eBox Gold/Extreme for MyChron4

User Manual

Racing Data Power

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eBox Gold/Extreme for **MyChron4** is the new external expansion module that improves the already great potentialities of **MyChron4**, an extremely innovative and flexible instrument.

eBox Gold/Extreme adds at least two temperatures, a speed and 3 analog channels (**eBox Extreme** only) to **MyChron4** potentialities.

This user manual is to be used as integration of **MyChron4** user manual. Refer to that document for all issues not explained here.

Chapter 1 – eBox Gold/Extreme kit and part number

The above image shows **eBox Gold** for **MyChron4** kit, including:

- **eBox Gold** (1);
- 1 speed sensor to be chosen between front wheel speed sensor (2) and rear axle speed sensor (3);
- 1 **Data key** (4);
- **Race Studio 2** software CD and **eBox Gold/Extreme** (5) user manual.

The above image shows **eBox Extreme** for **MyChron4** kit, including:

- **eBox Extreme** (1);
- 1 speed sensor to be chosen between front wheel speed sensor (2) and rear axle speed sensor (3);
- 1 **Data key** (4);
- **Race Studio 2** software CD and **eBox Gold/Extreme** (5) user manual.

Part numbers are:

- **eBox Gold** kit **X50M4EBG**;
- **eBox Extreme** kit **X50M4EBX.**

- front wheel speed sensor **X05SNVK301**;
- rear axle speed sensor **X05SNVB301**;
- **Data key** **X50M4PC00**.

Chapter 2 – How to install and connect eBox

eBox Gold/Extreme samples RPM, speed and, thanks to the internal accelerometer, lateral acceleration. A careful installation is key to sample correct and consistent data.

Warning: when connecting eBox to an AIM logger both devices must be OFF.

2.1 – Installing eBox Gold/Extreme on the kart

Install eBox parallel to travel direction and perpendicular to lateral acceleration.

Here below you can see how to correctly install the **eBox** on the left and an **eBox** correctly installed on the right.

Once **eBox** is installed, the internal accelerometer must be calibrated.

2.2 – Connecting eBox to MyChron4

Once **eBox is** correctly installed it is necessary to connect it to **MyChron4** to perform any setting.

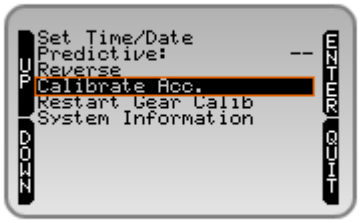
To connect the devices plug the connector of **eBox** rear cable in **MyChron4** Exp/PC connector as shown here below.

2.3 – How to calibrate eBox Gold/Extreme internal accelerometer

Once **MyChron4** and **eBox** are installed and connected, **eBox** internal accelerometer must be calibrated.

Please note: to get a correct calibration place the kart in level ground and leave it still for 2-3 seconds.

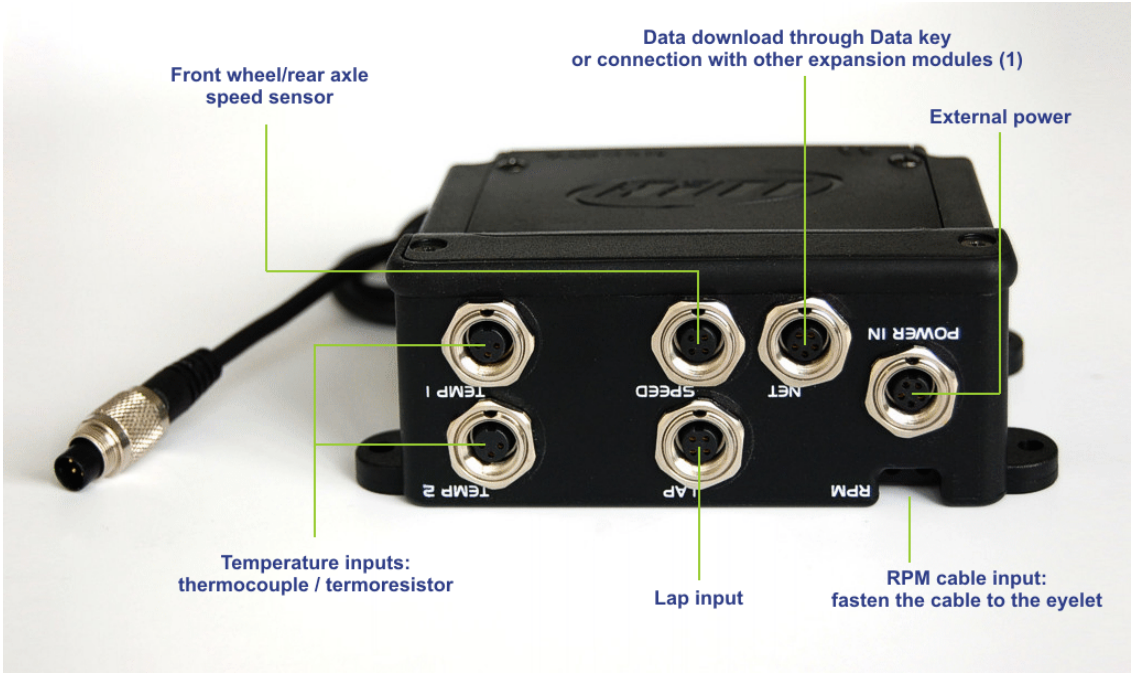
Switch **MyChron4** on; enter calibration function following this path: MENU button –> “Control panel” icon –> “System setup” option. This window appears:

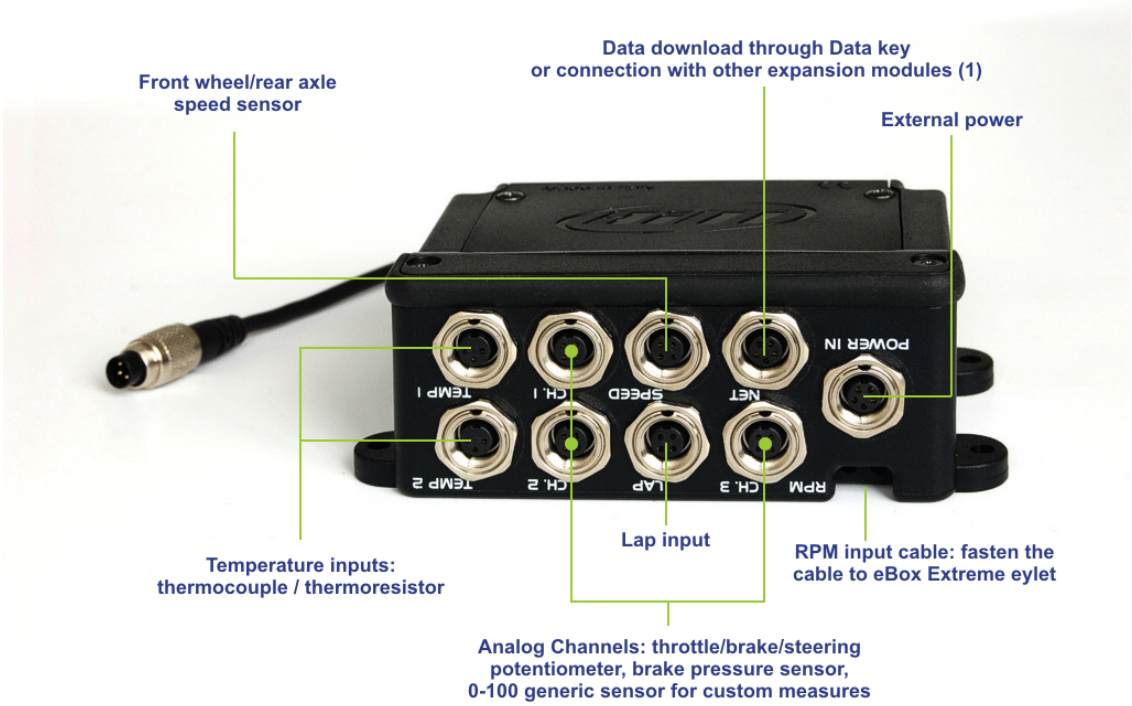


Scroll options and select “Calibrate Acc.” to perform calibration.

2.4 – Where to plug eBox additional sensors

Connection between **eBox Gold/Extreme** and additional sensors is made plugging the sensors in the respective connectors. The images below show position and function of the connectors.





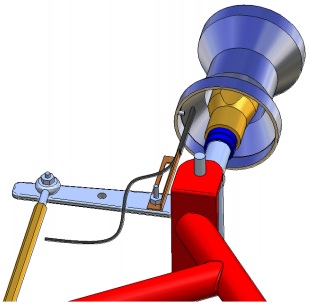
(1) Plugging a **Data Hub** in this connector data download can be remoted and **eBox** channels are increased.

Warning: once MyChron4 is connected to the eBox, unplug lap cable from MyChron4 and plug it in the eBox Lap input. Otherwise lap times are missing.

Chapter 3 – How to install and configure the speed sensors

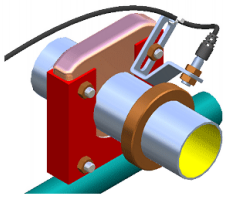
There are two types of available speed sensors: front wheel speed sensor and rear axle speed sensor. Here below the installation instructions.

3.1 – Installing the front wheel speed sensor



Front wheel speed sensor (above on the left) has to be oriented as shown above on the right, at 5 mm distance from the magnet.

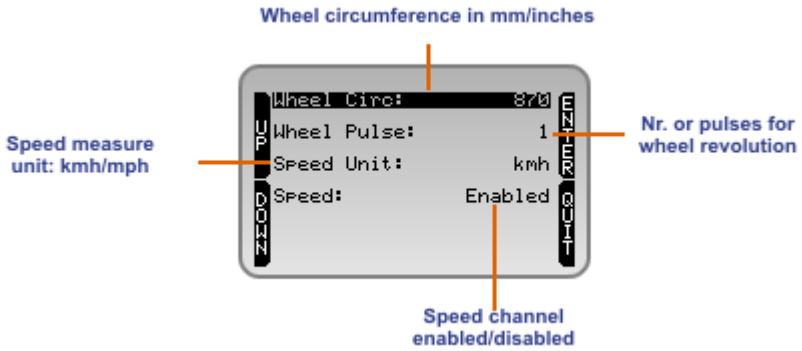
3.2 – Installing the rear axle seed sensor



Rear axle speed sensor shown here above on the left fits an installation on the bearing housing of the axle and can also be provided with a magnetic ring. It is to be installed at 3-5 mm from the magnet (or magnetic ring).

3.3 – Configuring the speed sensor

Speed sensor configuration can be performed through the configuration wizard or following this path: MENU button –> Control panel" icon –> "Speed Setup". The below screen appears: set it.



Chapter 4 – How to configure eBox Gold/Extreme

eBox Gold/Extreme is configured using **MyChron4**. Configuration can be performed using the wizard or the control panel. Both need activation.

Configuration through MyChron4 Wizard (quicker)

To configure **eBox Gold/Extreme** through **MyChron4** wizard press “MENU” and select “Configuration wizard” highlighted below.

The configuration wizard starts. It sets all parameters needed to make the system work. Here below the information needed only when **eBox Gold/Extreme** is connected are specified.

- language;
- driver (only in case of very first configuration of **MyChron4**);
- (drive) type – if gearbox fill in the number of gears;
- temperature unit: Celsius/Fahrenheit;
- **speed unit: km/h or mph (only with eBox connected)**;
- Maximum RPM;
- Shift light;
- **wheel circumference (only with eBox connected)**;
- **wheel pulse (only with eBox connected)**;
- M4 Temperature 1 alarm (select the led to link to this alarm);
- High temp Alarm;
- **eBox temp 1 alarm (with eBox connected);**
- **eBox Temp 2 Alarm (with eBox connected)**;
- **High temp Alarm (with eBox connected)**;
- adjust time;
- adjust date.

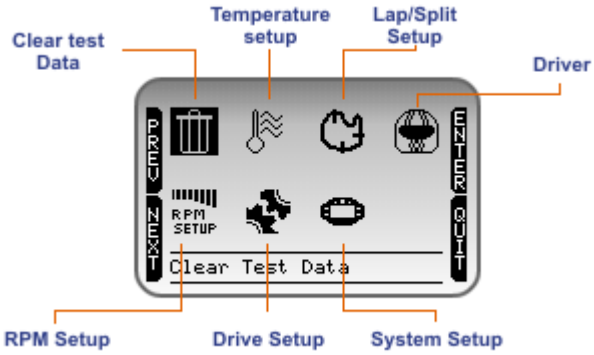
Starting wizard when **MyChron4** has already been configured previous settings are showed and can be modified.

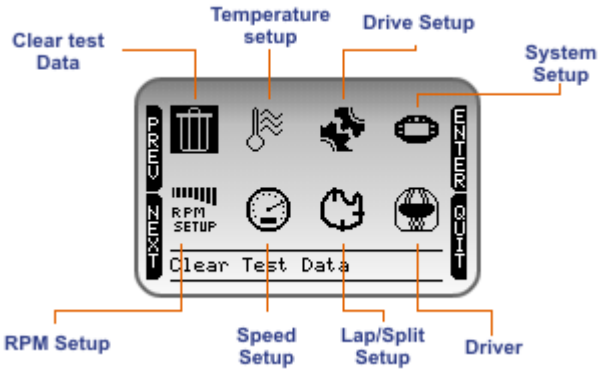
Note: in order to show the engaged gear with eBox Gold/Extreme installed and connected to MyChron4, just enable the speed sensor.

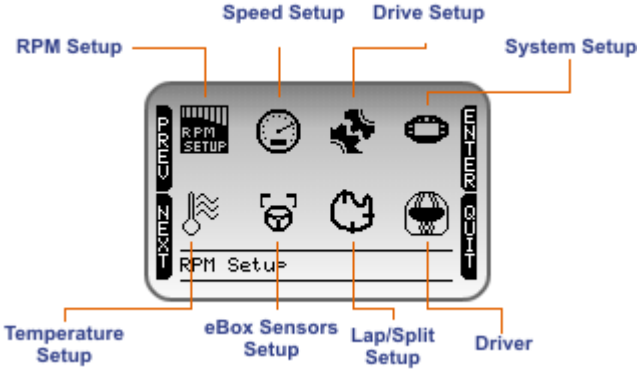
Manual Configuration (through the control panel – complete)

To configure **eBox Gold/Extreme** using **MyChron4** control panel press "MENU" and select "Control panel" icon highlighted here below.

Control panel screen appears. Here below control panel pages of **MyChron4** stand alone (top), with **eBox Gold** (bottom left) and **Extreme** (bottom right) are shown.







Starting the configuration when **MyChron4** has already been configured, the previous settings are showed and can be modified. Control panel menu of **MyChron 4** with **eBox Gold/Extreme** connected includes more options and additional features.

Additional options that depends on **eBox Gold/Extreme** are:

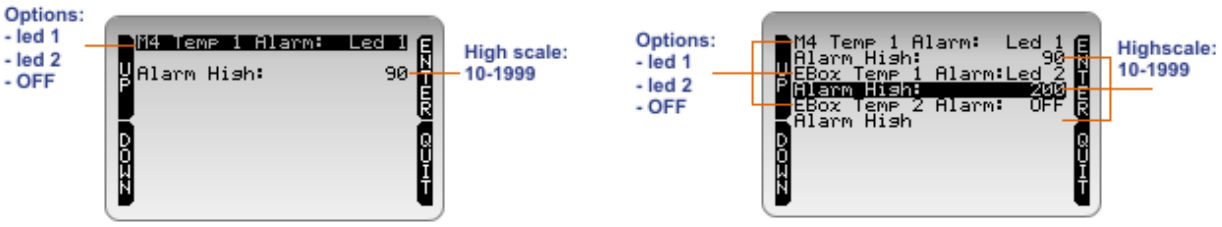
- Speed setup;
- eBox sensors setup (eBox Extreme only).

Options with additional features are:

- Temperature setup;
- System setup.

4.1 – Temperature Setup (Menu–>Control panel–>Temperature Setup)

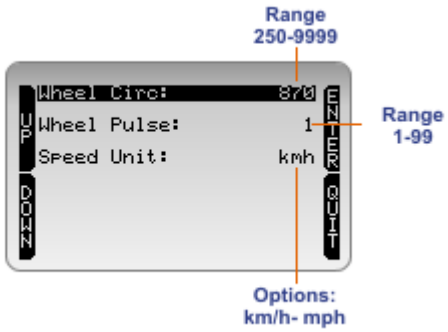
This function menu is different depending whether **MyChron4** is stand alone or connected to an **eBox**. Here below temperature setup screens of **MyChron4** stand alone (on the left) and with **eBox Gold/Extreme** (on the right) are shown.



Please note: available alarm led are two, so once they have been set the third alarm sets automatically on "OFF".

4.2 – Speed setup (Menu–>Control Panel–>Speed setup)

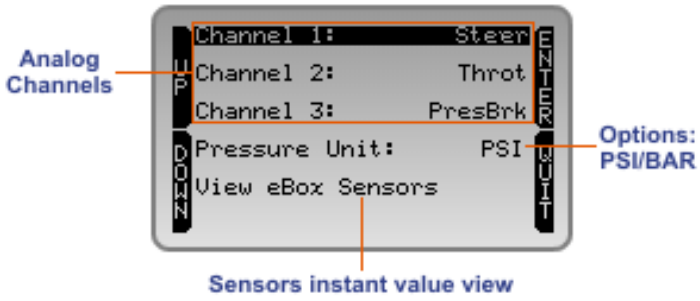
Additional function only available with **MyChron4** connected to an **eBox Gold/Extreme**.



Please: modifying speed units of measure from km/h to mph, circumference unit of measure in mm is recomputed in inches too.

4.3 – eBox sensors Setup (Menu–>Control Panel–>eBox sensors setup)

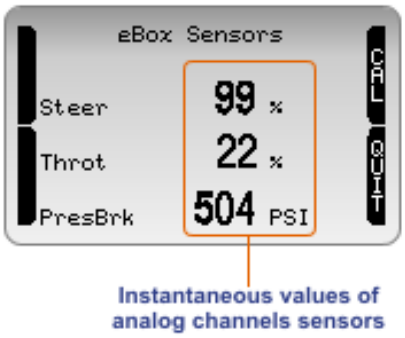
Additional function only available when **MyChron4** is connected to **eBox Extreme**. Here below is the screen.



Each channel can support:

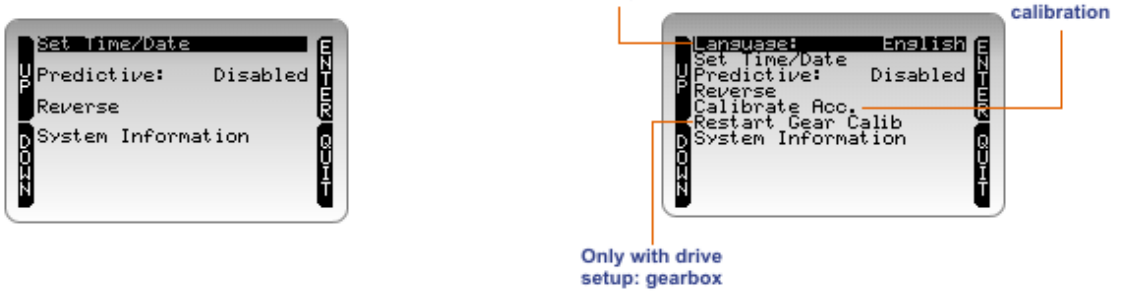
- Brake pressure sensor (PresBrk);
- Throttle potentiometer (Throt);
- Brake potentiometer (PotBrk);
- Steering angle potentiometer (Steer)
- Generic sensor for custom measures (0-100).

Once all sensors are set and connected to **eBox Extreme,** their instant values can be viewed selecting “View eBox sensors” option.



4.4 – System setup (Menu–>Control Panel–>System setup)

This function features changes depending on if **MyChron4** is stand alone or connected to an **eBox**. Here below are screens of **MyChron4** stand alone on the left and with **eBox Gold/Extreme** on the right.



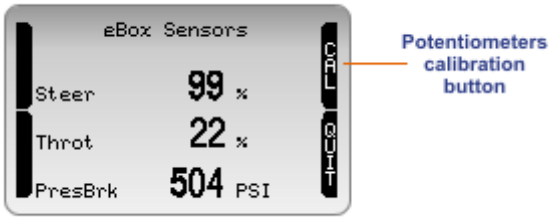
This function calibrates **eBox Gold/Extreme** internal accelerometer. To perform it:

- install the system on the kart;
- place the kart on level ground;
- enter system setup menu;
- select Calibrate acceleration option;
- press “Enter”;
- wait for the system confirmation message.

Please note: restart gear calibration option appears only if drive setup is set on gearbox (Menu–>Control Panel–>Drive Setup)

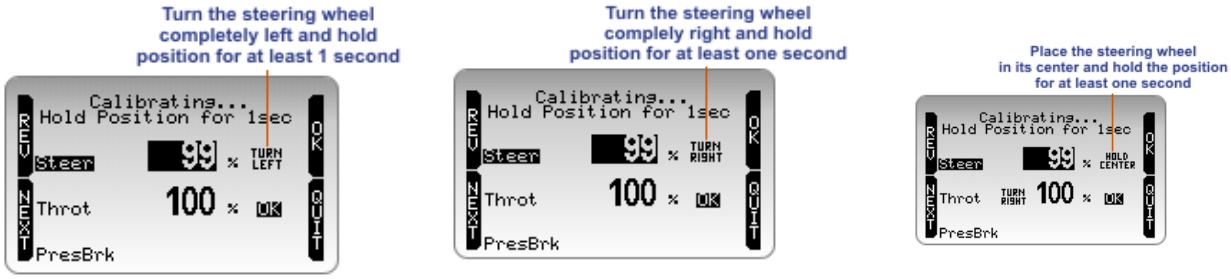
4.5 – Calibrating potentiometers

Throttle, brake and steering wheel potentiometer have to be calibrated. To perform this operation press “CAL”, as shown here below.

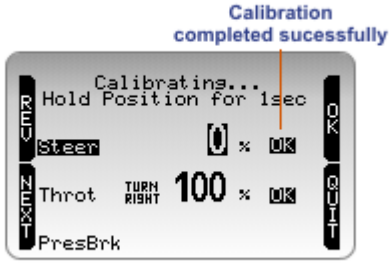


4.5.1 – Calibrating the steering potentiometer

Pressing “CAL” the display shows three screens in sequence. Follow the instructions.



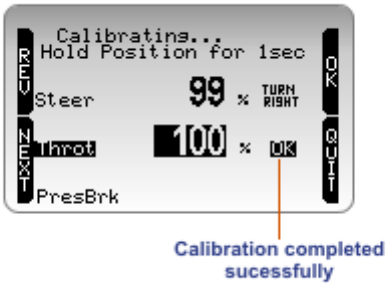
Once calibration is completed the system gives confirmation.



4.5.2 – Calibrating the throttle and brake potentiometer

Pressing “CAL” the display shows two screens in sequence: follow the instructions.

Once the calibration is completed the system gives confirmation.



Once all potentiometer are calibrated, press “OK” and the system saves the calibration showing a confirmation message.

4.6 – Setting 0-100 generic sensors (expert users only)

This function manages custom sensors. Values are linked following this calibration curve:

- 0 counts – 0 Volt
- 100 counts – 5 Volt

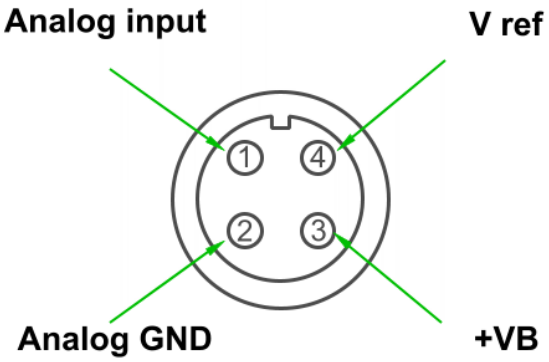
Calibration curve is already set and needs not calibration.

Warning: always check sensor reference power value (VB), that should never be higher than eBox internal battery – 9V – in case of internal power and should be 12Volts in case of external power.

Always refer to the sensors user manuals and datasheets supplied by the sensors builder for any further information.

4.6.1 – Analog channels connectors pinout

5 pins female Binder connector of CH1, CH2 and CH3 analog channels is shown here below.

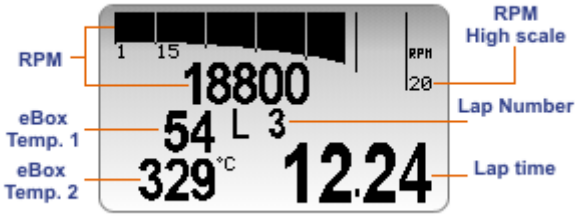


Chapter 5 – View data on track

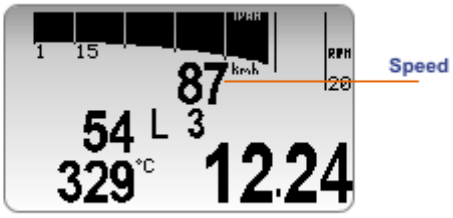
During track session it is possible to view different values, depending on the fact that the kart where the system is installed has the gearbox or not.

5.1 – View data on track with a kart without gearbox

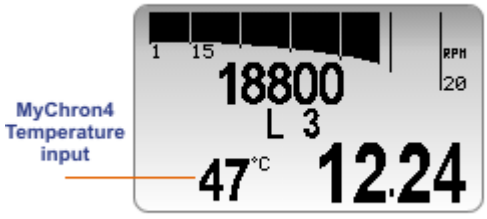
On track **MyChron4** display shows this screen;



Pressing “ON/VIEW” the display shows speed in spite of RPM digital value (below).



Pressing “>>/OFF” **MyChron4** temperature input is shown (others temperatures come from **MyChron4 eBox**).

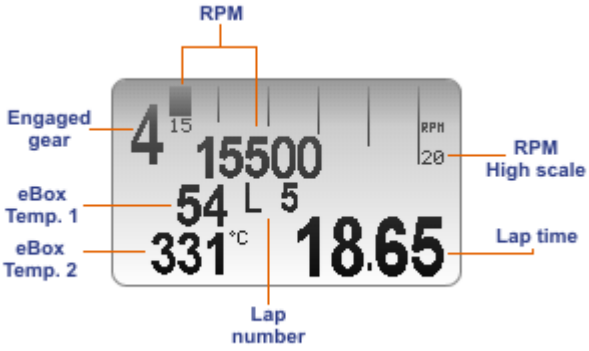


Possible visualizations sequence is the following:

- 2 **MyChron4 eBox** temperature inputs + RPM
- 2 **MyChron4 eBox** temperature inputs + speed;
- 1 **MyChron4** temperature input + RPM
- 1 **MyChron4** temperature input + speed.

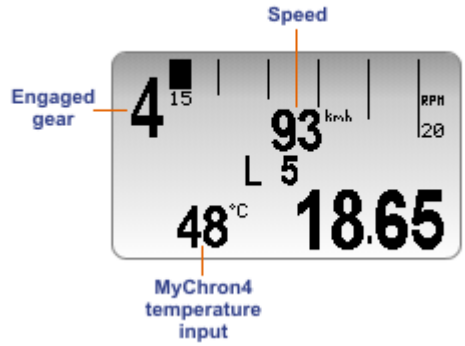
5.2 – View data on track with a kart with gearbox

A kart having the gearbox shows data on track only after making gear calculation (Menu–>Control panel–> System Setup –> restart gear calib). The display shows this screen:



Warning: eBox correctly computes the engaged gear only if RPM cable is plugged in the corresponding eBox connector (see paragraph 2.4)

Pressing "ON/VIEW" speed is shown in spite of RPM digital value and **MyChron4** temperature input is shown as well, as here below.

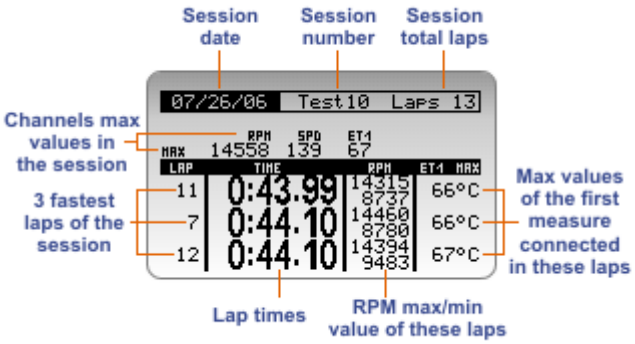


Please note: eBox Extreme additional channels CH.1, CH.2 and CH.3 are not shown on MyChron4 display.

Chapter 6 – Data recall and analysis

When a track session is over, data stored in **MyChron4** memory can be recalled pressing "MEM/OK".

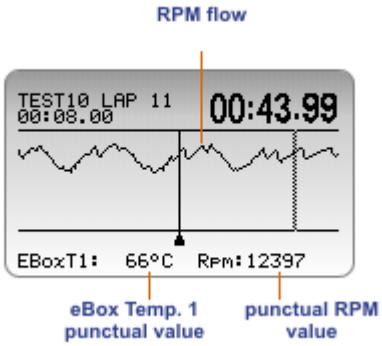
The first page that appears is "session summary".



Pressing ">>/OFF" and "MENU/<<" different sessions are scrolled.

Pressing again "MEM/OK" the **second page Lap times Histograms**, appears: it's identical to the one shown by **MyChron4**. Refer to that logger user manual for further information on this subject.

Selecting a lap from histogram page and pressing again "MEM/OK" the **third page, RPM graph appears**.

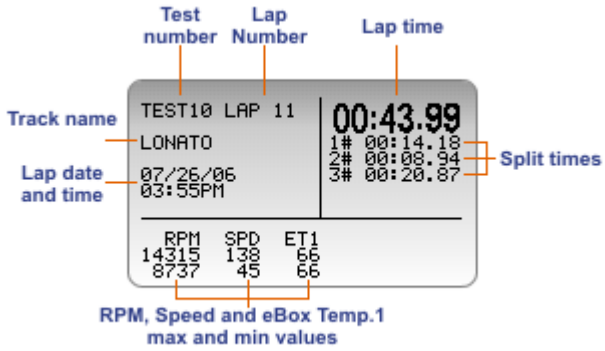


">>/OFF" and "MENU/<<" button scroll temperature and RPM punctual values.

Pressing "ON/VIEW" other temperatures are shown in the same page. Shown temperature sequence is:

- **eBox** Temperature1;
- **eBox** Temperature 2:
- **MyChron4** Temperature 1.

Pressing again “MEM/OK” **the fourth page - lap summary - appears**.



Press “>>/OFF” and ”MENU/<<” to scroll laps and “ON/VIEW” to see, in sequence:

- **eBox** Temp. 1;
- **eBox** Temp. 2;
- **MyChron4** Temp. 1.

Please note: data of eBox additional channels CH.1, CH.2 and CH.3 cannot be shown on MyChron4 display.

Chapter 7 – Notes about MyChron4 and Data key

In case **MyChron4** is used without **eBox Gold/Extreme,** some parameters (obscuring time, split number, driver and track name, RPM setting and **MyChron4** temperature alarm) remain set.

Data key for data download and **Race Studio 2** software works exactly like on **MyChron4**. Refer to that logger user manual for further information.

Please remember that this user manual is to be considered an integration to MyChron4 user manual. Refer to that document, that can be downloaded free of charge from www.aim-sportline.com, for any information concerning eBox working mode not explained in this document.