Dear MyChron 3 Plus/Gold Owner

The **MyChron 3 Plus/Gold** represents the newest generation of Aim data acquisition systems that provide the karter with a wide and easy to use display normally reserved for premium sports cars.

MyChron 3 Plus/Gold monitors and displays RPM, two separate temperature inputs, wheel speed, current gear number and lap (split) times. It has a backlight, which can be switched on during night racing, and a huge internal flash memory (512 kbyte for **Plus** version and 2 Mbyte for **Gold** one) which guarantees the capacity to record up to 315 laps. It has also a built in 10Hz data logger for "on-screen" playback and a USB port to interface the instrument with a PC. The new software **Race Studio 2** will allow you to download data to a PC and to analyse them. Finally, the internal lateral g sensor will allow you the ability to create a circuit map, in order to correlate your data to your track position (available on **Gold** versions only).

Our Customer Service is available every day from 9 to 5 and at most all the major races throughout the country to provide you with personal service. Please call our toll free number or visit our website **www.aim-spotline.com** if you have any questions, need help, or want to give us feedback.

Thank you for your **MyChron 3 Plus/Gold** purchase.

Table of contents

Getting Started with MyChron 3 Plus/Gold

Aim has developed and tested your **MyChron 3 Plus/Gold** to provide precise and accurate results.

Here are the parts of your system:

- **MyChron 3 Plus/Gold** Display Unit (1).
- Junction box: used to plug the sensors in the instrument (not shown).
- Inductive RPM sensor (2).
- Temperature sensors – In alternative you may choose Water thermocouple (5), Water thermo-resistance (not shown), Exhaust Gas Sensor (9) or Under-spark Temperature Sensor (10). The water temperature sensors may be provided with an optional M5 connection or a 1/8 connection.
- Optional water thermocouple M5 fitting (11).
- Thermocouple extension cable (not shown).
- Lap Timer . May be optical (3) or magnetic (8). The optical one is provided with the optical transmitter (4), while the second one may work only in the kart tracks provided with a magnetic strip.
- External power wire for Infrared transmitter (6) for IR version.
- USB data download cable (7): optional for Plus version, furnished as standard equipment for Gold one.
- Front wheel / Rear Axle speed sensor (not shown).

The components of your system are also reported in the pictures 1.1 and 1.2 on page 5.

Fig 1.1: packing list

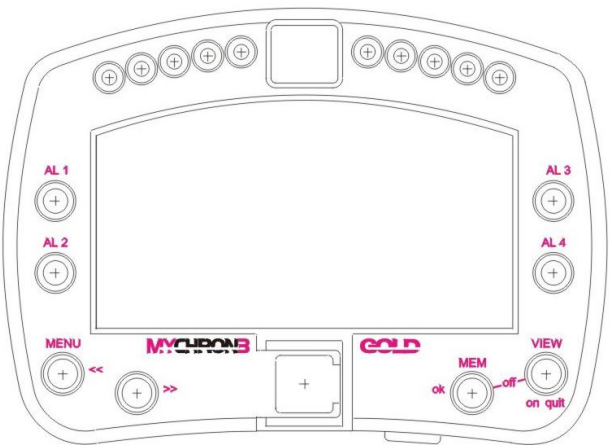
Fig 1.2: also available

MyChron 3 Plus/Gold and its parts

Before installing **MyChron 3 Plus/Gold**, please read carefully these installation instructions.

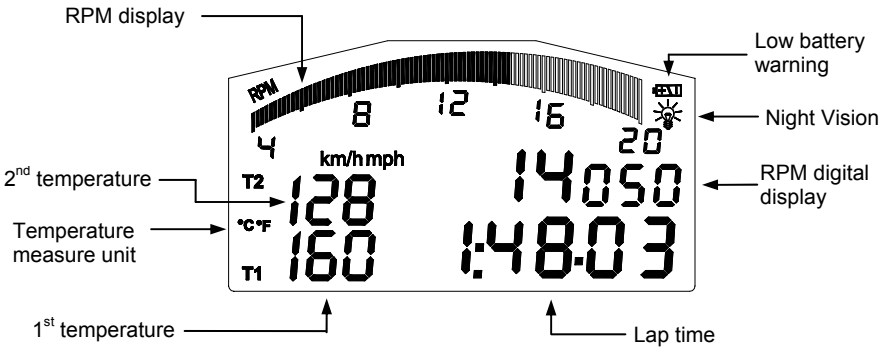
It is very important that your MyChron 3 Plus/Gold is correctly installed to capture consistent and accurate data. Incorrect installation may result in system malfunction.

In the following drawing it is represented the **MyChron 3 Plus/Gold** display unit: in the middle of the picture it is visible the wide display, in the lower part there is the keyboard, on the left and on the right there are 4 coloured alarm led (labelled from AL.1 to AL4) and, in the upper part, you can find the gear number display and 10 fully configurable RPM led.



In the following pages it will be described the different parts of **MyChron 3 Plus/Gold** system.

The Display



The wide display with backlight (optional) shows RPM, 2 separate temperature inputs (in °C or °F), test and lap number and, when the kart passes in front of the beacon, it shows the Lap Time (or Split Time). It is also possible to configure a second page (using button **VIEW**) in order to see RPM digital value (as showed in the previous drawing), kart speed (in km/h or Mph) or best lap time. When you are not running it is also possible (using button **VIEW**) to see the battery voltage.
The display also presents some small icons, showing the configured *Temperature* unit of measure (Celsius [°C] or Fahrenheit [°F]), the *Speed* unit of measure (km/h or Mph), the Night Vision option and the Low Battery Warning, that appears when the batteries are down.

Your MyChron 3 Plus/Gold has also an automatic power down feature that turns the power off after 10 minutes of inactivity

The Keyboard

The Keyboard is composed of four push-buttons and it is used to switch ON (OFF) the instrument, to configure the system, to recall the recorded data and to clear the internal memory.

The four pushbuttons are used for:

MENU/<<	Used to enter configuration mode and to switch to previous configuration option; also used to turn on backlight during a test.
>>	Used in configuration to switch to next option.
MEM/ok	Used to confirm a configuration, to retrieve recorded data and to see the best lap time.
VIEW	Used to **SWITCH ON** the instrument, to exit configuration mode without saving, or to switch the display from “digital RPM” value to “battery voltage” or to “best lap time”

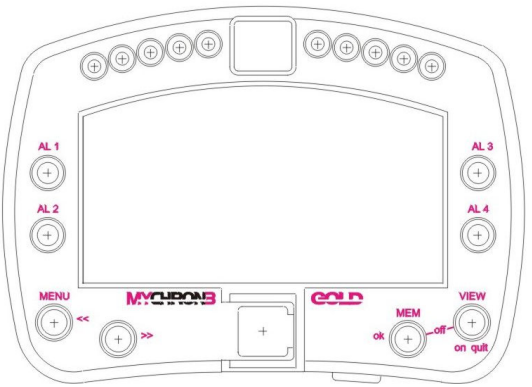
To switch the gauge **ON,** press button **VIEW**. To switch the gauge **OFF**, press at the same time **MEM/OK** and **VIEW**.

To run the system in DEMO MODE, while holding down button **MENU/<<** and **>>**, press button **VIEW**.

In the middle of the keyboard, protected by a plastic cover, it is placed the instrument’s USB port.

The alarm led and the gear display

In the following picture it is reported a drawing of **MyChron 3 Plus/Gold** display unit.



- The *alarm led* are placed on the left and right of the main display: on the left there are the led 1 and 2 (temperature 1 maximum and minimum) and, on the right, there are the led 3 and 4 (temp. 2 max. and min.). The four led are red colored.
- The *RPM led* are placed in the display unit upper part: this fully configurable led turn on two-by-two, advising the driver to shift gear. The 4 external led (2 on the left and 2 on the right) are green colored, the 2 middle ones are orange colored and the 4 remaining ones are red colored.
- The *Gear display* is placed exactly in the middle of the RPM led. This digital display shows the current gear number (for those karts equipped with a gearbox). The instrument is able to display up to 9 gears.

The “Junction Box”

The Junction Box, reported in the following photo, has two different functions: it includes the battery pack (made up of 6 AAA alkaline batteries), it is used to connect the cables incoming from the sensors. The Junction Box is also connected to the **MyChron 3 Plus/Gold** display unit by using a connection cable.

If you are using MyChron 3 Gold, the Junction Box also has another important function: it includes the lateral g sensor, which will allow you the ability to create a circuit map, in order to correlate your data to your track position.

The RPM cable

This clip wire has been designed to plug directly on the spark wire and it is used for RPM pick up from single cylinder **2-4 stroke engines**. When running the RPM cable along the chassis between the **MyChron 3 Plus/Gold** display unit and

spark plug wire, the RPM cable should be positioned as far as possible from the thermocouple wire.

In the following picture it is reported a photo of the RPM cable.

The Speed sensors

MyChron 3 Plus/Gold is equipped with a magnetic speed sensor, which allows the pilot to measure kart's speed.

Two speed sensors are available for karts: the first one is used to measure the front wheels speed, while the second one is used to measure the rear axle rotational speed.

The front wheel sensor is made up of two separate parts: a static one, which has to be installed on the steering arm, and a rotating one, composed of an iron plate and a magnetic sensor, which has to be installed inside the wheel rim.

Even the rear axle sensor is made up of two separate parts: a rotating one, made up of a plastic collar and a magnetic sensor, which has to be installed coaxially to the rear axle, and a static one.

In the following photo you can see the front wheel speed sensor, on the left, and the rear axle speed sensor and collar, on the right.

The Thermocouple

MyChron 3 Plus/Gold supports two temperature sensors. There are 5 types of temperature sensors that are available for selection or subsequent purchase:

1. H_2O - Water thermocouple1/8 inches type.
2. H_2O - Water thermocouple M5 type.
3. EGT - Exhaust gas thermocouple.
4. CHT - Cylinder head thermocouple.
5. H_2O - Water thermo-resistance M5 type (not shown and quite similar to thermocouple #2).

Temperature sensors number 1, 2, 3 and 5 are provided with an extension cable (length = 1.5mt = 45 inches) Thermocouple 4 does not need extension cable (length = 1.5mt = 45 inches).

The LAP receiver

The lap receiver may be *infrared* or *magnetic* and it is used to recognise a lap marker. If you are using an *optic* receiver, it is necessary to use an Infrared Transmitter at the trackside; while, if you have installed the *magnetic* receiver, the track must be provided with magnetic strips.

Infra Red receiver has to "see" the transmitter placed on the trackside, so remember to install it with the receiver eye (the grey point in the photo on the left) pointed to the beacon transmitter.

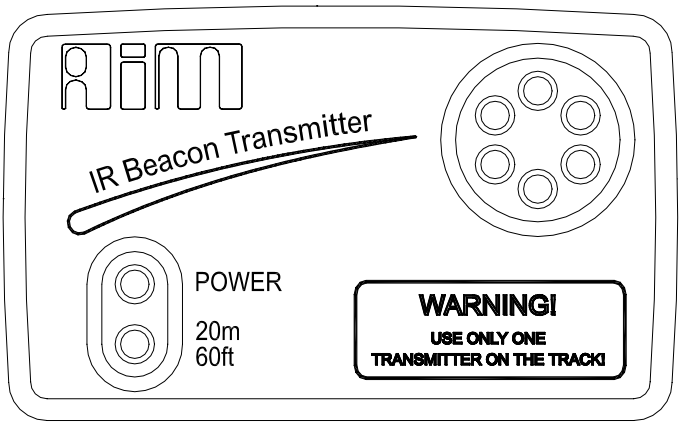
Magnetic receiver has to be installed on the floor of the kart, with two tyre wraps. The arrows on the magnetic receiver need to point to the front and rear of the kart

MyChron 3 Plus/Gold automatically recognises the lap receiver (optic or magnetic) and so no beacon type configuration is needed.

The Optical beacon

The optical Beacon Transmitter has to be placed on the trackside to mark laps. Ensure the infrared receiver eye faces the side of the track where the Beacon has been placed, otherwise the system will not record lap time.

The Beacon transmitter is powered using 8 AA batteries or an external 12V power cable. If you are using 8 AA batteries, unscrew the back cover of the Beacon transmitter and place the battery pack into the transmitter casing.

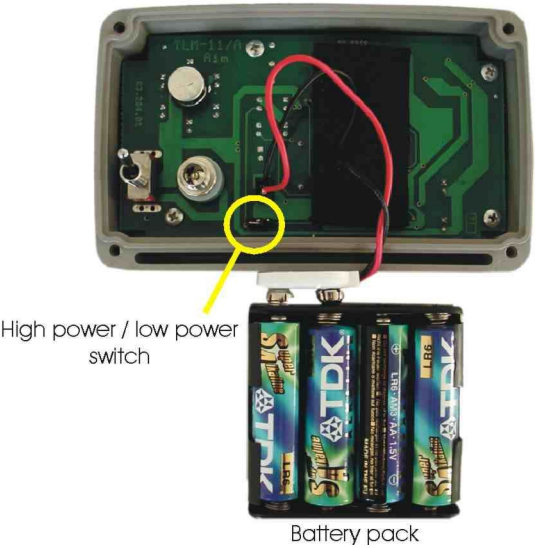


The transmitter has two operating modes: *Low* power and *High* power. The Low Power Mode has to be used when the track is less than 10 meters wide, while the High Power mode has to be used when the track is wider than 10 meters.

To activate the *High/Low Power* function, please open the Beacon transmitter with a corkscrew and place the clip (located directly below where the battery pack is attached to the beacon transmitter board) either over one of the two

connectors (for *low power* mode) or over the two connectors (for *high power* mode).

When the Beacon transmitter operates in high power mode, both the power led lights will light up when the transmitter is turned on.



Please, remember that, in High Power Mode, the transmitter has to be powered by an external 12 Volts battery.

How to install MyChron 3 Plus/Gold

Now you can start installing **MyChron 3 Plus/Gold** on your kart.
It is recommended to follow these instructions in order to preserve your instrument and to capture consistent and accurate data.

Installing and changing the display batteries

6 AAA alkaline batteries power **MyChron 3 Plus/Gold**. The batteries provide approximately 40 hours of use. When the batteries require replacement, a battery indicator will appear in the top right hand corner of the display.
If battery voltage is very low it will also appear the following text:

LOW BATTERY

If battery voltage is really too low, the system will automatically shut down.

Please, replace the 6 batteries when the battery indicator appears to avoid the system's shutting down during a test.

To change batteries, remove the Junction Box top cover by unscrewing the four screws and replace each one of the 6 AAA alkaline batteries.

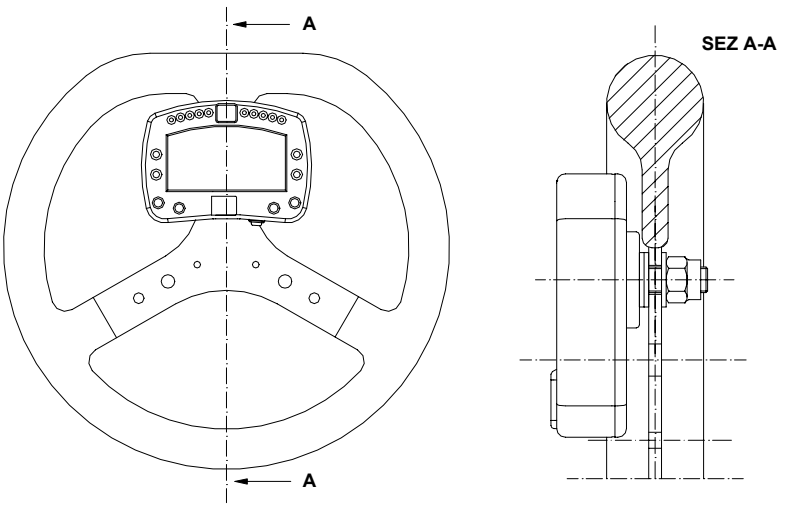
Do not over-tighten the screws when mounting the Junction Box top cover in order not to damage the Junction Box itself.

Installing MyChron 3 Plus/Gold on the steering wheel

Most of steering wheels have existing holes in the three central arms that will accommodate the **MyChron 3 Plus/Gold** display unit.

If the steering wheel arms are solid, mark the point where the hole is to be drilled and then indent a drill reference point with a large nail or hole punch, to minimize drill wander. It is recommended that an 8 to 10 mm drill bit be used.

Do not over-tighten the nut. Over-tightening the nut may cause damage to the display unit casing.

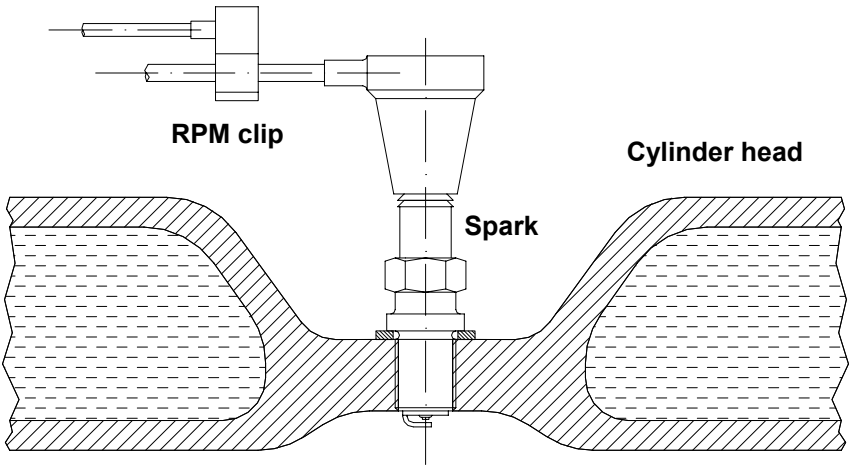


As showed in the previous drawing, it is suggested to use the plastic washers furnished as equipment to keep separate your MyChron 3 Plus/Gold and the steering wheel, in order to avoid possible damages to the display unit.

Installing the RPM clip

This clip wire has been designed to plug directly on the spark wire and it is used for RPM pick up from single cylinder **2-4 stroke engines**.

When running the RPM cable along the chassis between the **MyChron 3 Plus/Gold** display unit and spark plug wire, the RPM cable should be positioned as far as possible from the thermocouple wire.



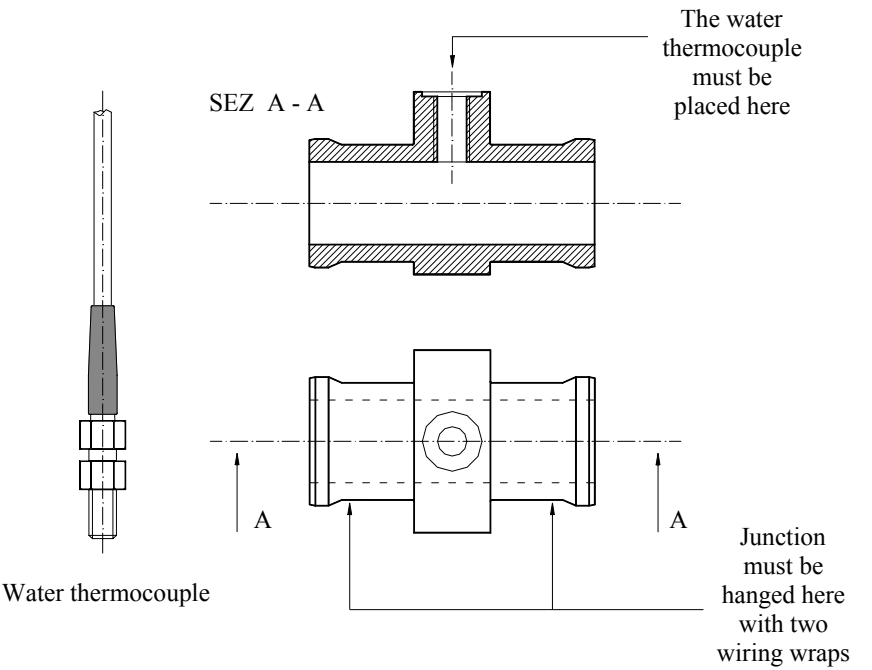
It is suggested to use plastic wrappers ties to securely attach the RPM cable along the chassis to prevent damage.

Installing the H_2O thermocouple (thermoresistance)

The H_2O thermocouple can be installed directly into the cylinder head (if the engine accommodates the thermocouple) or by using the water thermocouple M5 fitting (sold separately) for the M5 type.

The thermo-resistance, instead, can be installed only in the inline water fitting.

In the following drawing it is represented how to correctly install the water thermocouple (thermoresistance) for the M5 type.

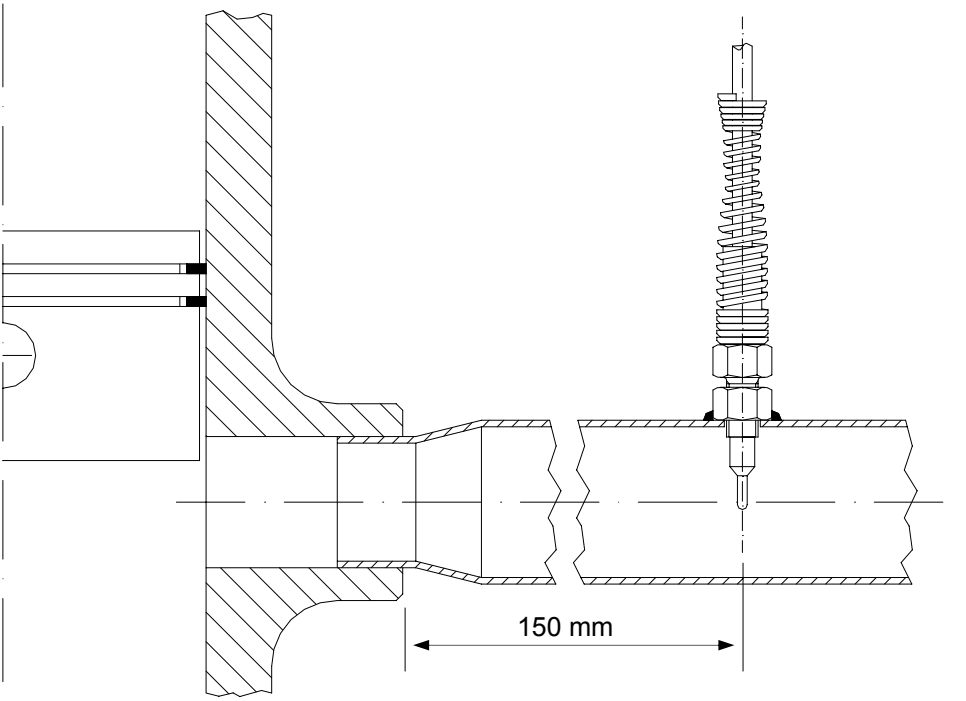


Installing the EGT thermocouple

The Exhaust Gas Thermocouple (EGT) should be positioned inside the exhaust header pipe at a distance of 150 mm (5.9 inches) from the exhaust port.

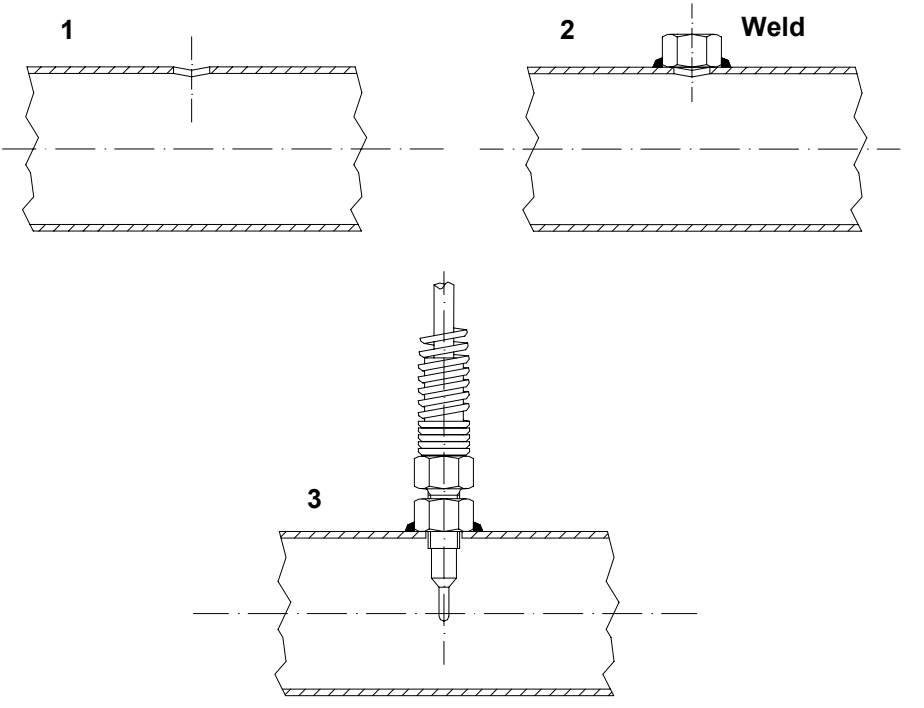
In the following drawing it is represented a correct installation of the EGT thermocouple.

It is recommended that the probe be inserted between 25% and 50% inside the exhaust gas header.



To install the EGT thermocouple, please follow these instructions:

1. Make a 5 mm (0.2 inches) hole inside the exhaust header;
2. Weld the little nut to the exhaust header in the place where the hole has been drilled;
3. Connect the remaining part of the thermocouple and fix it to the exhaust header by screwing it.

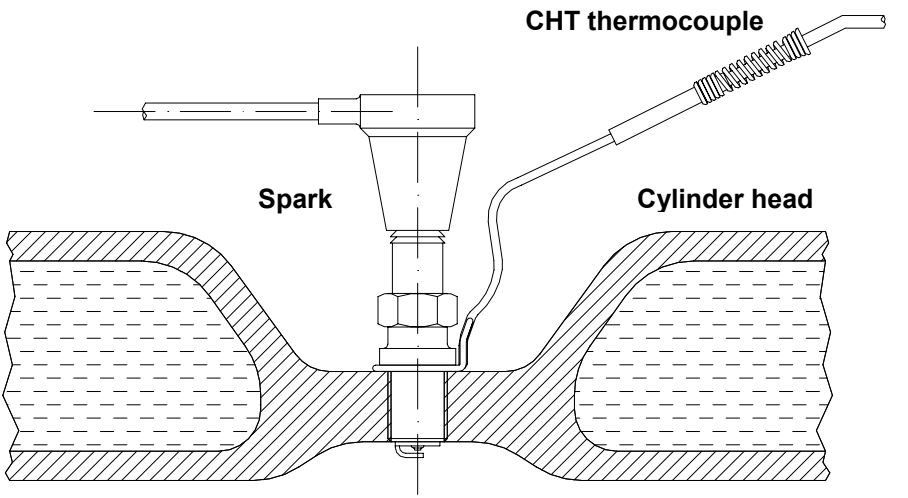


Installing the under-spark thermocouple

When using a Cylinder Head Thermocouple (CHT) sensor, always remove the spark plug washer before inserting the spark plug into the sensor.

When tightening and loosening the spark plug, minimise movement of the sensor to avoid damage.

In the following drawing it is represented the correct installation of the under-spark thermocouple.



Installing the “front wheel speed sensor”

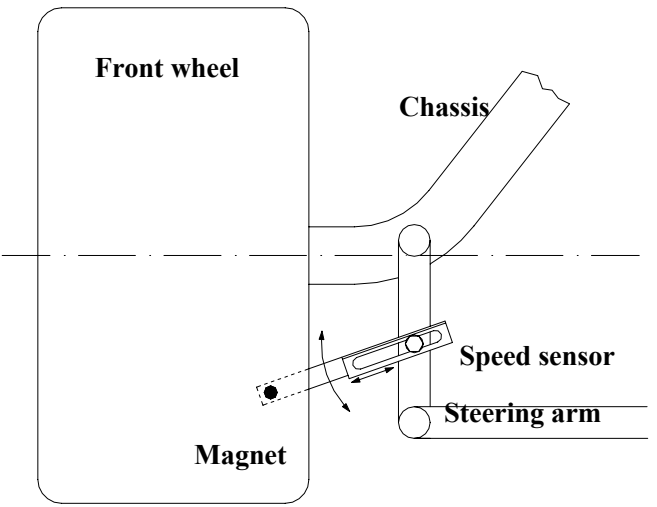
The kart front wheel speed sensor is a slotted bracket with the sensor located at the tip and it has been designed for use on the front wheel without front brakes.

The sensor is made up of two separate parts: static and a rotating one. The rotating one has to be installed inside the wheel rim; the static one, instead, composed of an iron plate and a magnetic sensor, has to be placed on the steering arm. If the steering arm is solid, make a hole in the steering arm by using a 6 mm drill bit.

The static part of the sensor has to be firmly fixed to the steering arm, in order to avoid movements of the sensor because of very high wheel vibrations.

It is reminded that the sensor’s sensing distance is included between 3 and 5 mm.

In the following drawing it is reported the speed sensor installation.



Installing the “rear axle speed sensor”

This speed sensor has been borrowed from our motorcycle and auto racing products but has become very popular on the rear axle of karts. The magnetic trigger is mounted to an axle collar.
The first installation step consists in mounting the axle collar coaxially to the kart’s rear axle. Once the collar is firmly fixed to the axle, it is possible to install the sensor at a distance included between 8 (0.3”) and 15 mm (0.6”).
The rear axle speed sensor allows the user to “calculate” the engaged gear: for further information, please refer to the “Gears calibration” paragraph (inside the “Configuration functions” chapter).

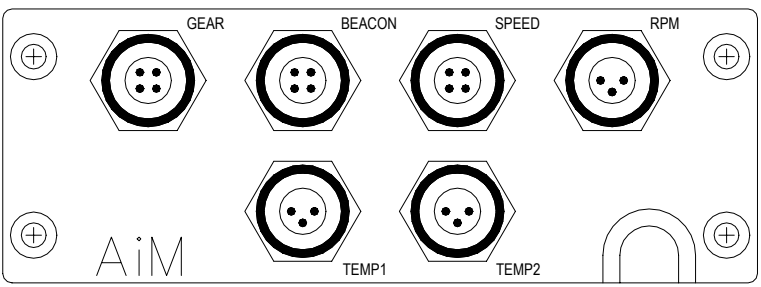
Installing the Junction Box

The Junction Box must be installed with the connectors (mounted on the front panel) facing the driver.
It is suggested to install the Junction Box turned upside down by screwing it under the kart’s front cockpit, in correspondence of the “number plate”. In that zone, the cockpit is flat and wide enough to allow you an easy installation.
It is suggested to use **Silent blocks** to install the Junction Box.

If the Junction Box has not been installed under the front cockpit but has been mounted firmly connected to the chassis (or to the platform), it is **absolutely necessary to use Silent blocks**: vibrations on the kart’s platform (or chassis) may seriously damage the Junction box itself.

NOTE: if you are using MyChron 3 Gold, equipped with a lateral g sensor, you have to install the Junction Box with the front panel facing the pilot. In fact, the lateral g sensor is mounted so that, if you wish to measure lateral g-force (and you wish to create a circuit map), you have to install the Junction Box with its front panel (the one where you plug in the sensors) facing the pilot.

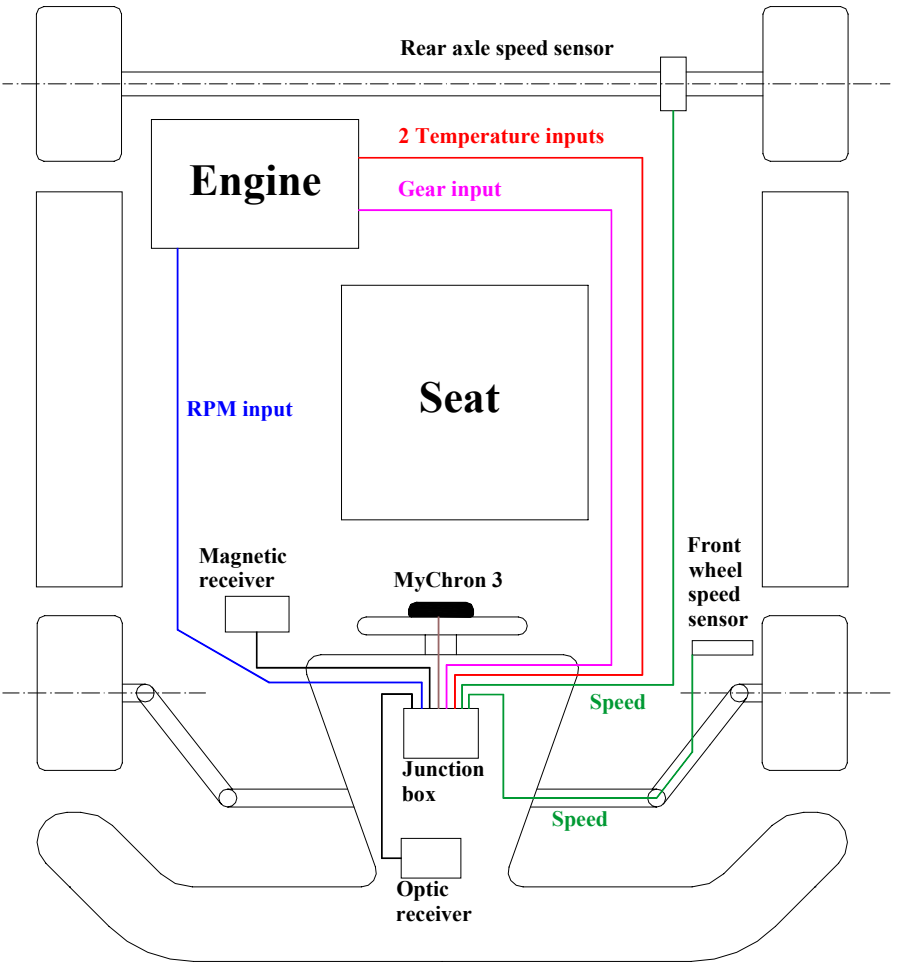
Once correctly installed all the parts of your **MyChron 3 Plus/Gold**, you need to connect them to the Junction Box. In the following picture it is reported a drawing concerning the binder connectors position on the Junction Box front panel.



As shown in the previous drawing, each binder connector is labelled with its own name, in order to make cables connection easier.

While plugging the cables' binder connectors in the Junction Box, it is recommended to firmly screw them, in order to avoid unscrewing during race time. Anyway, it is also recommended not to over-screw the binder connectors, in order to avoid damages to the internal welds.

While connecting the cables to the Junction Box, it is strongly recommended to keep as separate as possible the RPM cable from the other ones in order to minimize interference between cables. See the following drawing for more information.



On track

As you power on your **MyChron 3 Gold** some information are displayed: here they are described in the same order as they appear:

1. AIM 1_xy Firmware version.
2. MYC 3 PLUS/GOLD KART Instrument name.

Configuration functions

Before getting started, please configure your gauge in order to get right data from your system.

After having switched ON the instruments, please, enter CONFIGURATION MODE (push **MENU/<<** button) to set the parameters.
Buttons **MENU/<<** (back to previous option) and **>>** (forward to next option) are used to scroll through the configuration menu.
To exit CONFIGURATION MODE and return to MAIN DISPLAY MODE, press button **VIEW**.

The parameters you can set in CONFIGURATION MODE are here above explained in the same order they appear by clicking **MENU/<<** button.

Night Vision

MyChron 3 Plus/Gold display can be set to backlight display so that it is visible during night racing.

To set the Night Vision ON or OFF, press button **MEM/OK** until you see

NIGHT VISION ON/OFF

and then push button **MEM/OK**. To return to main display mode press button **VIEW**. When the Night Vision option is activated, a light globe will be displayed in the display's top right corner.

To activate Night Vision mode during a test, it is enough to press button **MENU/<<**.

Clear test data

The "Clear test data" option clears the data stored in system's memory.

To run this function, after having entered the CONFIGURATION MODE, push **MENU/<<** until you see

CLEAR TEST DATA

Then press button **MEM/OK** twice to erase data or press **VIEW** to quit.

Beacon obscuring time and split's number

These 2 functions are fundamental in order to acquire the correct lap and split time.

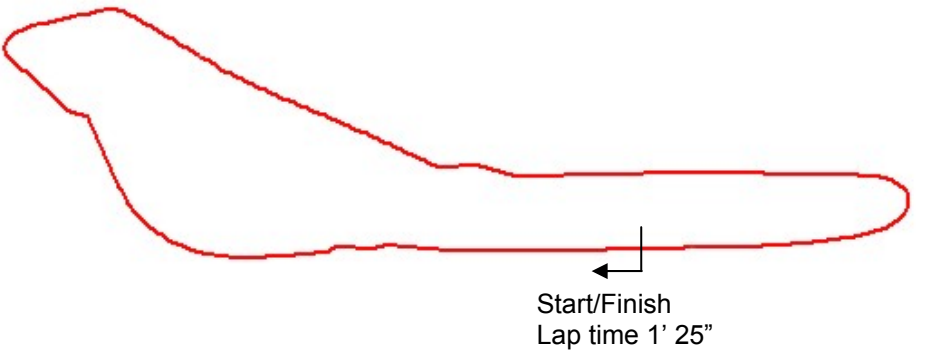
The first function is used to set the Beacon's obscuring time, which is a time period during which the lap receiver, after having acquired the lap marker, is "blind" and can't detect

other lap markers.

The second function, instead, allows the user to set the track's split number. In fact, it is possible that a circuit is equipped with more than one Beacon transmitter (magnetic strip) along the track: additional transmitters (magnetic strips) than the first one installed on the straight line give "split time".

In the following paragraph, it is reported three examples of obscuring time/split's number configurations.

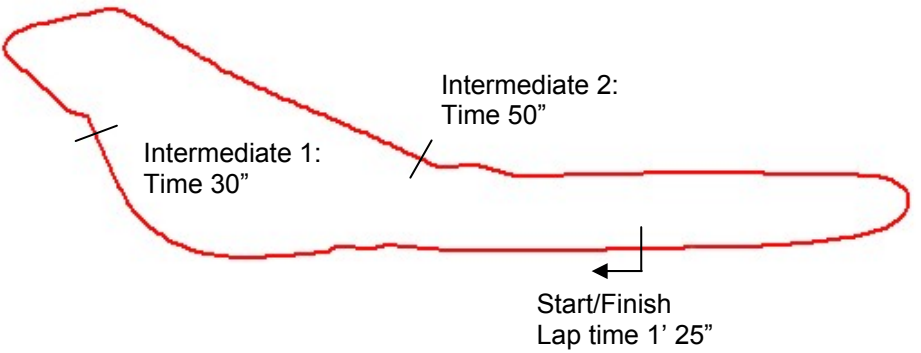
Example 1) The track is equipped with only one lap transmitter



- In this case you cannot acquire split times because the track is not equipped with additional lap transmitters. It is recommended to set the following values:
    - Split's number = 0;

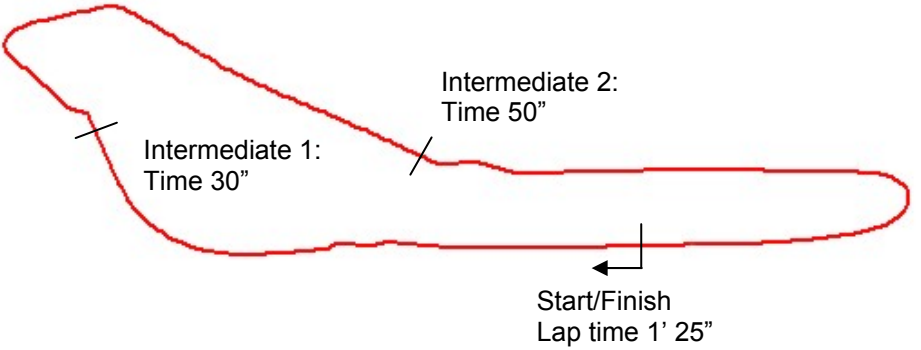
- Beacon obscuring time: please set a time lower than your best lap time. **In this example**, the best lap time is 1' 25": you should set, for instance, 1' 10".

Example 2) The track is equipped with more than one lap transmitter but you do not wish to capture split times



- As the track is equipped with more than one transmitter and you do not wish to capture split times, please set the following parameters:
  - Split's number = 0;
  - Beacon obscuring time: please set a time lower than your best lap time and greater than the time elapsed at the last intermediate before the finish line. **In this example**, you should set a value included between 50" and 1' 25".

Example 3) The track is equipped with more than one lap transmitter and you wish to capture split times



- As the track is equipped with more than one transmitter and you wish to capture split times, please set the following parameters:
  - Split’s number = total number of lap transmitters installed on the track excluded the one installed on the finish line. **In this example**, set 2 split’s number.
  - Beacon obscuring time: the obscuring time must be lower than the minimum split time. **In this example**, as the minimum split time elapsed is the one from the first intermediate to the second one (split time 20”), please set the beacon obscuring time to 15”.

To set the split’s number, after having entered the CONFIGURATION MODE, push **MENU/<<** until you see

NUMBER OF SPLITS

Then push **MEM/OK** to enter EDIT MODE: use button **MENU/<<** to change numbers and button **>>** to change digit. The blinking number identifies the digit that can be edited.

Press button **MEM/OK** to save the changes or button **VIEW** to discard the changes.

To set the Beacon obscuring time, after having entered the CONFIGURATION MODE, push **MENU/<<** until you see

Obscuring time

Now push **MEM/OK** to enter EDIT MODE, then press button **MENU/<<** until the correct number of splits appears on the display's lower right corner. The obscuring time can be set up to a maximum value of 100 seconds.

Press button **MEM/OK** to save the changes or button **VIEW** to discard the change

Distance and total time

This function shows the total instrument working time (in hours and minutes) and the distance covered by the vehicle (in km or in miles) during a test.

To run this function press button **MENU/<<** until you see

TOTAL RUNNING

To delete the total working time and the distance covered by the vehicle, please press twice button **MEM/OK**; press **VIEW**, instead, if you do not wish to delete these information.

It is reminded that this function computes only time and distance corresponding to a single test: if you wish to know the total distance covered by the vehicle, please run function "Odometer".

Odometer

This function computes the total distance covered by the vehicle during all the tests made.

To run this function press button **MENU/<<** till you see

ODOMETER

Unlike the previous function, this parameter cannot be erased.

Gears calibration

Your gauge is able both to detect the engaged gear by using a sensor (for those karts equipped with a sensor installed inside the gearbox) or by calculating them (using an algorithm based on engine's **RPM** and **rear axle speed**). If no sensor is installed and the driver does not wish to see the gear number on the display, the gauge allows the user to disable the gear channel.

To run this function press button **MENU/<<** until you see

GEAR CALIBRATION

Press button **NEXT/MEM** to activate one of the gears calibration functions here above described:

GEAR computed

Gear is disabled

Gear with sensor

1) Compute gears

Once selected the "Gear computed" option, pressing button **MEM/OK,** it will appear the following text:

Higher gear

Enter the higher gear number (up to 9) using button **MENU/<<**; then press button **MEM/OK** to save the changes or **VIEW** to discard them.

Once set the higher gear number, you have to run at least 2 track laps in order to let the gauge “learn” the threshold values for the different gears.

It is strongly recommended to run these laps engaging all gears. If a gear is not engaged during this “learning lap”, the gauge will not be able to show all gears.

During the first “learning lap” no gear value will be shown.

Once finished the first “learning lap”, the red led AL 1 lights up, informing the driver that the gauge is calculating the threshold values. Starting from the second “learning lap”, the driver will see the gear number on the display.

If, during this second lap, the gear values displayed correspond to the engaged gears (i.e. the “learning lap” is a good lap), press button **MEM/OK** to save the threshold values.

Otherwise, if the gear values displayed do not correspond to the engaged gears, please keep on running a new “learning lap”.

It is reminded that the threshold values are saved in the gauge’s internal memory and the user will not have to calculate them each time the gauge is switched on.

The algorithm is able to detect the engaged gear as it calculates the engine's RPM vs. rear axle speed ratio. If the speed is acquired from the front wheel, the algorithm may return incorrect gear values.

The RPM vs. rear axle speed ratio is directly proportional to the cog wheel and rim teeth-number: if one of them (or both) is replaced with a different teeth-number cog wheel/rim, the gear calibration procedure has to be done again.

2) Gear is disabled

Select this option if you do not wish to see the gear number.

3) Gear with sensor

Once selected the "Gear with sensor" option, you will see the following sentence

INSERT GEAR

Meanwhile, in the gear display, you will see the gear number blinking.

Please engage the "neutral gear" and then press button **>>** to step to next gear calibration. The procedure to be followed is similar to what has just been explained: you have to engage the next gear and to press the **>>** pushbutton.

The gauge supports gearboxes with a gear number up to 9.

If your vehicle's gearbox has a gear number lower than 9 (typical values are 5, 6 or 7 gears), once you have engaged the last gear you have to press button **MEM/OK** to save the current calibration.

To restart the calibration procedure, press button **MENU/<<**.

To disable the gear channel, press button **MEM/OK** when you see the number 0 blinking in the gear display; it will also appear the following sentence

GEAR IS DISABLED

To exit calibration mode without saving press button **VIEW**.

Maximum temperature alarm 1

This function sets the maximum threshold temperature for the first thermocouple sensor that triggers the alarm when a dangerous temperature has been reached.

You should consult with your engine manufacturer to determine what temperature threshold should be set for your engine and thermocouple sensor.

To run this function press **MENU/<<** till the red led labeled as "AL 1" gets switched on and you see this sentence

MAX TE1 ALARM

Then push **MEM/OK** to enter EDIT MODE: use button **MENU/<<** to change numbers and button **>>** to change digit. The blinking digit identifies the digit that can be edited.

When the required temperature has been set, press button

MEM/OK to save changes or press button **VIEW** to discard changes.

The temperature alarm can be set between 0 and 1999 degrees.

If you set the value 0, the maximum temperature 1 alarm function will be disabled.

When the display shows a temperature **greater** than the alarm one, the red led will get switched on until the temperature value will not decrease under the threshold value.

Minimum temperature alarm 1

This function is quite similar to the previous one and it is used to set a minimum threshold temperature for the first thermocouple sensor that triggers the alarm led “AL 2”.

To run this function press **MENU/<<** till the red led labeled as “AL 2” gets switched on and you see this sentence

MIN TE1 ALARM

Then push **MEM/OK** to enter EDIT MODE: use button **MENU/<<** to change numbers and button **>>** to change digit. The blinking digit identifies the digit that can be edited.

When the required temperature has been set, press button **MEM/OK** to save changes or press button **VIEW** to discard changes.

The temperature alarm can be set between 0 and 1999 degrees.

If you set the value 0, the maximum temperature 1 alarm

function will be disabled.

When the display shows a temperature **lower** than the alarm one, the red led will get switched on until the temperature value will not become greater than the threshold value.

Maximum and Minimum temperature alarm 2

These functions are completely similar to the previously described “Maximum/Minimum temperature alarm 1”, with the only difference that they allow the customer to set the maximum/minimum threshold temperature value for the second thermocouple.

The procedure to be followed to configure the thresholds for the second temperature are exactly the same previously described, with the only difference that, on the display, it will appear the following sentences

MAX TE2 ALARM

MIN TE2 ALARM

And the red led “AL 3” and “AL 4” will get switched on.

Shift lights configuration

This function allows the user to configure the 10 colored led placed in the right upper part of the instrument’s display. These led get switched on when the engine reaches a set RPM value, indicating the pilot to change gear.

To run this function, press button **MENU/<<** until you see

SHIFT LIGHT

By pressing button **MEM/OK** you will switch on the first led on the left and the first one on the right, both green colored, and it will appear the RPM value correspondent to that led lighting.

Press **MEM/OK** to enter EDIT MODE: use button **MENU/<<** to change numbers and button **>>** to change digit. The blinking digit identifies the digit that can be edited.

When the correct RPM value is displayed, press button **MEM/OK** to save the changes and to step to second led configuration; otherwise press button **VIEW** to quit without saving.

The 10 led are colored in the following way: the first two on the left and the first two on the right are green, the middle ones are orange and the remaining ones led are red colored. When the engine reaches the RPM value set for the 5th led, all the 10 led will start flashing, advising the pilot to change gear.

The RPM value can be set between 0 and 29999; if you set an alarm value of 0, that led will be disabled.

Wheel circumference

This function sets the wheel circumference (in mm or in inches).

This parameter is fundamental to correlate the wheel's angular speed and the kart speed.

To run this function press button **MENU/<<** until you see

WHEEL CIRCUMFEREN

Then push **MEM/OK** to enter EDIT MODE: use button

MENU/<< to change numbers and button **>>** to change digit. The blinking digit identifies the digit that can be edited. The wheel circumference value can be set in a range included between a minimum value of 0 and a maximum one of 9999 mm (0 and 399.99 inches).

When the correct circumference value has been set, press button **MEM/OK** to save changes or press button **VIEW** to quit without saving.

Speed sensors number

This option allows the user to set the number of magnets installed on the wheel in order to measure the wheel's angular speed.

The speed sensor, passing by the magnet, generates an electric pulse which gets acquired by the instrument: if it is installed just one magnet, the instrument will measure one impulse per lap, while, if it is installed more than one magnet, the number of pulses per lap will be greater than one.

In order to capture the correct wheel's angular speed, it is necessary to set the correct magnets number.

To run this function press **MENU/<<** until you see

PULSES ON WHEEL

Then push **MEM/OK** to enter EDIT MODE: use button **MENU/<<** to change numbers and button **>>** to change digit. The blinking digit identifies the digit that can be edited.

The number of magnets installed on the wheel is included

between a minimum of 0 and a maximum of 199.
Press button **MEM/OK** to save the changes and button **VIEW** to quit without saving.

Max RPM value

This function sets the maximum scale for the graphical RPM display and the maximum acceptable RPM value acquired by your **MyChron 3 Plus/Gold**.
MyChron 3 Plus/Gold has seven levels for the RPM scale: 8,000 / 10,000 / 12,000 / 16,000 / 20,000 / 22,000 and 25,000 RPM.
To run this function, after having entered the CONFIGURATION MODE, push **MENU/<<** until you see

MAX RPM VALUE

Then push **MEM/OK** to enter EDIT MODE and use buttons **MENU/<<** or **>>** to scroll between the seven standard RPM values. When the required RPM value is displayed, press button **MEM/OK** to save the changes or button **VIEW** to quit.

Spark for Revs

This option represents the number of spark signals for every engine revolution. A two-stroke engine has one spark signal per revolution, while a four-stroke engine has a spark every two engine revolutions.
To set the Spark for Revs, after having entered the CONFIGURATION MODE, push **MENU/<<** until you see

SPARK FOR REVS

Then push **MEM/OK** to enter EDIT MODE and use buttons **MENU/<<** or **>>** to scroll among the standard values: x1, x2, /2, /3, /4 and /6. For a two-stroke, one cylinder engine, the RPM ratio is x1.

Press button **MEM/OK** to save the changes or button **VIEW** to discard the changes.

Temperature unit of measure

This function sets the temperature's unit of measure; the user can choose between Celsius [°C] and Fahrenheit [°F] degrees.

To run this function, after having entered the CONFIGURATION MODE, push **MENU/<<** until you see

FAHRENHEIT/CELSIUS

Then push **MEM/OK** to enter EDIT MODE and use button **MENU/<<** till you don't see the proper Temperature unit of measure, and confirm it pushing **MEM/OK**. Press button **VIEW** to discard the changes.

The symbols °C or °F will appear on the left of the display.

Speed unit of measure

This function sets the speed's unit of measure; the user can choose between **km/h** and **Mph**.

To run this function, after having entered the CONFIGURATION MODE, push **MENU/<<** until you see

SPEED UNIT

Then push **MEM/OK** to enter EDIT MODE and use button

MENU/<< till you don't see the proper measure unit.

To confirm your choice push button **MEM/OK**; press button **VIEW** to discard the changes.

Message language

MyChron 3 Plus/Gold text can be displayed in English, Italian, German or French.

To run this function, after having entered the CONFIGURATION MODE, push **MENU/<<** until you see

MESSAGE LANGUAGE

Then push **MEM/OK** to enter EDIT MODE and use **MENU/<<** or **>>** to change language.

Press button **MEM/OK** to save the changes or button **VIEW** to discard the changes.

Firmware version

This function shows three numbers, which represent, respectively, the firmware version, the firmware upgrade date and the gauge's serial number.

To run this function, after having entered the CONFIGURATION MODE, push **MENU/<<** until you see

FIRMWARE version

The firmware management window is organized on two different rows: in the upper one it is shown the firmware version, on the left, and the firmware upgrade date, on the right (dd/mm/yy). In the lower row, instead, it is shown the gauge's serial number.

Utility functions

Once configured your system, you are ready to manage the data you have acquired with your gauge. **MyChron 3 Plus/Gold** records RPM, two temperature values, speed, gear number and lateral g-acceleration (**Gold** version only) at a sampling rate of 10 Hertz (ten times per second). This data can be retrieved at a later stage for analysis.

MyChron 3 Plus/Gold segments data for a session as a test and each test includes the laps completed in that session. To begin recording a new test you may switch off your instrument and then switch it back on, or you may press the **MEM/OK** button: once you exit the “retrieve data from memory” function, your **MyChron 3 Plus/Gold** will record data in a new test session.

Viewing data while driving

MyChron 3 Plus/Gold will display “Test 01” or the current test number if memory has not been cleared, and “Lap 001” once the magnetic sensor passes over a magnetic strip (or the infrared receiver passes the beacon transmitter).

If the system has been configured to capture back segments using the number of splits option, the system will display “Split Number x”, up to the number of splits selected. Once the system records times for each split, the final segment is displayed as a completed lap.

At the same time the system displays the time difference between the current split time and the split time of the previous lap.

When the system records the best lap time for a test, the text

BEST LAP TIME

will appear on the display.

By pressing button **VIEW** it is possible to visualize, instead of lap time, the RPM digital value or kart's speed.

To switch on backlight option during race time you have to press button **MENU/<**.

When the gauge is switched on, the display shows the last selected measures during race time: for instance, if you were visualizing speed (or RPM digital value, etc…) the display will show this channel.

Your gauge's memory is divided into two separate parts. In the first one it is stored the sampled channels and it has a 1 hour (**MyChron 3 Plus**) or a 4 hours (**MyChron 3 Gold**) maximum storage time. In the second one it is only stored the lap times, the split times and the maximum and minimum values of temperature, speed and RPM for each lap.

If during race the "sampled channels" memory fills up, the following text will be displayed:

Measures memory full

The gauge will keep on recording the lap/split times and the channels' maximum/minimum values.

If, otherwise, the "maximum/minimum values" memory fills up, the following text will be displayed:

Lap Memory full

The gauge will keep on recording the channels' values at a sampling frequency of 10 Hz.

When both memories are full, the following text will be displayed:

Memory full

In this situation, the data logger works only as a "dash" and does not samples any more data. It is recommended to download the data stored in the gauge's memory and to clear it.

When a test is complete, the system displays the last lap number and last lap time. Using button **MEM/OK** you will access the data stored in system's memory. Let's now see how to retrieve data after the completion of a test

Viewing data per best lap time

To view the data for the lap with the best lap time, press **MEM/OK** while in general display mode.

The best lap time is displayed for the most recent test. The lap time will be flashing, signaling that this is the best time for the current test.

The instrument will also show the test and lap number and the maximum temperature and RPM values for the current lap.

If button **MEM/OK** is pressed a second time, it will appear the minimum temperature and RPM values for the best lap.

If you press button **VIEW** in one of the two previously described display pages, the display will show temperature 1,

temperature 2 and Speed maximum values. Press button **VIEW** again to quit replay mode or press button **MEM/OK** to view temperature 1, temperature 2 and Speed minimum values.

View other completed lap data

To view completed lap data, while in general display mode, press button **MEM/OK** to view the best lap time. Then press button **MENU/<<** to view a previous lap or button **>>** for a following lap. If you have configured the **MyChron 3 Plus/Gold** to capture splits, buttons **MENU/<<** and **>>** will also scroll through the split times within each lap.

To retrieve previous test data (when more than one test has been recorded) press button **MENU/<<** until the required test and lap details (or split details) appear on the display.

Buttons **MEM/OK** and **VIEW** will allow you to switch between the different display pages, as previously described in the "Viewing data per best lap time" paragraph.

Replaying detailed data for the lap

If you wish to replay detailed data for a lap, you may choose between an AUTOMATIC way and a MANUAL one.

Automatic lap replay: while in general display mode, press button **MEM/OK**; then, using buttons **MENU/<<** or **>>** choose the lap you wish to see and then press twice button **MEM/OK**: the system will automatically replay the graphic and decimal

RPM, temperatures and lap time from start to finish in time intervals of one-tenth of a second (10 Hertz).

Use button **VIEW** to switch between RPM digital value and Speed.

Press button **MEM/OK** to exit automatic replay and return to maximum RPM and Temperature 1 and 2 display page.

Manual lap replay: to manually step through the detailed lap data, while the system is in general display mode, press **MEM/OK**; then, using buttons **MENU/<<** or **>>** choose the desired lap and then press twice button **MEM/OK**. The system will go to the "automatic lap replay" mode.

Now press **>>** or **MENU/<<** to stop the automatic replay; use button **MENU/<<** to decrease the progressive lap time by one-tenth of a second and button **>>** to increment the progressive lap time by one-tenth of a second.

Through pressing button **MEM/OK**, the system will return to the "automatic lap replay" mode.

To return to general display mode press **VIEW**.

Maintenance

Your MyChron 3 Plus/Gold does not require any special maintenance.

Provided adequate care is taken with the display unit and components, the only maintenance will be to upgrade the firmware when upgrades are released by

Aim (periodically check **www.aim-sportline.com**) and to change the display unit batteries when the low battery indicator appears on the top right hand corner of the display.

Upgrading the firmware

To upgrade the firmware, please visit to our website **www.aim-sportline.com** and download the latest firmware version. The file you have to download is an EXE file, and it is called "**FIRMUP.EXE**" (**FIRM**ware **UP**grade).

Connect **MyChron 3 Plus/Gold** to your PC by using the USB cable previously described.

Now you can launch the **FIRMUP** file by double-clicking on it and the system will automatically upgrade your instrument's firmware.

It is recommended that, when upgrading the firmware, the gauge's battery voltage must absolutely be greater than 7 Volts. If the battery voltage is too low, the firmware may be not correctly written in the gauge's internal flash memory: **if the firmware is incorrectly written in the flash memory, the gauge does not work at all.**

As previously mentioned, use pushbutton **VIEW** to see the battery voltage.

MyChron 3 Plus/Gold and the computer

MyChron 3 Plus/Gold is equipped with an internal non volatile flash RAM memory (512 kbyte for **Plus** version and 2 Mbyte for **Gold** one) which guarantees the capacity to record up to 315 laps and a total amount of 1 hour (**Plus** version) or 4 hours (**Gold** one) full channels record.
The instrument's sampling frequency is 10 Hz (ten times per second).
MyChron 3 Plus/Gold has been designed and developed to be interfaceable with a Pc: through the previously described USB cable it is possible to connect the gauge to a PC in order to both download the data stored in memory and configure your instrument.

Aim reminds all MyChron 3 Plus/Gold owners that, for a correct, complete and easier instrument configuration, it is absolutely necessary to use a PC and the software Race Studio 2.

This software has been properly developed by Aim in order to interface all its products (**Drack, EVO 3, MyChron 2, MyChron PRO, Dash ST1, MyChron 3 standard/Plus/Gold**) with the PC.
It is reminded that the new software installation does not either cancel or influence the functionalities of **Race Studio 1**. Once installed the program, the user will be able to choose if to use the new software even with his old Aim products (all supported by **Race Studio 2**) or if to keep on using the previous program. It is also reminded that Aim newest products (**MyChron 3, MyChron 3 Plus/Gold and Dash ST1**) are only supported by **Race Studio 2**.

In the following pages it will be shown how to install the software on your PC and how to correctly configure your MyChron 3 Plus/Gold by using a PC.

Software installation

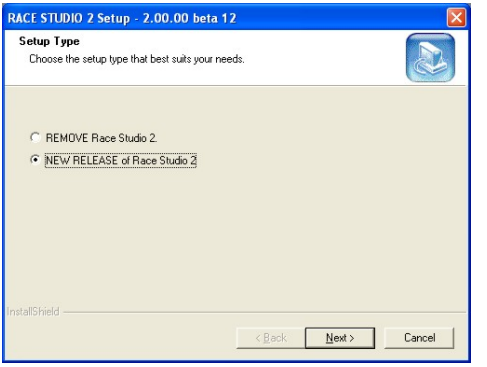
Race Studio 2 is a software properly developed to download and analyse the data stored in your **MyChron 3 Plus/Gold** memory.

To install the software, insert the CD inside the CD-ROM drive: if the *autorun* option is enabled (most of cases), software installation will automatically start, otherwise click twice on *SETUP* icon.

The 1st screenshot that will appear on your PC's monitor concerns the installation language choice. Through a pop-up menu it will be possible to choose the preferred language.

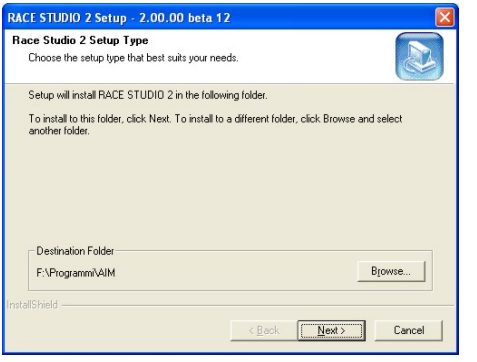
It is reminded that the installation language choice does not entail the software's working with only that language.

If on your PC you have installed a previous version of **Race Studio 2**, it will appear the following screenshot:

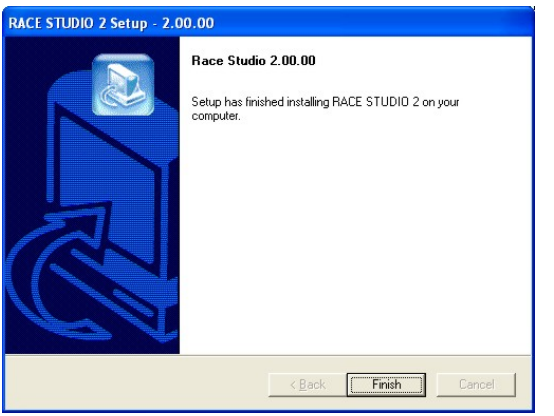


It is possible to choose whether to *Remove* the previous version or to *Install* the new release. By choosing this second option, the software will automatically uninstall the previous version and install the new one.

Otherwise, if you do not have older versions of **Race Studio 2** on your PC, it will appear the standard installation window:



By using button *Browse*, it is possible to choose the software installation folder: if you click on the *Next* button without choosing the installation folder, the software will be installed in the default folder “X:\Program files\AIM”, where “X” represents the Hard Drive in which you installed the operative system.
The following screenshot is the final one: please click on Finish button and, then, run the program.



To run the program, click twice on **Race Studio 2** icon, located directly on your computer desktop, once the installation has finished.

To uninstall **Race Studio 2** from your computer, please insert the CD-Rom containing the software inside the CD-ROM drive and run the installation procedure. It will appear a dialog box where the user will be allowed to “Remove Race Studio 2” or to “Install a new release of Race Studio 2”. Please, select the first option and press “Next” button: **Race Studio 2** will be automatically removed from your computer.

If you wish to update **Race Studio 2**, please connect to our website **www.aim-sportline.com** and go to "Download" page, where it is possible to download the latest updates. To install the update, click twice on the downloaded file and follow the instructions you see on your PC's monitor.

Race Studio 2 program has been designed and developed to guarantee the maximum working reliability and its proper working has been tested with the following operative systems: Microsoft Windows 98 ™, Windows 2000 ™, Windows Me ™, Windows Xp ™. Microsoft Windows 95 ™, Windows NT ™ and other operative systems (Linux, Unix, Macintosh ™) are not supported.

If you have troubles during installation or normal working time, please check out our website or contact Aim.

Installing the USB drivers

Please, read carefully these instructions in order to correctly install the USB drivers: an incorrect installation may cause system's malfunctions.

To connect your **MyChron 3 Plus/Gold** to the PC's USB port, please use the USB cable furnished as equipment.
When the PC and the instrument are **switched off**, connect your **MyChron 3 Plus/Gold** to the PC's USB and then switch on both computer and **MyChron 3 Plus/Gold** (it is suggested to switch on before the PC and later on the gauge).

During restart time, the operative system will recognize a new hardware and will ask you to install the proper driver, driver that is included either in **Race Studio 2** installation CD-ROM or in the "X:/Program files/AIM/USB_DRIVER" folder on your PC".
The driver file name is ***WDUSB503.inf***.

In the following pages it will be reported two examples concerning the USB drivers' installation for the Microsoft **Windows 98 ™** and Microsoft **Windows 2000 ™** operative systems.

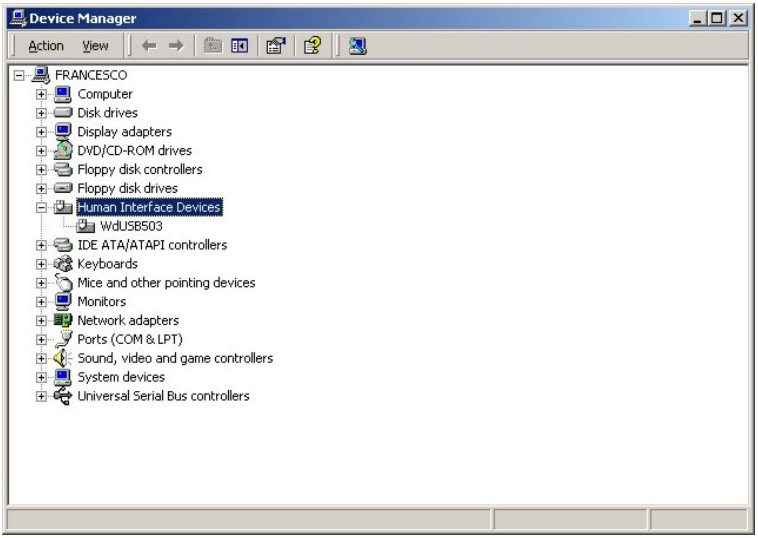
How to install the USB Driver for Windows 98 ™:

1. Press [Next] button when the "Add new Hardware wizard" window appears.
2. Select [Search for the best driver for your device] and press the [Next] button again.
3. Place the **Race Studio 2** disk in the computer's CD-ROM drive if it is not already there.
4. If the *autorun* option is enabled the system will try to install **Race Studio 2**. As you have already installed it, please exit installation menu. If the *autorun* option is enabled, go directly to next installation step.
5. Place a check beside [CD-ROM drive] and click the [Next] button.
6. Click the [Next] button again.
7. The installation software has to search for WDUSB503.inf.
8. Click the [Finish] button once reached the end of the installation.
9. Restart the computer if prompted.

How to install the USB Driver for Windows 2000 ™:

1. Press [Next] button when the “Found new Hardware wizard” window appears.
2. Select [Search for a suitable driver for my device] and press the [Next] button again.
3. Place the **Race Studio 2** disk in the computer’s CD-ROM drive if it is not already there.
4. If the *autorun* option is enabled the system will try to install **Race Studio 2**. As you have already installed it, please exit installation menu. If the *autorun* option is enabled, please go directly to next installation step.
5. Place a check beside [CD-ROM drive] and click the [Next] button.
6. Click the [Next] button again.
7. The installation software has to search for WDUSB503.inf.
8. Click [Yes] if the “Digital Signature Not Found” window appears.
9. Click [No to All] if the “Confirm File Replace” window appears.
10. Click the [Finish] button once reached the end of the installation.
11. Restart the computer if prompted.

If the USB drivers have been correctly installed, when your **MyChron 3 Plus/Gold** is switched on, in your PC’s Device management window (click Start \ Settings \ Control Panel \ System \ Device management) you will find the voice **HID (Human Interface Device) Class** and, in subnode, **WDUSB503**, as showed in the following screenshot.



USB drivers troubleshooting

In this paragraph it will be described the possible solutions to the mostly common USB drivers installation troubles encountered.

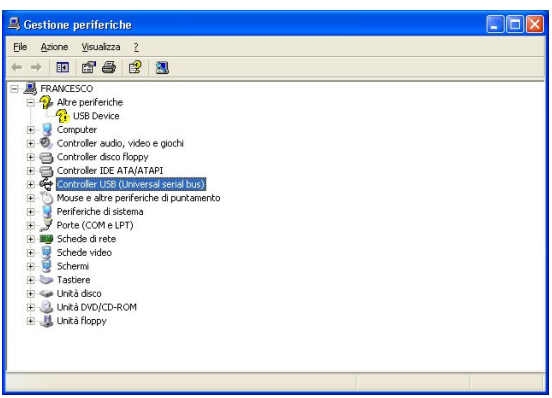
1. Once connected **MyChron 3 Plus/Gold** to a switched on PC, the automatic USB drivers installation does not start:
    a. Control that the instrument is correctly plugged in the PC's USB port.
    b. Verify that both PC and **MyChron 3 Plus/Gold** are switched on.
    c. If **MyChron 3 Plus/Gold** does not turn on, verify that the 6 batteries are installed and their charge status is good.

d. If the instruments switches on but the automatic USB drivers installation does not begin, try to plug the USB cable into another USB port (if a second USB port is available).

e. If available, try to use another USB cable to plug **MyChron 3 Plus/Gold** in a PC's USB port.

2. The automatic USB drivers installation starts but the USB driver is not properly installed:

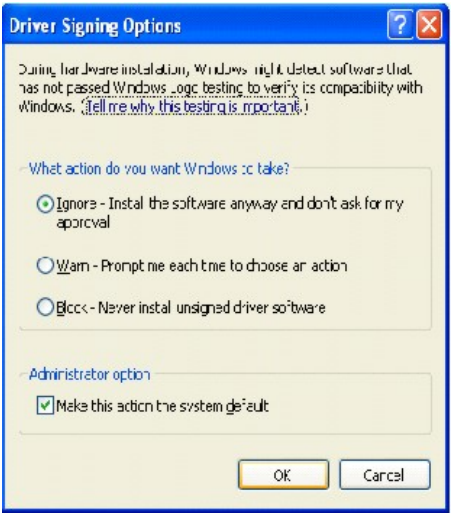
   a. Control your PC's Control Panel (click Start \ Settings \ Control Panel \ System \ Device management): if you see a voice like **Unknown Peripheral** or **Unknown USB device** with a yellow question mark (or a red cross), please select that voice and remove it (click the mouse right button and select the "Remove" option). Then switch off your **MyChron 3 Plus/Gold**, unplug the USB cable from the PC's USB port, re-plug the USB cable in the PC's USB port and repeat the previously described installation procedure.



b. If you see a yellow question mark again, please select the voice and, instead of removing it, click on the “Property” option; then choose the “Driver” tab and finally select the “Driver Update” option. It is now possible to repeat the installation procedure described in the “How to install the USB Driver for Windows” paragraph. Please remember to specify the correct path for the USB drivers, which is the **Race Studio 2** CD-ROM drive.

3. In case your PC has not been able to automatically recognize your **MyChron 3 Plus/Gold** or the two procedures previously described had not succeeded in solving your problems, you have to install the driver **manually** as here above explained:
   - Go to Control panel window.
   - Select the “New Hardware” icon.
   - Click twice button “Next”.
   - Place a check beside “No, I want to select the hardware from list”.
   - Select “HID class” (or “Human Interface Device”).
   - Specify the correct path for the USB driver (i.e. **Race Studio 2** CD-ROM drive).
4. The USB driver ***WDUSB503*** does not have a “digital signature”. In some cases (very rare) **Windows XP ™** or **Windows 2000 ™** operative systems have some default settings which do not allow the driver ***WDUSB503*** to be installed. These settings may be removed following this procedure:
   - Go to Control panel window.

- If you have a **Windows XP ™** operative system, select the "Performance and maintenance" option.
- Click the "System" button (both for **Windows XP ™** and **2000 ™**).
- Select the "Hardware" flag and, then, press button "Driver signing".
- Select the "Ignore" option and press button "OK", as showed in the following image.



Configuration via software

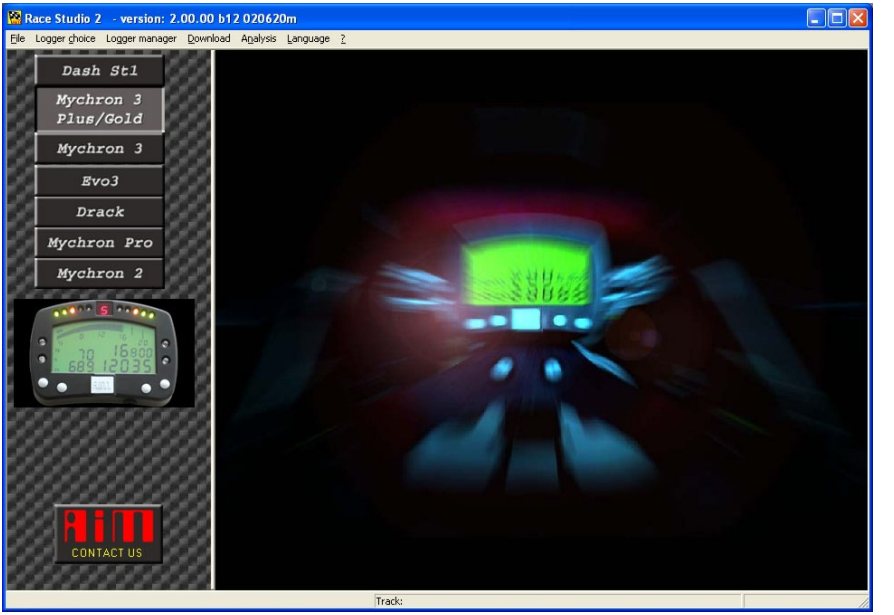
For a correct, complete and fast MyChron 3 Plus/Gold configuration, it is recommended to use a PC and the software Race Studio 2.

MyChron 3 Plus/Gold may be configured both via keyboard and via software, by using **Race Studio 2**.

The “via software configuration” allows the user to set some parameters that cannot be set using the keyboard. For instance, if you wish to measure the lateral g-force (in order to create a track map), you have to calibrate the internal lateral accelerometer via software.

It is reminded that, before starting the via software configuration, to install Race Studio 2 and the USB drivers as mentioned in the previous chapter. It is also reminded, before configuring the instrument, to connect it to a PC and to switch it on.

Once launched the program, by double-clicking on the **Race Studio 2** icon on your PC’s desktop or by selecting the **Race Studio 2** shortcut in your PC’s *Start* toolbar, it will appear the software’s main window, reported here above:

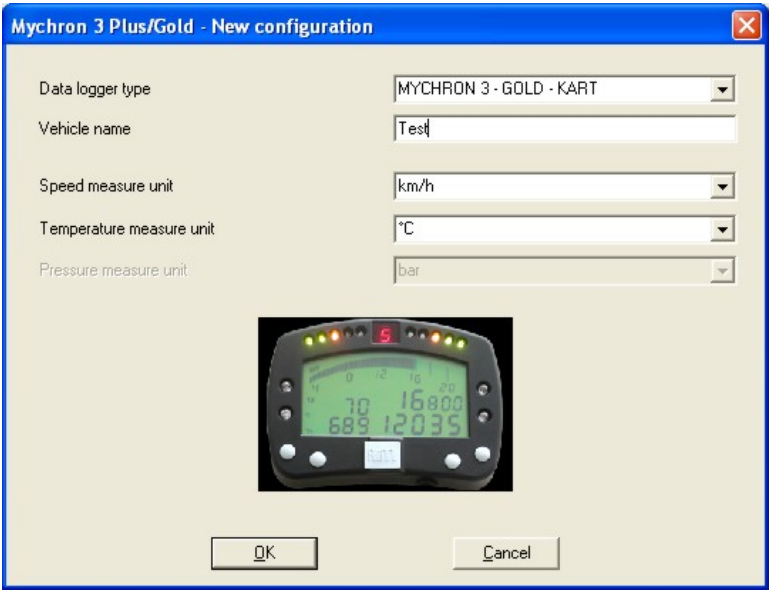


On the left of the window you may see the icons corresponding to all the Aim instruments supported by **Race Studio 2**: **Dash ST1**, **MyChron 3 Plus/Gold, MyChron 3, Evo 3**, **Drack**, **MyChron Pro**, and **MyChron 2**.

To select **MyChron 3 Plus/Gold**, please click on the corresponding icon (as showed in the previous image).

Creating a new configuration

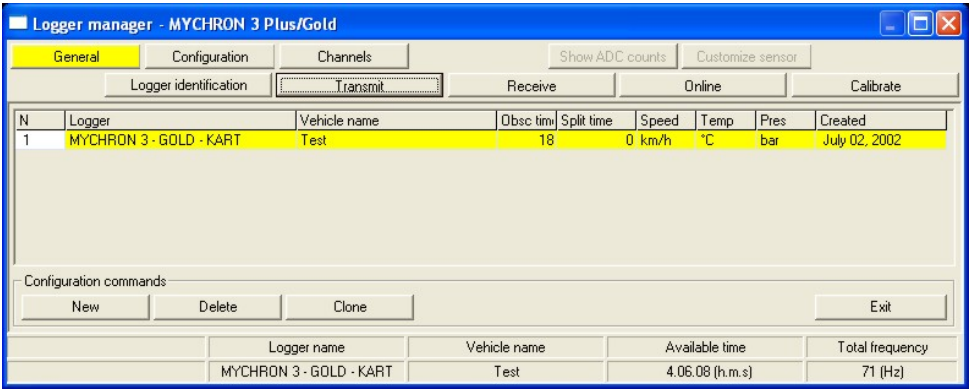
It is now possible to configure the instrument: in order to start the configuration procedure, please click on the *Logger manager* icon, located in **Race Studio 2** toolbar. It will appear the following screenshot:



The user will have to set some parameters, listed here above:

- Data logger type: at choice between **MyChron 3 Plus/Gold** and **Auto/Kart**. Please, remember to select the **KART** version;
- Vehicle name;
- Speed unit of measure: choose between km/h and Mph;
- Temperature unit of measure: choose between °C and °F;

Once filled all the boxes of the previous screenshot, click on the *OK* pushbutton to save the settings. On your PC's monitor it will appear the *Logger manager* main window:



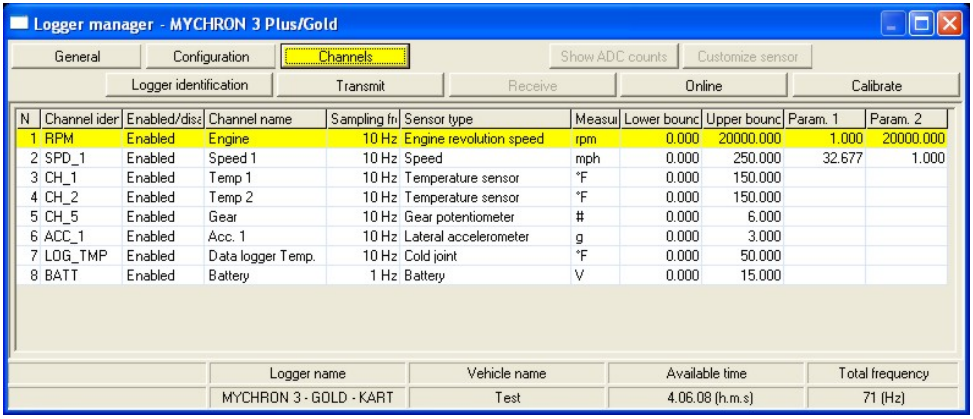
Here above you can see a short description of all the pushbuttons that can be used to configure your **MyChron 3 Plus/Gold**:

- *General*: with this pushbutton you activate the *Logger manager* main window;
- *Configuration*: this pushbutton will open a very useful dialog box, where the user is allowed to set the temperature alarm values, the RPM shift light threshold values, the RPM and speed parameters and the measure units;
- *Channels*: by using this option you may visualize the sensors installed on your vehicle;
- *Logger identification*: this button allows the user to detect the characteristics of the data logger connected to the PC;
- *Transmit*: once configured the data logger, the parameters have to be transmitted to the instrument by clicking this button;

- *Receive*: if you connect to a PC a data logger of whom you do not know the configuration, you may detect its configuration, by clicking the *Receive* button, and to save it in the configuration's database;
- *Online*: the *Online* button allows the user to make a data acquisition simulation, in order to verify if the new configuration is correct and if it has been correctly transmitted to the data logger;
- *Calibrate*: this button allows the user to calibrate both the internal lateral accelerometer (**Gold** versions only) and the gear sensor;
- *New / Delete / Clone*: these three buttons allows the user to create a new configuration, to delete an old one or to clone an existing one;
- *Exit*: this button is used to exit the "Logger manager" menu.

Channels

Clicking on the *Channels* pushbutton it will appear the following screenshot:



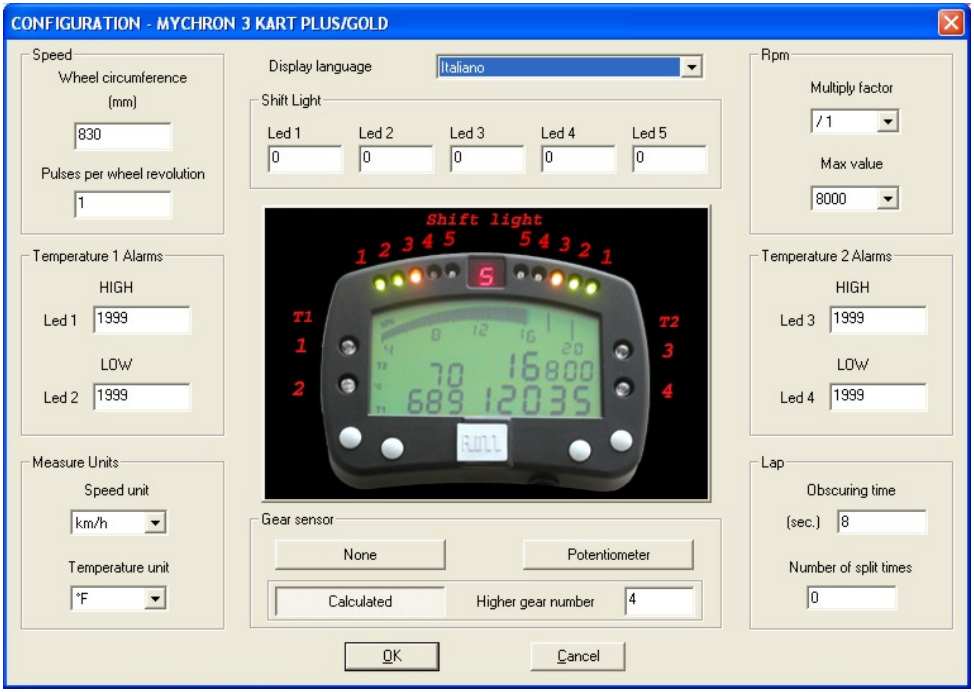
In the window previously shown, it is possible to set the channels acquired by your **MyChron 3 Plus/Gold**.

- Channels labelled as CH_1 and CH_2 are two temperature inputs: the instrument automatically recognizes if the temperature sensor is a thermocouple or a thermoresistance, so no temperature sensor configuration is needed;
- Channel labelled as CH_5 is the gear sensor: this sensor, installed inside the gearbox, allows your **MyChron 3 Plus/Gold** to measure the engaged gear;
- If your **MyChron 3** is a **Gold** version one, you may also measure the lateral g-force using an internal lateral g-sensor, labelled as ACC_1; this sensor will allow you to create the circuit map.

Channels configuration

Your **MyChron 3 Plus/Gold** is equipped with 14 fully configurable coloured led; the 4 ones placed on the left and right of the display unit represent the 4 analog inputs (temperatures and pressures) *maximum* alarms, while the other 10 led in the upper part of the display are called *Shift light*.

By clicking on the *Configuration* icon it will appear the following screenshot:



- *Wheel circumference*: this function allows the user to set the kart wheel circumference (in mm or in inches); this value is fundamental to correlate the wheel revolution speed and the kart speed.
- *Number of pulses per wheel revolution*: this function allows the user to set the number of magnets installed on the wheel in order to measure the wheel revolution speed. When the sensor passes by the magnet, it generates an electric pulse: if I install just one magnet, the instrument will measure one pulse per wheel revolution, while if I install more than one magnet the sensor will acquire more than one pulse per wheel revolution.

- *Configuring the Shift light led*: in the window's middle part it is possible to set 5 RPM values, each one corresponding to a coloured led. The five led progressively turn on in order to indicate the pilot to shift gear.

  To set the proper RPM value, you have to modify the values in the different boxes.

  The 10 led are so coloured: the first two on the left and the first two on the right are green coloured, the middle ones are orange coloured and the last four are red. When the engine reaches the RPM value set in the 5th box, all the five led start blinking, informing the pilot to change gear.

  If a value is set to 0, the corresponding led will be disabled.
- *Number of pulses per engine revolution*: this option represents the number of pulses, acquired from the spark plug wire, per engine revolution. A two-strokes one-cylinder engine has one spark signal per revolution: the correct RPM multiply factor is x1.
- *Maximum RPM value*: this option allows the user to set the Maximum RPM value acquired by the instrument.
- *Configuring the temperature alarm led*: the first thing you have to do is to decide which led has to indicate a particular alarm; in order to keep a correspondence with the via keyboard configuration, it is suggested to respect the following sequence: *Maximum temperature 1* on led 1, *Minimum temperature 1* on led number 2, *Maximum temperature 2* on led 3 and *Minimum temperature 2* on led 4.
- *Configuring the unit of measure:* the user can set the Speed (Km/h or Mph) and Temperature (°C or °F) unit of measure.

- *Gear sensor*: the software allows you setting the gear sensor type. Select “None” if you do not wish to see the gear number, select “Potentiometer” if your kart is equipped with a gear sensor installed inside the gearbox or select “Calculated” if you wish to use a software algorithm to calculate the engaged gear. In this case, the “Higher gear number” box will become enabled: please insert the gear number.
- *Configuring the lap parameters:* by setting these two parameters, the user will be able to acquire the correct lap time and, if more than one optic transmitter is available, the split times. For further information on these parameters, please refer to the “Beacon obscuring time and split’s number” paragraph reported in the “Configuration functions” paragraph.
- *Language selection:* the user may choose the display text language among 6 different languages: Italian, English, German, Spanish, French and Slovenian.

Transmitting the configuration

It is recommended, before transmitting the configuration, to switch on the instrument and to connect it to the PC’s USB port.

Once set all the parameters, it is necessary to transmit the configuration to the instrument.
In order to transmit the configuration, you have to press the *Transmit* pushbutton and the system, automatically, will download the configuration from the PC to the instrument’s Flash memory.

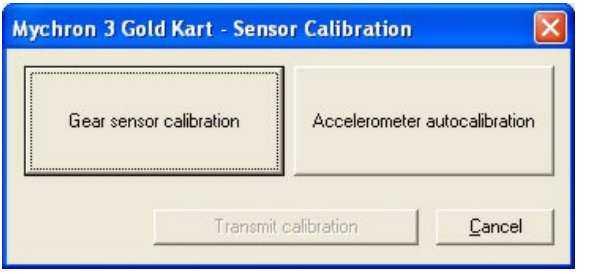
If the data logger is not correctly connected to the PC's USB port or if the data logger is switched off when transmitting the configuration, it will appear the following screenshot on your PC's monitor:

Please, ensure that the data logger is switched on and correctly connected to the PC and then retry to transmit the configuration.

Accelerometer autocalibration (Gold versions only)

Once the configuration has been transmitted to the instrument, it is possible to calibrate the gear sensor (**Plus/Gold** versions) and the internal lateral accelerometer (**Gold** versions only).

To enter calibration dialog box, reported here above, it is necessary to press "Calibrate" button.



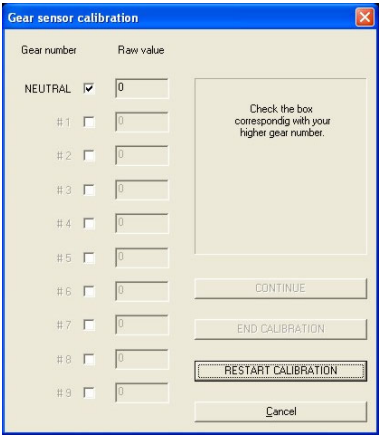
In this window you can see two big buttons: the “Gear sensor calibration” button, on the left, and the “Accelerometer autocalibration” one, on the right. In the window’s lower part there are two other buttons: the “Cancel” one, used to exit calibration, and the “Transmit calibration” one (which becomes enabled once you have calibrated the gear sensor or the accelerometer).

By pressing the “Accelerometer autocalibration” button, the software will automatically autocalibrate the internal lateral accelerometer.

Once the accelerometer calibration has finished, it is recommended to transmit the calibration using the proper button.

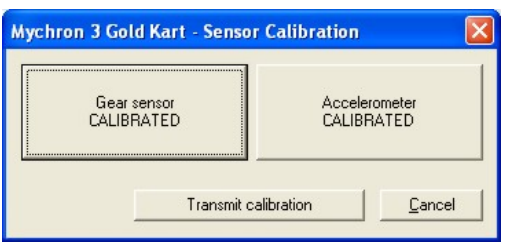
Gear calibration

To calibrate the gear sensor, once entered calibration mode by clicking the “calibrate” button, to select the “Gear sensor calibration” button. It will appear the following screenshot:



Now, please follow the instructions listed here above:

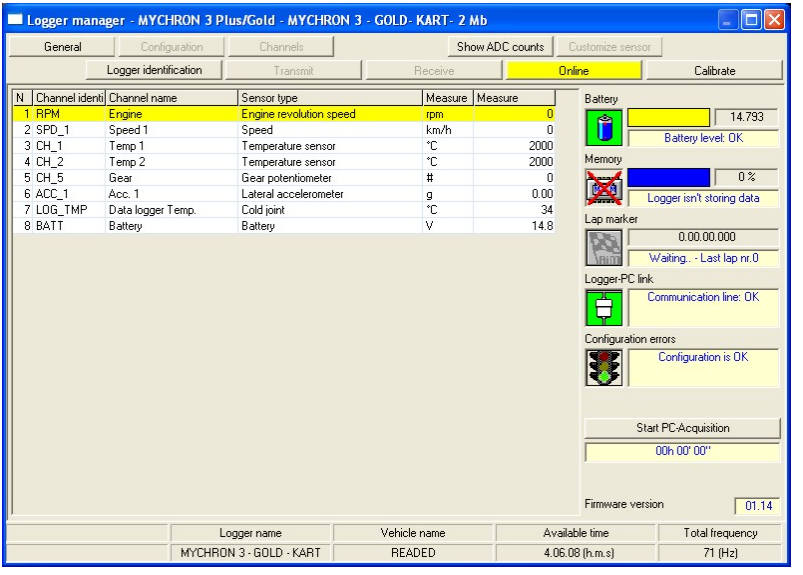
- Check the box corresponding to the gearbox's gear number;
- Engage the neutral gear;
- Press the "Continue" button;
- Engage the first gear;
- Press the "Continue" button;
- Repeat this procedure until the last gear has been engaged (the instrument supports gearboxes up to 9 gears);
- Once the last gear has been engaged, press the "End Calibration" button;
- Once the gear calibration has finished, it is **absolutely** necessary to transmit the calibration to your **MyChron 3 Plus/Gold** by pressing the "Transmit calibration" button.



Online visualization

Once you finished calibrating/autocalibrating the sensors, it is suggested to enter the "Online" mode, by pressing the Online button in the "Logger manager" main window, in order to verify that each channel has been correctly configured.

The “Online” visualization mode will allow you to control if the temperature sensors are correctly working and if the gear sensor and the internal accelerometer have been correctly calibrated. It is also possible to see the “Battery charge level” and to start a test data acquisition, in order to verify that the system is correctly working.



Attention: if the gear channel or the accelerometer one have not been correctly calibrated, it will not be possible both to acquire the current gear and, for MyChron 3 Gold only, to create the circuit map. It is recommended to pay a particular attention when calibrating/autocalibrating the channels.

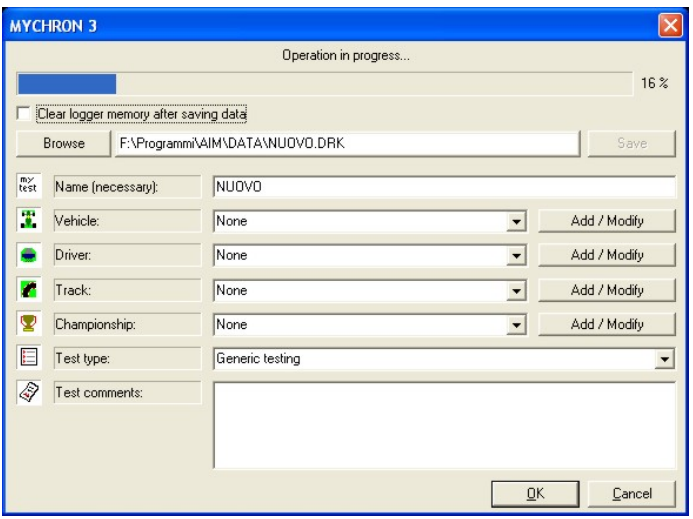
How to download a test

Once a test session has finished, it is possible to download the data stored in the instrument's memory.

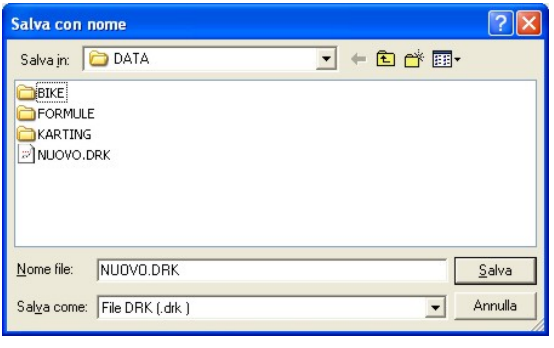
In order to correctly download these data, please connect your **MyChron 3 Plus/Gold** to the PC's USB port by using the USB cable and to switch on the instrument.

Downloading a test

To download the data, please run **Race Studio 2** and, then, click on the "Download" button, located in the commands toolbar: the file download will automatically start and it will appear the following screenshot:



- In the window's upper part you can see a "wait-bar" which informs you on the download percentage status;
- In the line directly below the download wait-bar, there is a function which allows the user to *Clear* the logger memory after saving data or to leave data in the instrument's memory: if you wish to clear the memory after saving data, please place a check in the proper cell;
- Once downloaded the instrument's memory, the *Save* button, located on the right of the window, will become enabled. If the user presses this button without specifying the file name and the download folder, the file will be automatically saved in the default folder "X:\Program files\AIM\DATA" (where X represents the hard drive where you have installed **Race Studio 2**) with the default name "new.drk".
- If you wish to save the file with another name, please insert the file name in the "Name" box. Moreover, if you wish to save the file in custom folder, please press button "Browse": you will be allowed to choose the desired folder, as showed in the following image.



- If you have not placed a check besides the “Clear logger memory after saving data” option, once you press button OK to exit download window, it will appear a dialog box where the user is allowed to choose whether to clear the or not to clear the logger memory. Please, select the desired option and exit download.

Inserting the test in a database

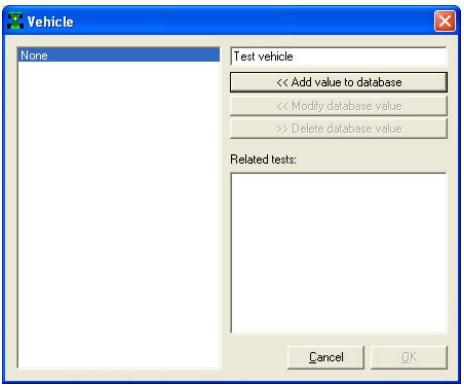
Race Studio 2 has a new and innovative tests storing system based on databases.

This storing system allows the user to save the files specifying 5 characteristics, such as the vehicle name, the driver, the track, the championship and the test type. Such information are saved together with the test file and are very useful, as they allow the user to group the files into self-defined categories, each one characterized by 5 attributes (vehicle, driver, track, championship and test type).

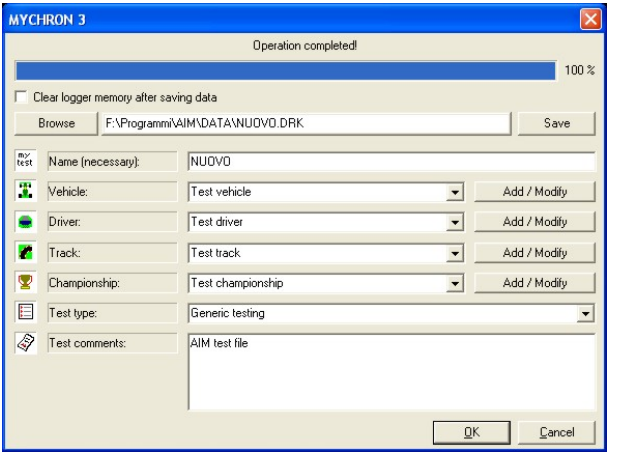
- When saving a new test file, it will be possible to insert this file in the previously set database categories or to create a new category.
- When loading a test from database, the user may select the desired category from the database and all the tests which do not belong to that category will not be shown (in this case, the database works like a *filter*).

To insert a test in the database, please follow these instructions:

- Once the download has finished, please enter the file name;
- Then click on the “Add/Modify” button corresponding to the *Vehicle* attribute. It will appear the following window;



- If the database is empty or you wish to create a new category, please fill the upper right box with the new Vehicle category and then click the “Add value to database” button. The new category will appear in the left column and the “OK” button will become enabled. Then click the “OK” button;
- If the desired category appears in the previously set database categories (left column), you may select it by single-clicking on the name. Then click the “OK” button;
- It is reminded that, if you do not wish to specify any category, the file will be saved in the database and the attributes will be set to “None”.
- Please, repeat this procedure until the 5 categories have been filled. Once all the attributes have been set, like in the following image, please click the “OK” button.


MYCHRON 3
Operation completed!
100 %
Clear logger memory after saving data
Browse
F:\Programmi\AIM\DATA\NUOVO.DRK
Save
Name (necessary):
NUOVO
Vehicle:
Test vehicle
Add / Modify
Driver:
Test driver
Add / Modify
Track:
Test track
Add / Modify
Championship:
Test championship
Add / Modify
Test type:
Generic testing
Test comments:
AIM test file
OK
Cancel

How to use Race Studio Analysis

Race Studio Analysis is software properly developed to analyse the data acquired with your gauge. The map creation option (available with **MyChron 3 Gold** versions only), the possibility to compare different laps, the data animation option, the possibility to plot channels VS time, VS distance or VS frequency, the histograms plotting option and the very useful math channels, make **Race Studio Analysis** a very powerful instrument to analyse and improve the driver performances.

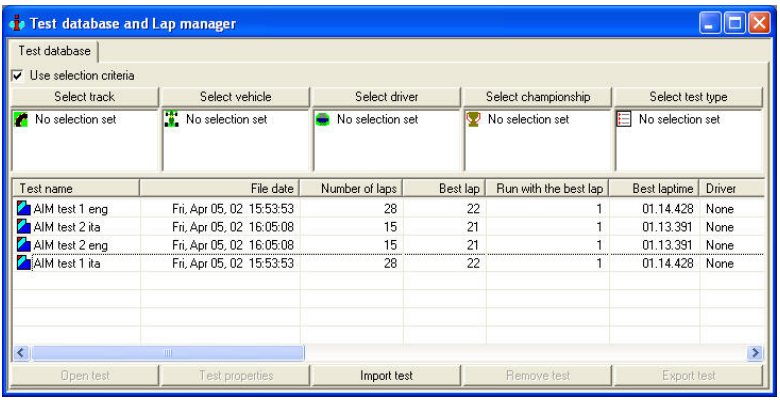
It is reminded that all the ".drk" files, downloaded with the previous software **Race Studio 1**, are perfectly compatible with the new one.

If you wish to update **Race Studio Analysis**, together with **Race Studio 2**, please connect to our website **www.aim-sportline.com** and go to "Download" page, where it is possible to download the latest updates. To install the update, click twice on the downloaded file and follow the instructions you see on your PC's monitor.

To run **Race Studio Analysis**, please click twice on the corresponding icon (reported here above) that you can find on your PC's desktop.

It is also possible to run **Race Studio Analysis** while working with **Race Studio 2** clicking on the "Analysis" tab, using the "F5" function key or clicking the following shortcut "Start \ Program \ AIM \ Race Studio 2 \ Race Studio 2 Analysis"."

Once run **Race Studio Analysis**, it will appear the following window:



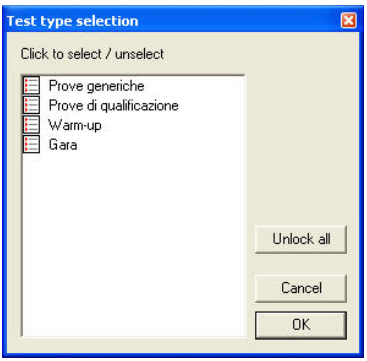
The “Test database and lap manager” window is organized on different layers and allows the user to load/unload a test and to manage both with the database and the loaded tests.

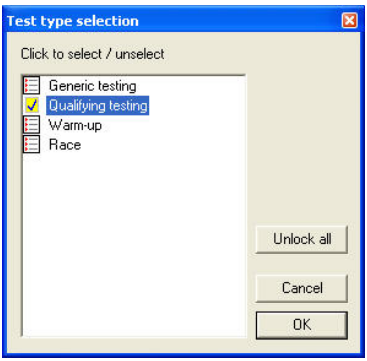
How to load a test

There are two possible ways to load a test: the first one (recommended) is based on 5 selection criteria (ensure that the “Use selection criteria” box is checked), while the second one does not use these criteria.

Open test from database using the selection criteria: **Race Studio 2** and **Race Studio Analysis** have been designed to manage the test files using a database. In the “Test database and Lap manager” window you can see, in the lower part, all the tests included inside the database and, in the upper part, the database

categories and sub-categories. To select a test from the database using the selection criteria, please left-click on the desired selection pushbutton (i.e. “Select track”, “Select vehicle”, etc…): it will appear the corresponding selection window. For instance, here below on the left it is shown the “Test type selection”, corresponding to the “Select test type” pushbutton.





In order to choose a database’s sub-category, place a check besides the desired one, as shown in the second “Test type selection” window’s screenshot.

It is reminded that you may select more than one sub-category at the same time: for instance you may select both “Generic testing” and “Qualifying testing”.

It is recommended to repeat this procedure for all the 5 database’s categories (track, vehicle, driver, championship and test type).

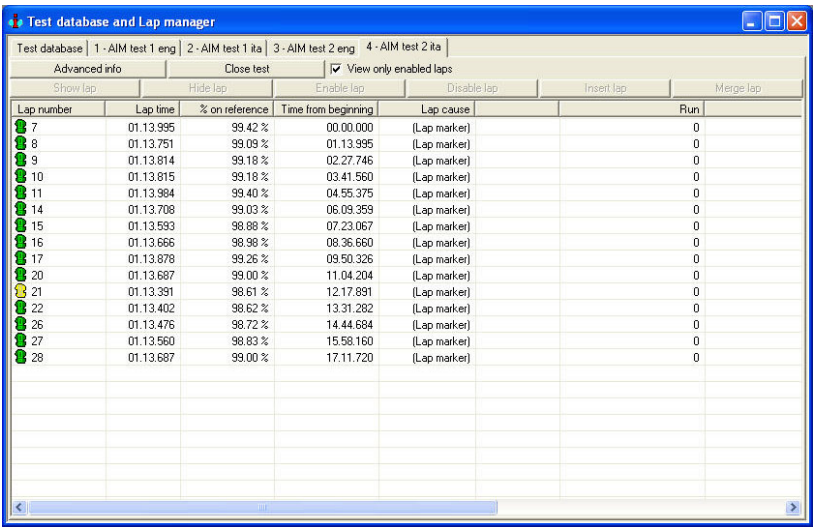
All the tests which do not belong to the selected sub-categories will be filtered and will not be shown in the “Test database and Lap manager” window’s lower part.

To load a file, once the desired database’s categories have been checked, you may double-click on the file, you may select it and then press button “Open test” or you may right-click on the file name and choose the “Open test” function.

Open test from database NOT using the selection criteria: if you do not wish to use the selection criteria, it is suggested to remove the check besides the "Use selection criteria" checkbox.

To load a file, you may double-click on the file, you may select it and then press button "Open test" or you may right-click on the file name and choose the "Open test" function.

The "Test database and Lap manager" window also allows the user to insert a new test inside the database (please refer to the "*Inserting the test in a database*" paragraph), to delete a previously saved test from the database and to modify the test properties. Once a test has been loaded, it will appear the window shown here below, where you can find both the "Test database" layer and the "Loaded tests" layers.



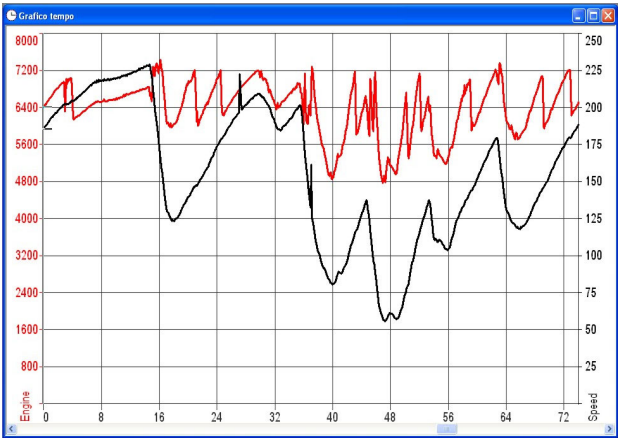
It is reminded that you may load up to 4 different tests (i.e. files) at the same time (as shown in the previous screenshot), in order to make comparisons between many different laps.
If you wish to select a particular lap, you may double-click on the corresponding lap number or you may single-click and choose the “Show lap” function: when the lap is selected, the green icon located on the left of the lap number turns yellow coloured. To unselect a lap, click twice on the lap number.

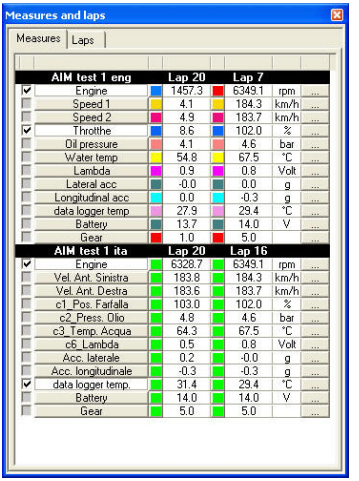
How to plot a channel

Race Studio Analysis will allow you the ability to plot the recorded laps and the sampled channels versus time, distance and frequency.

For instance, if you wish to plot engine’s RPM and the vehicle speed versus time, first of all you have to select these measures by clicking on them in the “Measures and laps” toolbar, located on the left of **Race Studio Analysis** window, and then you have to click on the “Plot vs. time” icon.
In order to plot a channel vs. time, it is also possible to use the shortcut “CTRL+F1” or to click “View \ Plot vs. time” command.

In the following graph, on the left, it is shown the speed (black) and the RPM (orange) diagram during a lap, while, on the right, it is shown the “Measures and laps” toolbar.
Left click on the desired channel name (inside the “Measures and laps” toolbar) in order to add a sampled channel to the graph.



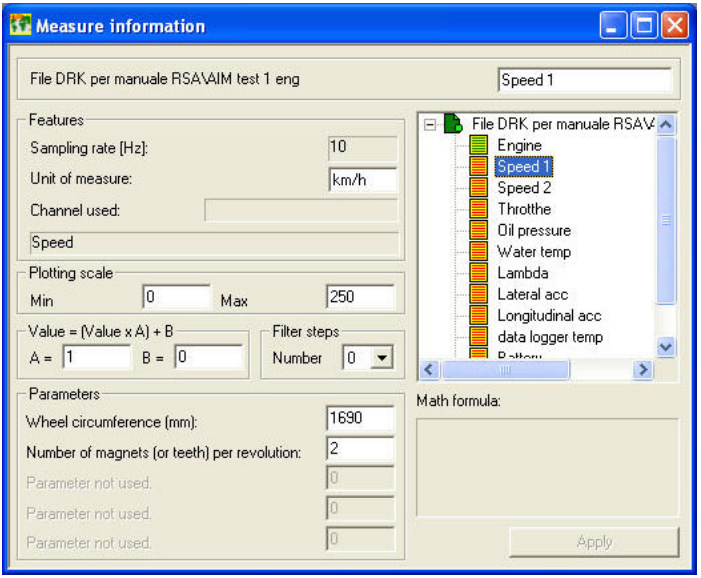


Left click on the coloured-boxes column if you wish to change the graph colour: the user may set the desired colour for each recorded lap and for each sampled channel. If you wish to add the scale to the graph, left click in the checkbox corresponding to the desired channel name.

Left click on the pushbuttons of the last column of the “Measures and laps” toolbar to load the “Measure information” dialog box: this window allows the user to change the channel name, the plotting scale and the unit of measure.

It is also possible to amplify and shift the diagram by using the “Value=(Value*A)+B” option: A is the amplification factor (included between -1000 and +1000), while B is the shift factor (included between –500000 and +500000).

In the following picture it is reported the “Measure information” dialog box.

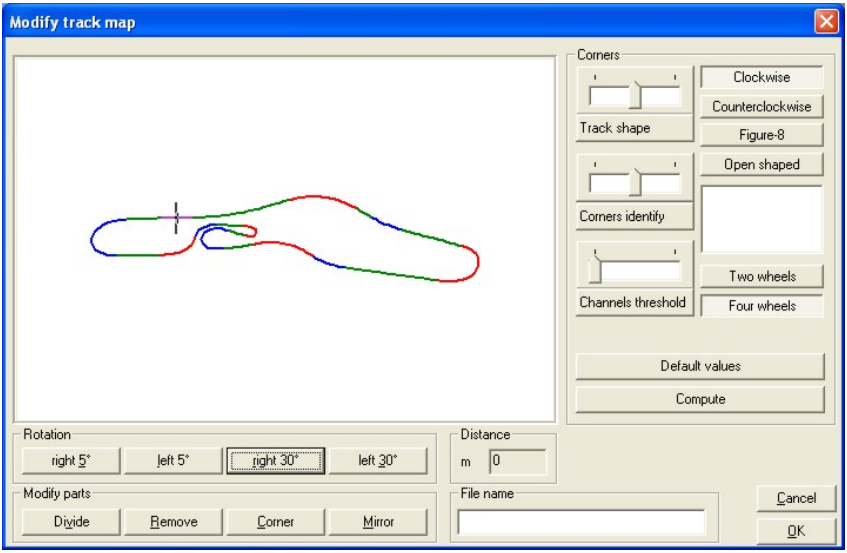


If you choose a channel from the channel list in the right upper corner list, it will also appear the parameters (in the lower left corner) that the user can set (i.e. RPM multiply factor, wheel circumference, pulses per revolution, etc…)

How to create your track map (Gold versions only)

The internal lateral g sensor (available on **MyChron 3 Gold** only) allows you the ability to create a circuit map on your PC.

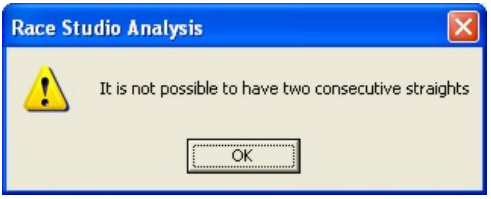
To create a circuit map, once loaded a test and selected a good lap (labelled as “Lap marker” in the Lap cause column of the Lap manager dialog box) please press “Map \ New” from the Command toolbar or “Shift+F4” keys: it will appear the following screenshot:



The user will be able to modify a large number of parameters by pressing the different pushbuttons, whose working is here above explained:

1. *Track shape* cursor: this button allows the user to modify the curves' radius of curvature, obtaining more or less open shaped curves.
2. *Track type:* it is possible to choose the track type between 4 choices: Clockwise, Counter Clockwise, Figure-8 and Open Shaped. Most of circuits belong to the first two types, while, for instance, the circuit of Suzuka (Japan) is a Figure-8 track type.
3. *Two Wheels / Four Wheels:* this option has to be set to "Four Wheels" if using a car or to "Two Wheels" if using a bike.
4. *Default values:* this pushbutton loads the default values for the different parameters that can be set during the map creation.

5. *File name:* once the map has been correctly created, it is possible to save it by choosing its “file name” and clicking the OK pushbutton.
6. *Rotation pushbuttons:* by using these buttons it is possible to right (Clockwise) or left (Counter Clockwise) rotate the circuit map of a 5 or 30 degrees angle.
7. *Modify parts pushbuttons:* these four buttons will allow the user to modify the track map just created. In particular it is possible to
    a. *Divide* a split in two separate splits;
    b. *Remove* an intermediate split;
    c. Change a circuit part from Straight (green line) to Corner (blue / red lines) or vice versa. It is reminded that it is not possible to have two consecutive straights but each straight has to be kept separate from another one by one curve at least.



    d. *Mirror* the track map.

Once the map has been created and saved, it is possible to recall it from the “Map Manager” dialog box (shortcut “SHIFT+F2”) by double clicking on the desired one.

Track map creation troubleshooting

In this paragraph it will be described the possible solutions to the mostly common map creation troubles encountered.

1. If it appears the following window

   please select a “Good lap, labelled as “Lap marker” in the Lap cause column of the Lap manager dialog box, and deselect the previously used lap (by double clicking on the lap number).
2. Select a lap without many skids.
3. Verify that it is set the correct vehicle type (2 or 4 wheels) in the “Modify track map” window.
4. Verify that the values stored in both speed channel and lateral acceleration one are sensible: lateral acceleration has to be near to 0 in the straight line, while speed must be greater than 0 and must not have high or low peaks.
5. If lateral acceleration in the straight line is not quite near to 0, it is probable that the internal lateral accelerometer has not been calibrated. It is possible to solve this problem by summing or subtracting a fixed value (see “Measure Information” dialog box) in order to have 0 in the straight line. **Please, before starting a new test run, remember to calibrate the internal lateral accelerometer.**

Configuration via keyboard

- Press **VIEW** to switch on your **MyChron 3 Plus/Gold**.
- Press **MENU/<<** to activate the configuration mode.
- Press **MENU/<<** (previous option) or **>>** (next option) to scroll through the configuration menu.

Setting the number of splits

- Select the “Number of Splits” option.
- Press **MEM/OK** to enter edit mode.
- Press **MENU/<<** or **>>** to set the number of splits.
- Press **MEM/OK** to save or **VIEW** to quit.

Setting the obscuring time

- Select the “Obscuring Time” option.
- Press **MEM/OK** to enter edit mode.
- Press **MENU/<<** to set the correct number of seconds.
- Press **>>** to switch between digits.
- Press **MEM/OK** to save or **VIEW** to quit.

Gear calibration

- Select the “Gear calibration” option.
- If you have selected the “Gear with sensor” option, follow these instructions:
    - Engage the NEUTRAL gear.

- Press **>>** pushbutton.
- Engage the first gear.
- Press **>>** and repeat this procedure for all the gears.
- Once the last gear has been engaged, press button **MEM/OK**.
- To restart calibration procedure, press button **MENU/<<**.

- If you have selected the “Gear computed” option follow this procedure:
  - Start for a “Learning lap”.
  - During this lap, engage all gears.
  - If the gears displayed by the gauge correspond to the engaged ones, press button **MEM/OK**.
  - If the gears do not correspond to the engaged ones, run another “learning lap”.

Setting the temperature alarms

- Select the “MAX/MIN TE1/TE2 Alarm” option.
- Press **MEM/OK** to enter edit mode.
- Press **MENU/<<** until the correct number appears.
- Press **>>** to switch between digits.
- Press **MEM/OK** to save or **VIEW** to quit.

Shift lights configuration

- Select the “Shift light” option.
- Press **MEM/OK** to enter edit mode.
- Press **MENU/<<** until the correct number appears.
- Press **>>** to switch between digits.

- Press **MEM/OK** to save and to configure the next led.
- Press **VIEW** to quit.

Setting the circumference wheel

- Select the “Wheel circumference” option.
- Press **MEM/OK** to enter edit mode.
- Press **MENU/<<** until the correct number appears.
- Press **>>** to switch between digits.
- Press **MEM/OK** to save or **VIEW** to quit.

Setting the pulses per wheel revolution

- Select the “Pulses on wheel” option.
- Press **MEM/OK** to enter edit mode.
- Press **MENU/<<** until the correct number appears.
- Press **>>** to switch between digits.
- Press **MEM/OK** to save or **VIEW** to quit.

Setting the maximum RPM value

- Select the “Max RPM value” option.
- Press **MEM/OK** to enter edit mode.
- Press **MENU/<<** or **>>** to select the desired RPM value.
- Press **MEM/OK** to save or **VIEW** to quit.

Setting the RPM factor

- Select the “Spark for revs” option.
- Press **MEM/OK** to enter edit mode.
- Press **MENU/<<** or **>>** to select the desired value.
- Press **MEM/OK** to save or **VIEW** to quit.

Viewing data per best lap time

- Press **MEM/OK** to see the best lap and the maximum RPM and temperatures values.
- Press **MEM/OK** to see minimum RPM and temperatures values.
- Press **VIEW** to switch from RPM to speed.
- Press **VIEW** twice to return to main display mode.

Viewing other completed lap data

- Press **MEM/OK**.
- Press **MENU/<<** to view a previous lap or **>>** to view a following lap.
- Press **VIEW** to return to main display mode.

Viewing detailed data for the lap

- **Automatic:**
  - Press **MEM/OK**.
  - Press **MENU/<<** or **>>** to choose a lap.
  - Press **MEM/OK** twice.
  - Press **VIEW** to switch from RPM to speed.
- **Manual:**
  - Press **MEM/OK**.
  - Press **MENU/<<** or **>>** to choose a lap.
  - Press **MEM/OK** twice.
  - Press **MENU/<<** or **>>** to stop “automatic lap replay”.
  - Press **MENU/<<** to step back by one tenth of a second.

- Press **>>** to step forward by one tenth of a second.
- Press **MEM/OK** to return to “automatic lap replay” mode.

Configuration via software

- Install **Race Studio 2** software (see “Software installation” paragraph).
- Connect the instrument to a “switched on” PC by using the USB cable.
- Switch on your **MyChron 3 Plus/Gold** and install the USB drivers (see “Installing the USB drivers” paragraph).
- Start **Race Studio 2**.
- Select **MyChron 3 Plus/Gold** and click “Logger manager” button.
- Fill the boxes of the “New configuration” window.
- Click “Configuration” button and set the following parameters:
  - Message language;
  - Wheel circumference and pulses per wheel revolution;
  - Shift light led;
  - RPM multiply factor and RPM maximum value;
  - Channels CH_1 and CH_2 maximum/minimum alarms;
  - Speed and temperature unit of measure;
  - Beacon receiver obscuring time and number of splits;
- Transmit the configuration to the instrument by pressing the “Transmit” button.
- Autocalibrate the internal lateral accelerometer (**Gold** versions only): press “calibrate” button and then click “Accelerometer autocalibration”.

- Calibrate the gear sensor (if available): from “channels calibration” dialog box, press button “Calibrate gear sensor”.
- Transmit the gear/accelerometer calibration to the instrument by using button “Transmit calibration”.