	66
8737	45	66

Number of laps, max and
min Temperature and
Speed per lap

ET1 e ET2
refers to MyChron4 eBox,
M4 T1
refers to MyChron 4

MY4 DATA ANALYSIS

Best Rolling Lap and Best Theoretical

In this case the visualization on display after connecting MyChron4 eBox is exactly the same as the one present on MyChron4.

MY4

In case you need to disconnect MyChron4 eBox from the logger, MyChron4 will keep the configuration set by retrieving data from the sensors still connected.

In this way the obscuring time, the number of splits, the driver's and track name, the RPM configuration MyChron4 Temperature alarm will not change.

MyChron4 DataKey for data download The use of the DataKey and the downloading procedure on the MyChron4 eBox is exactly the same as showed in the MyChron4 unit.

For this operations we kindly suggest you to refer to MyChron4 manual. You can download it from www.mychron4.com or www.aim-sportline.com websites.





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Dealer



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