



EVO5 Logger

USER GUIDE



AiM TECH Srl.
Via Cavalcanti, 8
20063 Cernusco S/N (MI)
Italia
Tel. (+39) 02.9290571

www.aim-sportline.com

Made in Italy



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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.aim-sportline.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 RaceStudio3 can read. Nevertheless, the last releases of RaceStudio2 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. Download procedure can be easily performed via WiFi or placing the SD card in your PC.

What about RaceStudio3? What are the differences between the old DRK format and new XRK?

RaceStudio3 is the new software for managing configuration, data download and data analysis for all the future AiM systems.

It is going to substitute RaceStudio2, which has accompanied us for almost 15 years.

Based on a totally new and much more flexible architecture, it is a work in progress; some features still have to be developed, so they are actually shared with RaceStudio2.

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



2. What is in the kit

The EVO5 kit includes:

EVO5 logger with SD card



Harness



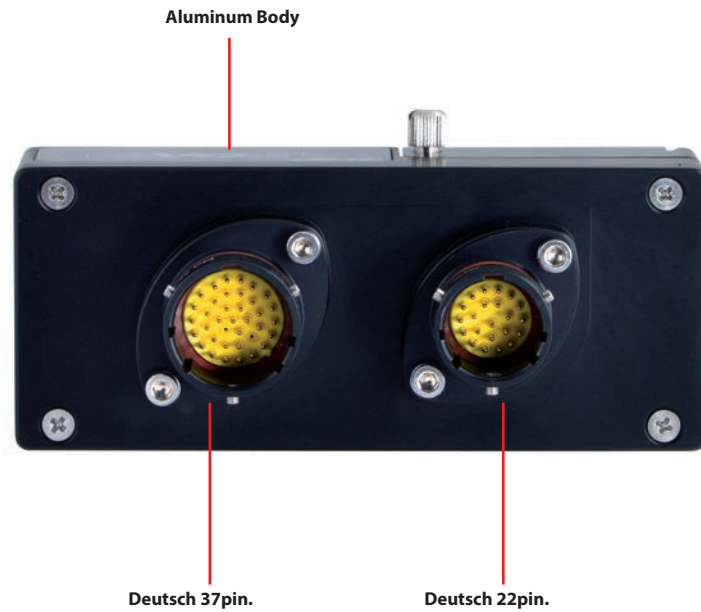
GPS module



Software



EVO5 Logger



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

Doing firmup
 Logger in error
 Recording
 WiFi connected
 WiFi available (but not connected)
 Idle status
 (WiFi off+EVO5 not recording)

LED COLOUR

Blue
 Red
 Cyan
 Yellow
 White
 Green

BLINKING

Quickly
 Slowly
 Still
 Still
 Still
 Still



5. ECU connection and CAN resistors

EVO5 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, ecus connections.

This list includes approximately 500 different protocols and is constantly updated with new protocols and upgrades published every week.

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, EVO5 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

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

3. Using RaceStudio3, 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 EVO5 with RS3 configuration software.

The steps are explained in section 11.1.

6. RPM

EVO5 can receive the RPM signal from three different sources:

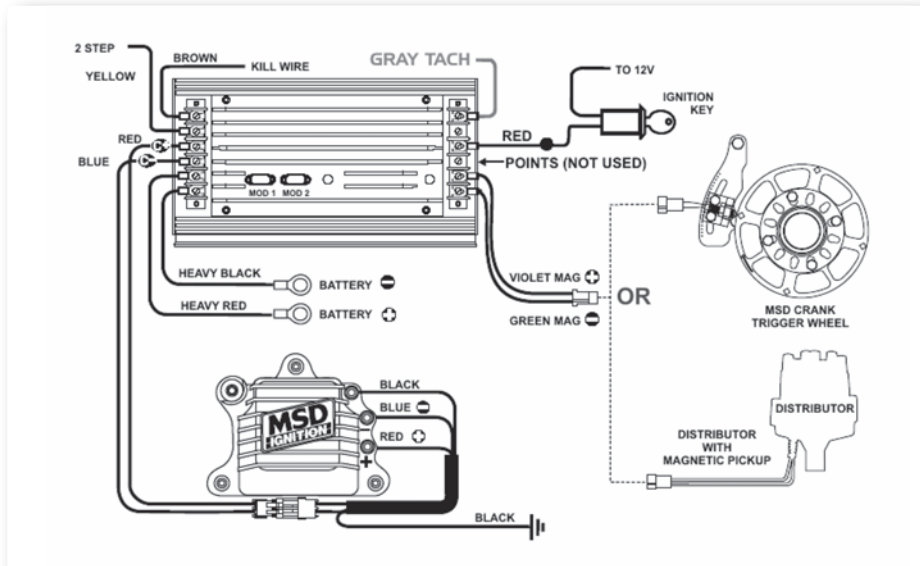
- From ECU
- Through a square wave signal (8 to 50 V)
- From the low voltage (from 150 to 400 V) of the coil

6.1 RPM from ECU

To get RPM from the ECU please configure your EVO5 and enable RPM channel as explained in section 11.1. RPM is one of the many data flowing from your ECU to EVO5

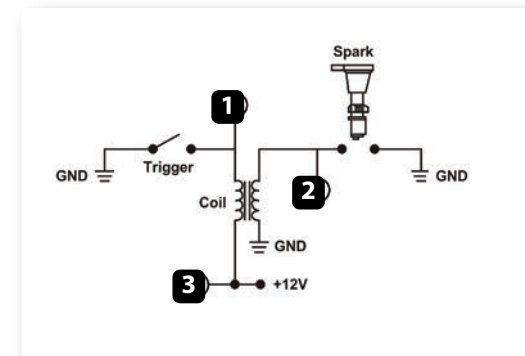
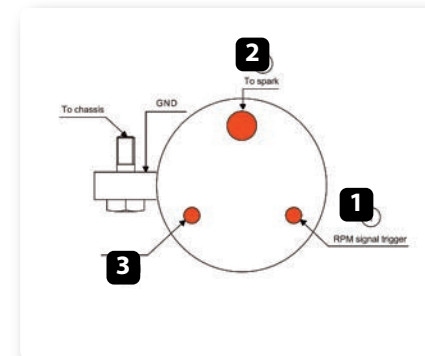
6.2 RPM via a 5-50 V Square Wave Signal or coil (150-400 V)

In case your engine is not managed by any ECU, EVO5 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 "GREY 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 connected 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 RaceStudio3 for enabling the RPM channel, as explained in section 11.1.2

7. Speed

EVO5 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 for EVO5 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 RaceStudio3 software, as explained in section 10.1.

7.2 Speed read from the GPS receiver

The GPS receiver you find in EVO5 kit is configured in order to obtain the best performance in terms of reactivity and accuracy.

For getting GPS speed, you don't need any configuration. Simply connect the GPS08 Module to your EVO5 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.



Please use the software RaceStudio3 for configuring the system.

Just enter the program configuration panel and, after enabling the desired speed channels, set the wheel circumference and the number of pulses per revolution

Id	<input checked="" type="checkbox"/>	Name	Function
RPM	<input checked="" type="checkbox"/>	RPM	<i>RPM</i>
Spd001	<input checked="" type="checkbox"/>	Speed001	<i>Vehicle Spd</i>
Spd002	<input checked="" type="checkbox"/>	Speed002	<i>Vehicle Spd</i>
Spd003	<input checked="" type="checkbox"/>	Speed003	<i>Vehicle Spd</i>
Spd004	<input checked="" type="checkbox"/>	Speed004	<i>Vehicle Spd</i>

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 RaceStudio3 as explained in section 10.1:

- 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.

■ Temperature sensors

K thermocouples
Thermo-PT100 resistors
Temperature sensors VDO

■ Pressure sensors

VDO 40-120 °C
VDO 50-150 °C
VDO 60-200 °C
MSI 0-2 bar
MSI 0-5 bar
MSI 0-10 bar
MSI 0-2000 psi

■ Potentiometers

Distance
Zero-based
Zero Central

■ Generic sensors

0-50 mV
0-500
0-5 V

9. Digital Outputs

EVO5 features two digital outputs in the 22 pins connector.

Each of them can give an output of 1 amp at 12 volts.

You can configure them in order to turn them on or off depending on the value of the analog or digital inputs, ECU values, expansion values, GPS information or math channels.

Please refer to section 11.1.4 in order to see how to manage the digital outputs.



RaceStudio3 3.0.1.14

Configurations

All

Save Close Transmit

Channels ECU Stream Shift/Lights and Actions Display

Id	✓	Name	Function	Sensor	Unit	Freq	Parameters
RP1	✓	RPM	RPM	RPM Sensor	rpm	20 Hz	max: 15000 ; factor: 1 ;
Spd1	✓	Speed1	Vehicle Spd	Speed Sensor	km/h 0.1	20 Hz	wheel: 1666 ; pulses: 1 ;
Spd2	✓	Speed2	Vehicle Spd	Speed Sensor	km/h 0.1	20 Hz	wheel: 1666 ; pulses: 1 ;
Spd3	✓	Speed3	Vehicle Spd	Speed Sensor	km/h 0.1	20 Hz	wheel: 1666 ; pulses: 1 ;
Spd4	✓	Speed4	Vehicle Spd	Speed Sensor	km/h 0.1	20 Hz	wheel: 1666 ; 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	
AccX	✓	AccelerometerX	Inline Accel	AIM Internal Accelerometer	g 0.01	20 Hz	
AccY	✓	AccelerometerY	Lateral Accel	AIM Internal Accelerometer	g 0.01	20 Hz	

10. WiFi Configuration

WiFi connectivity is set on AUTO by default in your EVO5. This means that if the vehicle is stopped WiFi is on and goes OFF as the vehicle's speed increases. Your EVO5 can be configured for WiFi communication in one of two ways:

1) As an Access Point (AP)

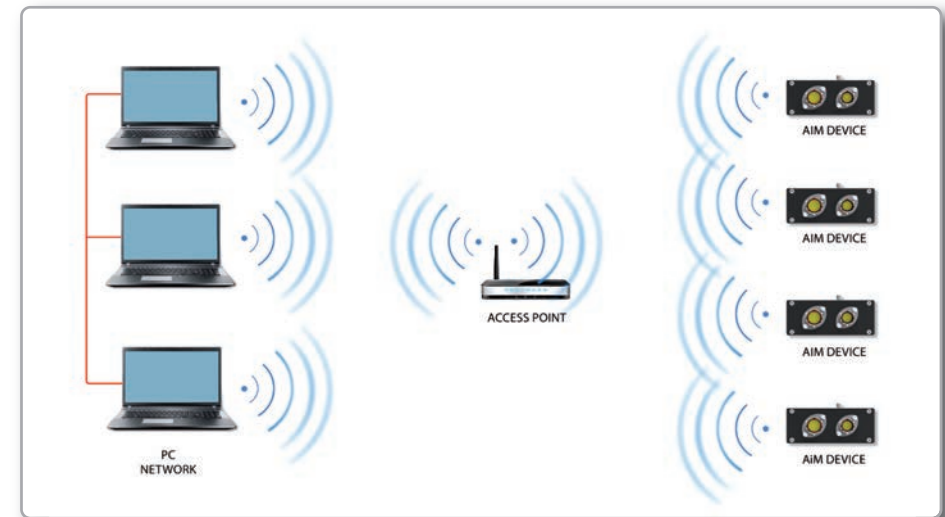


This is ideal when you have one device and one computer. In this configuration, your AiM device creates its own WiFi network, which acts as an AP to which you can connect with your PC.

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 device and with more than one PC on the same network.

In this configuration, both your EVO5 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 device's connectivity.



When a EVO5 is working 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 the AiM devices for which it has the password.

10.1 Configuring Your EVO5 as an AP

Follow these steps to create an AP, allowing you to connect your PC to your EVO5 via WiFi.

This is the most simple and direct WiFi connection method and is ideal when you wish to communicate with only one EVO5 using one PC.

By default your EVO5 is configured as an Access Point and creates a network, without a password, completely accessible to everyone.

So, for establishing the WiFi connection:

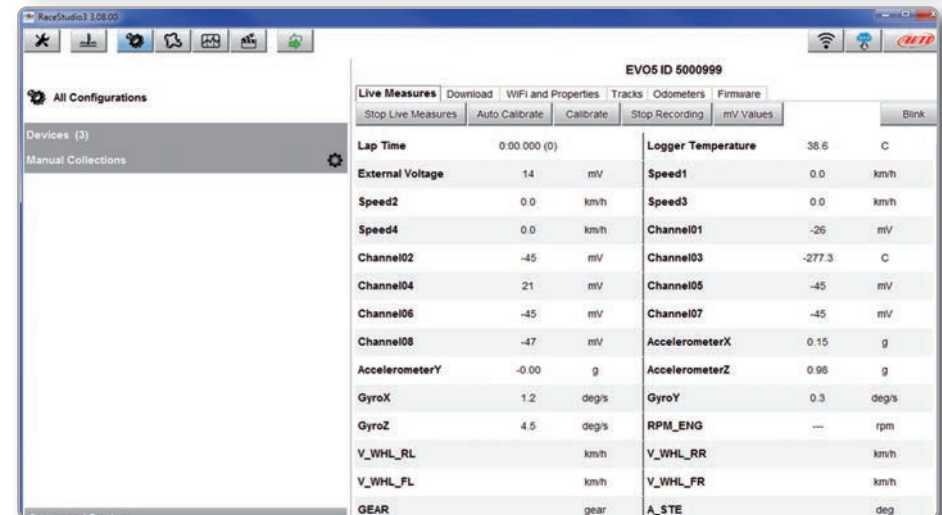
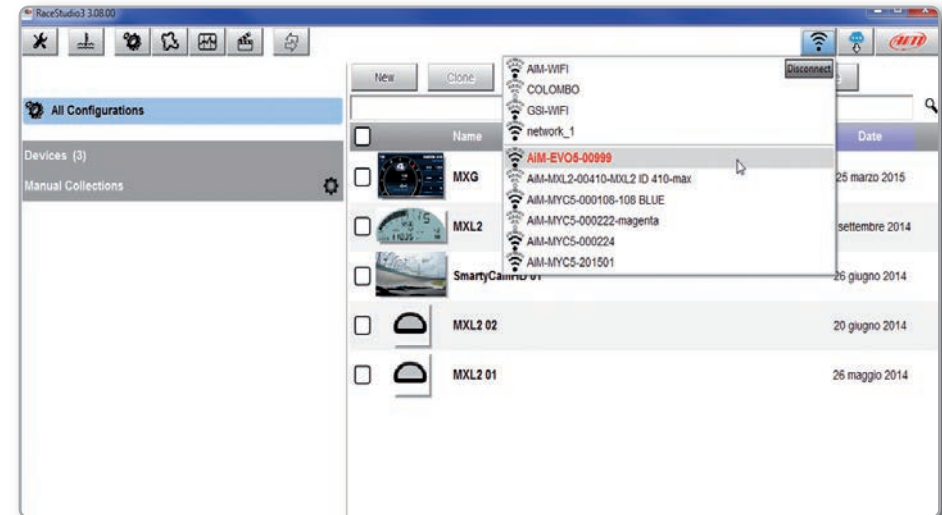
■ Be sure your EVO5 has the WiFi enabled

■ Read the name of your EVO5, available in the lower part of the OnLine page

■ Click on the WiFi Icon of RaceStudio3 and select your EVO5



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 name is:

"AiM-EVO5-054321"

Whereas:

- "AiM" is the prefix for all AiM devices
- "EVO5" is type of system identifier
- "054321" is a unique serial number for your device assigned at the factory.

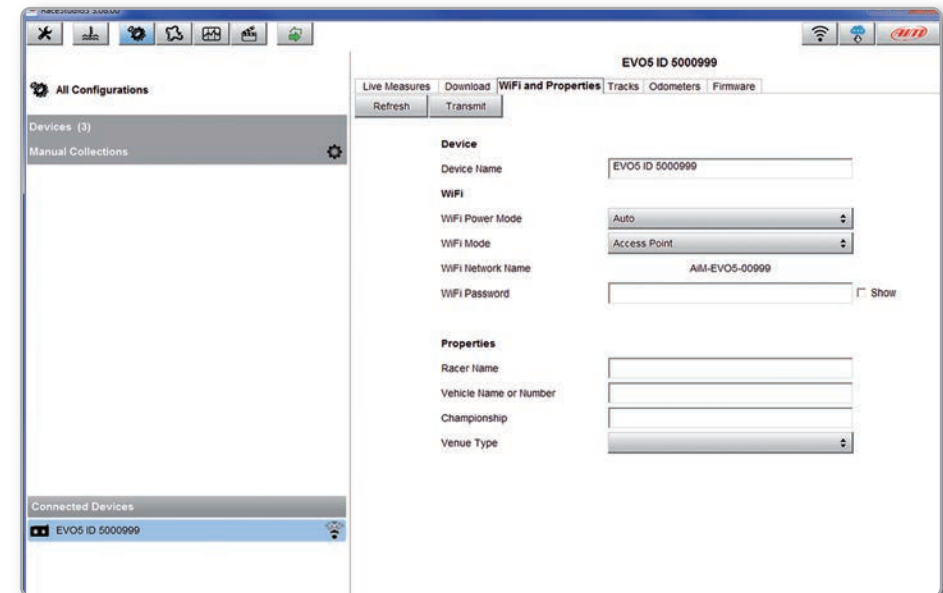
To make your device more recognizable, you can append a friendly name to the SSID. There is a limit of eight characters.

For example, if you add the driver's name, Tom Wolf, the resulting network name (SSID) will be:

AiM-EVO5-054321-Tom Wolf

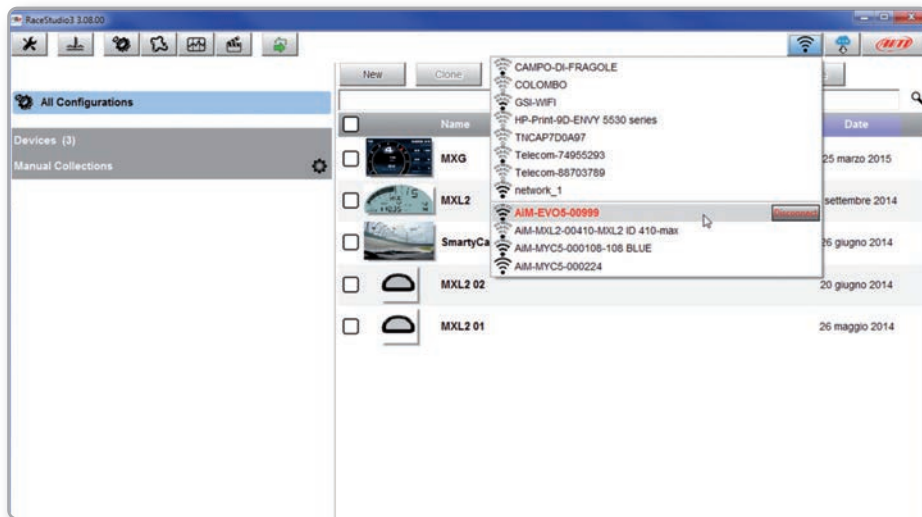
After having set all the parameters, click the Transmit and Restart button. Your EVO5 will restart and be configured with the new parameters. To connect to your EVO5, simply choose your device's name from the dropdown list of available WiFi connections from within Race Studio 3.

If your EVO5 is protected by a password, as recommended, RaceStudio3 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.

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



10.2 Joining Your EVO5 to an Existing Network

In this scenario, both your EVO5 and PC join an existing WiFi network (WLAN).

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

Note again that each EVO5 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 any and all EVO5 devices connected to the same network and the PC. 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.

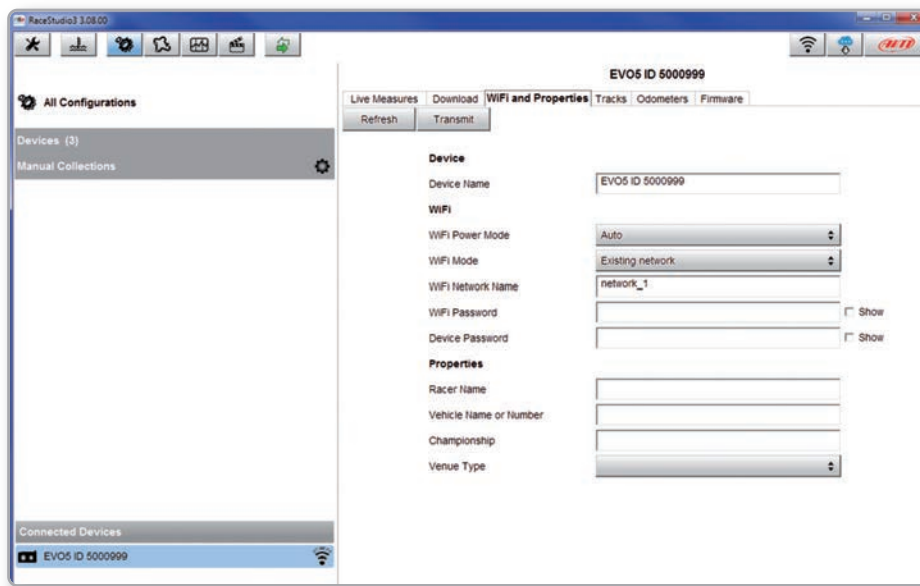
To commit the network settings to your device, click the Transmit and Restart button on this same tab. Your device will restart and join the network you specified.

Connect your PC to the same network, and you will see your device under Connected Devices, just as when 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, which was already described, and the network password.

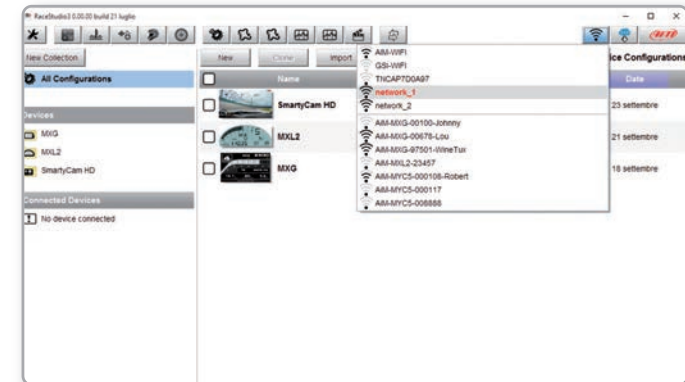
Please note that only passwords following the WPA2-PSK code are admitted.

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

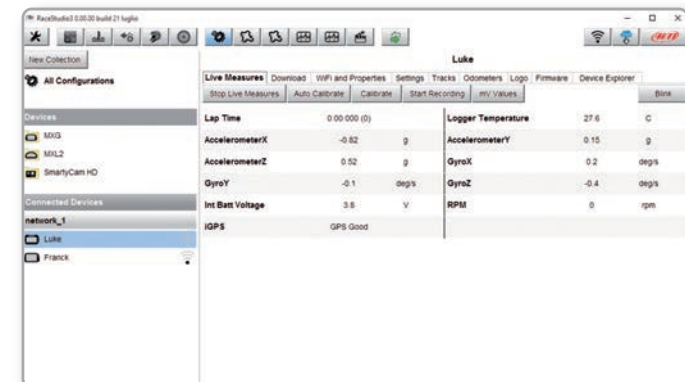


As you can see by the picture above, one device called "EVO5 ID 5000999" is switched from AP mode to WLAN mode. The network name is "network_2," and it is not working in open authentication mode since it is protected by a network password

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_2," 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.

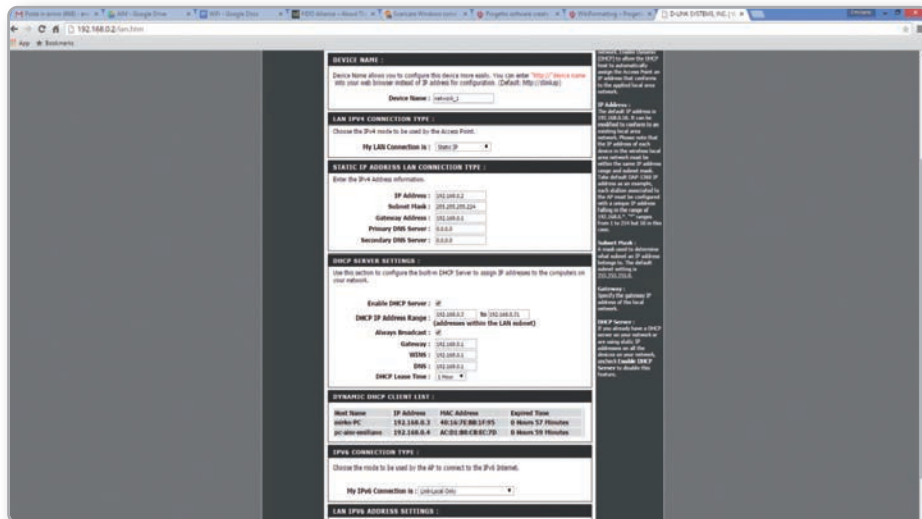
10.3 High-Performance WLAN Setup

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

This guide 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 in Figure 10.



As you can see by the picture, the network device configuration parameters are the following:

■ Wireless network name: network_1

(It states that 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 devices 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 RaceStudio3 to identify devices on the network.

10.4 About Internet Connectivity

For optimal network speed for your AiM device(s), we have recommended not allowing an internet connection on the same network and have provided 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 by means of additional hardware (NIC).

Such a configuration would provide optimal data network speed for your AiM device(s) and simultaneously provide internet access via the second NIC.

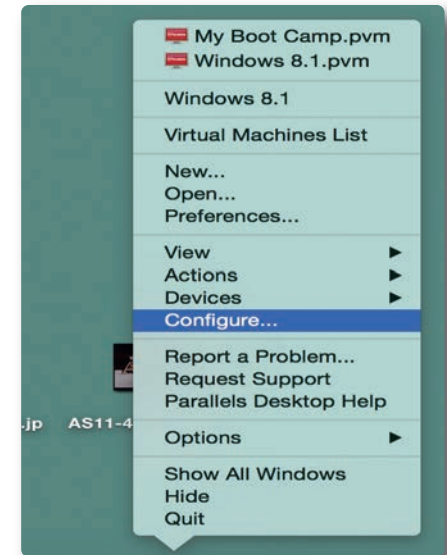
10.5 Working with Mac(™) OS and Virtualized Windows (™)

Race Studio software runs exclusively on Windows operating systems, but also if the OS is virtualized on an Apple iMac OS.

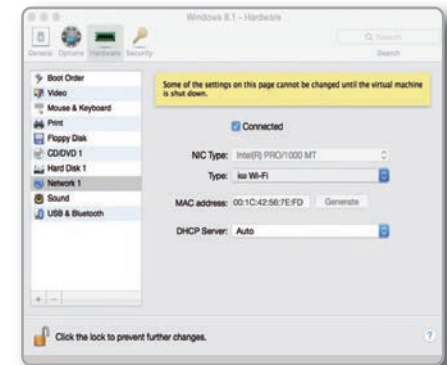
The main issue in this case is that the host OS (Mac) shares the WiFi interface with the virtualized OS (Windows) not as a WiFi interface but as an Ethernet interface.

Configuring Parallels(™)

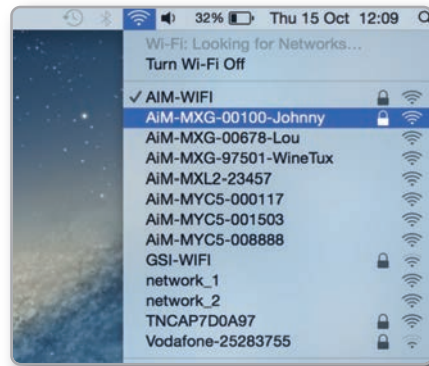
Choose the “Configure...” menu from the Parallels icon.



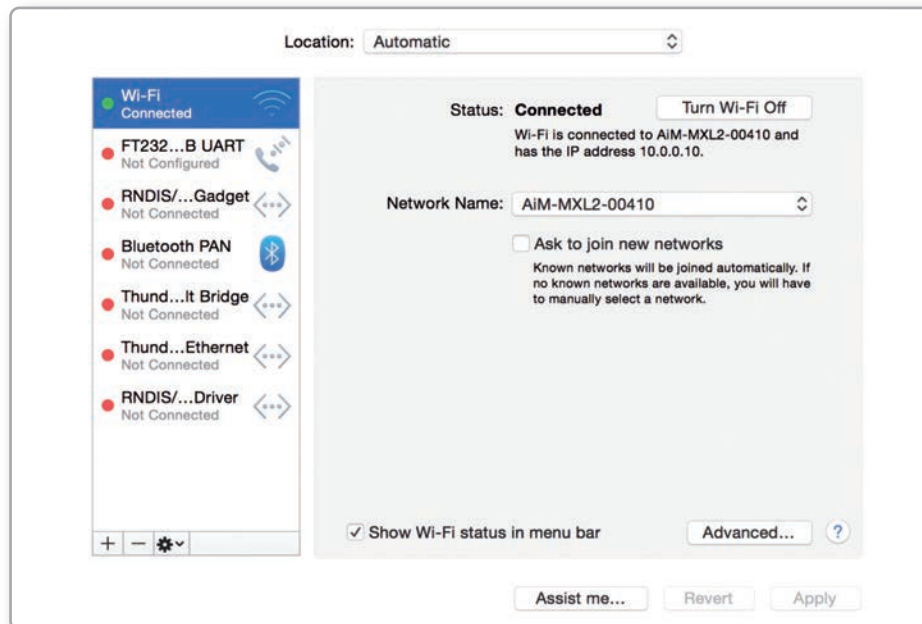
In the window you're prompted, choose the Hardware button at the top then the Network line at the left. In the right configuration part, be sure to choose Wi-Fi in the Type field. Then, choose the device you want to communicate with.



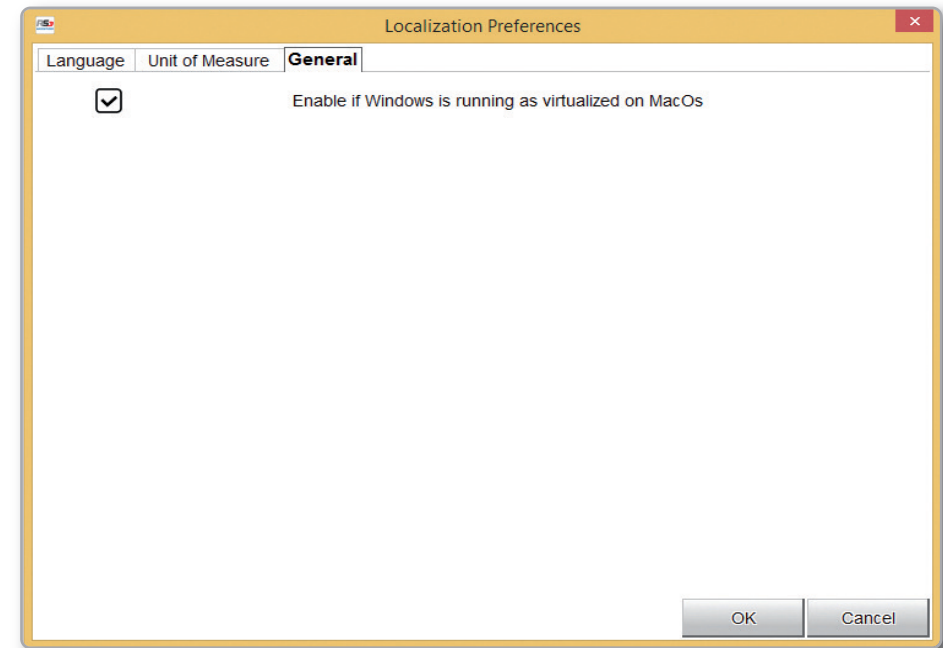
If you want to be sure the communication is working, choose the “Open Network Preferences...” menu.



In the window, you're prompted to 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.



11. RaceStudio3 Software

RaceStudio3 is the powerful software that you are going to use for all the activities regarding your EVO5.

It is provided on a CD included in EVO5 kit or can be downloaded from Download area of www.AiM-Sportline.com. It offers the following features:

EVO5 configuration:

Create, modify, delete, export and import configurations with all Channels, ECU drivers, Math channels, Digital outputs and all the expansions.

When you start RaceStudio3 with your EVO5 connected and switched on, you can see a row of seven pushbuttons top left of the screen that give you different options:



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

Preferences

For setting software language, measure units (pressures, speed, temperature, brake and oil pressure) and fixing download settings.

Configurations

Creates, imports, exports and modifies existing configurations.

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



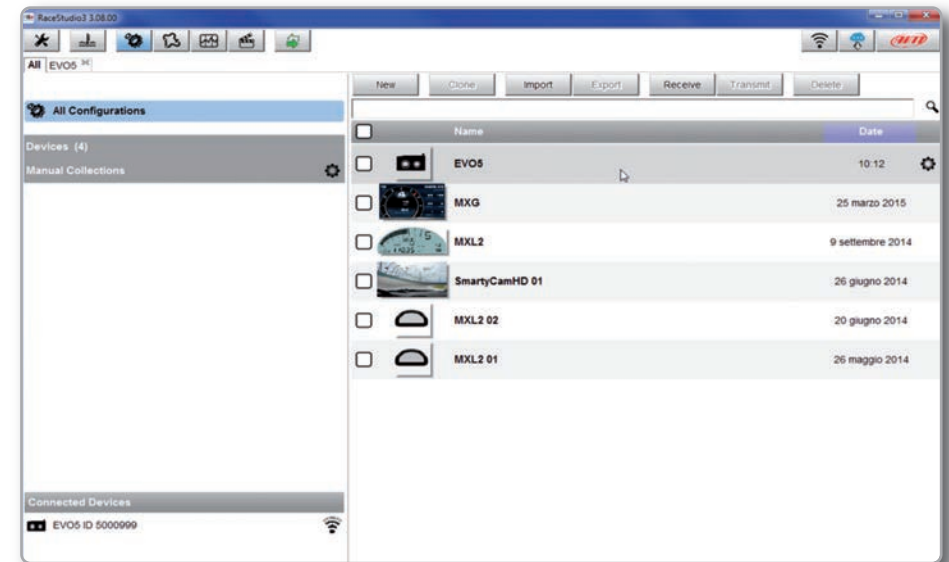
They can be used to:

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 into 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 [+] pushbutton in order to create a new one.

When you connect an AiM logger, like your EVO5, 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 EVO5 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
- Digital outputs
- Display
- SmartyCam Stream
- CAN Expansions

11.1.1 Channels Configuration

Push the tab Channels:

The channel configuration page will appear.

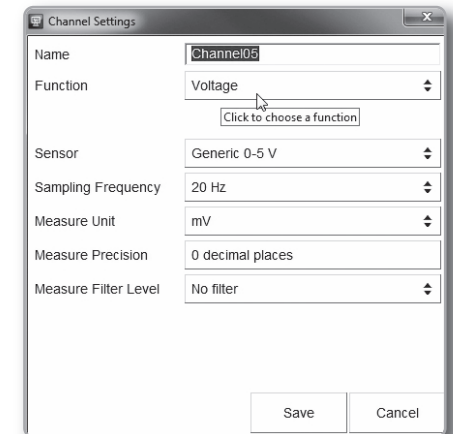
Channels | ECU Stream | CAN2 Stream | Math Channels

With this page you can define all the parameters for your analog inputs, speed inputs and digital RPM input.

Id	<input checked="" type="checkbox"/>	Name	Function	Freq	Parameters
RPM	<input checked="" type="checkbox"/>	RPM	RPM	20 Hz	
Spd001	<input checked="" type="checkbox"/>	Speed001	Vehicle Spd	20 Hz	
Spd002	<input checked="" type="checkbox"/>	Speed002	Vehicle Spd	20 Hz	
Spd003	<input checked="" type="checkbox"/>	Speed003	Vehicle Spd	20 Hz	
Spd004	<input checked="" type="checkbox"/>	Speed004	Vehicle Spd	20 Hz	
Ch001	<input checked="" type="checkbox"/>	Channel001	Pct	20 Hz	
Ch002	<input checked="" type="checkbox"/>	Channel002	Pct	20 Hz	
Ch003	<input checked="" type="checkbox"/>	Channel003	Pct	20 Hz	
Ch004	<input checked="" type="checkbox"/>	Channel004	Pct	20 Hz	
Ch005	<input checked="" type="checkbox"/>	Channel005	Pct	20 Hz	
Ch006	<input checked="" type="checkbox"/>	Channel006	Pct	20 Hz	
Ch007	<input checked="" type="checkbox"/>	Channel007	Pct	20 Hz	

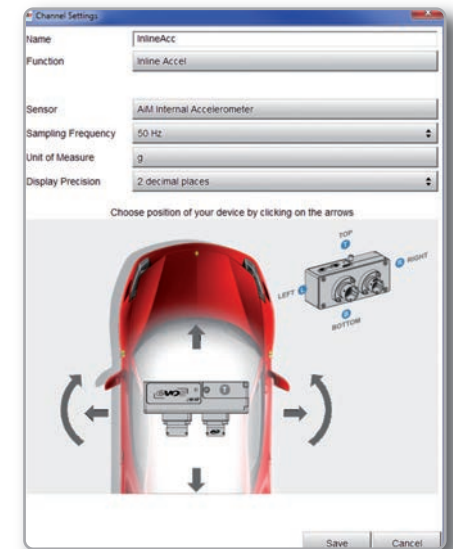
By clicking on each line, a menu appears:
You can define:

- The name of the channel
- The function
- The sensor connected
- The sampling frequency
- The measure unit



To set EVO5 three-axial accelerometers:

- Click on the cell "Accelerometer" in sensor column
- The panel appears allowing you to set the accelerometers



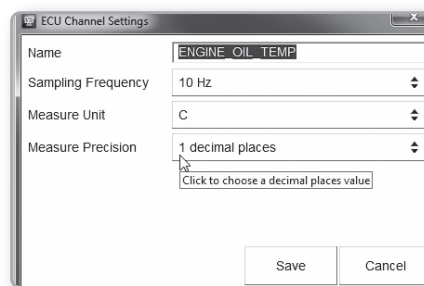
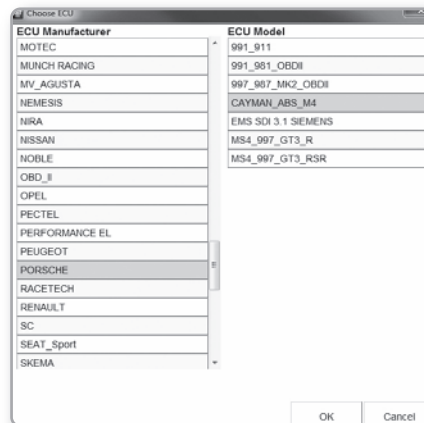
11.1.2 ECU Stream and CAN resistor configuration

Push the tab "ECU Stream".
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
- Measure unit
- Measure precision



CAN resistor configuration

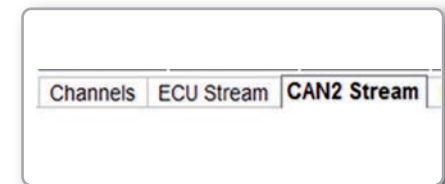
A CAN line ending 120 Ohm resistor can be enabled/disabled through this checkbox.

11.1.3 CAN2 Stream

Push the tab "CAN2 Stream".

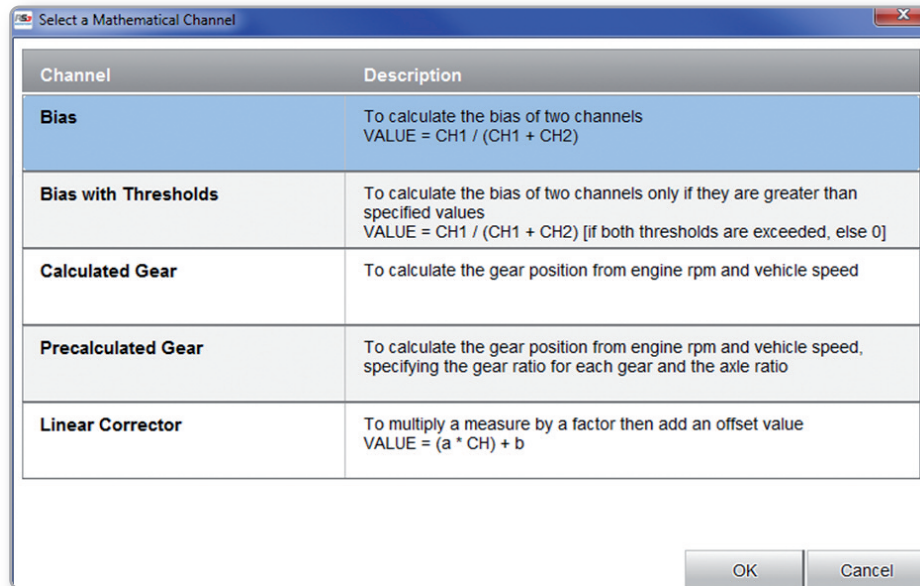
Here you can set the CAN driver of electronic devices other than ECU as well as enable/disable the data coming from that device and enable/disable the ending CAN2 resistor.

This second CAN stream works exactly like the first one.

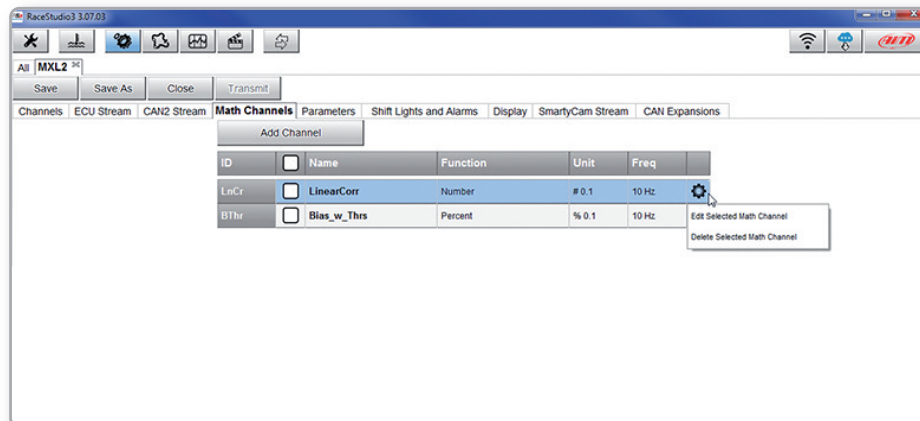


11.1.4 Math Channels

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.

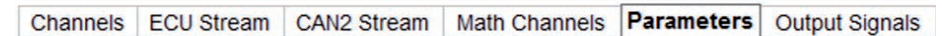


To modify/delete a math channel click the corresponding icon and select the desired option.



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.

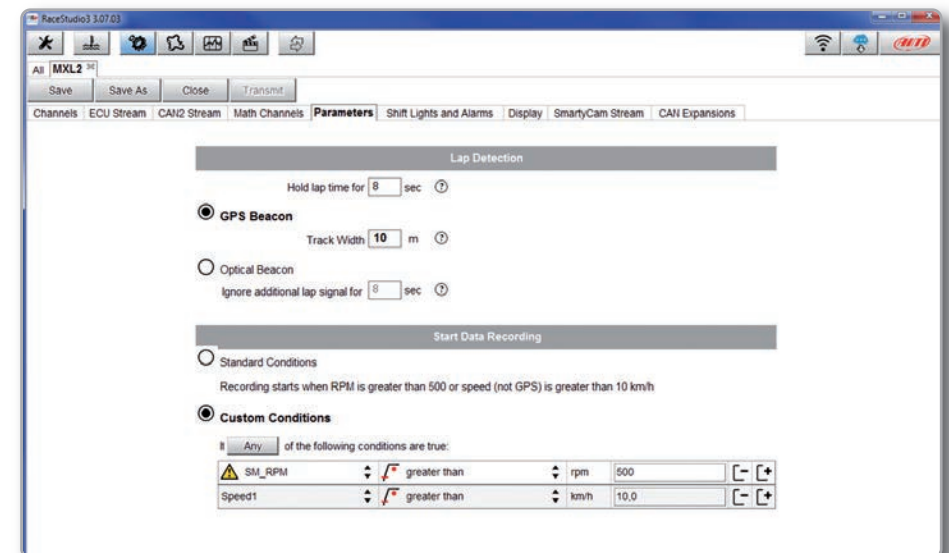


1) Lap Detection

Once you have decided for how many second you want your lap time to be shown - Hold lap time for - 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 signal

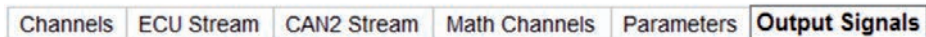
2) Start Data Raecording

By default EVO5 starts recording when RPM value is greater than 500 or GPS speed is greater than 10 km/h. Using Custom condition option you can define one or more custom conditions and decide that your EVO5 start recording when one or all set conditions occurs.



11.1.6 Output Signals

Push the tab "Output Signals" for managing EVO5 digital outputs.

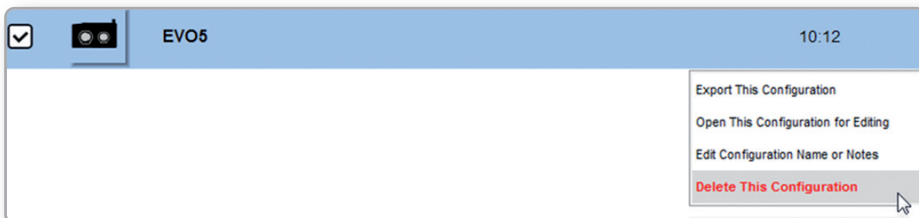


11.2 Modify or Delete an Existing configuration

Push "All" tab top left of RaceStudio3 page; just under the seven 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.

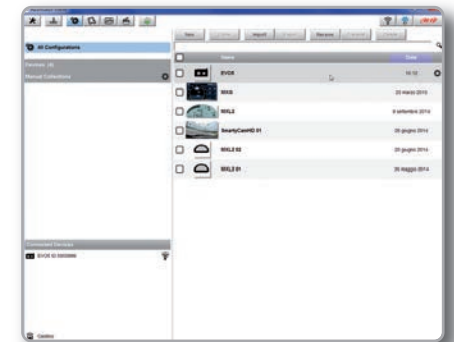


11.3 Connect Your EVO5 to a PC

When you connect your EVO5 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 execute the following functions:

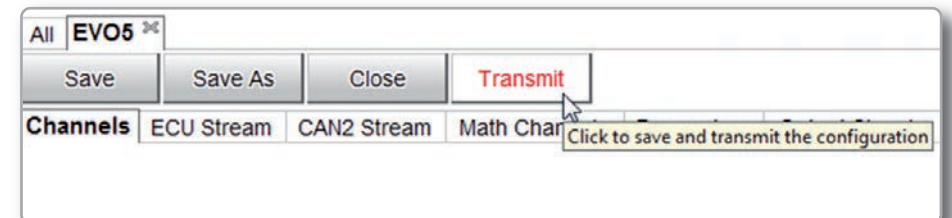
- Transmit the configuration
- On Line view
- Calibration
- Data download



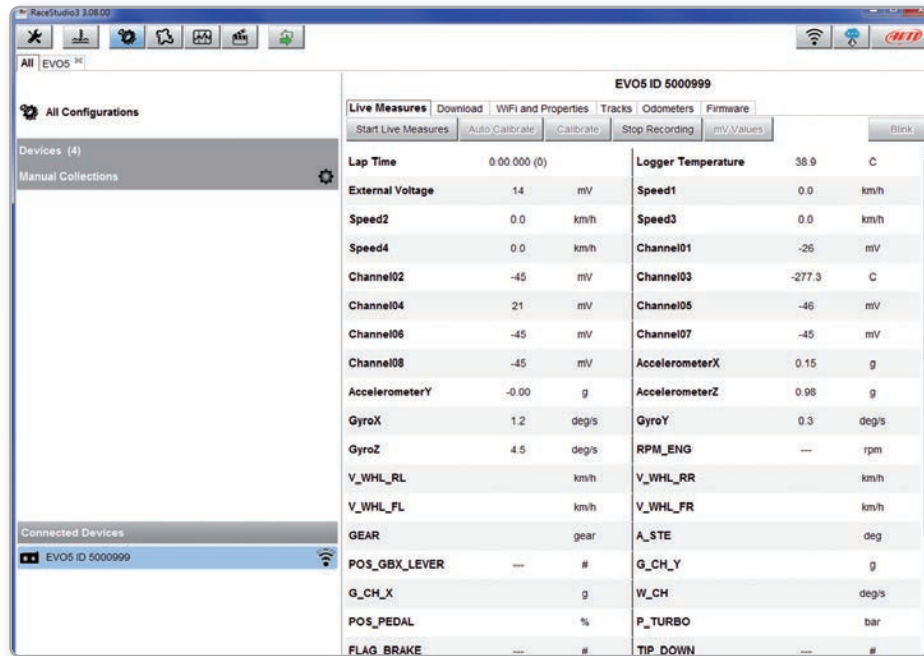
This is explained in the next paragraphs.

11.3.1 Configuration Transmission

When you connect an EVO5 to your PC, the "TRANSMIT" pushbutton appears at the top of the configuration page. Push it and the configuration will be transmitted.



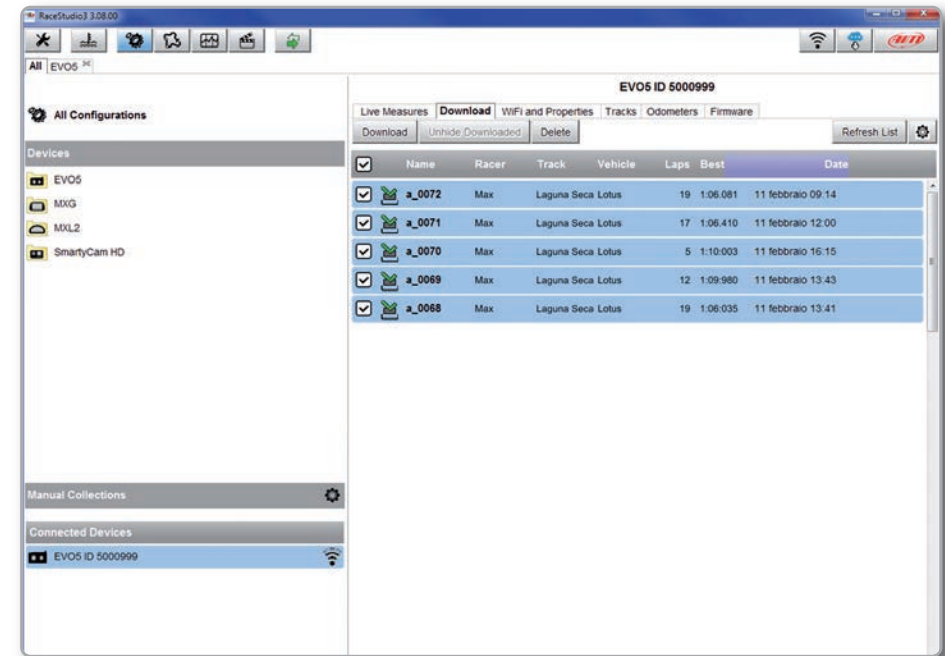
11.3.2 On Line View and Calibration



Once EVO5 connected, click on it to enter On Line view.

Push "LIVE MEASURE" for looking at the data coming from your EVO5. You can change the measure unit double-clicking on the measure. From the Online View, you can calibrate the channels requiring calibration.

11.3.3. Data Download



Storing data both in its memory and on the SD card, EVO5 can download them via USB, via WiFi or placing the SD card in the PC.

EVO5 SD card is immediately recognized by RaceStudio3 as containing stored data.

To download data click on your EVO5 name in "Connected devices" panel bottom left of the software main page. The device window appears on the right.

Push "Download" tab for downloading the data recorded in your EVO5.

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

The GPS Module included in the EVO5 kit, provides the following information, updated ten times per second

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

If EVO5 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 the following section

12.1 Tracks Feature

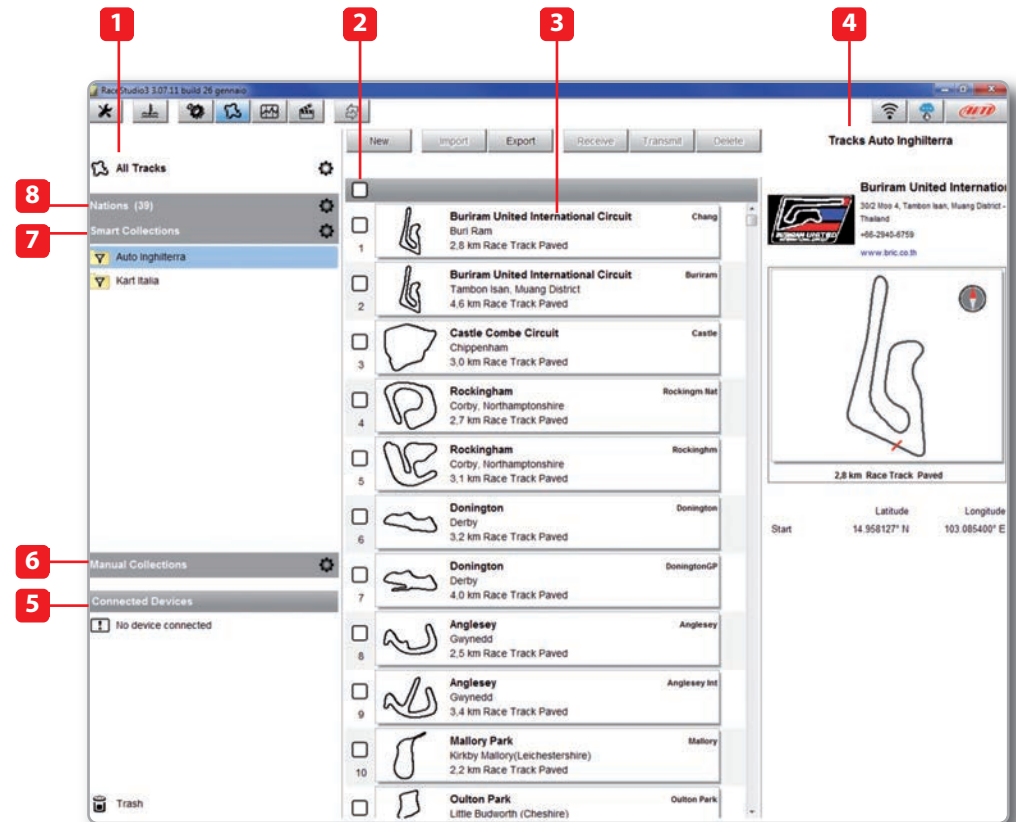
With "Tracks" you can update, modify, transmit and receive to and from EVO5 the coordinates of the start/finish line and split points of all the tracks you are going to run on.

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 track 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

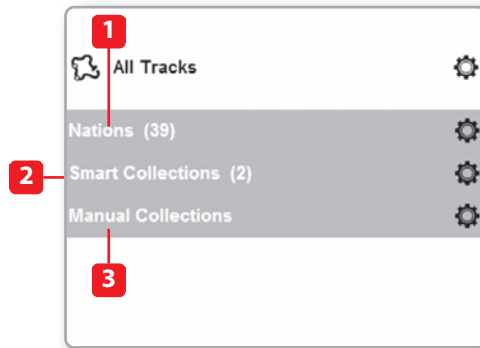


12.2 Tracks Collections

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

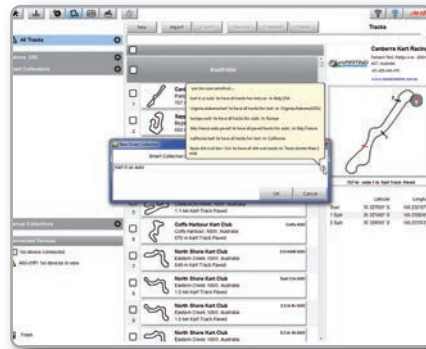
Select a Nation and you will see only the tracks belonging to that Country.



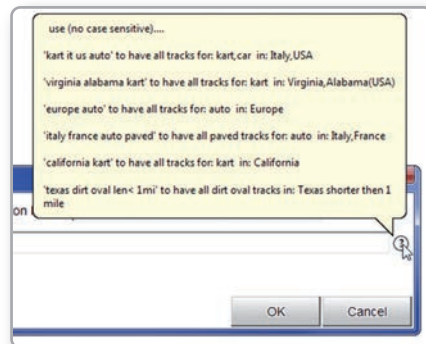
2) Smart collections

To create a Smart Collection of tracks click the setting icon highlighted top left on the software page.

"Selection criteria" panel appears.

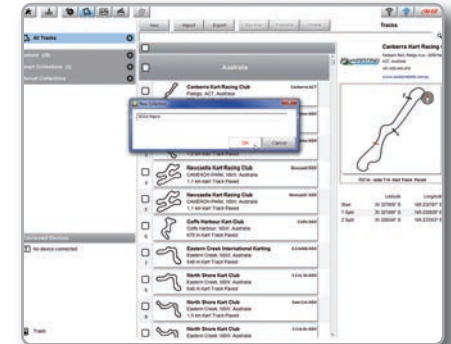


To know how to perform a search click the question mark on the right and some examples show up in a yellow pop up panel as shown here below.



3) Manual collections

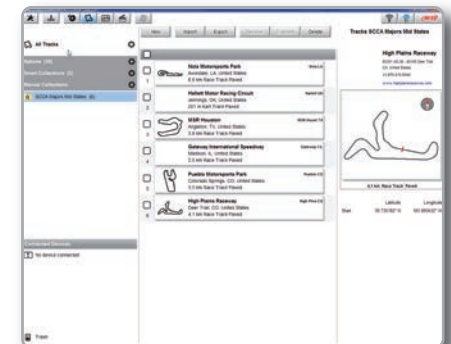
To create a Manual Collection of tracks click on the setting icon, fill in the Collection name and click OK.



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.

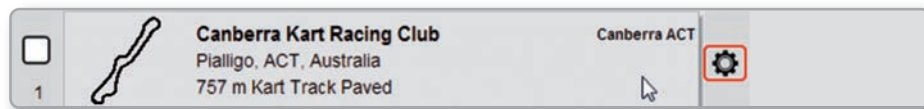


Click on the Manual list name and the tracks you included appear in the central panel.



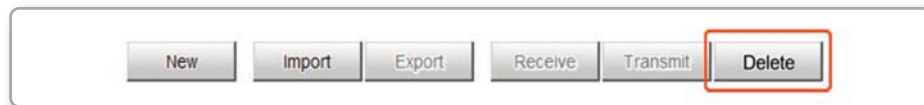
12.3 How to Modify Track Data in the PC Database

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

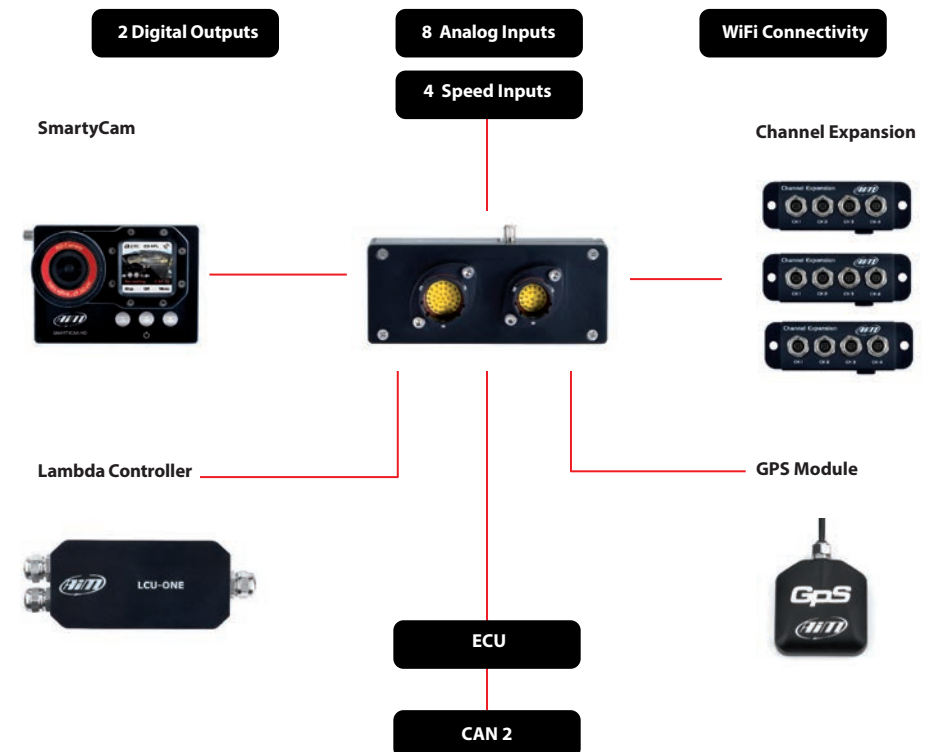
To transmit track information to your EVO5 select the tracks you want to load in your EVO5 and click "Transmit" on the software top central keyboard.



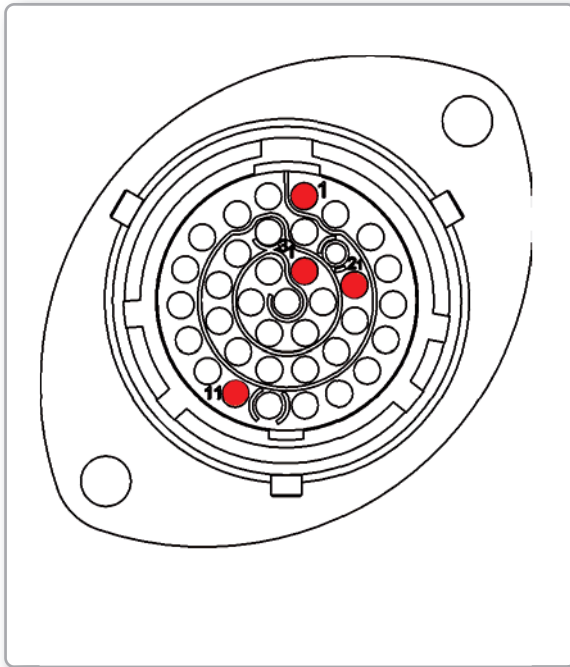
13. Expansions

Using our built in CAN bus, add expansion modules like GPS, channel expansions, lambda controllers. These are only some of the

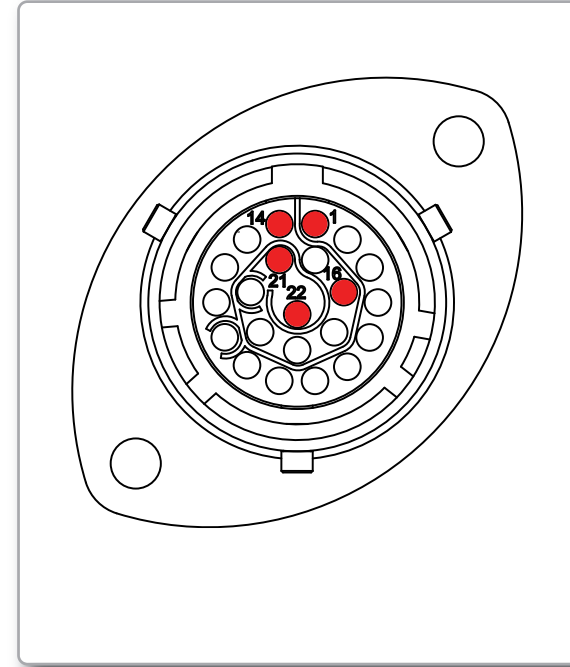
items that can be added to our EVO5 range for incrementing the performance and the data acquired.



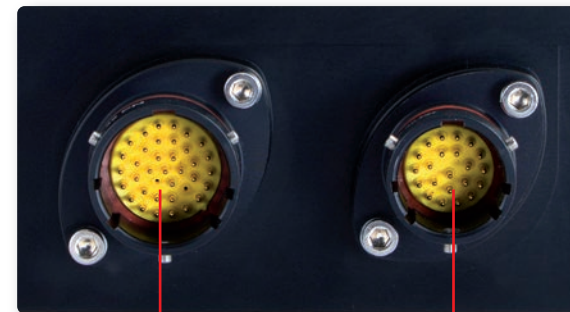
14. EVO5 Pinout



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



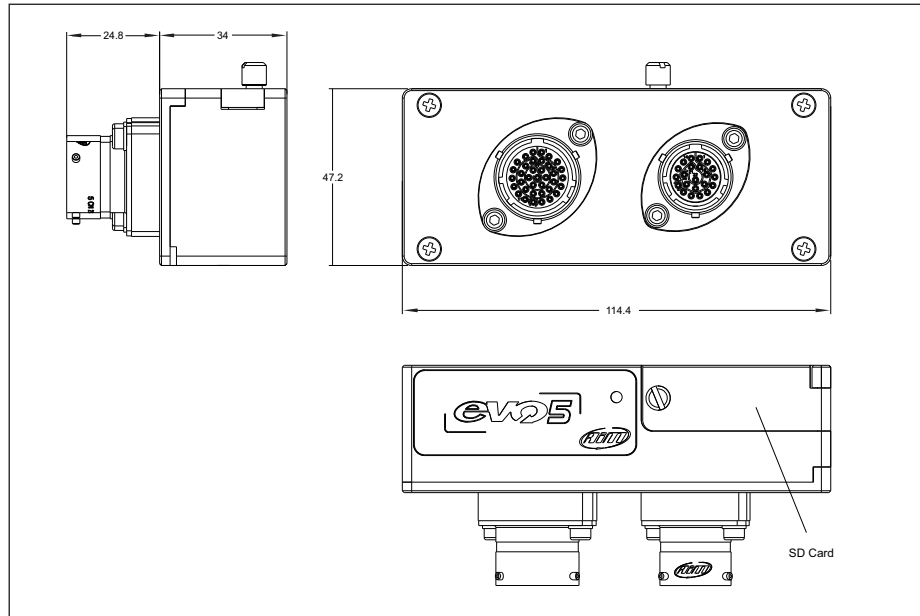
PIN	Deutsch 22pin.
01	Analog Input 5
02	Analog GND
03	+Vbattery
04	+Vreference
05	Analog Input 6
06	Analog Input 7
07	Analog GND
08	+Vbattery
09	+Vreference
10	Analog Input 8
11	Speed2
12	GND
13	+Vbattery
14	Speed 3
15	Speed4
16	GND
17	CAN2+ ECU
18	CAN2- ECU
19	Digital output 1
20	Digital output 2
21	RS232TX ECU
22	RS232RX ECU



Deutsch 37pin.

Deutsch 22pin.

Motorsport Connectors



- 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 freq 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 128 gigabytes
- Digital outputs	2, up to 1 Amp each
- Body	Anodized aluminum
- Dimension	114,4X47,2X58,8mm
- Weight	300g
- Waterproof	IP65



Our web site aim-sportline.com is constantly updated.

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

