

MyChron4 User Manual



Racing Data Power

MyChron4 is an extremely innovative instrument in the world of multi-purpose kart loggers. Designed and developed to be the heart of a modular end expandable system, **MyChron4** perfectly connects to a wide range of expansions.

This characteristic makes it unique and fitting any pilot need: from the beginner that needs few basic information to the pro that needs to analyse his and its kart performances in detail.

Moreover, thanks to the numerous and innovative functionalities of **Race Studio Analysis**, the analysis software, strengths and weaknesses of any test session will be analyzed in an easy and intuitive way. The software is available for free download at www.aim-sportline.com and www.mychron4.com.

Equipped with a wide graphical display, **MyChron4** can display sampled data as histogram and, using **MyChron4 Picture Manager**, the free software, it is possible to upload bitmap images, like, for example your team logo.

When connected to the expansions that AIM designed and developed for his most innovative loggers, from **Gps Module**, to **Data Hub**, from **Lambda controller** to **eBox**, **MyChron4** becomes a data logger with a virtually infinite number of channels.

Moreover, thanks to the practical download via **Data key**, **MyChron4** does not need a Computer immediately available on the track and allows data download on different computers.

MyChron4, like all AIM products, is always improving: this is why it is suggested to periodically check www.aim-sportline.com or www.mychron4.com to know if AIM released new firmware and/or software for **MyChron4**.

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1 – MyChron4 display

MyChron4 display shows a lot of information. Here below they are explained in detail.



1. Power on button
2. Data recall button
3. Menu and scroll button
4. Power off and scroll button
5. RPM alarm led
6. Led AL1 temperature alarm
7. Lap time
8. Temperature value with configurable unit of measure
9. Digital RPM value
10. Lap number
11. External battery alarm
12. RPM graph bar
13. Bar graph scaling in thousands

2 – MyChron4 connections and power

On the back of **MyChron4** are three connectors, shown below.



Connector 1 –Temperature input

It allows the connection of a temperature sensor among those available to measure water, cylinder head or exhaust gas temperature.

Connector 2 – Lap time receiver

It allows to connect optical or magnetic lap time receiver.

Connector 3 – eBox input

It is for **MyChron4** external power, **eBox** and **Data key** connection, data download on a Pc. Here below **MyChron4 eBox** is shown.



2.1 – MyChron4 external power cable

MyChron4 can also be powered from an external power source but in this case it needs the proper power cable, shown below.



External power cable has a double function: it powers **MyChron4** using the engine battery or the power produced by the master switch and detects RPM value through this same cable when it is connected to the master switch, avoiding the installation of RPM cable. External power cable is expected for some 4 stroke engines (Honda, Briggs & Stratton).

Note: **MyChron4** has an auto-power off function after eight minutes of inactivity that switches the logger off also if externally powered.

3 –Temperature sensors for MyChron4

MyChron4 can be connected to different temperature sensors, shown below.

CHT Thermo resistor:

detects the temperature of the cylinder head and should be mounted removing the spark washer to keep the same compression ratio.



CHT Thermocouple:

Detects the temperature of the head of the engine and should be mounted removing the spark washer to keep the same compression ratio.



Water Thermocouple:

Should be mounted on the proper adaptor - shown on the right - wrapping the thread with Teflon™ to ensure the seal.



EGT Thermocouple:

Should be installed on the exhaust pipe at a distance of 100 – 120 mm from the piston shell to have a correct reading of the value.



4 – MyChron4 receivers

MyChron4 supports both optical and magnetic lap receiver (shown below). The system automatically recognizes the connected receiver.

Magnetic receiver



Optical receiver

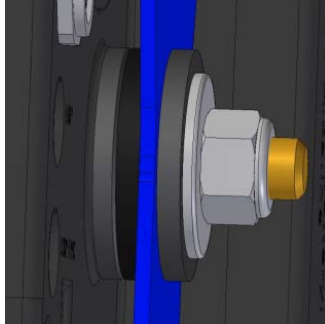


As explained more in detail in the chapter concerning **MyChron4** configuration, in case the track has more magnetic strips/optical transmitters, it is necessary to set the logger as to indicate:

- number of magnetic strips /transmitters installed on the track
- magnetic strip/transmitter corresponding to start/finish line

5 – MyChron4 installation

Pay particular attention to this step to allow **MyChron4** work properly.
To minimize logger vibrations the rubber washers supplied with the kit should be mounted over and under the steering spoke as shown below:



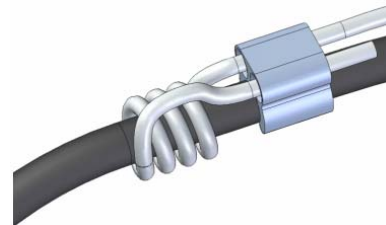
Moreover it is suggested to fix RPM cable (in case of internal power) on the spark plug cable following the specifications of the different engines.

5.1 – Fixing RPM cable on 4 strokes engines (Honda, Briggs & Stratton)

4 strokes engines have a very weak power-on system. It is thereby necessary to wrap more times the cable on the spark plug cable, as shown below, to make the logger become more sensitive.



Wrapping of RPM cable on spark cable



Particular of the wrapping

5.2 – Fixing RPM cable on 2 strokes engines (Tag, Junior, ICA, FA, ICC ecc..)

Power-on of 2 strokes engines supplies a very strong signal; it is thereby sufficient to fix RPM cable on the spark plug cable using the proper clip as shown below:



Wrapping of RPM cable on spark cable



Particular of the wrapping

6 – MyChron4 configuration and wizard

To enter configuration menu press MENU button. The first configuration is made through the **Wizard**, a sort of tutorial menu that allows the user to quickly configure all needed parameters.

Warning: the **Wizard** has to be completed at least once or it will re-start at the first switch on.

Wizard steps are:

- Language
- Pilot name
- Drive Setup (in case of gearbox set the number of gears)
- Temperature unit of measure (Fahrenheit – Celsius)
- RPM max value
- RPM tattle
- M4 Temp 1 Alarm
- Adjust Hour/date

Almost all **Wizard** steps are extremely intuitive and do not require a particular explanation, except, may be, “**Drive Setup**”:

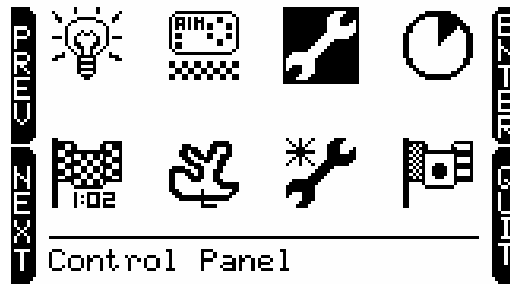
- **Direct drive:** used in karts without clutch, like classical Formula and ICA;
- **Low stall clutch:** used in Rotax Max, TAG, JICA, HPV, Comer, and in most 4 strokes engines
- **Gearbox:** in case this drive type is selected the user is required to insert the number of gears.

Note 1: the engaged gear number is shown on the display **only** if **MyChron4** is connected to **eBox** that, managing speed signal, allows to compute the engaged gear using the proper algorithm (based on RPM and speed).

Note 2: in case of gearbox and direct drive type “**predictive**” option won’t be available.

6.1 – MyChron4 configuration menu

Press MENU button to enter the configuration. In case the **Wizard** has been activated and completed at least once, the menu below appears:



Each icon allows the user to enter a configuration function:



Backlight icon: allows the user to enable/disable the display backlight.

At logger power-on it is disabled and disables at power-off.



Session mode icon: allows the user to set session mode as:

- **lap counter:** the logger shows the incremental number of run laps.
- **count down:** the logger shows the remaining time to the end of the qualify or the race



Obscuring time icon: allows the user to set minimum lap time and obscuring time.

It is very useful to avoid false lap times in case more magnetic strips or transmitters are installed on the track. From start/finish line and for the set period of time the receiver won't record signals.



Track icon: allows the user to set the track name.

Track name is associated to each sampled run, downloaded to the PC and managed by **Race Studio 2** software.

It is possible to insert track names and select them when needed.



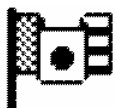
Configuration icon: allows the user to enter **MyChron4** custom configuration. Refer to the paragraph concerning control panel for further information.



Configuration Wizard icon: enters **MyChron4** configuration wizard that allows the user to quickly set the basic parameters the logger needs at start up.



Hour meter Icon: allows the user to manage the logger hour meters. **MyChron4** manages 5 hour meters four of which resettable, that can be associated, for example to four different engines, and a fifth one not resettable



Language icon: allows the user to select the logger language. **MyChron4** manages these languages: English, Italian, Dutch, French, Deutsch, Japanese, Spanish, Swedish and Portuguese.

6.2 – Control panel or custom configuration

Selecting configuration icon a sub-menu appears:



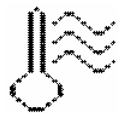
Each icon allows the user to set different functions:



Clear test data: allows to delete data stored in **MyChron4** memory.



RPM Setup: enters a sub-menu explained in the related paragraph



Set Temperature: allows the user to link temperature alarm threshold value to one of **MyChron4** lateral led and to set temperature unit of measure.



Drive setup: as explained in configuration wizard paragraph this function allows the user to set drive type and in case, kart gears number (accepted values from 2 to 6).



Lap / split Setup: selecting this icon the related sub-menu appears:

- **Total magnetic strips:** allows the user to set the number of magnetic strips /optical transmitters installed on the track.
- **Split mode:** allows the user to show split as absolute value (actual) or as difference in respect of best lap (+/- best)
- **Start line number:** in case of a track with more than one optical transmitter/magnetic strip it is required to set the one used as reference for lap time.



System Setup: selecting this icon the related sub menu appears:

- **Set Time/Date:** set date and time format: 12 or 24h and MM/DD/YY or YY/MM/DD or DD/MM/YY
- **Predictive:** enables/disables predictive lap time. **Note:** this function is available only if split number is set on 1 and drive type on direct drive (ICA,FA, etc). Like split, also predictive can be enabled/disabled and can be shown as absolute or difference mode.
- **reverse:** reverses **MyChron4** menu background and text colours.
- **System Information** (shown below): shows logger name (1), firmware version (2), logger serial number (3) and version (4) EU: European - USA: American.

```

1 AIM MyChron 4
MYCHR4 v31.55.06
S.N. 555457 EU Vers.
www.mychron4.com
  
```

Pilot: selecting this icon the window shown below appears. It is associated to each run, both in data recall on the display and in data analysis through the PC.

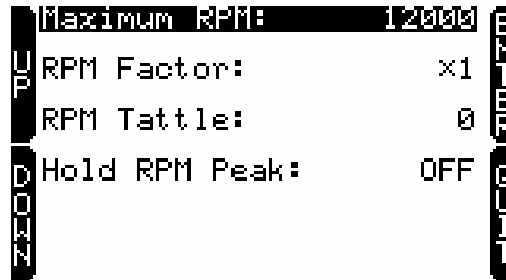


Enter Driver's Name												
A	B	C	D	E	F	G	H	I	J			
K	L	M	N	O	P	Q	R	S	T			
U	V	W	X	Y	Z	0	1	2	3			
4	5	6	7	8	9	.	+					
MA_												

Use the top right button to select a character, the arrow to delete it and the floppy icon to save the pilot name.

6.2.1 – RPM Setup

RPM Setup icon of system configuration menu allows the user to enter the related sub-menu:



Maximum RPM: set RPM max value shown in the proper display field.

RPM Factor: available options are x1, x2, /2, /4.

RPM Tattle: set RPM threshold value that switches on **MyChron4** RPM led shown below.



Hold RPM Peak: set the period of time in seconds during which RPM value refresh at display is stopped. Available options are from 5 to 10 with increasing value and OFF (disabled).

RPM Max value is generally reached just before a corner, where it is very difficult for the pilot to look at the lap counter. This is why, if required, the system stops the refresh of RPM value at display for some seconds.

7 – MyChron4 data analysis

To enter **MyChron4** data recall and scroll menu pages, press more times MEM/OK button. ON/VIEW button quits data recall and comes back to **MyChron4** main display page.

7.1 – Session Summary

Pressing once MEM/OK button session summary page, shown below, appears.

05/06/08		Test 4		Laps 10	
MAX RPM		H4T1			
16752					
LAP	TIME	RPM	H4T1	MAX	
7	0:34.14	16752	8030	85°C	
5	0:34.35	16634	7828	87°C	
6	0:34.38	16721	7675	82°C	

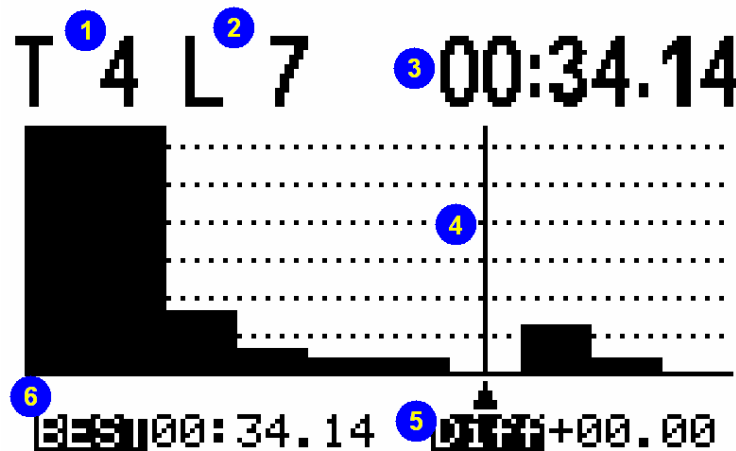
It shows a summary of the main session data distributed as follows:

1. test/session date;
2. test/session number
3. test/session number of laps
4. each lap max temperature;
5. each lap max and min RPM value
6. three faster laps lap time
7. lap number
8. Max RPM value recorded in that test/session.

It is possible to change the session using “<<” or “>>” button.

7.2 – Lap time histogram

Pressing a second time MEM/OK button lap times histogram page, shown below, appears.



It shows lap times in histogram format:

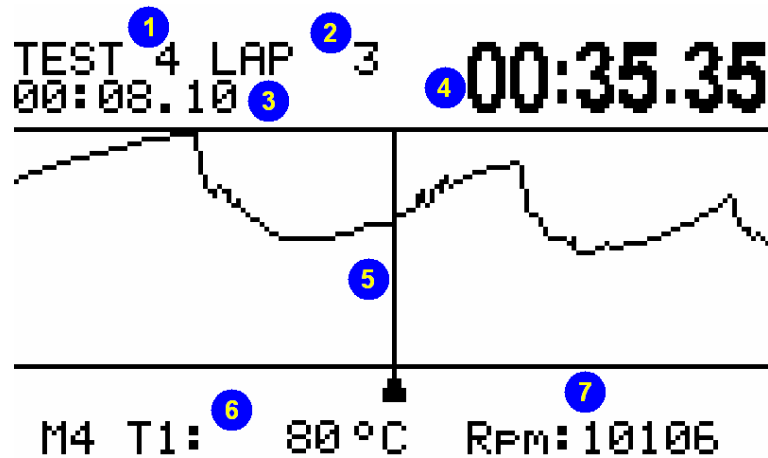
1. test/session number;
2. number of the selected (the one where the cursor is) lap;
3. lap time of the selected lap;
4. lap selection cursor;
5. difference in respect of test/session best lap (in this case the difference is zero because selected lap is the best one);
6. test/session best lap time (in this case it is the same as lap time because the selected lap is the best one).

It is possible to scroll all laps using “<<” and “>>” buttons.

Note: the histogram does not appear if the session/test has less that 5 laps.

7.3 – RPM Graph

Pressing a third time MEM/OK button RPM graph page, shown below, appears.



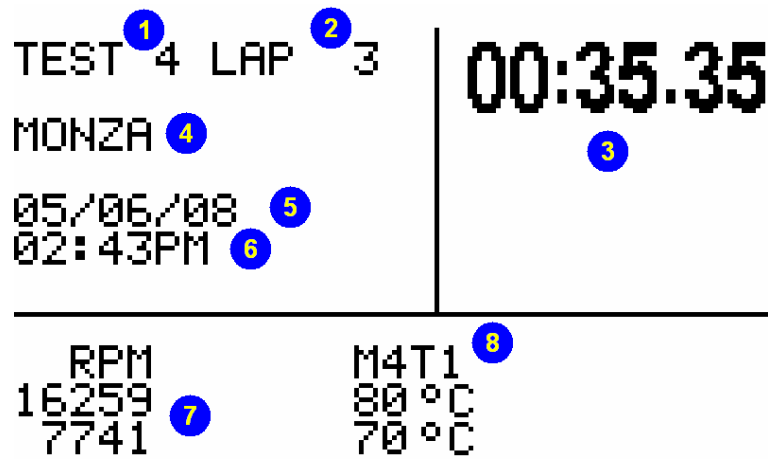
It shows lap RPM value:

1. test/session number;
2. lap number;
3. incremental lap time in the selected point (the one where the cursor is positioned);
4. selected lap time;
5. selection cursor;
6. temperature in the selected point (the one where the cursor is positioned)
7. RPM value in the selected point.

It is possible to scroll RPM and temperature lap values using “<<” and “>>” buttons.

7.4 – Split summary

Pressing a fourth time MEM/OK button, split summary page, shown below, appears.



It shows a summary of the lap analysed in the previous page:

1. test/session number;
2. selected lap number;
3. selected lap lapttime;
4. track name;
5. test/session date;
6. selected lap hour;
7. max/min RPM value of the analyzed lap;
8. max/min temperature value of the selected lap.

7.5 – Best Rolling Lap and Best theoretical

In case **MyChron4** is set to sample split times, pressing for the fifth time MEM/OK button user enters Best rolling and best theoretical page, shown below.

Best Rollins
00:44.02

Theoretical Best
00:39.40

Best Rolling shows the best lap time the pilot really made but not from start/finish line to start/finish line;

Best Theoretical represents the lap time resulting from the sum of the best splits recorded in the session.

8 – Data key for data download

For a quick and immediate data download on a PC, AIM developed **Data key**, the special USB pen drive extremely handy and compact.



With 32 Mb internal memory, it can be used to save data coming from different sessions of the same kart or from different karts.

Each session is recognised thanks to the association of the data with track name, pilot name and session incremental number.

Data key can be used also to upgrade **MyChron4** firmware.

8.1 – MyChron4 data download

To download data from **MyChron4** on the PC, connect **Data key** to **MyChron4**: data download proceeding starts automatically and **MyChron4** display shows a message. Available options are:

- Memory Empty: **MyChron4** has no stored data
- No New Data: data stored in **MyChron4** memory have already been downloaded on that **Data key**
- Download Data: there are new data to download on that **Data Key**.

Once data download is over, plug **Data key** in the PC USB port, run **Race Studio 2** software and press “Download data” button as shown below.



Data download window, shown below, appears.



It shows all data stored in **Data key**: select only those to download.

Press “download selected” button and the system downloads data. At the end the software comes back to its main window.

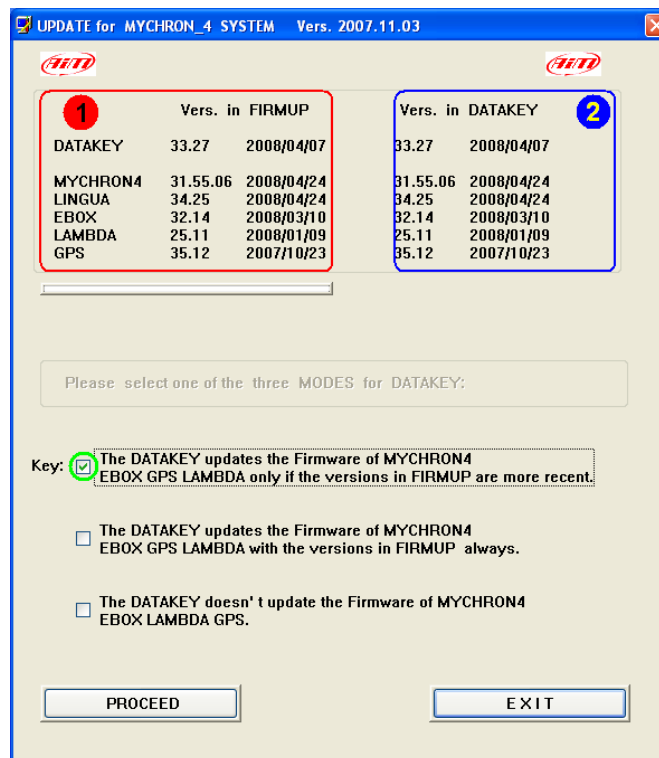
To see downloaded data press “Go to Analysis” button on the vertical keyboard or on the menu bar.

Warning: for any further information concerning **Race Studio 2** or **Race Studio Analysis** software refer to the related user manuals.

9 – MyChron4 firmware upgrading (firmup)

MyChron4, like all AIM loggers, is always improving and can be easily upgraded following this procedure:

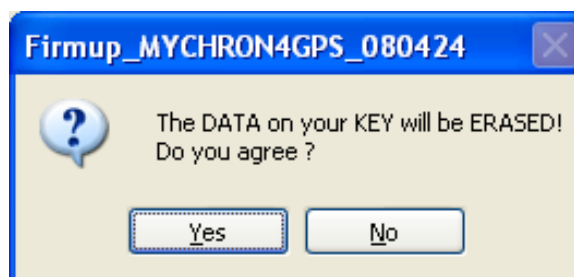
- connect to www.aim-sportline.com or to www.mychron4.com website
- select download area and firmware section
- click on firmware **MyChron4**
- select “save” option and downloaded firmware destination folder
- connect **Data key** to the PC USB port and run the firmup
- press “run” button
- the window here below appears



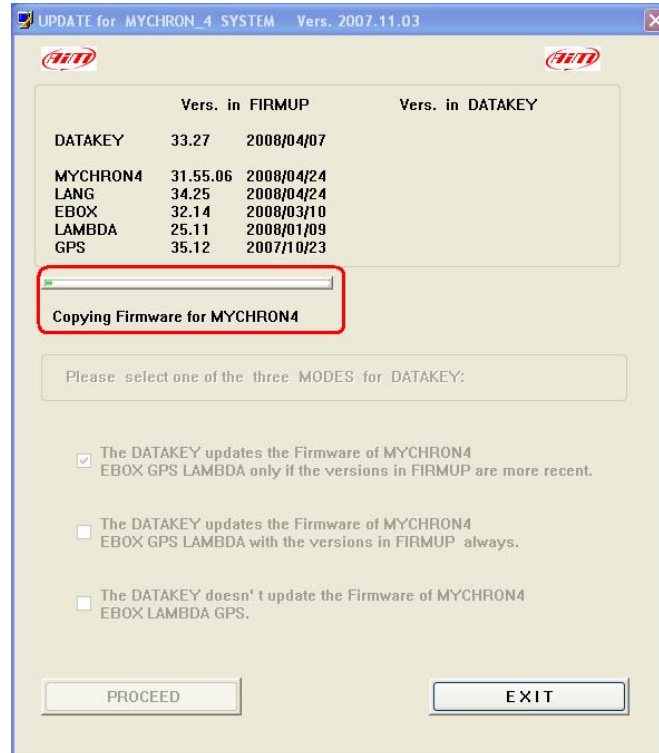
It shows: **top left (1)** firmware versions included in the run firmup, **top right (2)** firmware versions at present installed in **Data key**.

Bottom: possible updating options. To upgrade **MyChron4** firmware select the first option, green circled: **Data key** updates the firmware of **MyChron4**. The system ask for confirmation. Press “Yes”

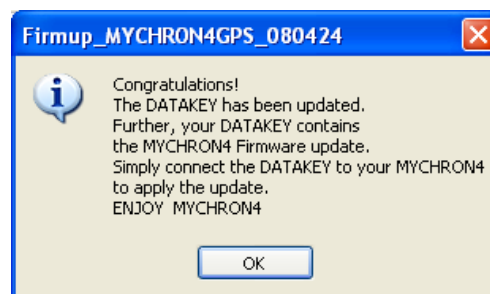
Note: firmware upgrading deletes data stored in Data key.



Firmware upgrading procedure will start: the waiting bar shows upgrading status and a text informs the user on which step is in course as shown below.



At the end of the procedure the system informs the user that upgrading has been done on **Data key**.



It is sufficient to connect **Data key** to **MyChron4** and updating procedure starts automatically.

Note: in case firmware contained in the logger is the same or more recent that the one contained in Data key and the first option has been previously selected, the logger starts automatically data download procedure.