



GPS MODULE





GPS MODULE Manual

The **GPS MODULE** for **AIM** systems, further expands the functionalities of the **MXL, MyChron4, EVO3 Pro** data loggers.

Please check the www.aim-sportline.com website for new firmware and software releases dedicated to your new **GPS MODULE**.

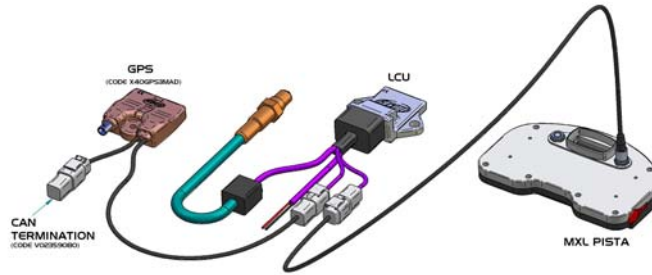
This is an integration manual for **GPS MODULE** connected to the **MXL, MyChron4, EVO3 Pro**. For the topics not included, please refer to your data logger's manual.

MXL GPS MODULE

Connections and power supply



This configuration is the simplest connection, made with a CAN line between a **MXL Pista** and a **GPS MODULE**. If you're a **MXL Pro** owner, please connect the **GPS MODULE** to the CAN cable marked as **EXP** (Expansion). The second CAN cable, exiting the **GPS MODULE** must end with the CAN termination plug. The CAN termination plug is a mating DTM connector with an internal resistor. The CAN termination plug is included in with the GPS kit.

Connection with additional peripherals

This is a CAN chain-connection between **AIM LCU-ONE** lambda controller and **AIM GPS MODULE**. As illustrated, the end of the chain must end with a CAN line termination plug. The connection order is indifferent.

MXL ► LCU-ONE ► GPS MODULE ► CAN TERMINATION;
MXL ► GPS MODULE ► LCU-ONE ► CAN TERMINATION;

The CAN chain may be further expanded.

EVO 3 PRO GPS MODULE

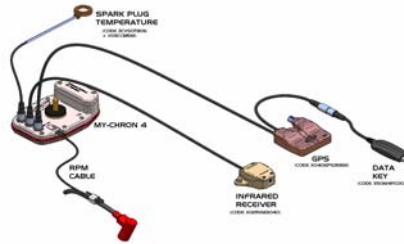
Connections and power supply

To connect the **GPS MODULE** to an **EVO 3 Pro**, please connect the **GPS MODULE** to the CAN cable marked as **EXP** (Expansion).

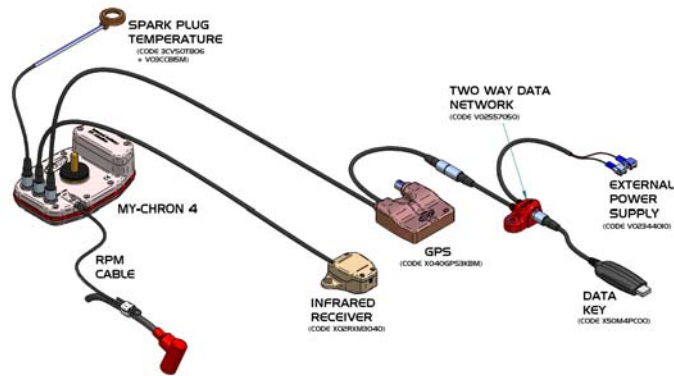
The second CAN cable, exiting the **GPS MODULE** must end with the CAN termination plug. The CAN termination plug is a mating DTM connector with an internal resistor. The CAN termination plug is included in with the **GPS** kit.

MyChron4 GPS MODULE

GPS Connection using internal power supply



This configuration uses the **MyChron4** internal 9v battery to power the **MyChron4** and **GPS MODULE**, which will reduce the battery life of your product to about 2 hours

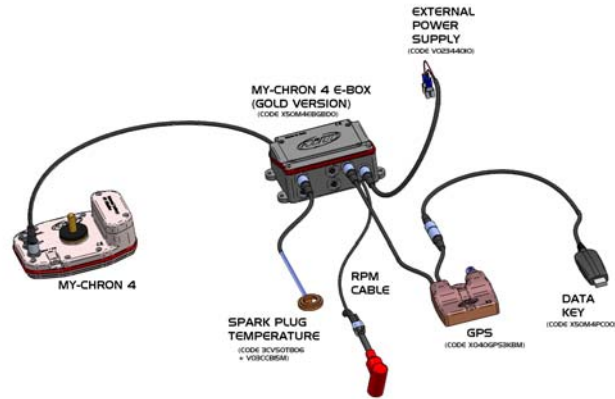
GPS connection using external power supply

In this configuration, the *Two Way Data Network* allows to power the **MyChron4** and **GPS** system with an external battery. A 12V starter battery of a TaG kart is a perfect example. This also allows you to position the **DataKey** download port in a more convenient location.

How to connect the **GPS MODULE** with **MyChron4 E-box**

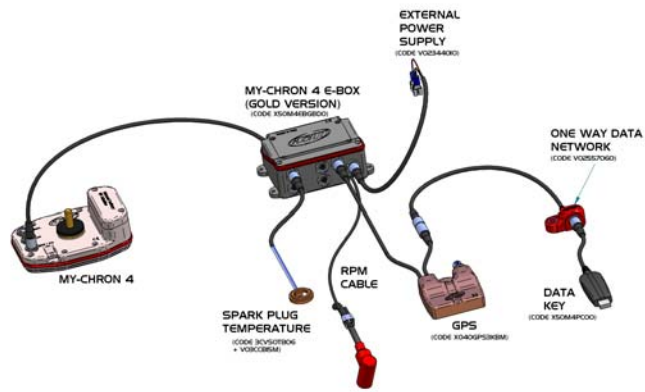
Connection without ONE WAY DATA NETWORK

As you can see in the picture below, the **E-Box** is connected to the **MyChron4** and directly interfaced with the **GPS MODULE**.



The **MyChron4**, **E-Box** and **GPS** may all be powered by using internal batteries of the **MyChron4** and **E-Box**. This solution will reduce the battery life to approximately 2 hours. Or, as illustrated, you can power the entire system with an external 12V power supply, such as the TaG starter battery.

Connection using ONE WAY DATA NETWORK



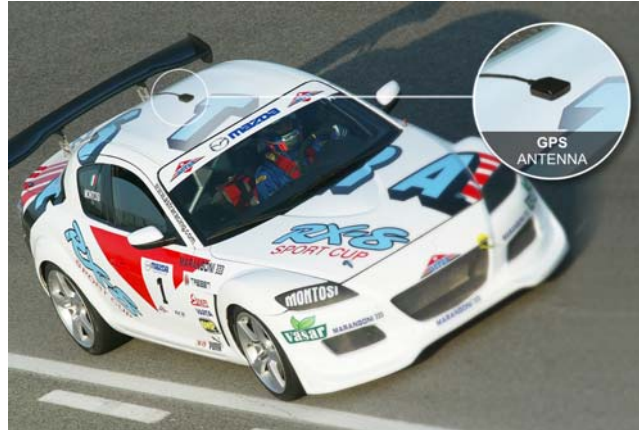
In this illustration, the *One Way Data Network* allows you to position the **Datakey** download plug in a more convenient location.

MXL GPS MODULE **How to install**

These instructions will ensure proper function of your **GPS MODULE**.

The **GPS MODULE** must not be mounted near heat sources. The antenna cable must not pass near electromagnetic sources like a coil or generator.

Use the mounting hole opposing the cables to fasten the **GPS MODULE** (with an x size screw) securely to the frame or chassis interior. For optimal satellite reception, the antenna should be mounted on the cars roof. The **GPS** antenna's magnetic base is suitable for mounting to a ferrous roof.



On motorbikes, place the antenna on the top of the tail section, parallel to the ground.

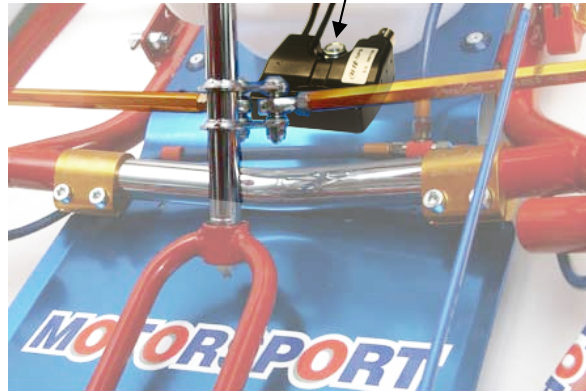


Then, install the **GPS MODULE** under the seat or tail section. Note that while the CAN cable from the **GPS MODULE** to the data logger can pass near the engine, the **GPS** antenna cannot. The **GPS** antenna cable is more vulnerable to electromagnetic noise.

MyChron4 GPS MODULE **How to install**

To ensure proper function of your **GPS MODULE** on your kart, install the **GPS** receiver (not the antenna) directly to the floorpan, using a self locking nut and a fastening bolt as shown in the picture.

Fasten the **GPS MODULE** to the floorpan using a self locking nut and a fastening bolt

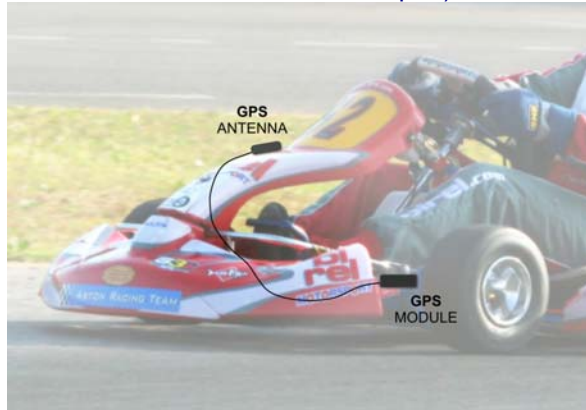


For optimal satellite reception, the **GPS** antenna must be mounted parallel to the ground. We suggest you to place it on the kart's front fairing (as shown in the picture).



The **GPS** antenna has a magnetic base, however because the typical front fairing is made of plastic, it is not a suitable base. For antenna installation, please use a industrial dual sided plastic tape or a hook and loop fastener as Velcro®

The antenna cable must pass on the kart's front fairing, sliding through the fairing brackets to the GPS module (that should be fastened to the floorpan).



Configuration Wizard

The **GPS MODULE** does not need any configuration. The system auto configures itself during the start up phase.

MXL : Data visualization

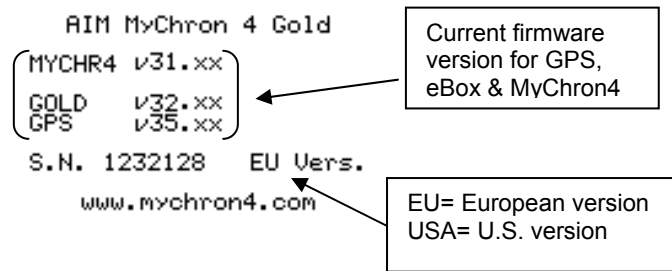


Number of received satellites

GPS Status:
SEARCH= Searching satellites
WEAK= Signal low
GOOD= Optimal

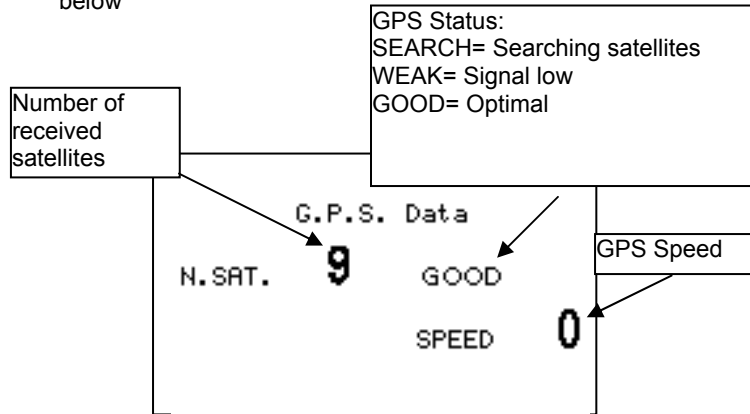
MyChron4 data visualization

When the **GPS MODULE** is connected to the **MyChron4**, it will show the following screen (during start up phase).



The first start-up of the day (cold start), the **GPS MODULE** requires almost 60-90 seconds to start calculating its position. This wait time will be reduced to a few seconds in the subsequent starts for the day.

You can view the number of satellites used by your **GPS MODULE**, by pressing the "ON/VIEW" button illustrated below





MXL data download

The software (as well as data download management) is equal to **MXL's**

MyChron4 DataKey and data download

The **Data-Key** use for **GPS** application (as well as data download management) is equal to **MyChron4's**

For these tasks, please refer to your **MyChron4** manual – available for download from the www.mychron4.com or www.aim-sportline.com website.

GPS MODULE stored data analysis

The **GPS** module adds the following channels to your acquired data

- GPS Speed;
- GPS Nsat;
- GPS LatAcc;
- GPS LonAcc;
- GPS Slope;
- GPS Heading;
- GPS Gyro;

GPS Speed

GPS speed is vehicle speed calculated through **GPS** satellite signals. **GPS** speed is considered state of the art for vehicle speed, there is no better method to acquire vehicle speed.

GPS Nsat

The number of satellites correctly locked to your **GPS** unit. The maximum number of satellites is fixed to 9 units

GPS Lat Acc

This channel shows the lateral acceleration compared to the trajectory calculated through **GPS** speed on three axes (North East Up) This value shows the side to side G-forces.



GPS LonAcc

This value shows the longitudinal acceleration compared to the trajectory calculated through **GPS** speed on three axes. This value shows acceleration and braking G-forces.

GPS Slope

This value measures the positive and negative slope of the track.

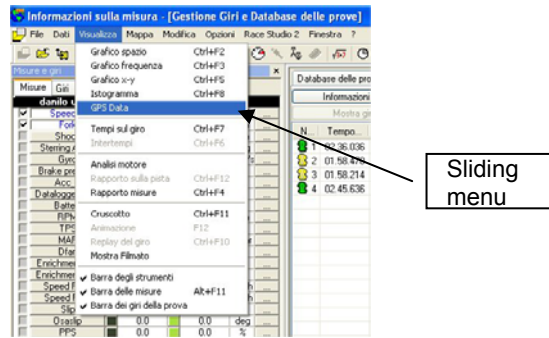
GPS Heading

This value measures the heading of the vehicle compared to the North direction

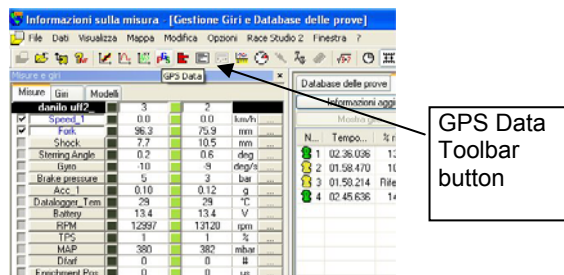
GPS Gyro

This value measures the cornering speed of the trajectory, in degrees / seconds

By selecting on the menu “View►GPS Data”, the system will show the window related to the trajectory view of the vehicle during the test, lap per lap.



The same function is available by using the **GPS Data** button, placed on the toolbar

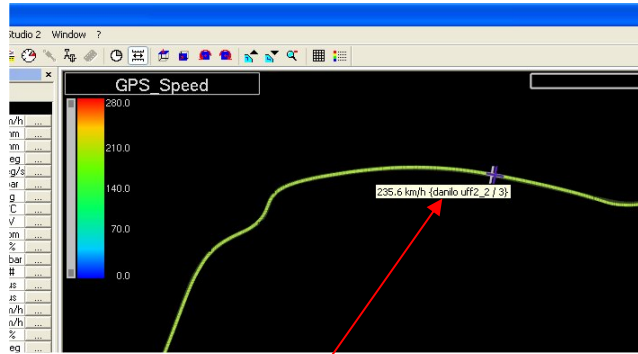


You can scroll between acquired channels values by placing the mouse cursor in the window containing the name of the chosen value, and rotating the mouse wheel (or by using the UP-DOWN cursor keys on your keyboard)

Scroll values



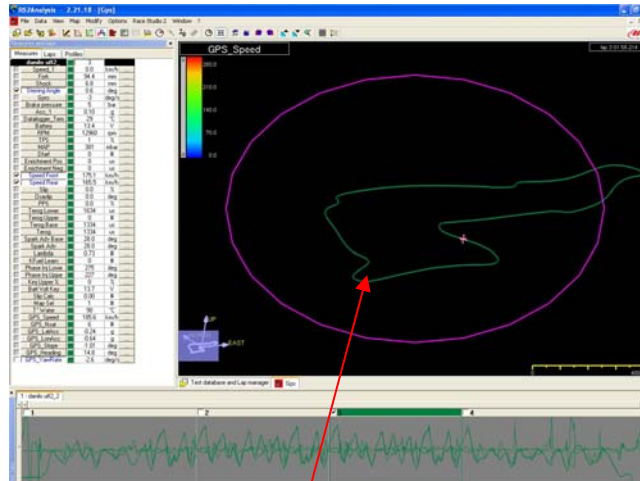
Placing the mouse cursor on the trajectory, will show you the exact value of the chosen measure (**GPS Speed** in this case)



Exact value :lap 3 - 235,6Km/h

You can zoom in and out of the **GPS** map using either a mouse scroll wheel, or the UP and DOWN cursor keys on your keyboard.

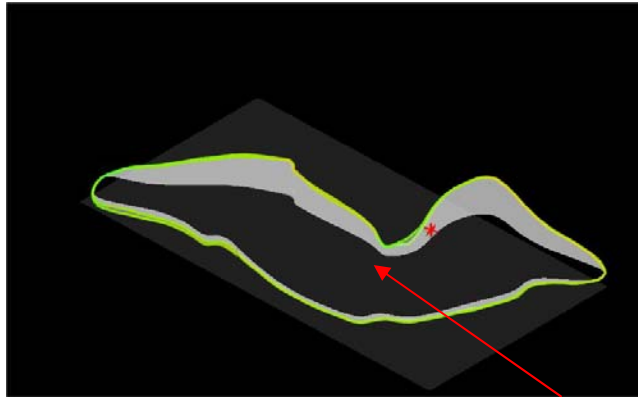
Click and hold the right mouse button in the track view and drag the pointer to rotate the map and use the 3D view



Keep the right mouse button pressed to rotate the map

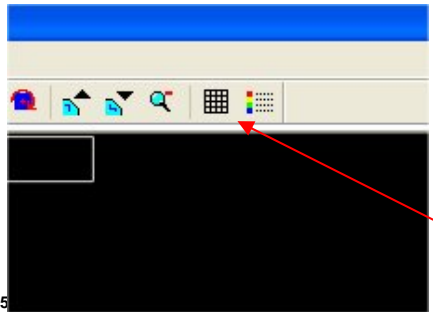
The map is a 3D (three dimensional) view. Rotate the map on the lateral axis to view slopes and elevational changes.

Double click the right mouse button twice while your cursor is on the map to enable this 3D view



3D view

For more detailed track analysis, there's a **Grid** function button available on the toolbar:



Grid button



You can modify the grid dimensions by selecting GRID SETTINGS from the OPTION ► GPS TOOLS menu

