EVO5 Logger

USER GUIDE

EVO5 Logger

Thanks.

Dear Customer,

First, we would like to thank you for choosing the EVO5 logger as the tool for improving your racing craft setup and ontrack performance.
EVO5 is an expandable new generation logger with high sampling capabilities, recording data from a variety of sensors and sources.
Please, before digging into your new data system, keep in mind that we are constantly working on bettering our software and firmware.
So, be sure to check our website periodically for any updates.

www.aimshop.com

What is EVO5?

EVO5 is the evolution of the traditional datalogger that, all over the years, has become a standard de facto acquisition system in a huge amount of championships.

Which data does it manage?

Data come from a wide range of sources, including your vehicle ECU, the internal accelerometers and gyro, the GPS module included in the kit, the analog/digital inputs, the external expansions as well as predefined math channels.

Why an extra CAN connection?

Many times you wish to get data not only from your ECU but also from other electronic devices you have in your car.
The extra CAN is intended to offer this possibility.

What is the LED intended for?

The top RGB LED, changing colour and blinking frequency, tells you if EVO5 is performing a firmUp, if it is in error, if it is recording or not, is using a WiFi connection or not.

Is there a digital output ?

EVO5 has two digital outputs you can freely configure.

Why a WiFi connection?

You can use a WiFi connection for transmitting the data of your test, sending data online and for configuring the system.

Are EVO5 data compatible with old MXL/EVO4 data?

Yes, MXL used to produce data in .DRK format. EVO5 offers an improved data management and produces .XRK format that only Race Studio 3 can read. Nevertheless, the last releases of Race Studio 2 can detect .XRK files and transform them into old .DRK format files that are compatible with MXL1 and EVO4 files.

What is the difference between the old DRK format and new .XRK?

.XRK, taking advantage of GPS technology, associates absolute time and GPS position to each data with the precision of 1 millisecond. In this way, it is possible to better compare different laps and tests.

How do I download the data from my EVO5

EVO5 stores data both in its memory and on an SD card (not included in the kit).
Download procedure can be easily performed via WiFi or placing the SD card in your PC.

What about Race Studio 3? What are the differences between the old .DRK format and new .XRK?

Race Studio 3 is the new software for managing configuration, data download and data analysis for all the future AiM systems.
It is going to substitute Race Studio 2, which has accompanied us for almost 15 years.
Based on a totally new and much more flexible architecture, it is a work in progress as some features are continuously improved.

We are going to upgrade it very often so, please don't forget to check out website at www.aim-sportline.com.

2. What is in the kit

EVO5 kit includes:

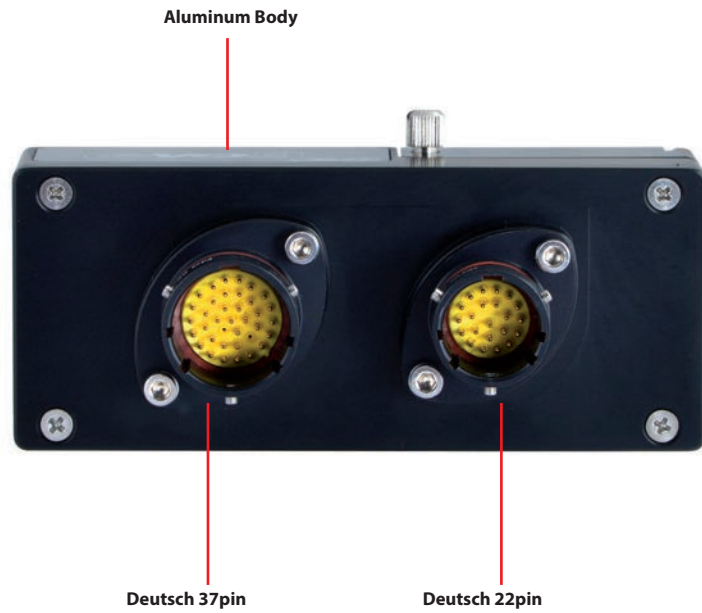EVO5 logger   Harness

GPS09 Module   Software

EVO5 Logger

Aluminum Body   **RGB LED**   **SD card slot**

Deutsch 37pin   **Deutsch 22pin**

4. RGB LED

EVO5 features an RGB LED on top of it near to the SD Card slot.

The LED shows the logger status as for the following table:

LOGGER STATUS	LED COLOUR	BLINKING
Doing firmup	Blue	Quickly
Logger in error	Red	Slowly
Recording	Cyan	Still
WiFi connected	Yellow	Still
WiFi available (but not connected)	White	Still
Idle status	Green	Still
(WiFi off+EVO5 not recording)		

5. ECU connection and CAN resistors

The system can acquire data from the ECU of your vehicle. The list of the available ECU protocols is published on our site: www.aim-sportline.com/download area, ECU connections.

This list includes approximately more than 1000 different protocols and is constantly updated with new protocols.

When possible documents explaining how to configure your ECU to ensure compatibility between the data flow transmitted are available, too.

From an hardware point of view, the system is compatible with all currently available connections: CAN, RS232 or K Line.

The steps to manage the data coming from the ECU are the following:

1. Determine wich hardware connection is available for your ECU

2. Read the documentation about your ECU at www.aim-sportline.com and identify the name of the software driver to be specified

3. Using Race Studio 3, configure EVO5 setting your ECU driver with the menu shown here below, that appears when you create a new configuration.

The ECU has to be set when configuring your system with RS3 configuration software.

The steps are explained in the related section.

CAN Resistors

EVO5 features two 120 Ohm ending resistors on CAN1 and CAN2 Line whose status by default is:

■ Enabled on CAN1
■ Disabled on CAN2

6. RPM

The system can receive the RPM signal from three different sources:

■ From ECU
■ Through a square wave signal (8 to 50 V)
■ From the low voltage (from 150 to 400 V) of the coil

6.1 RPM from ECU

To get RPM from the ECU, please configure your device and enable RPM channel. RPM is one of the many data flowing from your ECU.

**6.2 RPM via a 5-50 V square wave signal or coil (150-400 V)**

In case your engine is not managed by any ECU, the device can read the signal from the low voltage of the coil (whose peak can be from 150 to 400 V) or from a possible square wave (the peak can be from 5 to 50V). The pin labelled **"RPM"** reported in appendix **"Pinout"** receives the signal.
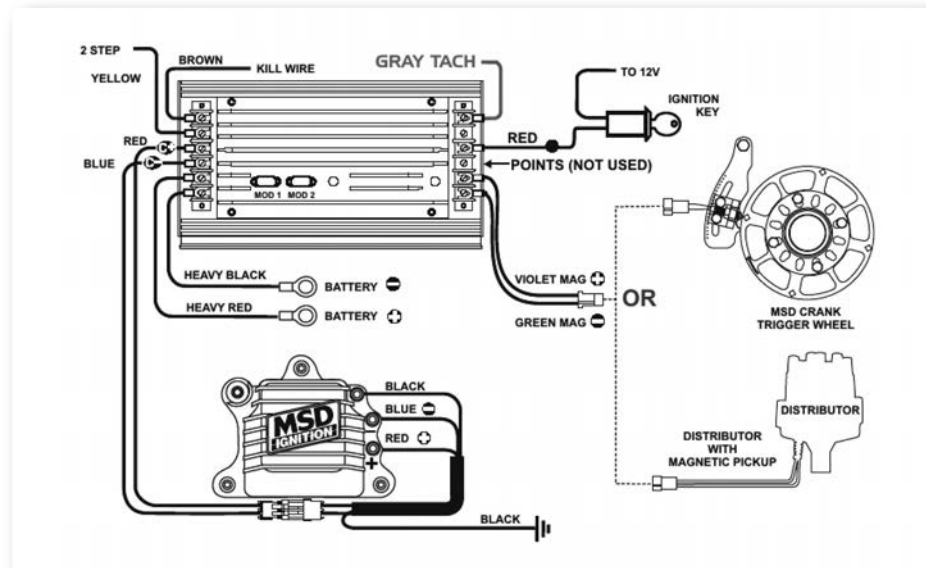
The image shows an example of wiring for the ignition system.

The output, labelled **"GRAY TACH"** gives a 5-50V output that can be directly acquired from EVO5.
If the output is not available from the ignition system, the system has to be c onnected to the low voltage of the coil, as shown in the following schematic.
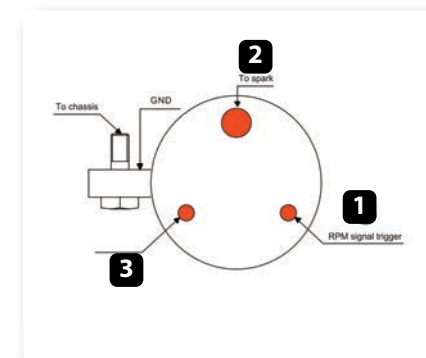
Point 1: Low voltage of the coil
Point 2: Connected to the spark plug
Point 3: Connected to the +12V of the battery

After connecting the RPM signal, please use the software Race Studio 3 for enabling the RPM channel.
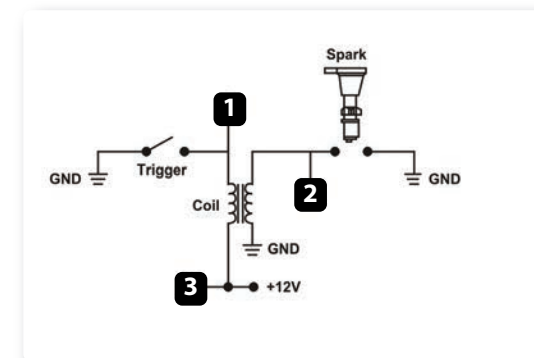
7. Speed

The system can receive the speed signal from three different sources:

■ from the ECU
■ from the GPS receiver included in the kit
■ from the wheel sensors (digital channels)

It is therefore possible to receive and store different values of speed at the same time; the more powerful ECUs transmit up to four wheel speed values.

7.1 Speed read from the ECU

If your ECU sends the value of speed in its data stream, it is obviously possible to read, record and show that value.
Simply enable it using Race Studio 3 software when setting the channels.

7.2 Speed read from the GPS receiver

The GPS receiver you find in the kit is configured in order to obtain the best performance in term of reactivity and accuracy.

For getting GPS speed you don't need any configuration.
Simply connect the GPS09 Module to your system and after a setup period of some seconds the data will be received and automatically recorded.

7.3 Speed read from wheel sensors

EVO5 has four wheel speed inputs, one in the 37 pins connector and the other three in the 22 pins connector:
The digital sensor X02SNVM00 detects the presence of a metallic tooth placed at a distance between 0.5 and 2 mm.

ID		Name	Function
RPM	☑	RPM	RPM
Spd	☐	Speed	Vehicle Spd

Please use the software Race Studio 3 to load the sensor in the system configuration.

Just enter the program configuration panel and, after enabling the desired speed channels, set the wheel circumference and the number of pulses for revolution.
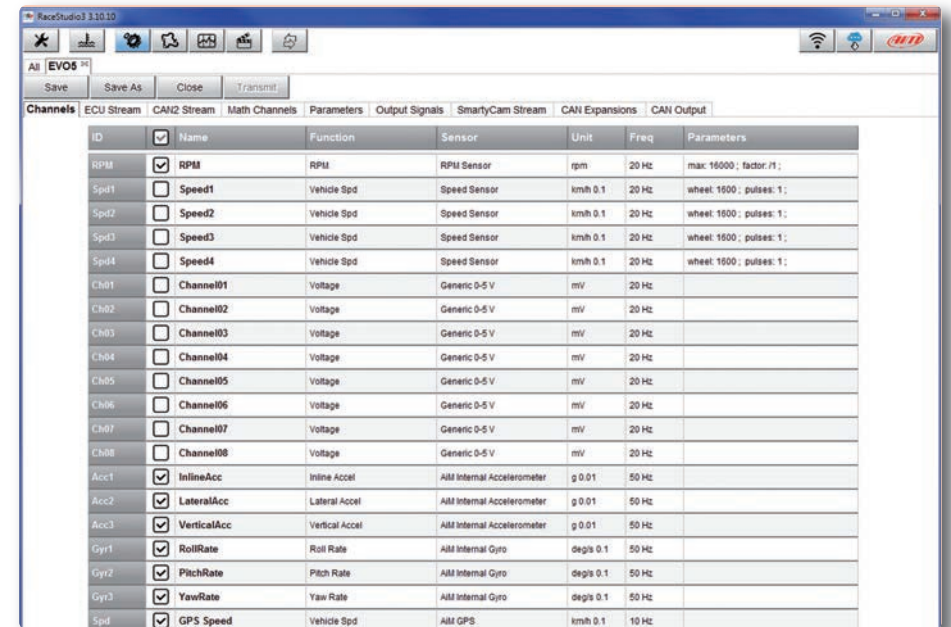
8. Analog inputs

EVO5 has 8 analog inputs, recorded up to 1000 times per second each.
You can connect:

■ 0-5 Volt signals
■ Ratiometric potentiometers
■ Pressure sensors
■ Thermo-resistances
■ K-type thermocouples

Please follow these steps, using the software Race Studio 3 to set the channels:

■ Connect the sensor to the desired input
■ Enable the channel in the Channels table
■ Select the proper sensor type; sensors of many different types are properly handled
■ Set the sampling frequency
■ Set the unit of measure.

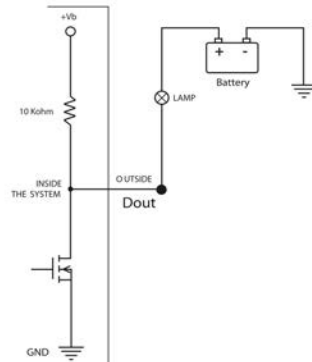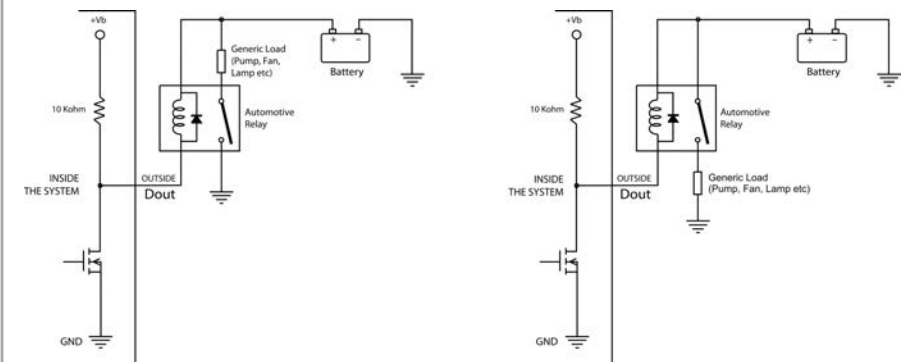| ID		Name	Function	Sensor	Unit	Freq	Parameters
RPM	☑	RPM	RPM	RPM Sensor	rpm	20 Hz	max: 16000 ; factor: /1 ;
Spd1	☐	Speed1	Vehicle Spd	Speed Sensor	km/h 0.1	20 Hz	wheel: 1600 ; pulses: 1 ;
Spd2	☐	Speed2	Vehicle Spd	Speed Sensor	km/h 0.1	20 Hz	wheel: 1600 ; pulses: 1 ;
Spd3	☐	Speed3	Vehicle Spd	Speed Sensor	km/h 0.1	20 Hz	wheel: 1600 ; pulses: 1 ;
Spd4	☐	Speed4	Vehicle Spd	Speed Sensor	km/h 0.1	20 Hz	wheel: 1600 ; pulses: 1 ;
Ch01	☐	Channel01	Voltage	Generic 0-5 V	mV	20 Hz	
Ch02	☐	Channel02	Voltage	Generic 0-5 V	mV	20 Hz	
Ch03	☐	Channel03	Voltage	Generic 0-5 V	mV	20 Hz	
Ch04	☐	Channel04	Voltage	Generic 0-5 V	mV	20 Hz	
Ch05	☐	Channel05	Voltage	Generic 0-5 V	mV	20 Hz	
Ch06	☐	Channel06	Voltage	Generic 0-5 V	mV	20 Hz	
Ch07	☐	Channel07	Voltage	Generic 0-5 V	mV	20 Hz	
Ch08	☐	Channel08	Voltage	Generic 0-5 V	mV	20 Hz	
Acc1	☑	InlineAcc	Inline Accel	AiM Internal Accelerometer	g 0.01	50 Hz	
Acc2	☑	LateralAcc	Lateral Accel	AiM Internal Accelerometer	g 0.01	50 Hz	
Acc3	☑	VerticalAcc	Vertical Accel	AiM Internal Accelerometer	g 0.01	50 Hz	
Gyr1	☑	RollRate	Roll Rate	AiM Internal Gyro	deg/s 0.1	50 Hz	
Gyr2	☑	PitchRate	Pitch Rate	AiM Internal Gyro	deg/s 0.1	50 Hz	
Gyr3	☑	YawRate	Yaw Rate	AiM Internal Gyro	deg/s 0.1	50 Hz	
Spd	☑	GPS Speed	Vehicle Spd	AiM GPS	km/h 0.1	10 Hz	

9. Digital output

The system features two digital inputs on the 22 pins connector.
Each of them can give an output of 1 amp at 12 volts.

The digital output (Dout) is a LOW-SIDE type with internal 10 Kohm weak pull-up resistor.
Here below are some connecting examples.

You can configure them in order to turn them on or off depending on the value of the analog or digital inputs, ECU values, expansions values, GPS information or math channels.
To each event you can associate an alarm LED, a message and a digital output.

You can configure it in order to turn them off when the condition disappears, when you turn EVO5 off, when you push a pushbutton or when the data are downloaded. Please refer to the related section in order to see how to use Race Studio 3 to manage the Output Signals.

Connecting examples

Load up to 1 Amp
Directly managed by the system digital output

Load higher than 1 Amp requires an automotive relay

10. WiFi Configuration

WiFi connectivity is set on AUTO by default. This means that if the vehicle is stopped WiFi is on and goes OFF as the vehicle speed increases. Your system can be configured for WiFi communication in one of two ways.

1) As an Access Point (AP)

This is ideal when you have one device and one computer.
In this configuration your AiM device creates its own WiFi network, which acts as an AP to which you can connect your PC.

2) To join an existing Wireless Local Area Network (WLAN)

This is more complex and requires an external AP but is more flexible and powerful. In this way you can communicate with more than one PC on the same network.
In this configuration both your system and your PC have to join a pre-existing WiFi network, called WLAN, in order to communicate with one another. The network is now created by a network device, which is acting as an external AP by permitting the connectivity.
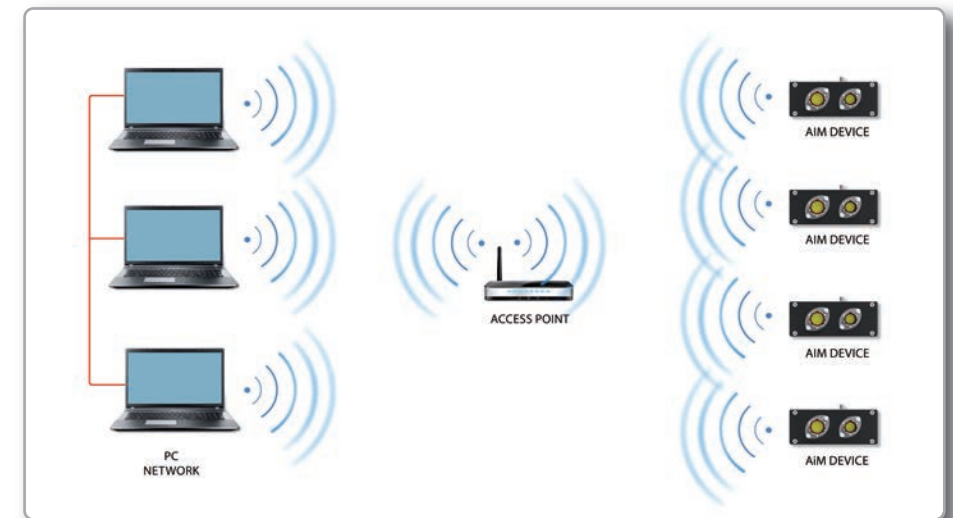
In WLAN mode there are two layers of security available:

■ Network authentication: the network password
■ Device authentication: a unique device password

Using both network and device authentication allows for various security strategies where multiple people, PCs and AiM devices are involved. For example a PC on a WLAN may see several AiM devices but can only communicate with AiM devices for which it has the password.

10.1 Configuring your device as an AP

Follow these steps to create an AP, allowing you to connect your PC to the device via WiFi.
This is the most simple and direct WiFi connection method and is ideal when you wish to communicate with only one device using one PC.
By default AiM system is configured as an Access Point and creates a network without a password completely accessible to everyone.

So, for establishing the WiFi connection:

■ Be sure your AiM system has the WiFi enabled.

■ Read its name in the lower part of the Live Measures page.

■ Click the WiFi icon of Race Studio 3 and select your AiM system.

In a few seconds the communication will be established.
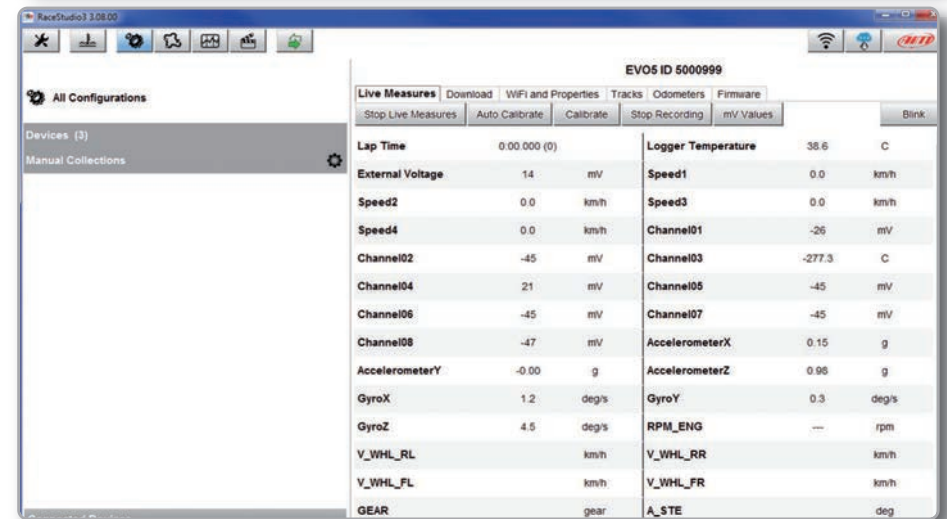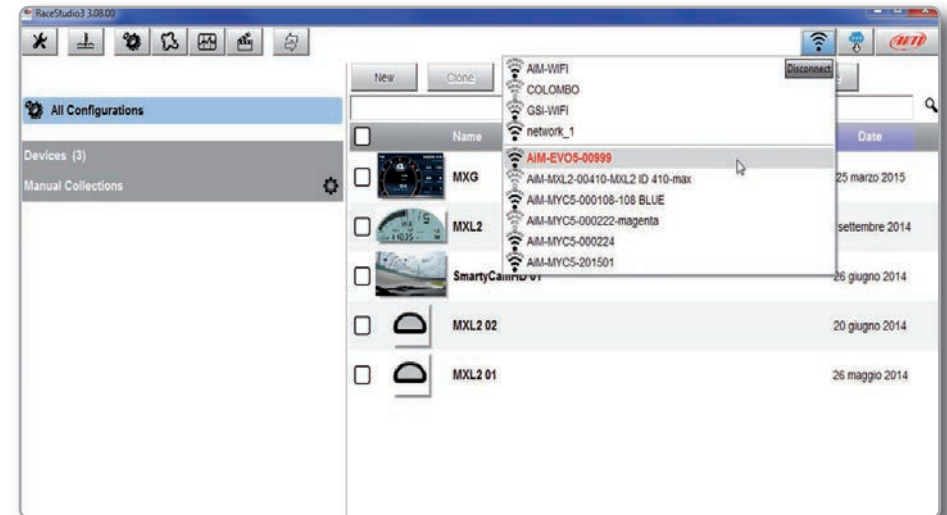
For setting other parameters it is therefore recommended that you create a unique password to secure your device/network immediately. With the use of a password, the communication is secure and encrypted using the WPA2-PSK standard.

The name of this AP, or SSID, is unique to your device. An example is: **"AiM-EVO5-5000999"** whereas:

■ "AiM" is the prefix for all AiM devices

■ "EVO5" is type of system identifier

■ "5000999" is a unique serial number for your device assigned at the factory.

To make your device more recognizable you can append a friendly name to the SSID. There is a limit of eight characters.

For example if you add the driver's name, Tom Wolf, the resulting network name (SSID) will be:
"AiM-EVO5-5000999-TomWolf".

After having set all the parameters click "Transmit" button. WiFi communicaton only will be restarted with the new parameters.

To connect your EVO5 simply choose your device from the list of available WiFi connections.

If your EVO5 is protected by a password, as recommended, Race Studio 3 will then require that password to authenticate.
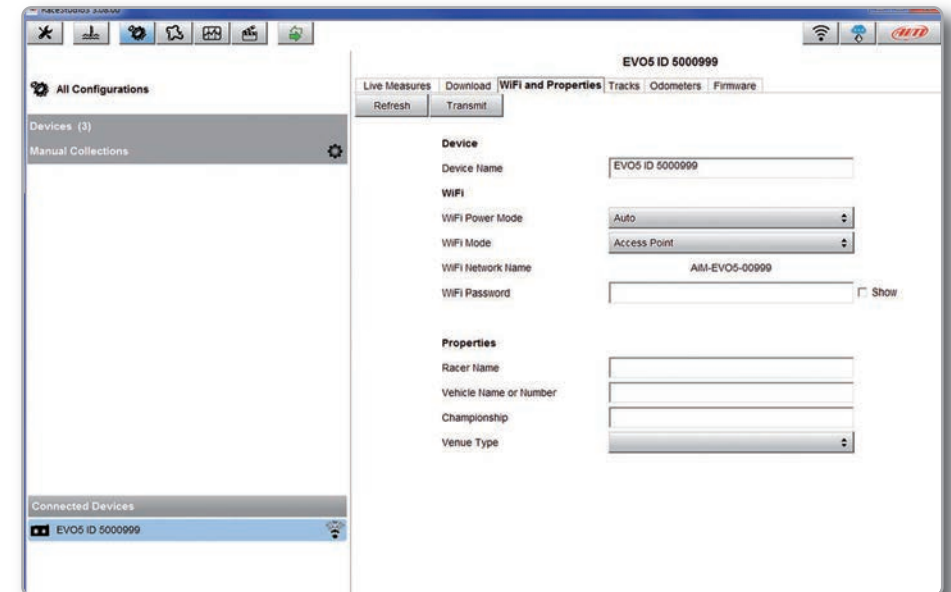
Please note that it is also possible to make the same WiFi connection using the WiFi tools of your operating system.

10.2 Joining Your AiM system to an existing network

Once the WiFi authentication with the device has been established, users can interact with the device clicking on it.

In this scenario, both your AiM system and the PC join an existing WiFi network (WLAN).

This scenario is ideal for a race team with multiple drivers and crewmembers that communicate with one or more AiM devices using the same PC network.

Note again that each AiM system can have a unique password, which is in addition to the network password, thus adding an additional layer of privacy and security.

Race Studio 3 will display all devices connected to the same network.

Connected devices can be seen under the "Connected Devices" header, just as if they were connected via USB: simply click on your device in the left panel under Connected Devices.

Go to the WiFi configuration tab and set the mode to Existing Network. Then, enter the network password and the device password, should you choose to add one, in the appropriate fields.

To commit the network settings to your device, click "Restart" button on this same tab. Your device will restart and join the network you specified.

Connect your PC to the same network and you will see your device under Connected Devices, just as if connected via USB.

If the AiM device is connected to your PC using a WLAN, it is possible to have two different passwords: the device password and the network password.

Please note that only passwords following the WPA2-PSK code are admitted.

In order to accomplish these tasks, Race Studio 3 has to be used as clarified in the following figure.
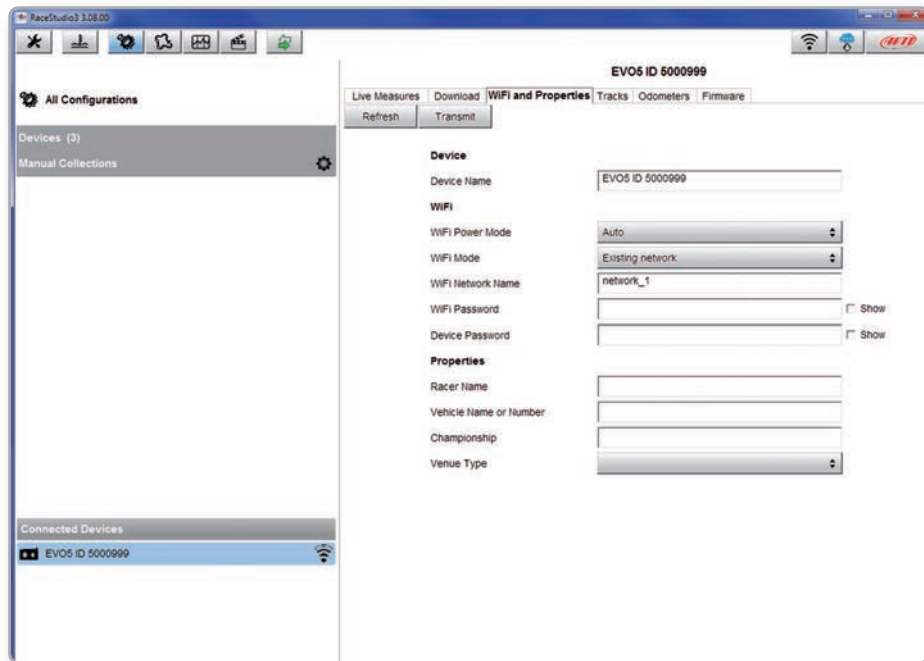

As you can see in the picture above, one device called "EVO5 ID 5000999" is switched from AP mode to WLAN mode.

The network name is "network_1," and it is not working in open authentication mode since it is protected by a network password.

In order to get the connectivity to the device, the user's PC also has to be authenticated to the same network, as clarified in the following figure.
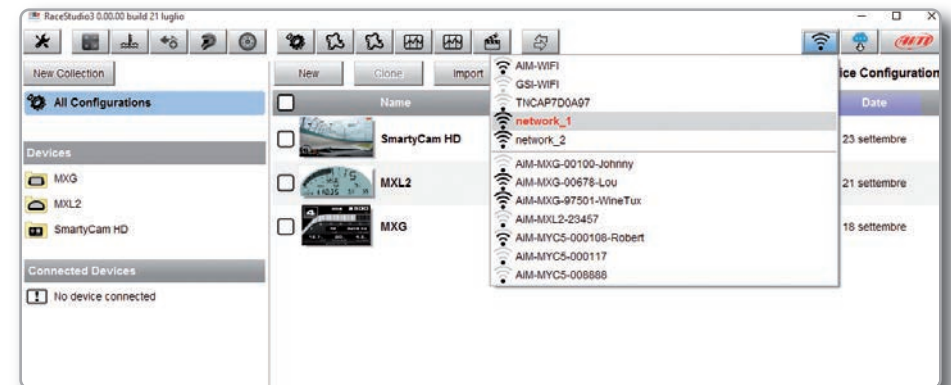
Once the user's PC is authenticated to the same network called "network_1," it can see the AiM device previously configured to gain access to the target network.
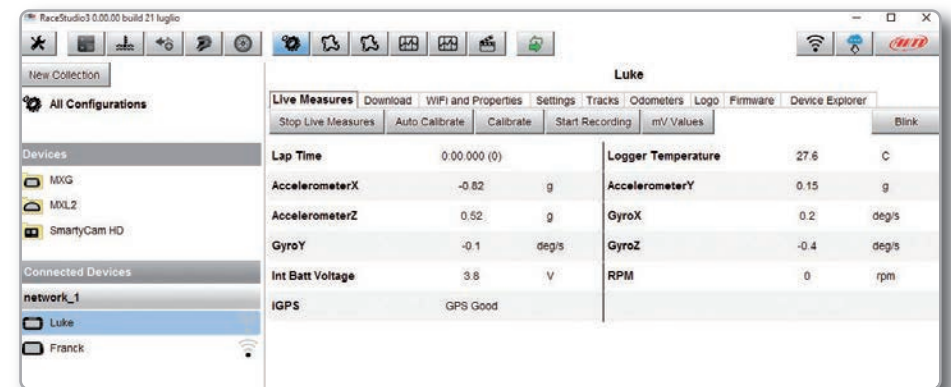
In the previous picture, two AiM devices are connected to the WLAN network_1.

10.3 High performance WLAN setup

This chapter reports a basic description of one WLAN configuration having an AiM devices and a user's PC on it.

AiM suggests the use of a Linksys AS3200 device as the network device in order to provide a WLAN. However, you can use any other network device that has at least both one 3x3 MIMO and one DHCP server.

Moreover, in order to maximize the bandwidth, the Internet should not be allowed through this WLAN. Hence, the DHCP server has to be configured without both DNS and default gateway addresses.

A typical example of configuration is shown Below.
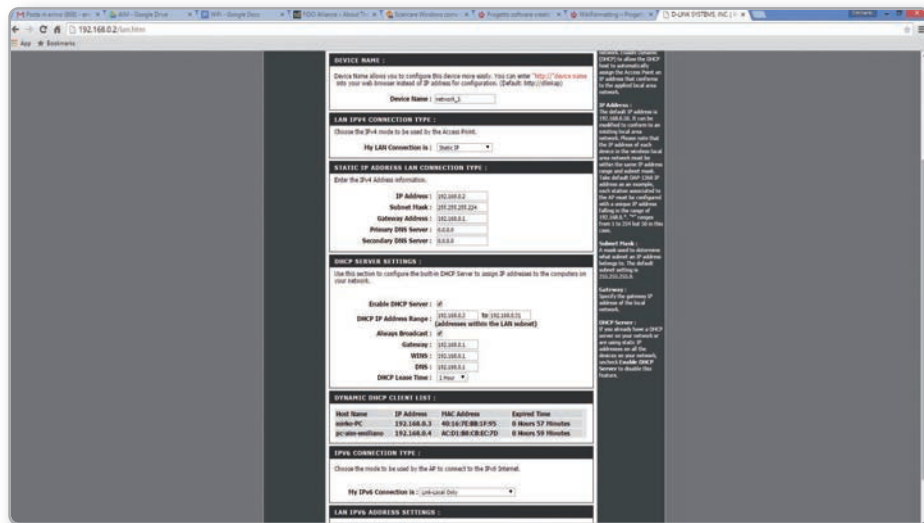
As you can see in the picture, the network device configuration parameters are the following:

■ **Wireless network name: network_1**
It states the network name belonging to the WLAN is "AiM-WLAN". Hence one user's PC needs to be authenticated to this network in order to interact with any AiM device on this network.

■ **Gateway address: 192.168.0.1**
Primary DNS server: 0.0.0.0
Secondary DNS server: 0.0.0.0
These settings prevent internet connectivity through this WLAN.

■ **Subnet mask: 255.255.255.224**
Enable DHCP server: yes
DHCP IP address range: 192.168.0.3 to 192.168.0.31
These settings enable a DHCP server running on this WLAN. It gives IP addresses belonging to the range 3-31. Hence, 29 network hosts are permitted on this network.

The number of network devices on one WLAN depends on the subnet mask.
This guide suggests the use of the following network masks and IP address range:

Subnet mask:	IP address range:	Number of devices:
255.255.255.0	192.168.0.1 - 254	254
255.255.255.128	192.168.0.1 - 126	126
255.255.255.192	192.168.0.1 - 62	62
255.255.255.224	192.168.0.1 - 30	30
255.255.255.240	192.168.0.1 - 14	14
255.255.255.248	**192.168.0.1 - 6**	**6**

The bold one is the configuration we suggest (if a greater number of devices is not needed), as it makes it easier and quicker for Race Studio 3 to identify devices on the network.

10.4 About Internet Connectivity

For optimal network speed of your AiM device(s) we recommend not to allow an Internet connection on the same network and to provide WLAN settings that prohibit an Internet connection.

Please know that it is certainly possible to allow internet access on the same network as your AiM device(s) but doing so can degrade the performance of AiM device communication.

These slightly slower network speeds may be suitable for your needs.

Also note that it is possible to have a second WiFi connection through an additional hardware (NIC – Network interface card or WiFi adapter).
Such a configuration would provide optimal data network speed for your AiM device(s) and simultaneously provide
Internet access via the second NIC.

10.5 Working with Mac(™) OS and Virtualized Windows (™)

Race Studio 3 software runs exclusively on Windows operating systems but, if the OS is virtualized on an Apple Mac OS too.

The main issue in this case is that the host OS (Mac) shares the WiFi interface with the virtualized OS (Windows) not as a WiFi interface but as an Ethernet interface.

Configuring Parallels(™)
Choose "Configure…" option in Parallels Menu.
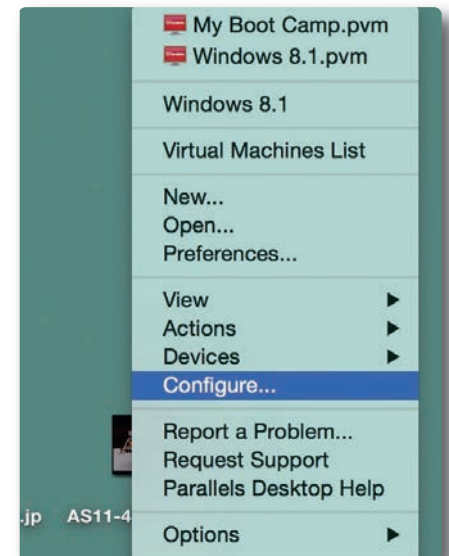
In the window you're prompted, select Hardware icon and then choose "Network" option on the left.

In the right part of the window, be sure to choose "Wi-Fi" in "Type" field.

Then choose the device you want to communicate with.
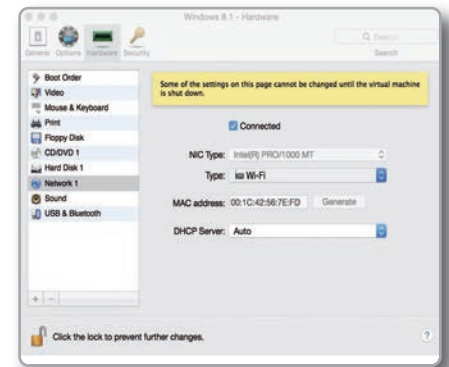
If you want to be sure the communication
is working, choose the
"Open Network Preferences…" menu.
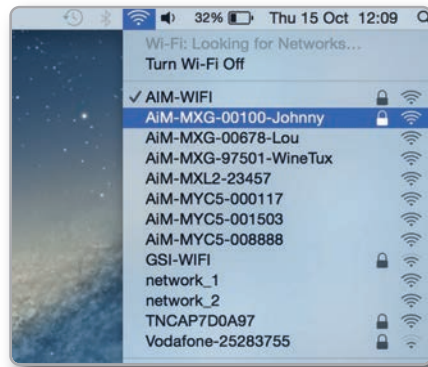
In the window you are prompted verify that the status is shown as "Connected" and that the
given IP is, for example, 10.0.0.10 (it could be 10.0.0.11, 10.0.0.12 or generically 10.0.0.x).
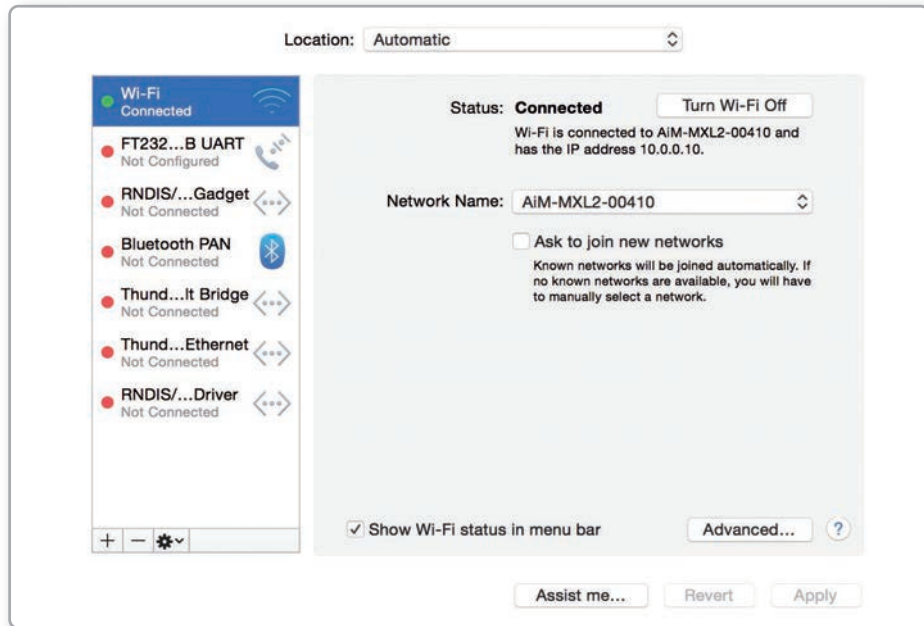
In Race Studio 3 flag the checkbox you find
in "Preferences –> WiFi Settings"
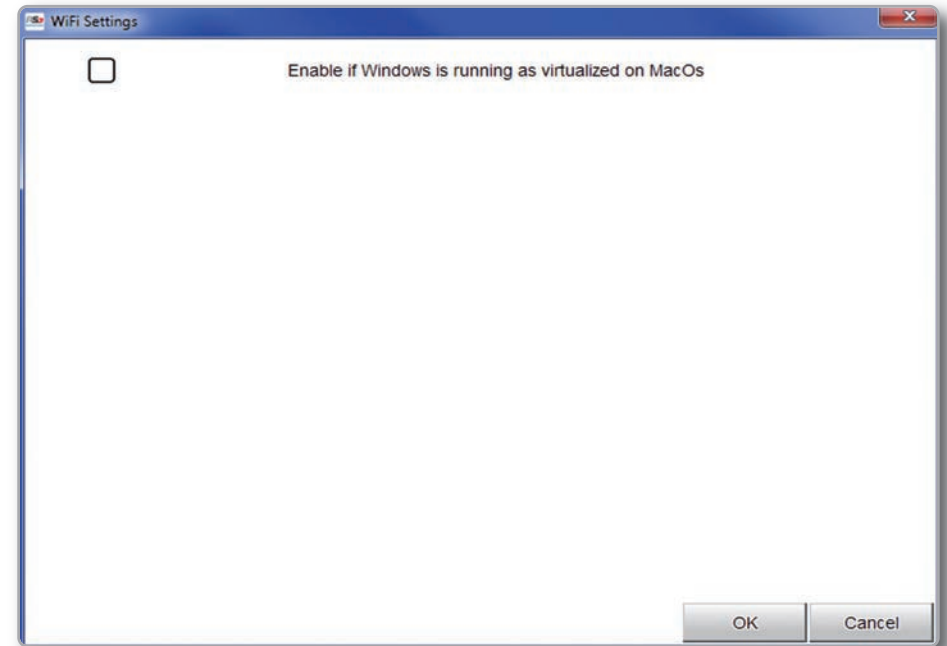
11. Race Studio 3 software

Race Studio 3 is the powerful software that you are going to use for all the activities regarding your system.

It is provided on a CD included in the kit or can be downloaded from Download area of www.aim-sportline.com.
It offers the following features:

When you start Race Studio 3 with your system connected and switched on, you can see a row of pushbuttons top left of the screen that give you different options:

■ Preferences
■ Custom sensors
■ Configurations
■ Tracks
■ Analysis
■ Movies
■ Devices

Preferences
For setting software measure units (pressure, speed, temperature, brake and oil pressure) and fixing download settings.
Custom sensors
Creates, imports, exports and modifies custom sensors.

Configurations
Create, modify, delete, export and import, configurations with all channels, ECU drivers, Math channels, digital outputs and all the expansions.
Tracks
Creates, imports, exports and modifies the map of your racing tracks.
Analysis
For looking at and comparing your data.
Movies
For watching and comparing up to two track laps movies.
Devices
To establish the connection with the loggers and to receive data.

Top right of the screen is a row of three pushbuttons

They can be used to:

See available WiFi networks

Download web updates
It automatically detects which new firmware and software releases are available and let you download them from our site www.aim-sportline.com.

Connect to AiM website

11.1 Configuration
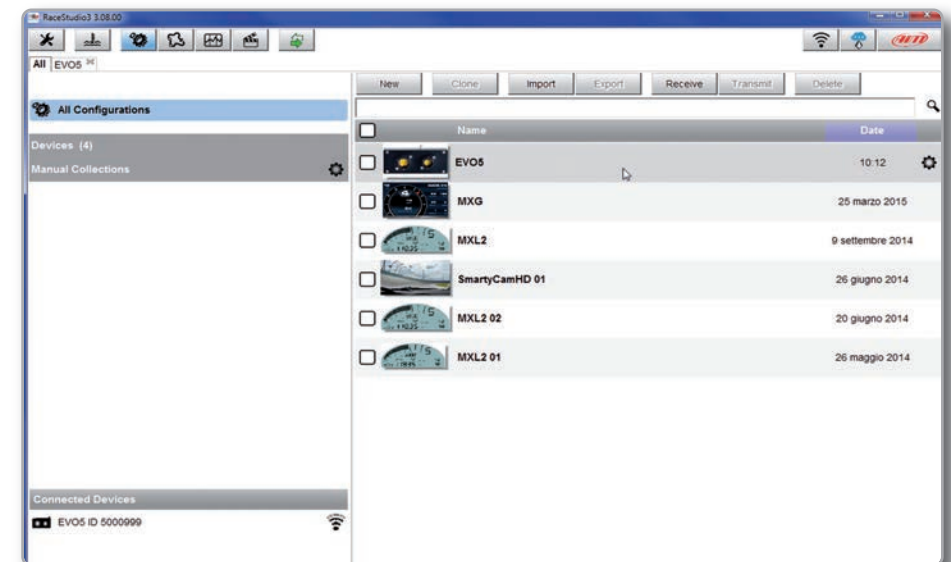
The configuration page is divided in two sections.
The left side is dedicated to the folders that you can create and manage in order to better organize your configurations.
Simply push the setting icon in order to create a new one. When you connect an AiM logger, its serial number appears in the left side of your screen. In the right side of the screen you can see all the configurations of the selected folder. Please click on the desired one for editing it or push the **"NEW"** pushbutton for creating a new one.

After having entered the configuration page you can see different tabs, which are useful for selecting one of the following configuration features:

Channels | ECU Stream | CAN2 Stream | Math Channels | Parameters | Digital outputs | Display | SmartyCam Stream | CAN Expansions

- ■ Channels
- ■ ECU Stream
- ■ CAN2 Stream
- ■ Math channels
- ■ Parameters
- ■ Output Signals
- ■ SmartyCam Stream
- ■ CAN expansion
- ■ CAN Output

11.1.1 Channels Configuration

Push **"Channels"** tab.

Channels | ECU Stream | CAN2 Stream | Math Channels

The channel configuration page will appear.

In this page you can define all the parameters for your analog inputs, speed inputs and digital RPM inputs as well as enable/disable any channel.

Id	☑	Name	Function	Freq	Parameters
RPM	☑	RPM	RPM	20 Hz	
Spd001	☑	Speed001	Vehicle Spd	20 Hz	
Spd002	☑	Speed002	Vehicle Spd	20 Hz	
Spd003	☑	Speed003	Vehicle Spd	20 Hz	
Spd004	☑	Speed004	Vehicle Spd	20 Hz	
Ch001	☑	Channel001	Pct	20 Hz	
Ch002	☑	Channel002	Pct	20 Hz	
Ch003	☑	Channel003	Pct	20 Hz	
Ch004	☑	Channel004	Pct	20 Hz	
Ch005	☑	Channel005	Pct	20 Hz	
Ch006	☑	Channel006	Pct	20 Hz	
Ch007	☑	Channel007	Pct	20 Hz	

By clicking on each line, a menu appears: You can define:

- ■ The name of the channel
- ■ The function
- ■ The sensor connected
- ■ The sampling frequency
- ■ The measure unit
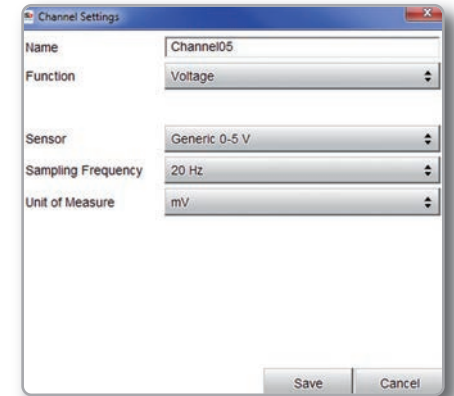
To configure the inertial platform (three-axial accelerometers):

- ■ Click on the cell "Accelerometer" in sensor column

- ■ The panel appears allowing you to set the accelerometers
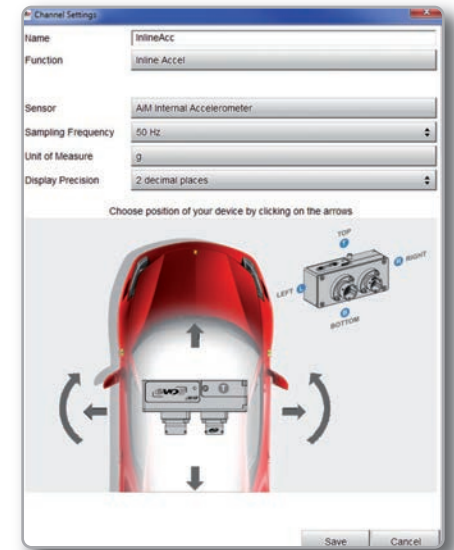
Here you can:

■ configure channel name (afterwards, that name will not be automatically modified)

■ configure parameters like measure unit, decimals number and sampling frequency, which will not be assigned just to that channel but even to the remaining channels of the inertial platform of the same type (the 3 accelerometers or gyros)

■ configure the logger position within the vehicle: this configuration is made clicking the arrows close to the logger image, which will make the logger rotate on the 3 spatial axes (the circled letter on the logger surface identifies the side currently shown, like indicated in the legend on the right of the image)

Logger position configuration automatically applies to all inertial platform channels, and consequently also their default names.
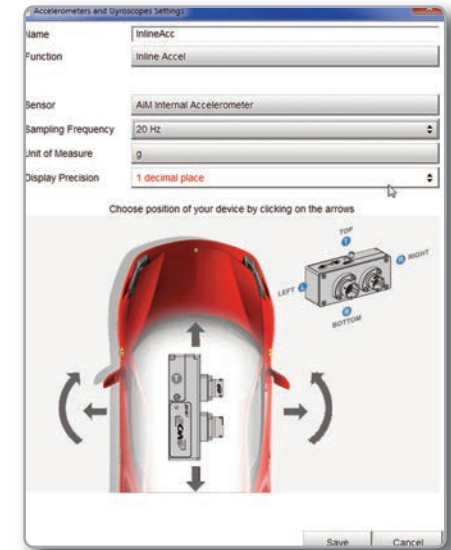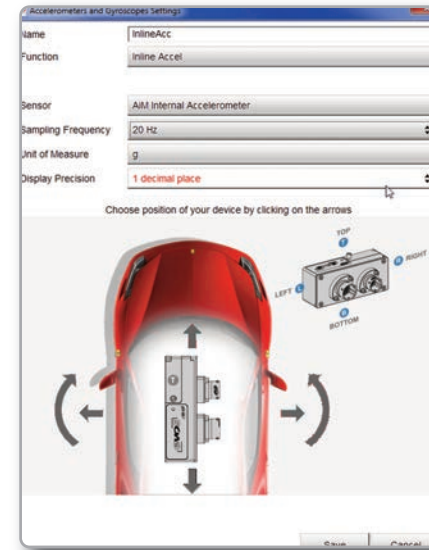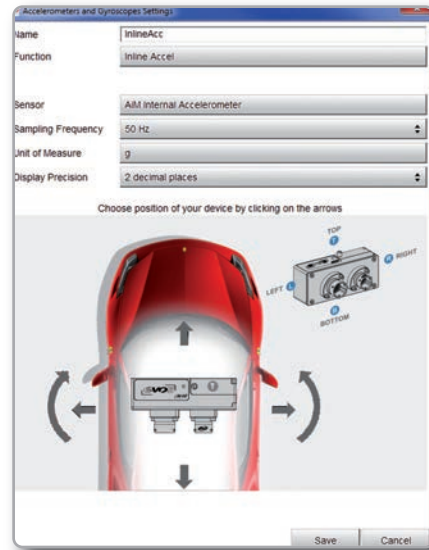
In the images above you see the result obtained selecting an accelerometer, changing the logger position and modifying frequency (to 20Hz) and precision (1 decimal).

To recap:

■ to configure the logger position, just click any of the 6 inertial platform channels and then move the arrows until the logger image has reached the actual placement within the vehicle

■ to change accelerometers or gyros sampling frequency it is necessary to select one of the accelerometers and change its frequency, then do the same selecting one of the gyro channels

■ to rename all 6 inertial platform channels select each of them, one by one, change its name and save

**11.1.2**
ECU Stream and CAN resistor configuration

Push **"ECU Stream"** tab.

Here you set the ECU driver as well as enable or disable the data coming from your ECU and enable/disable the ending 120 Ohm CAN1 resistor.

To set the ECU driver of your vehicle click "Change ECU" and select ECU Manufacturer and ECU Model.
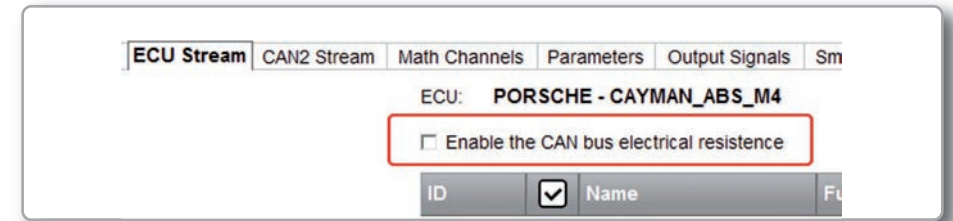
Each ECU channel can be enabled/ disabled and you can define:

■ Name
■ Sampling frequency
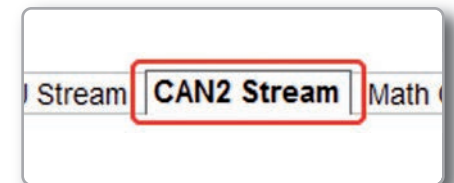■ Unit of measure
■ Display precision
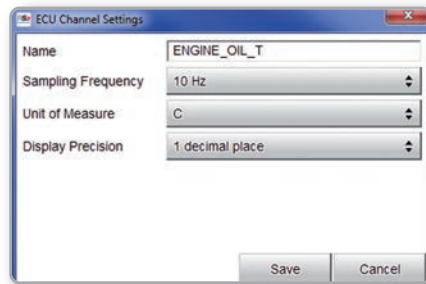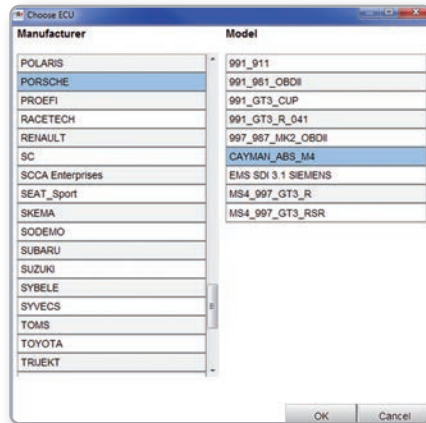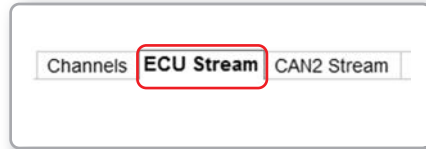
CAN resistor configuration

A CAN line ending with a 120 Ohm resistor can be enabled/disabled through this checkbox.

11.1.3 CAN2 Stream

Push the tab **"CAN2 Stream"**.

CAN2 Stream works like ECU Stream and is normally used for non engine control units like for example ABS management, suspension kits or similar.

11.1.4 Math Channels

Press "Math channels" tab. Using the button "Add Channel" you can calculate the engaged gear both with a learning lap (calculated gear) and filling in the RPM values (precalculated gear). You can as well configure Bias channels and add linear corrector channels.
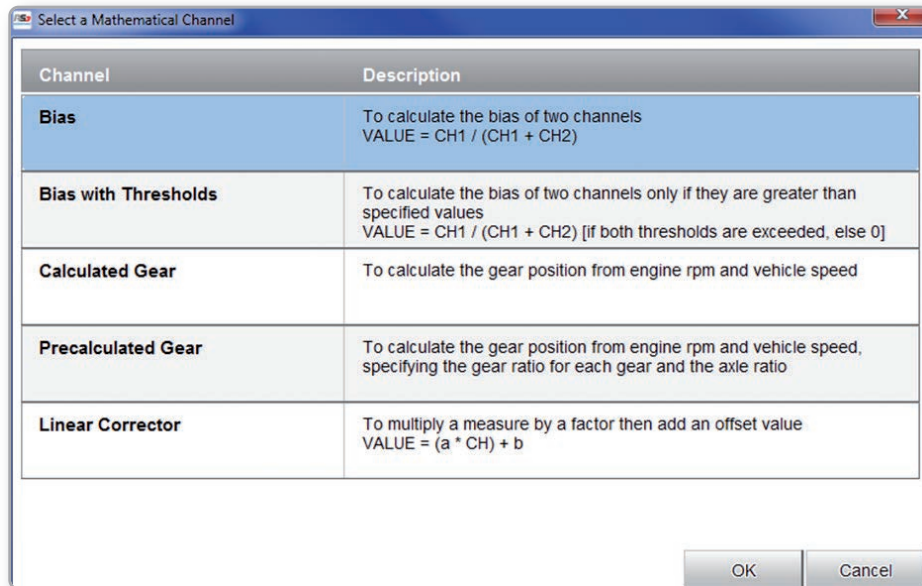
To modify/delete a math channel click the corrisponding icon and select the desired option.
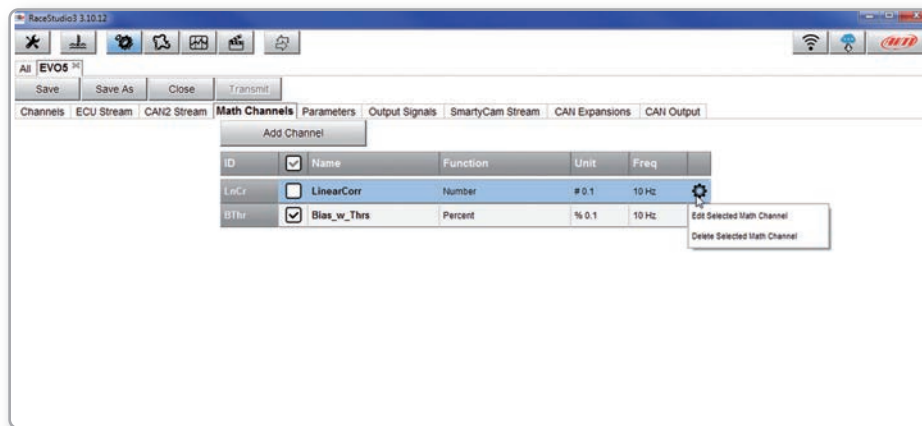
11.1.5 Parameters

Press "Parameters" tab. Here you can set the lap detection (GPS or Optical beacon) as well as decide when start recording.

1) Lap Detection

You can choose whether detecting a lap signal from GPS or using optical transmitter/receiver.
GPS beacon requires the track width while optical beacon requires you to insert a time during which the system does not record additional lap signals.

2) Start Data Recording

By default the system starts recording when RPM value is greater than 500 or speed (not GPS) is greater than 10 km/h.

Using custom condition option you can define one or more custom conditions and decide to start recording when one or all set conditions occur.
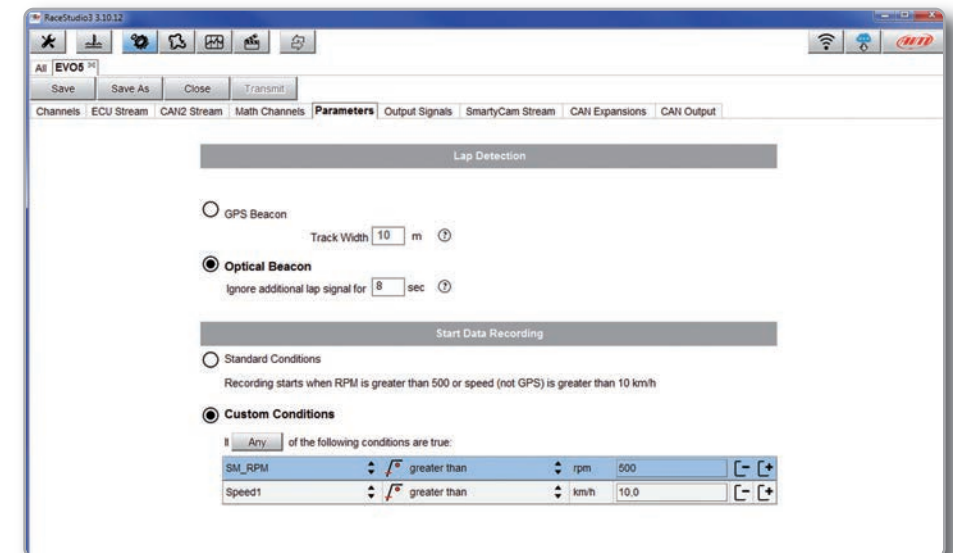
11.1.6 Output Signals

Push **"Output Signal"** tab for managing EVO5 digital outputs.

Here you can define the condition to meet and the action to perform. In the example below Channel04 is a temperature channel: when water temperature is higher than 90°C the digital output will close the circuit to ground until when the condition is no longer met.
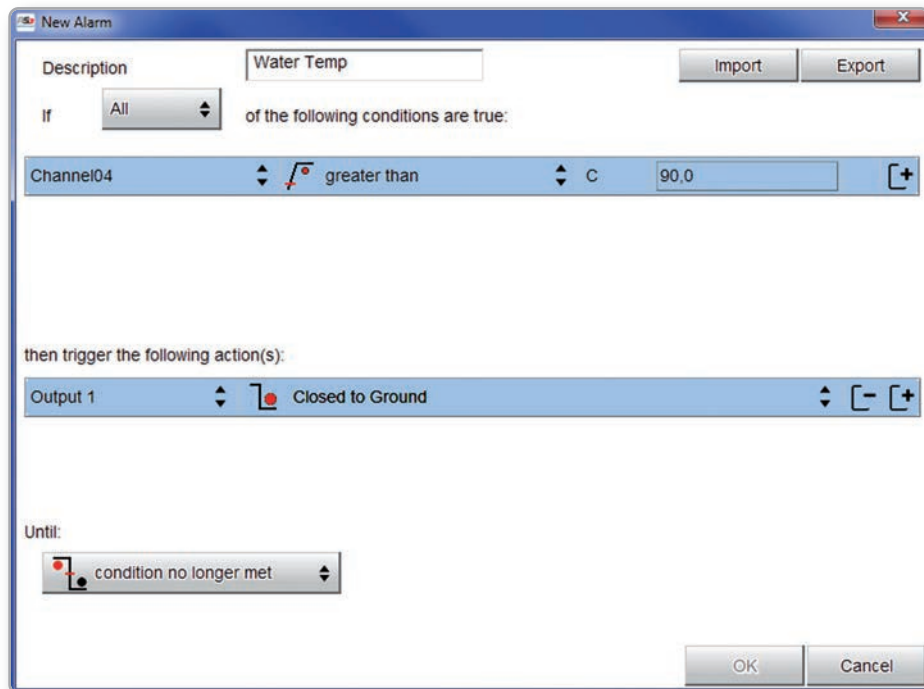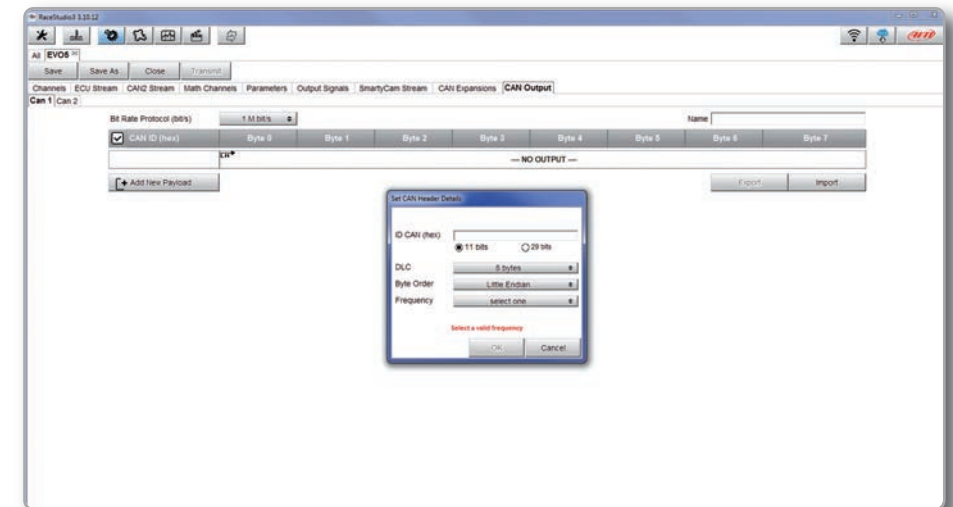

11.1.7 CAN Output

Push **"CAN Output"** tab do define a CAN Stream Output.

For each payload you can define:

■ ID CAN (Hex)
■ Byte number (DLC): up to 8 bytes
■ Byte Order: little endian or big endian
■ Frequency: up to20 Hz

Moreover you can transmit each field coming from analog, digital, internal channel, expansions, ECU or GPS Module.

WARNING: Please be advised that this function allows you to send messages directly to your vehicle CAN network. Sending messages that can potentially conflict with the CAN-bus frame may cause malfunction of your vehicle's safety systems, resulting in personal injury or death. It is your responsibility to fully understand your vehicles CAN-bus. AiM cannot be held responsible for any damage or injury caused by misuse of this function.

11.2 Modify or delete an existing configuration

Push **"All"** tab top left of Race Studio 3 page; just under the pushbuttons.

All configurations are shown on the right part of the page. For modifying an existing configuration, right click on it and select the desired option.

To delete an existing configuration, right click on it and select **"Delete".**

11.3 Connect your AiM system to a PC

When you connect your system to the PC, it is automatically recognized and on the left side of the PC display the name of your device appears, as shown in the picture.

At this point you can transmit the configuration or, clicking on the configuration:

■ see live measures
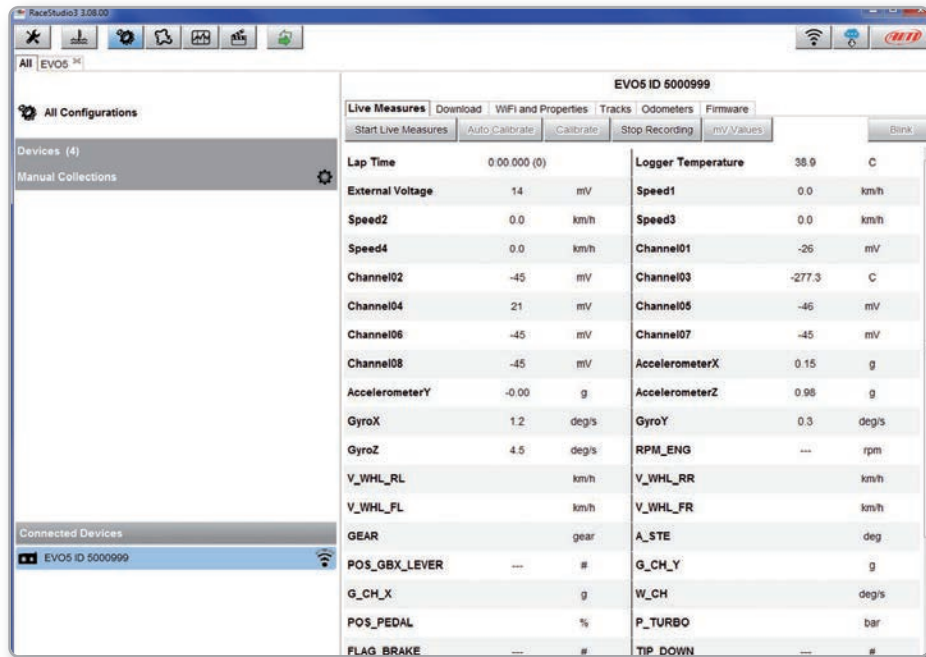■ calibrate sensors
■ download data
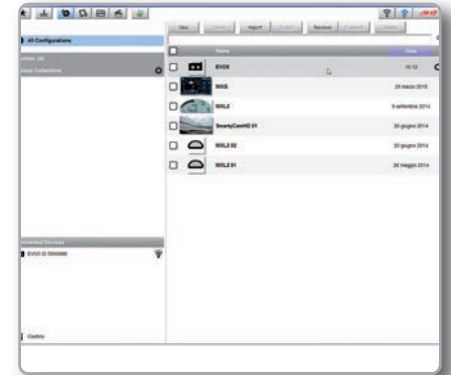
11.3.1 Configuration transmission

When you connect the system to your PC and select it, **"Transmit"** pushbutton enables top of the configuration page. Push it and the configuration is transmitted.
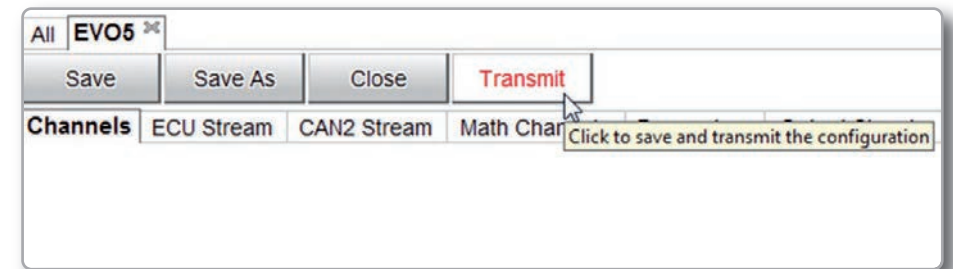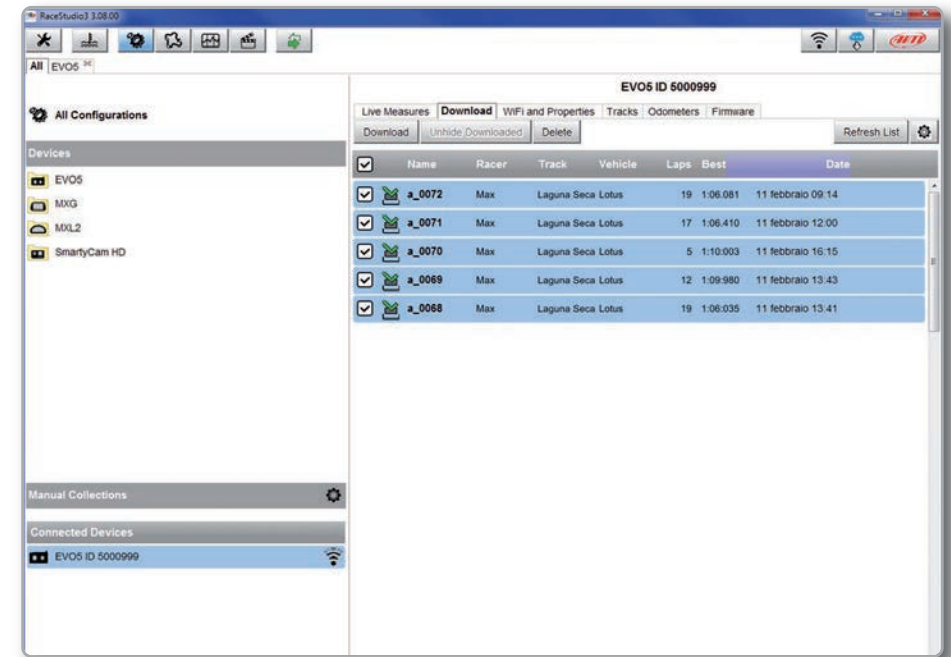
11.3.2 Live Measures and calibration

11.3.3. Data download

Once connected, click on it to enter "Live Measures".

Push "Start Live Measures" to look the data coming from your system. You can change the measure unit double-clicking on the measure. From "Live Measures" view you can calibrate the channels requiring it.

Storing data both in its memory and on an SD card, EVO5 can download them via USB, via WiFi or placing the SD card in the PC slot.
EVO5 SD card is immediately recognized by Race Studio 3 as containing stored data. To download data click on your system name in **"Connected Devices"** panel bottom left of the software main page.

The device window appears on the right.

Push **"Download"** button for downloading the data recorded in your system.

You will see the information about the files recorded in the system: dimension and date/time of the file creation.

Please select a file and push **"Download"** for transferring it to your PC.

12. GPS and track management

GPS09 Module included in the kit provides these information, updated ten times per second:

■ Position (latitude, longitude, altitude)
■ Speed
■ Longitudinal acceleration
■ Lateral acceleration

If the system knows the finish line of the track and the split coordinates, it can calculate and show:

■ Lap Times
■ Split times

To transmit/receive track information to EVO5, use **"Tracks"** feature, as explained in this section.

12.1 Tracks feature

With "Tracks" you can update, modify, transmit and receive to and from the system the coordinates of the start/finish line and split points of all the tracks you are going to run on.
Opening the software, with no logger connected to your PC, you will see the screen shown here on the right. As you can see, the screen is divided in three parts.
On the left are track collections and connected devices.
Central is the track list. If available, each track label shows you the track layout, its address and the type of vehicle that usually races on that track.
On the right side of the screen, if available, you will find the track page with its logo, address, contact information, website and coordinates.

|	
1	Shows all available tracks
2	Select all tracks of the list
3	Track info
4	Track page
5	Shows all connected devices
6	Shows Manual Collections
7	Shows Smart Collections
8	Shows all nations whose track are included in the database
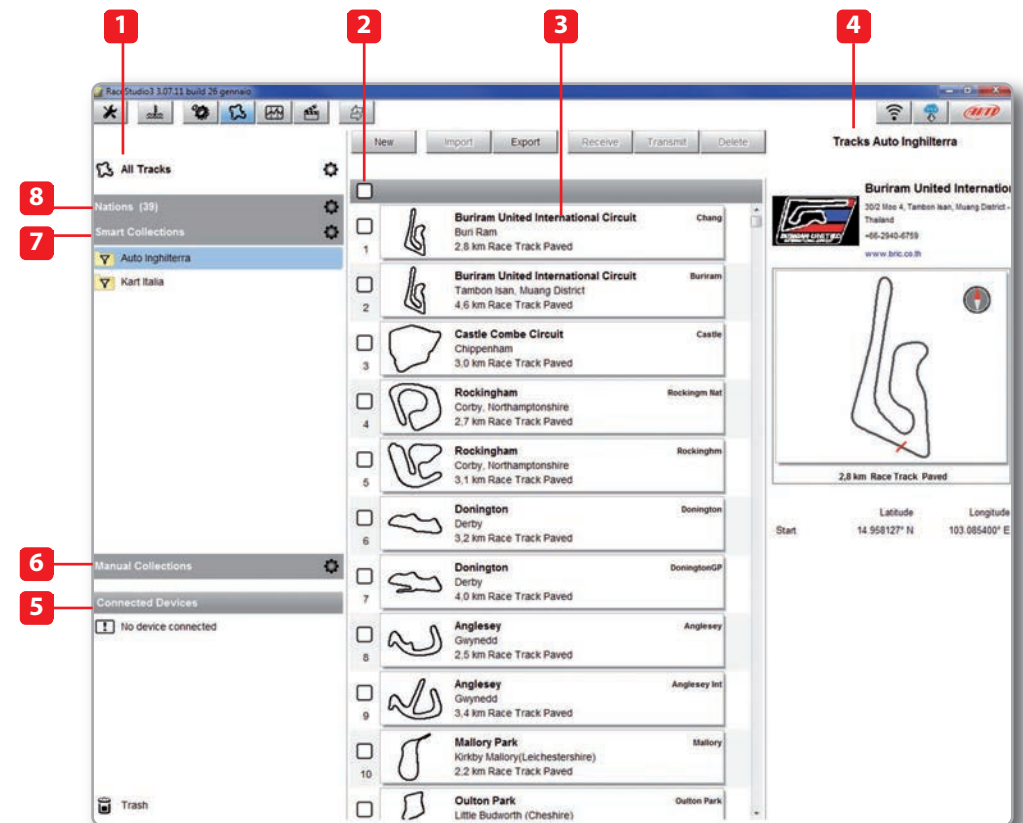
12.2 Tracks Collections

You can see collections of tracks selecting the Nation they belong to (1), setting some filtering criteria and creating Smart Collections (2) or selecting some tracks and creating Manual Collections (3).
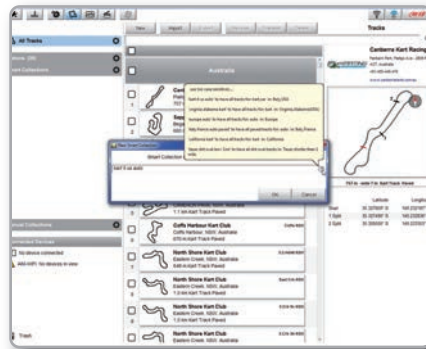
1) Nations
Select a Nation and you will see only the tracks belonging to that Country.
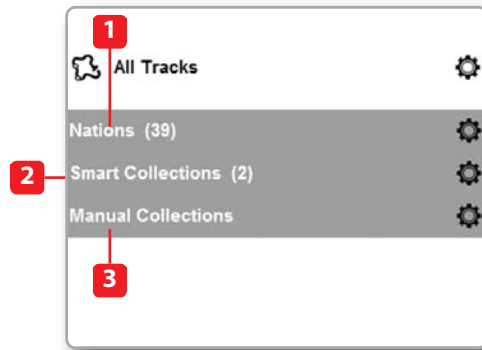
2) Smart collections
To create a Smart Collection of tracks click the setting Icon highlighted top left on the software page.
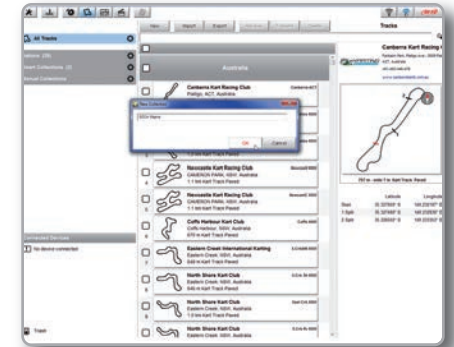
"Selection criteria" panel appears.

To know how to perform a search click the question mark on the right and some examples show up in a yellow pop up panel as shown here on the right.
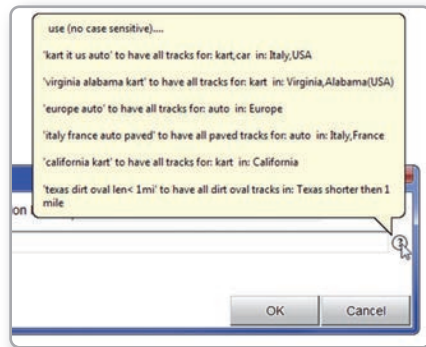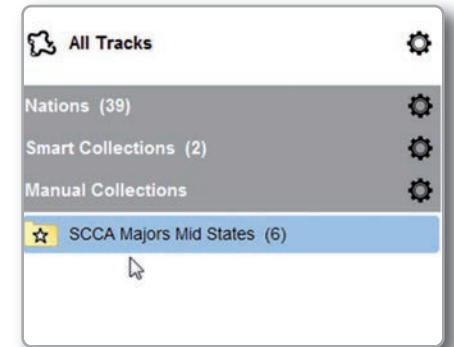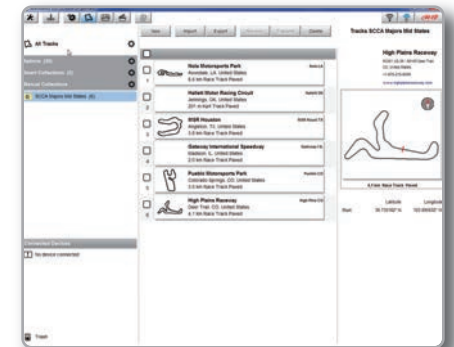

3) Manual collections
To create a Manual Collection of tracks click on the setting Icon, fill in the Collection name and click OK.

The new collection appears in the "Manual Collections" list.
Drag and drop the tracks you want to insert in the collection from the central panel.
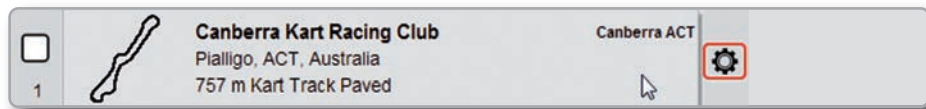

Click on the Manual list name and the tracks you included appear in the central panel.

12.3 How to Modify track data in the PC database

Click the setting icon that appears right of the track label mousing over it.
Select **"Edit"** to modify all track information.

12.4 How to delete a track from the PC database

The tracks you find in the software by default and provided by AiM cannot be deleted.
To delete a track you imported just select it and press **"Delete"** on the software top central keyboard.
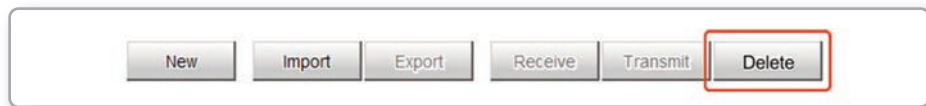
**12.5 How to transmit track information to EVO5**

To transmit track information to your system select the tracks you want to load and click **"Transmit"** on the software keyboard.
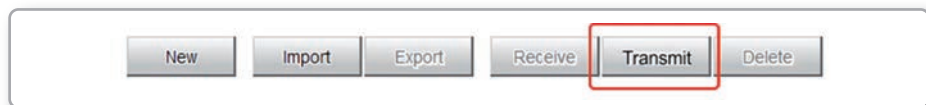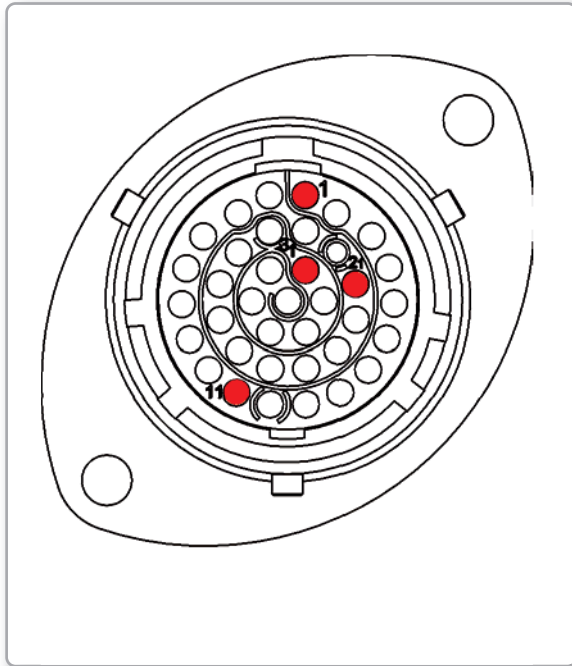

13. Expansions

Using our built in CAN bus you can add expansion modules like GPS, channel expansions, lambda controllers. These are only some of the items that can be added to our system range for incrementing the performance and the data acquired.
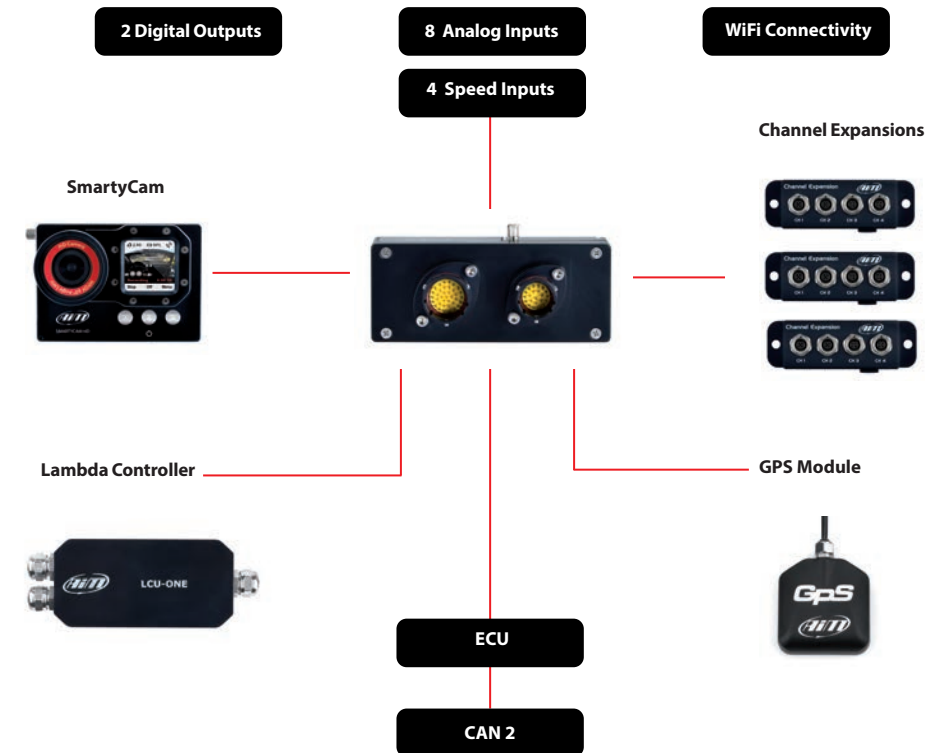
14. EVO5 Pinout

PIN	Deutsch 37pin
01	9-15V Power Input
02	Battery GND
03	CAN+ Exp
04	GND
05	+Vbattery CAN
06	CAN- Exp
07	+Vbext
08	CAN1+ ECU
09	CAN1- ECU
10	GND
11	K Line ECU
12	USB D+
13	USB D-
14	GND
15	RPM
16	GND
17	+Vbattery
18	Optical lap
19	Speed1
20	GND
21	+Vbattery
22	Analog Input 1
23	Analog GND
24	+Vbattery
25	+Vreference
26	Analog Input 2
27	Analog GND
28	+Vbattery
29	+Vreference
30	Analog Input 3
31	Analog GND
32	+Vbattery
33	+Vreference
34	Analog Input4
35	Analog GND
36	+Vbattery
37	+Vreference
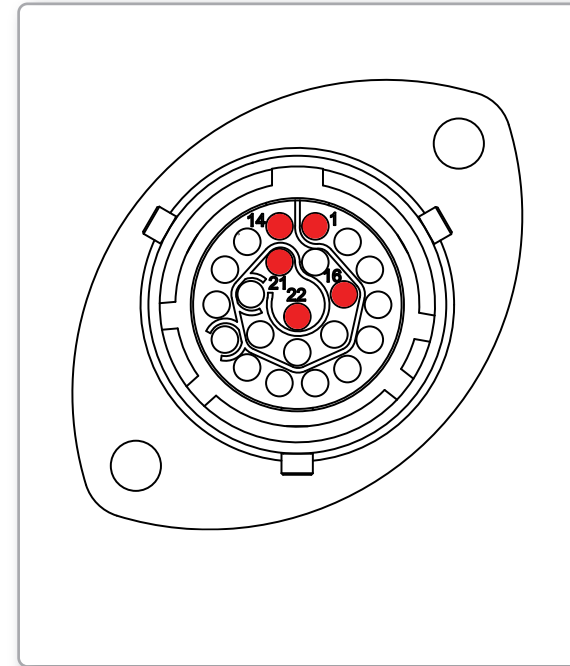
PIN	Deutsch 22pin
01	Analog Input 5
02	Analog GND
03	+Vbattery
04	+Vreference
05	Analog Input 6
06	Analog Input 7
07	Analog GND
08	+Vbattery
09	+Vreference
10	Analog Input 8
11	Speed2
12	GND
13	+Vbattery
14	Speed 3
15	Speed4
16	GND
17	CAN2+ ECU
18	CAN2- ECU
19	Digital output 1
20	Digital output 2
21	RS232TX ECU
22	RS232RX ECU

Motorsport Connectors

Deutsch 37pin   Deutsch 22pin

SD Card
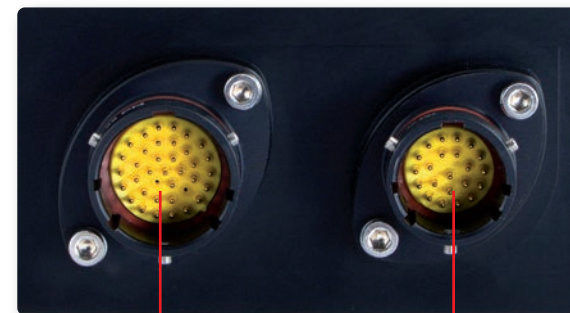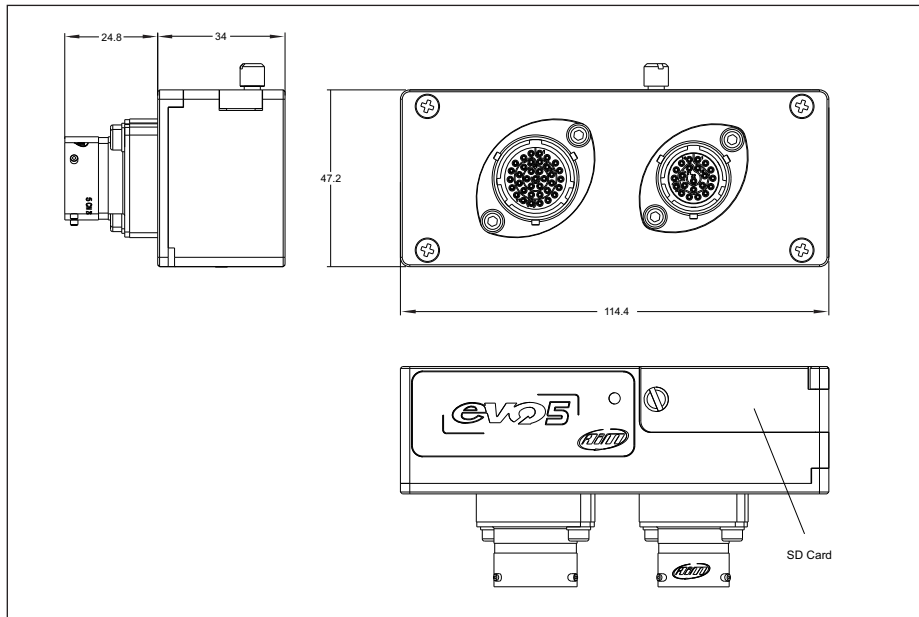
- ECU connection	CAN, RS232, K-Line
- Second CAN	YES
- External modules connection	YES: GPS Module, Channel Expansion, Lambda controller, SmartyCam HD
- Analog inputs	8 fully configurable: 0-5V, 0-12V, K thermocouples Max frequency 1 KHz each
- Digital inputs	Coil, RPM and 4 speed inputs
- Inertial platform	Internal 3 axis +-5G accelerometer + 3 axis gyro
- WiFi connection	YES
- Internal memory	4 gigabytes
- SD card	Internal: up to 32 gigabytes - not included
- Digital outputs	2, up to 1 Amp each
- Body	Anodized aluminum
- Dimension	114,4X47,2X58,8mm
- Weight	300g
- Waterproof	IP65

Our web site **aimshop.com** is constantly updated.

Please check it frequently and download the latest versions of the firmware of your products.