evo3 pro evo3 pista

User Manual

Dear EVO3 Pista/Pro Owner,

Your EVO3 belongs to the latest generation of AIM loggers for car / bike racing and provides you with a powerful, compact, reliable and expandable data acquisition system.
Thanks to AIM ECT (Easy Connection Technology), the connection with its wide range of external expansion modules is made in a click.
EVO3 allows you to monitor RPM, speed, gear number, lap (split) times and custom sensors.
We offer EVO3 in two different versions: Pista and Pro, with 8 (Pista)/16 (Pro) Mb of non volatile Flash internal memory. This memory stores data even when the power is off.
EVO3 is supplied with infrared lap transmitter and receiver. Moreover it comes equipped with a powerful bi-axial G-force sensor to create track maps.

Expandable, as we said before, EVO3 can be connected to many optional components using the CAN bus:
GPS module - to compare your data and your on-track position with the trustworthy precision of the GPS technology.
LCU-ONE Lambda Controller – the best solution to keep engine Air/Fuel Ratio under control.
USB DataKey – a smart and fast way to save your data .

All sampled data can also be visualized connecting EVO3 to one of our hi-tech visors (TG Dash - MyChron3 Dash - Formula Steering wheel), keeping everything under control at a glance.
Last but not least EVO3 includes the powerful AIM Race Studio 2 software, that allows you to control and configure your data logger as well as to download and analyze your racing data through the USB port.
Thank you for choosing an AIM product!

Chapter 1 – EVO3 available versions and kits

EVO3 is available in two different versions and kits. Thanks to its wide range of optional it can fit various situations. The tables below show EVO3 Pista and Pro main characteristics, standard kit and available optional.

EVO3 Pista

EVO3 Pro

Technical characteristics

- Memory: 8 Mb
- Analogue channels: 8
- Digital Speed Input: 1
- Connectors: 2 AMP

- Memory: 16 Mb
- Analogue Channels: 12
- Digital Speed Inputs: 4
- Connectors: two (22 pins and 37 pins) Deutsch Professional Autosport

EVO3 Pista

EVO3 Pro

Standard equipment

- EVO3 Pista
- Oil temperature sensor
- Water temperature sensor
- Speed sensor
- RPM sensor
- IR Lap Tx and Rx[1]
- USB cable
- Race Studio 2 software
- CAN/RS232 Cables
- Harness

- EVO3 Pro
- Oil temperature sensor
- Water temperature sensor
- Speed sensor
- RPM Sensor
- IR Lap Tx and Rx[1]
- USB cable
- Race Studio 2 software

Optional

- Split transmitter
- Other sensors
- Visors: TG Dash, MyChron3 Dash, Formula steering wheel
- GPS Module
- LCU-ONE Lambda Controller

- Split transmitter
- Other sensors
- Visors: TG Dash, MyChron3 Dash, Formula steering wheel
- GPS Module
- LCU-ONE Lambda Controller
- 37 pins connector harness
- 22 pins connector harness

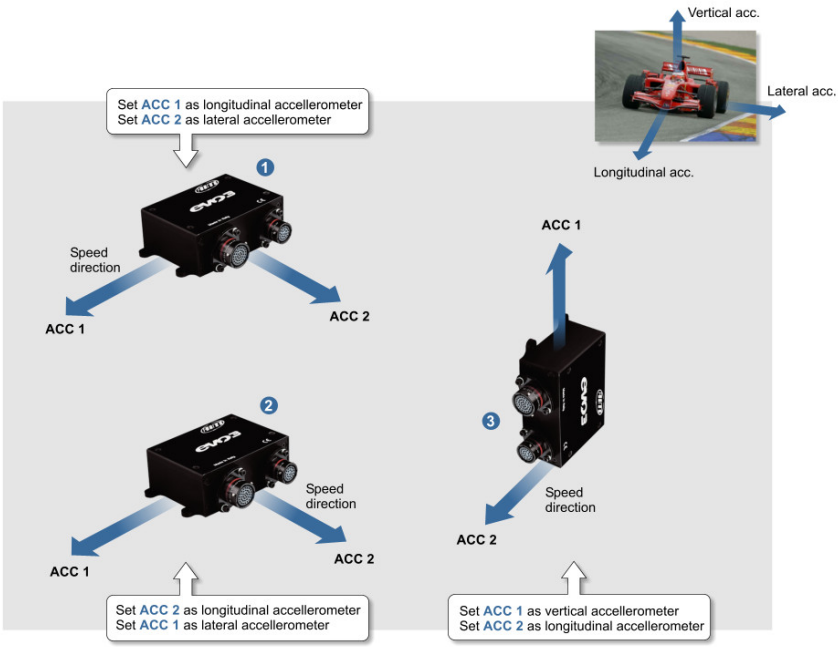
[1] IR Lap Tx and Rx means Infrared lap Transmitter and Receiver

Chapter 2 – EVO3 installation and power

To **install** EVO3 Pista/Pro on your vehicle:

- Choose a safe location where EVO3 won't be in contact with oil or fuel sprinklings;
- Make sure that the logger is not installed too close to heat sources;
- To acquire correct data, please place logger and harnesses far from electromagnetic interference sources like spark plugs and coils;

Your EVO3 is equipped with 1 bi-axial internal accelerometer.
The recommended installation for this accelerometer, to correctly record **in-line** (parallel to the vehicle speed) and **lateral** (perpendicular to the vehicle speed) acceleration, is shown in example 1.
You may also install it differently but in this last case Acc_1 and Acc_2 settings need to be changed during configuration, as detailed in examples 2 and 3.



In case of bike installations you can install an optional external gyroscope that would allow you to create track maps. This sensor can only be installed on:

- CH_4 to CH_8 on **EVO3 Pista**
- CH_8 to CH_11 on **EVO3 Pro**.

This because these channels only provide the 12 Volt power supply the sensor needs.

To **power** EVO3 Pista/Pro:

- Check the power supply voltage: EVO3 needs an external 9/18 VDC power source (the vehicle battery for example). **Please don't exceed these limits**.
- Connect the black GND cable to the negative pole and the red 9/18 VDC cable to the positive one;
- To save your battery charge, please connect your EVO3 to the vehicle's master switch;

Please note: EVO3 has a little green led on the front panel. On EVO3 Pista the led is on the top left corner while on EVO3 Pro is bottom central (see Appendix – Technical - draws for further information). This led has a double function: it lights up when EVO3 is powered and shows you the logger status. This means that led status corresponds to logger status:

- Led blinking 1 Hz (once a second) Logger waiting to record
- Led on (not blinking) Logger recording
- Led blinking 3 Hz (three times a second) Logger status not ok

Chapter 3 – How to sample the RPM

RPM signal may be sampled in many different ways:

- from the ECU: via CAN bus or RS232 line
- from the ECU: on a square wave signal (from 8 to 50V)
- from the coil: low voltage RPM input (from 150 to 400V)
- from the spark plug: converting the RPM waveform sampled from the spark plug into a square waveform

3.1 – Sampling RPM via CAN bus/RS232 line

To sample RPM via CAN bus or RS232 line, please refer to Ch. 4.

3.2 – Sampling RPM from the ECU on a square wave signal (EVO3 Pro only)

To sample RPM signal from the ECU on a square wave signal (from 8 to 50V), please connect pin 12 of 37 pins Deutsch connector (blue cable) to the ECU RPM output (if present).

3.3 – Sampling RPM from the coil: low voltage RPM input

To sample RPM signal from the coil on a low voltage RPM input (150 to 400V), please connect pin 13 (white cable) of 37 pins Deutsch connector to the ECU coil output.

3.4 – Sampling RPM from the spark plug

To sample RPM signal from the spark plug you need an AIM ARP-05 custom adapter (part number X10ADRPM000 - refer to figure 2 for installation instructions).
With reference to figure 1, please proceed as follows:

- Connect the **RPM clip** to the spark plug.
- Connect the black wire labelled **GND** to the logger **GND** pin.
- Connect the red wire to the vehicle battery positive pole (+): the battery voltage should be **12V**.
- Connect the blue wire labelled as **RPM** to EVO3 Pista/Pro RPM (8-15V) input.

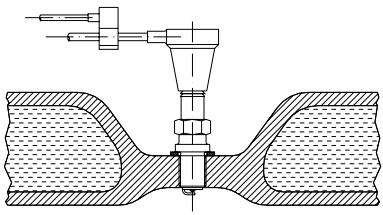


Figure 1: How to connect the RPM clip to the spark plug

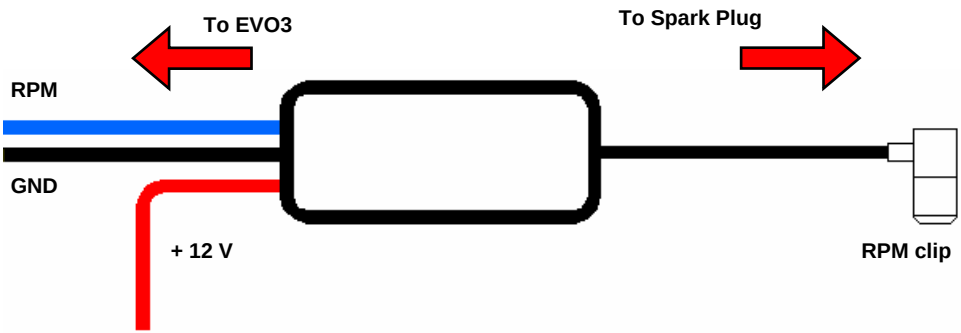


Figure 2: RPM Adapter ARP05 – Top side view

Chapter 4 – How to connect EVO3 to the ECU

EVO3 Pista/Pro can sample data out coming from the ECU of your vehicle using a CAN/RS232 cable.

To know if your vehicle ECU is supported by EVO3 and for further information about updated ECU-AIM logger connection, please refer to the proper installation manual you can freely download from our website: www.aim-sportline.com.

In case you need conversion of non-standard lines (like Subaru K-line) into readable CAN or RS232, please contact us.

Please refer always to your ECU user's manual to check for pins and cable connections.

As a general reference, EVO3 systems - ECU connection scheme is reported in the following paragraphs.

4.1 – EVO3 Pista-ECU connection

Connection is to be made through the 12 pins AMP connector.

Using **CAN** bus pins connection is:

- CAN 1+ pin 4 white cable
- CAN 1- pin 3 blue cable

Using **RS232** line pins connection is

- RS232RX pin 6 white cable
- RS232TX pin 5 bleu cable

4.2 – EVO3 Pro-ECU connection

Connection is to be made through the 22 pins Deutsch connector.

Using **CAN** bus pins connection is:

- CAN 1+ pin 20 white cable
- CAN 1- pin 21 blue cable

Using **RX232** line pins connection is:

- RS232RX pin 17 white cable
- RS232TX pin 18 blue cable

Chapter 5 – Installing Race Studio 2 and configuring EVO3

EVO3 Pista / Pro easily connects to a PC through an USB cable and can be configured only using Race Studio 2 the powerful software properly developed by AIM to configure its instruments and analyze stored data.
EVO3 Pista / Pro standard kits include the USB cable and Race Studio 2 CD.

Please note: logger configuration is only possible after software and drivers installation. Moreover a periodical check of www.aim-sportline.com website is suggested to know if a new Race Studio 2 software and/or EVO3 Pista/Pro firmware version has been released before proceeding.

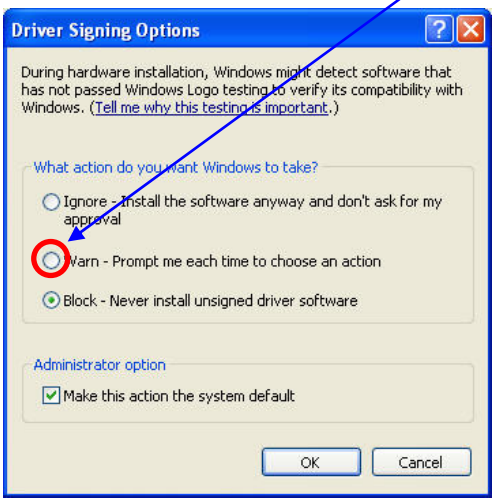
5.1 – Installing Race Studio 2 and the USB drivers.

Race Studio 2 software has been engineered and developed to guarantee maximum working reliability. Its compatibility has been tested with Microsoft Windows XP™ operating system. Microsoft Vista™ compatibility is actually in progress

5.1.1 – Installing Race Studio 2 under Windows XP

Before starting software installation:

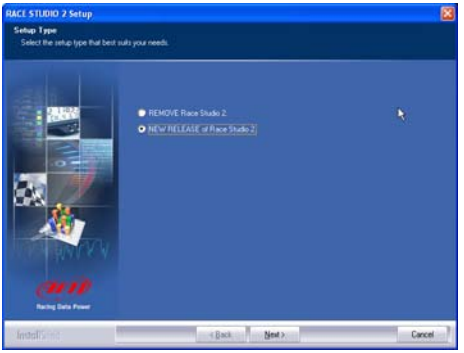
- **ensure** that your EVO3 is **NOT** connected to the Pc USB port. if it is, please unplug it;
- **check** Window™ "Driver signing option" default setting; click on: Start ➡ Settings ➡ Control Panel ➡ System and select "Hardware" layer; click on "Driver Signing" option and select "Warn – Prompt me each time to choose an action" option; confirm pressing OK button. Close all windows.



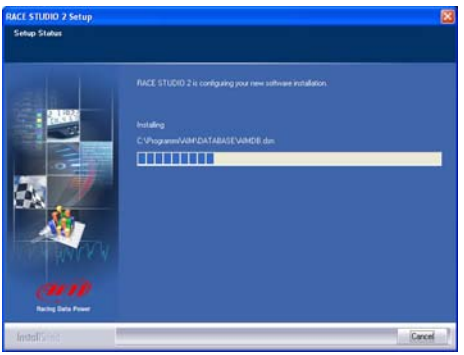
Once this done, please follow carefully the following instructions.

- Close all running applications;
- Insert Race Studio 2 CD in your CD/DVD drive and, if "auto play" function is enabled installation will start automatically, otherwise double click on "SETUP" icon.

- Enable “New Release of Race Studio 2” checkbox and press “Next>” button.

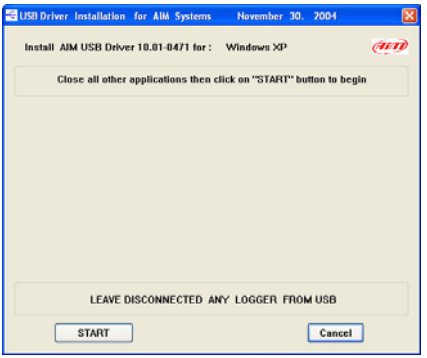


- This window appears.

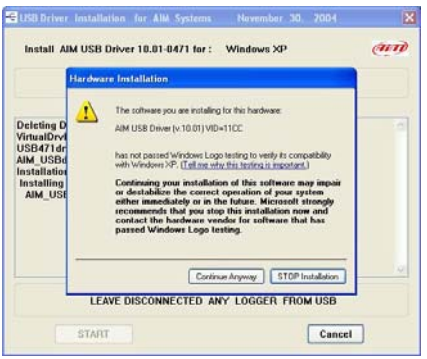


If you are installing Race Studio 2 for the first time, the system starts USB drivers installation and this window appears.
Please disconnect any USB cable from your Pc and click on “Start” button: USB drivers installation starts

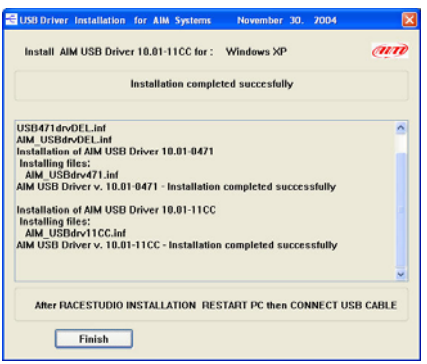
Please close all running applications and click on “Start” button.



- Press twice “Continue Anyway” button.



- Press “Finish” button



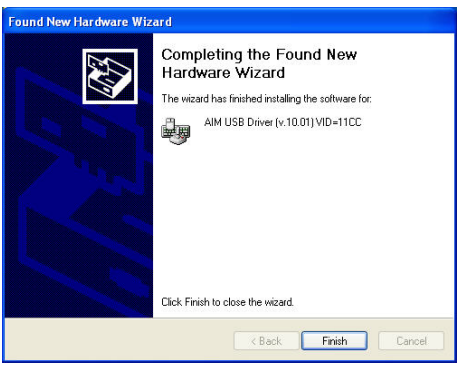
- Press “Finish” button

Connect EVO3 Pista / Pro to your PC using the USB cable and switch the logger on

- Click on “Next” button

- Click on “Continue anyway” button

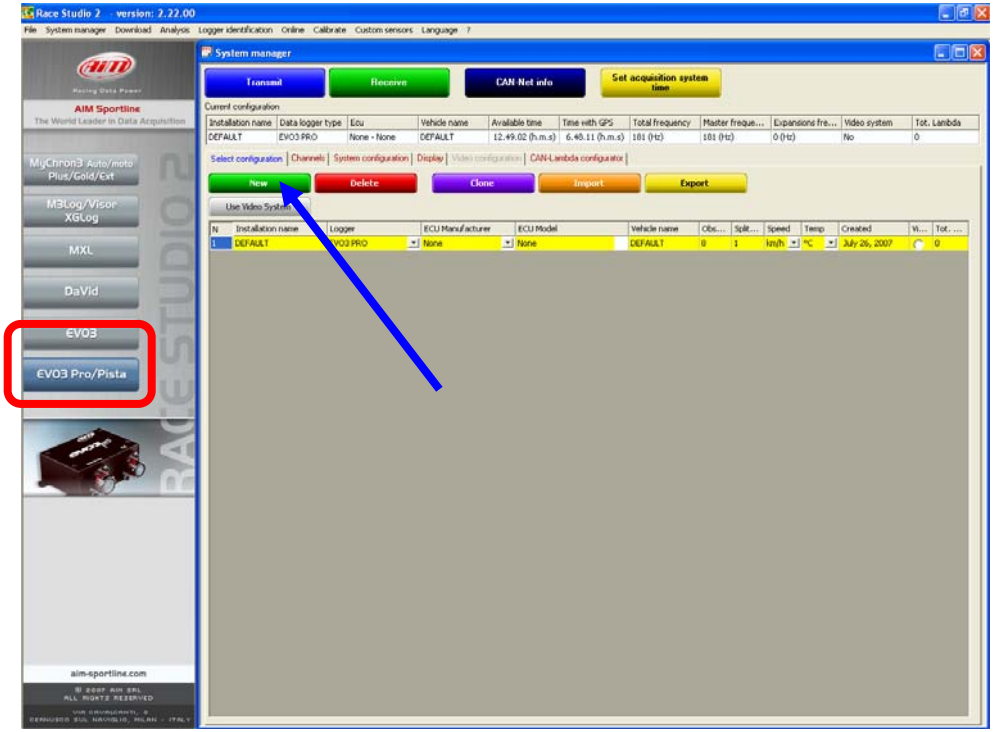
- Click on “Finish” button and run Race Studio 2 software



Please note: If you connect your EVO3 to another USB port of the same Pc, the system may ask you again for driver installation. Repeat this USB driver installation procedure. This may occur on each USB port you might want to connect your EVO3 to for the first time.

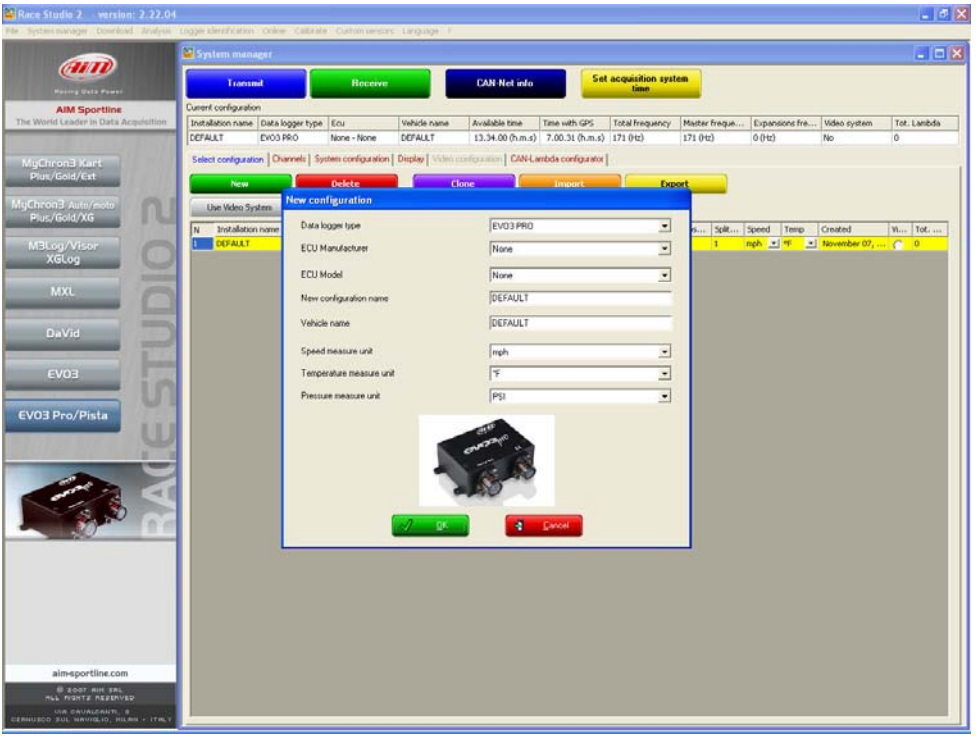
5.2 – Configuring EVO3 with Race Studio 2 Software

To configure EVO3 Pista/ Pro run Race Studio 2 software and click on EVO3 Pro/Pista button on the left vertical toolbar (red circled in the figure below) and then on “New” button on the bottom horizontal toolbar (green button, indicated by a bleu arrow in the figure below).



5.2.1 – Creating EVO3 configurations

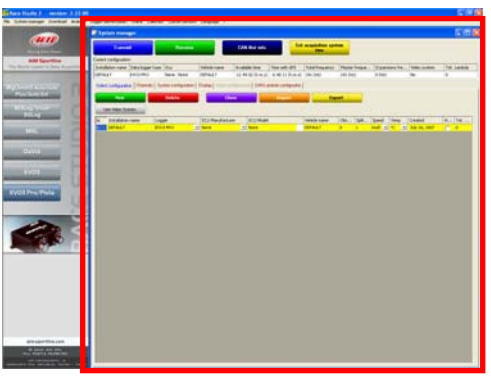
A New Configuration window appear as shown below:



You have to fill in the grey window as explained below.

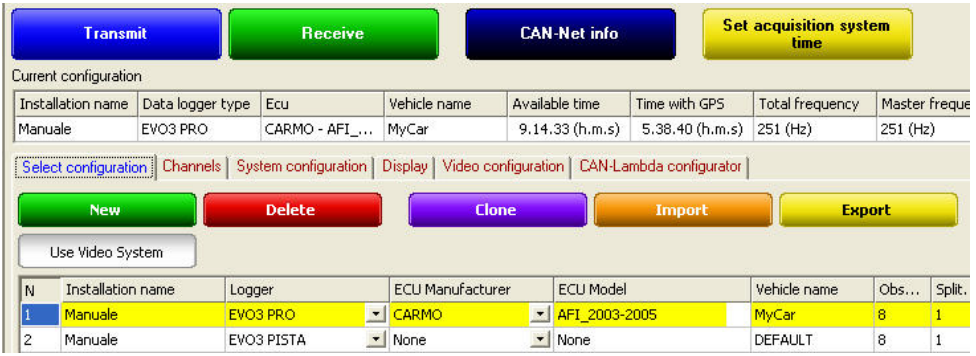
- *Data logger type* - select EVO3 Pista or EVO3 Pro
- *ECU manufacturer* - select your ECU manufacturer if supported.
- *ECU Model* - select your model
- *New configuration name* - name your configuration
- *Vehicle name* - enter your vehicle name
- Choose Speed, Temperature and Pressure *measure units*
- Press “OK” button

System Manager window (red circled in the figure below) appears.



This window is internal to Race Studio 2 main window and allows you to manage all commands related to EVO3 configuration.

On the top of this window, is a four buttons toolbar.



- *Transmit* – Transmits a configuration to EVO3;
- *Receive* – Detects an unknown configuration and stores it in the configurations database;
- *CAN Net info* – Provides information about devices connected to EVO3 through the CAN bus (ex. GPS Module, Lambda Controller, David);
- *Set acquisition system time* – Sets the logger time according to the connected PC one.

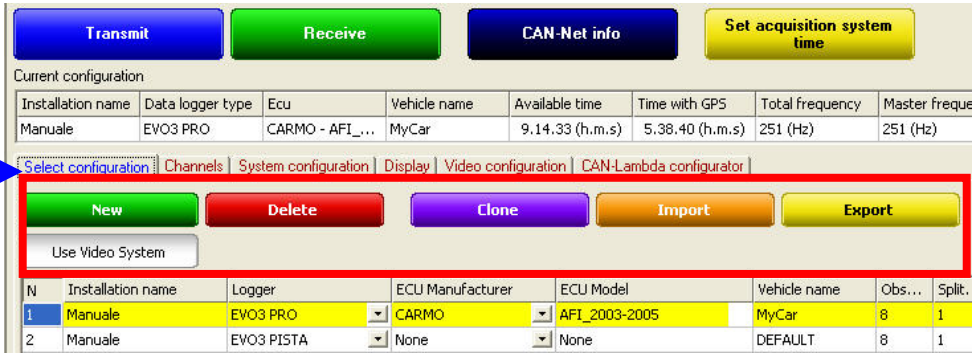
Under this toolbar is a 6 layers row that shows:

- Select configuration
- Channels
- System configuration
- Display
- Video configuration
- CAN-Lambda Configurator.

We are now going to explain all layers

5.2.2 – Selecting EVO3 configuration

Activate “Select configuration” layer. This layer has a 6 buttons top toolbar red circled in the figure below.

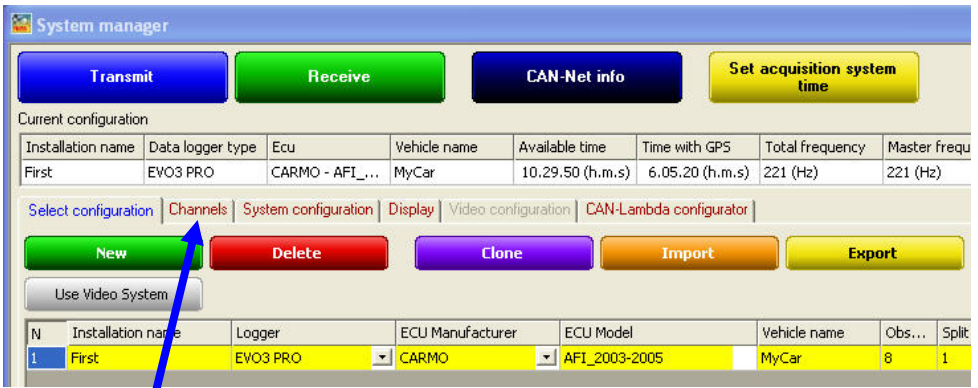


- *New* - creates a new configuration
- *Delete* - deletes an existing configuration
- *Clone* - Clones/Copies an existing configuration
- *Import* - imports a configuration in your database
- *Export* - exports a configuration from this database to use it elsewhere
- *Use Video System* - in case a DaVid Slave Expansion system (see related user manual for further information) is connected to EVO3 this buttons enables it and its related layer.
  Please note: in this case EVO3 configuration is not complete until Video configuration layer is completed.

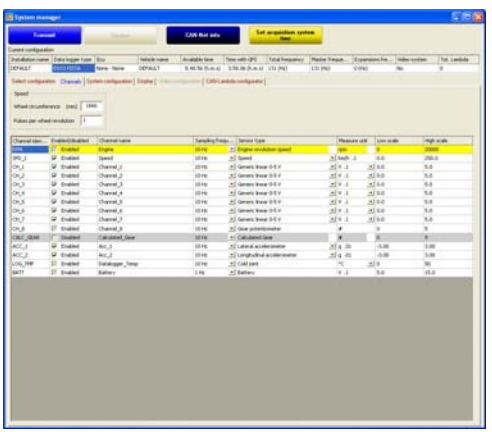
Select a configuration clicking the related row (it becomes highlighted in yellow)

5.2.3 – Setting EVO3 channels

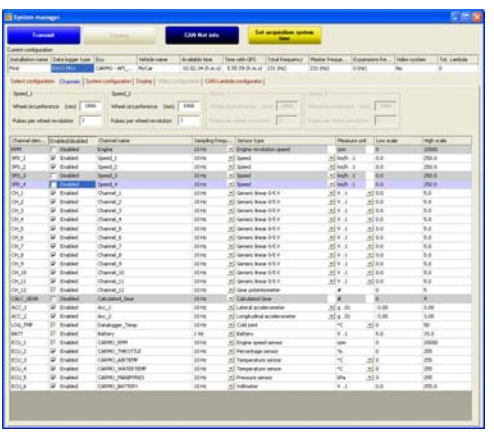
With reference to the figure below:



Activate *"Channels"* layer. It allows you setting the channels acquired by EVO3 and its layout depends on EVO3 version.



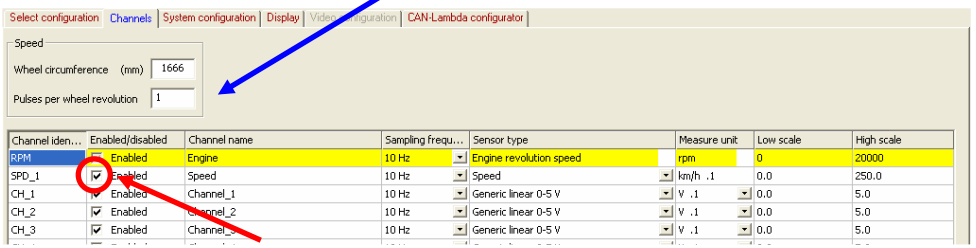
EVO3 Pista



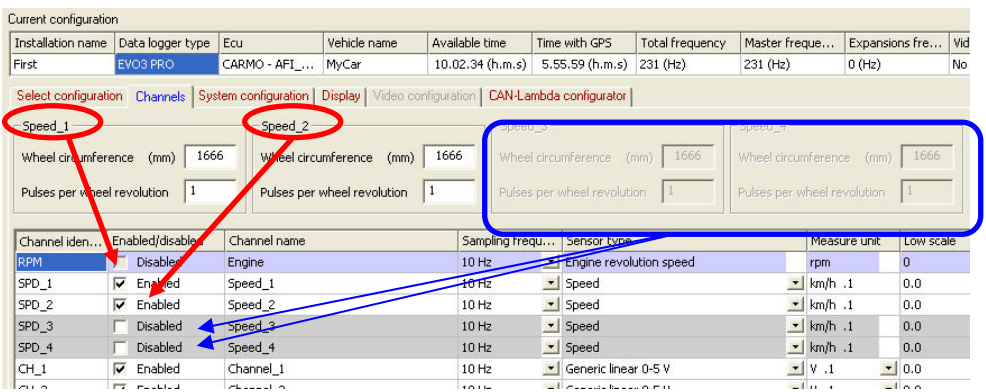
EVO3 Pro

Channels layer shows on top from 1 up to 4 speed boxes according to EVO3 version. The box(es) can be enabled/disabled through the Channels table placed below the box(es). To enable a speed channel check the correspondent row in the channel table.

The figure below shows EVO3 Pista speed channel checked (red circled and highlighted by a red arrow). The related box is enabled.

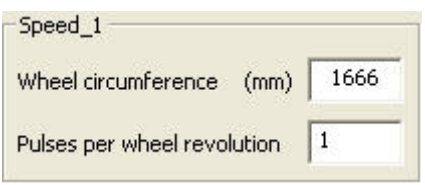


The figure below shows EVO3 Pro speed channels. Two of them are checked and the related boxes enabled, while the other two aren't.

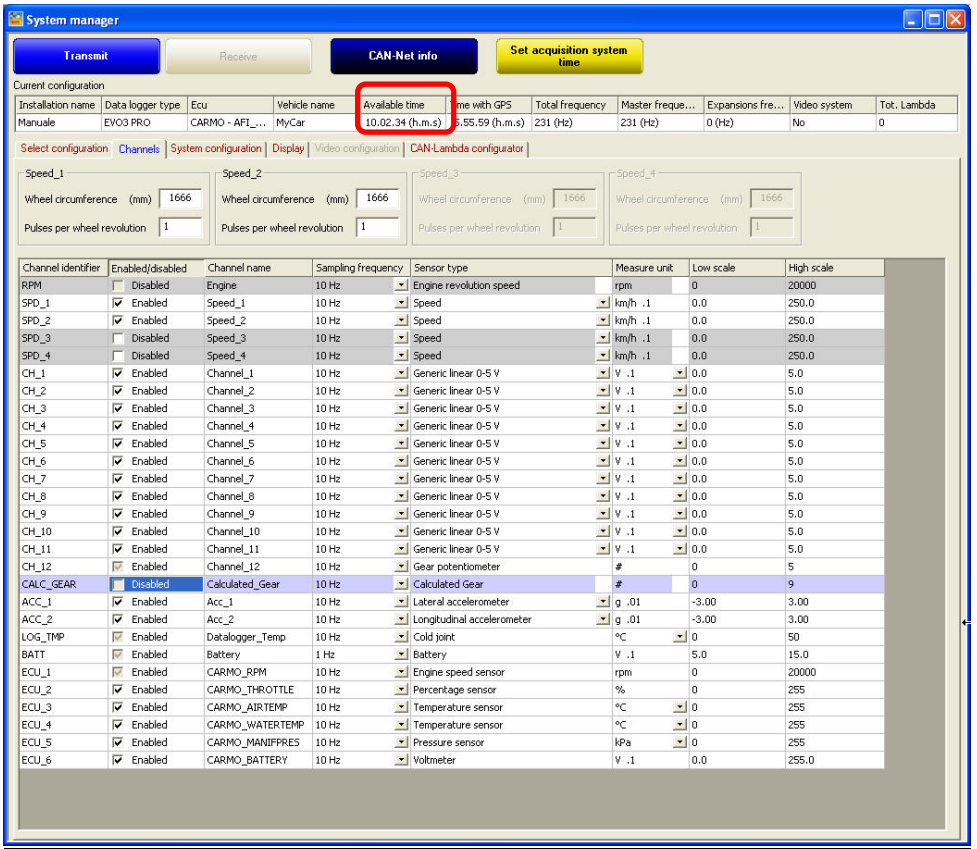


Once speed channel box, shown below, is enabled, you need to set it:

- Enter the wheel circumference of your vehicle
- Enter the number of pulses per wheel revolution (that corresponds to the number of magnets installed on the wheel)



Channels table:



Installation name	Data logger type	Ecu	Vehicle name	Available time	me with GPS	Total frequency	Master freque...	Expansions fre...	Video system	Tot. Lambda
Manuale	EVO3 PRO	CARMO - AFI_...	MyCar	10.02.34 (h.m.s)	5.55.59 (h.m.s)	231 (Hz)	231 (Hz)	0 (Hz)	No	0

Channel identifier	Enabled/disabled	Channel name	Sampling frequency	Sensor type	Measure unit	Low scale	High scale
RPM	Disabled	Engine	10 Hz	Engine revolution speed	rpm	0	20000
SPD_1	Enabled	Speed_1	10 Hz	Speed	km/h .1	0.0	250.0
SPD_2	Enabled	Speed_2	10 Hz	Speed	km/h .1	0.0	250.0
SPD_3	Disabled	Speed_3	10 Hz	Speed	km/h .1	0.0	250.0
SPD_4	Disabled	Speed_4	10 Hz	Speed	km/h .1	0.0	250.0
CH_1	Enabled	Channel_1	10 Hz	Generic linear 0-5 V	V .1	0.0	5.0
CH_2	Enabled	Channel_2	10 Hz	Generic linear 0-5 V	V .1	0.0	5.0
CH_3	Enabled	Channel_3	10 Hz	Generic linear 0-5 V	V .1	0.0	5.0
CH_4	Enabled	Channel_4	10 Hz	Generic linear 0-5 V	V .1	0.0	5.0
CH_5	Enabled	Channel_5	10 Hz	Generic linear 0-5 V	V .1	0.0	5.0
CH_6	Enabled	Channel_6	10 Hz	Generic linear 0-5 V	V .1	0.0	5.0
CH_7	Enabled	Channel_7	10 Hz	Generic linear 0-5 V	V .1	0.0	5.0
CH_8	Enabled	Channel_8	10 Hz	Generic linear 0-5 V	V .1	0.0	5.0
CH_9	Enabled	Channel_9	10 Hz	Generic linear 0-5 V	V .1	0.0	5.0
CH_10	Enabled	Channel_10	10 Hz	Generic linear 0-5 V	V .1	0.0	5.0
CH_11	Enabled	Channel_11	10 Hz	Generic linear 0-5 V	V .1	0.0	5.0
CH_12	Enabled	Channel_12	10 Hz	Gear potentiometer	#	0	5
CALC_GEAR	Disabled	Calculated_Gear	10 Hz	Calculated Gear	#	0	9
ACC_1	Enabled	Acc_1	10 Hz	Lateral accelerometer	g .01	-3.00	3.00
ACC_2	Enabled	Acc_2	10 Hz	Longitudinal accelerometer	g .01	-3.00	3.00
LOG_TMP	Enabled	Datalogger_Temp	10 Hz	Cold joint	°C	0	50
BATT	Enabled	Battery	1 Hz	Battery	V .1	5.0	15.0
ECU_1	Enabled	CARMO_RPM	10 Hz	Engine speed sensor	rpm	0	20000
ECU_2	Enabled	CARMO_THROTTLE	10 Hz	Percentage sensor	%	0	255
ECU_3	Enabled	CARMO_AIRTEMP	10 Hz	Temperature sensor	°C	0	255
ECU_4	Enabled	CARMO_WATERTEMP	10 Hz	Temperature sensor	°C	0	255
ECU_5	Enabled	CARMO_MANIFPRES	10 Hz	Pressure sensor	kPa	0	255
ECU_6	Enabled	CARMO_BATTERY	10 Hz	Voltmeter	V .1	0.0	255.0

With reference to the previous figure, channels Table is divided in 8 columns. Here follows description of each column.

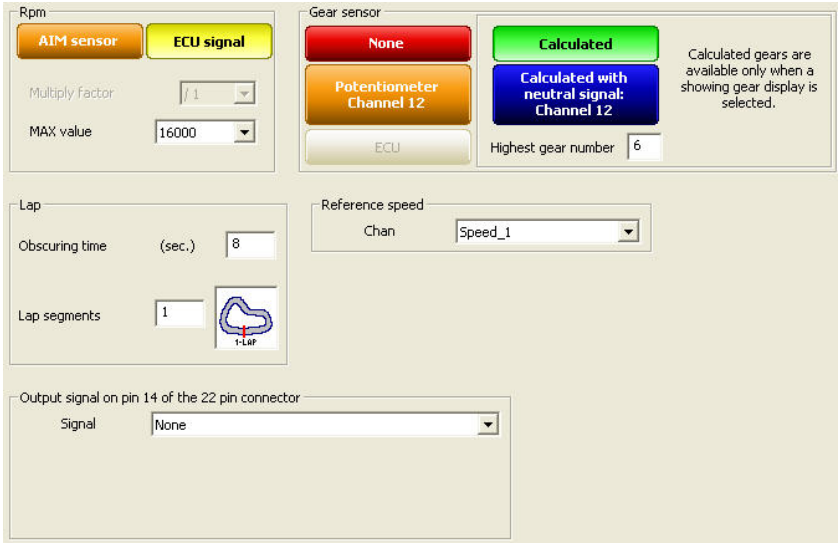
- *Channel identifier*: identifies each channel: RPM, Speed, configurable channels labelled as CH_X, ECU channels if the vehicle ECU is supported. These labels cannot be modified.
- *Enabled/Disabled*: shows which channels are enabled/disabled and allows the user to switch them on/off double clicking on the cell.
  Please note: RPM, speed and gear channels need to be set through system configuration layer.
- *Channel name*: shows the name of each channel and allows the user to change it double clicking on the cell and inserting the desired name.
- *Sampling frequency*: shows each channel sampling frequency and allows the user to change it double clicking on the cell.
  Please note: increasing sampling frequency maximum storage time decreases as the memory fills up faster; to check time availability always refer to “available time” box red circled in the previous figure.
- *Sensor Type*: shows which type of sensor is installed on each channel and allows the user to set a sensor on a configurable channel choosing it from a list of pre-defined sensors. It is also possible to set a custom sensor assuming you have previously created it (see custom sensor management paragraph).
- *Measure Unit*: shows the unit of measure set for each channel and allows the user to change it with a double click.
- *Low scale*: show sensor lower bounds and allows the user to change it double clicking on the cell.
- *High Scale*: shows sensor upper bounds and allows the user to change it double clicking on the cell.

As far as analogue channels (labelled as CH_X) are concerned here follows their configuration characteristics.

EVO3 Pista		EVO3 Pro	
CH_1	User defined	CH_1	User defined
CH_2	User defined	CH_2	User defined
CH_3	User defined	CH_3	User defined
CH_4	User defined	CH_4	User defined
CH_5	User defined	CH_5	User defined
CH_6	User defined	CH_6	User defined
CH_7	User defined	CH_7	User defined
CH_8	Gear potentiometer[2]	CH_8	User defined
		CH_9	User defined
		CH_10	User defined
		CH_11	User defined
		CH_12	Gear Potentiometer[2]

With reference to channel 8 of EVO3 Pista and channel 12 of EVO3 Pro, their configuration depends on how gear sensor box is set in System configuration layer.

[2] If present. When no gear potentiometer is installed these channels can be used and configured like the previous channels.



Setting “Potentiometer Channel 8/12” or “Calculated with Neutral Signal: Channel 8/12” channel labelled as CH_8/12 switches to Calculated Gear and it is only possible to set Channel name and Sampling frequency.

CH_12	Enabled	Channel_12	No_Mem	Calculated Gear
CALC_GEAR	Enabled	Calculated_Gear	10 Hz	Calculated Gear

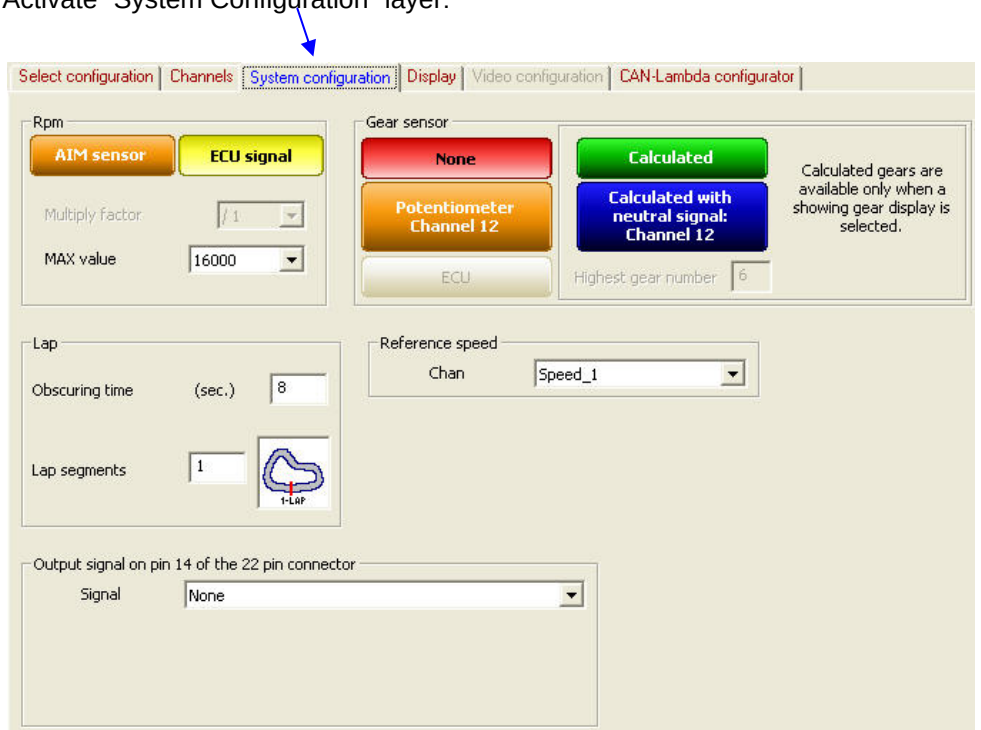
As told before setting “Calculated” “ECU” or “None”, CH_8/12 become a user defined channel and works exactly like channels from CH_1 to CH_7/11.

CH_12	Disabled	Channel_12	10 Hz	Generic linear 0-5 V
CALC_GEAR	Disabled	Calculated_Gear	10 Hz	Calculated Gear

EVO3 has a standard bi-axial accelerometer to sample lateral and longitudinal acceleration labelled as
ACC_1 – Lateral accelerometer
ACC_2 – Longitudinal accelerometer

5.2.4 – How to set the system configuration

Activate “System Configuration” layer:

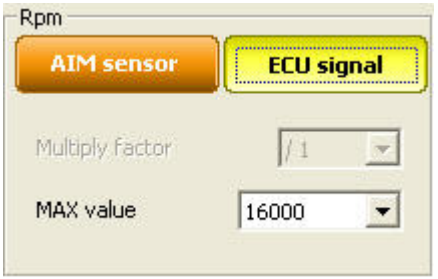


It is possible to set:

- RPM ;
- Gear sensor;
- Lap ;
- Reference Speed ;
- Output signal (only for EVO3 Pro);

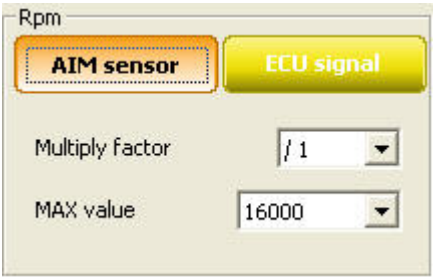
RPM Box:

If RPM is sampled from the vehicle ECU, please enable “ECU Signal” and set RPM max value. Multiply factor is in fact disabled.



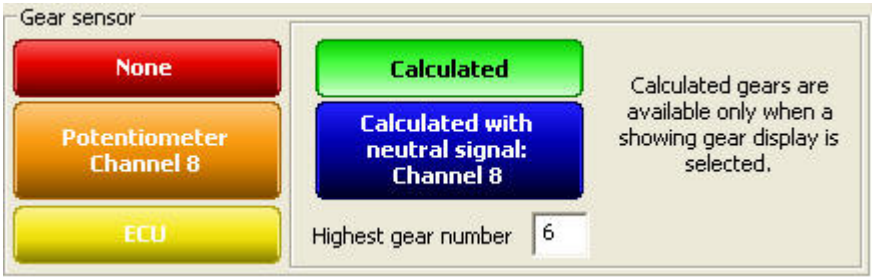
RPM Sampled from the vehicle ECU

If an RPM sensor is installed and connected to EVO3, please enable “AIM Sensor” and fill in Multiply factor and RPM Max Value. RPM row in channel table is now enabled.



RPM sampled from a custom sensor

Gear sensor Box:



EVO3 can detect the engaged gear using an on-board gear sensor, sampling it from the ECU or calculating it using an algorithm based on engine RPM and Speed.
Available option are:

- **None**: you do not wish to acquire or see engaged Gear value. **Please note**: dash connection is required anyway.
- **Potentiometer Channel 8** (EVO3 Pista) /**Channel 12** (EVO3 Pro): your vehicle is equipped with a gear potentiometer installed on channel 8/12.
- **ECU**: you wish to acquire this value form the vehicle ECU (**assuming** it can transmit it).
- **Calculated** (only with Formula steering wheel and MyChron3 dash connected): you wish to calculate the engaged gear through an algorithm based on RPM and speed. To do that fill in “Highest gear number” box.
- **Calculated+neutral signal: Channel 8/12**: you have a neutral sensor you use to calculate gear and acquire neutral signal. Connect it to pin 20 (analogue input channel 12) of the 37 pins Deutsch connector for EVO3 Pro or to pin 9 (analogue input channel 8) of the 16 pins AMP connector for EVO3 Pista.

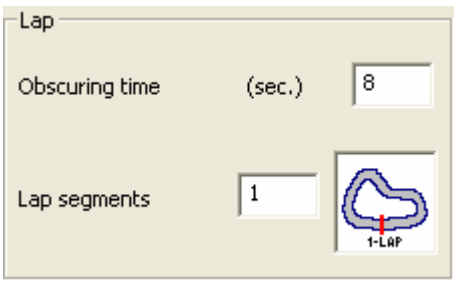
Lap Box

What is obscuring time? "Obscuring time is a time period during which the optic receiver, after detecting a beacon, is "blind" and ignores beacons signals. This value needs to be correctly set if more than one beacon transmitter is installed on the track. Accepted values are from 3 to 255 seconds.

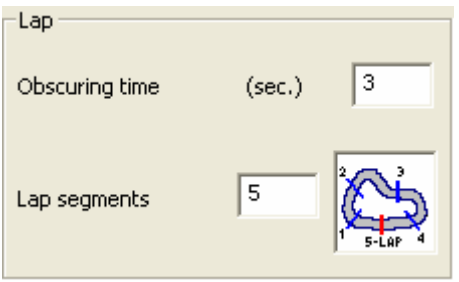
What are lap segments? "Lap segments" is the number of segments you wish to divide your track into, and should coincide with the number of white transmitters installed on the track. Accepted values are from 1 to 6.

If you do not wish to capture split times on a track where more than one beacon transmitter is installed, please set obscuring time to a value lower than your track best lap time and higher than the time elapsed between last split and start/finish line.

If you wish to capture splits you need to set this parameter value lower than best split time. In case your track is equipped with red transmitters no lap segments filling in is needed: EVO3 Pista/Pro automatically recognizes the transmitters.



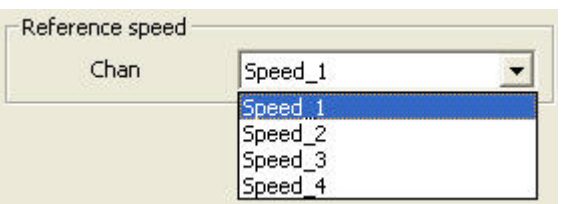
Lap box – no split is set



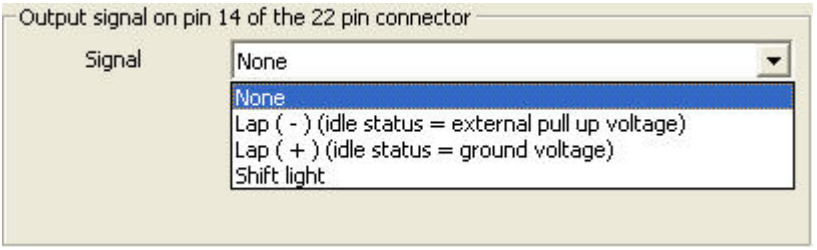
Lap box – split detection set

Reference Speed box:

Choose the speed you want to refer to for gear calculation and to display (if dash is connected)



Output signal box (EVO3 Pro only):



This feature allows EVO3 Pro to send an output signal to an external system, typically a dashboard or anECU.
This output is connected on pin 14 of the 22 pins Deutsch Connector of EVO3 Pro and has the following technical characteristics:

- Voltage – Depending on External pull-up voltage
- Output duration – about 0,8 seconds (for Lap (-) and Lap (+) only)
- Type – it can be “Lap” or “Alarm” type.

Available options are:

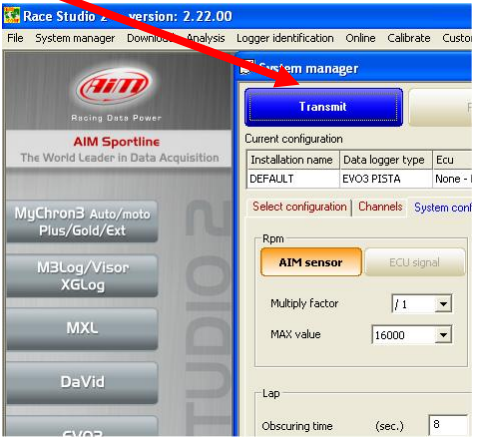
- None: output signal disabled.
- Lap(-): when EVO3 Pro receives a lap signal, output signal decreases from External pull-up voltage (idle status) to 0V (lap) for about 0,8 seconds.
- Lap(+): when EVO3 Pro receives a lap signal, output signal increases from 0V (idle status) to External pull-up voltage (lap) for about 0,8 seconds.
- Shift light: when RPM are over the selected threshold, the output signal increases from 0V (OFF status) to External pull-up voltage (ON status) for the time in which threshold value is exceeded. This feature may be useful if you want to light an alarm led on your dashboard.

In Formula Renault applications, for example, “Lap” option enables EVO3 to send a Lap-Beacon signal to vehicles default dashboard.

5.3 – How to transmit the configuration to the logger

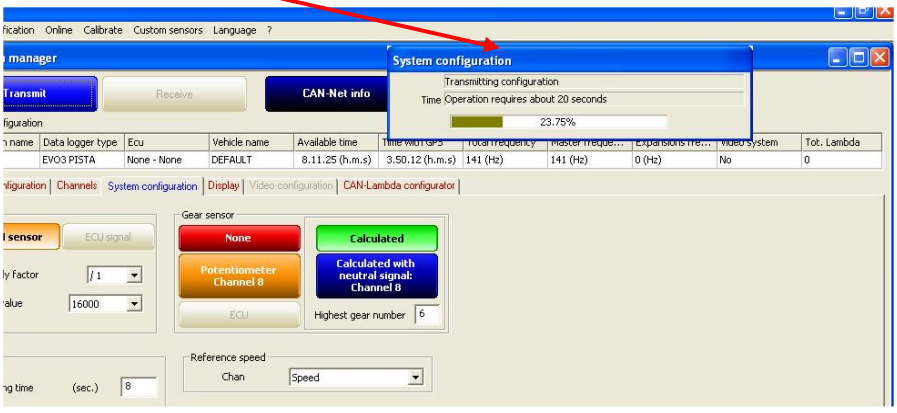
Once the configuration is set in the software[3] it needs to be transmitted via USB to the logger in order to be effective. To do so:

- Leave your PC switched on with Race Studio 2 running;
- Connect the USB cable to the Pc USB port and plug EVO3 in; use cable labelled as “USB” of your EVO3 harness (Pista and Pro);
- Power EVO3;
- Go to Race Studio 2 System manager window;
- Press “Transmit” button on the top toolbar.



[3] And the USB drivers are installed

- This window appears

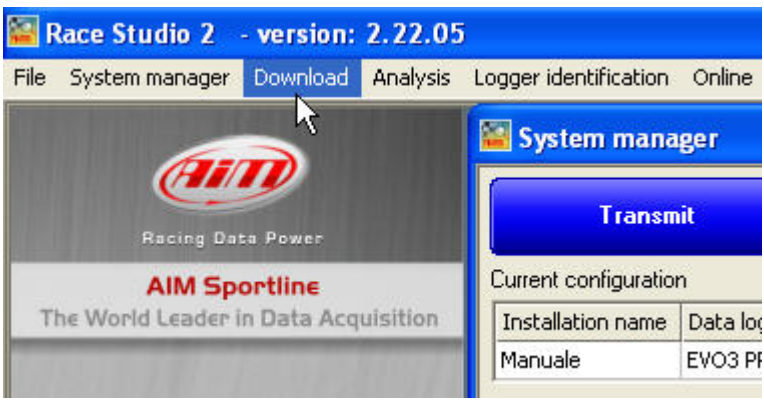


Once the configuration transmitted, the systems informs you about transmission result.

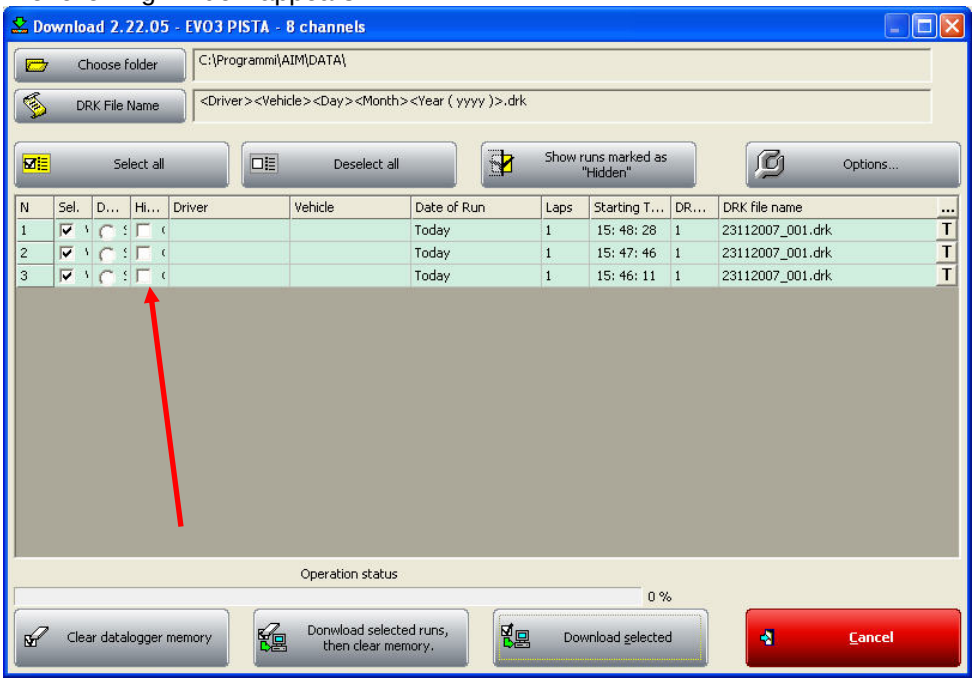
Chapter 6 – How to download and save tests

Once a test session is finished, stored data can be downloaded on a Pc using our database management system. EVO3 automatically groups data for a track session as a RUN. A run is made of the laps recorded between 2 pit stops and 2 power on/off.
To download data:

- Switch on the PC and run Race Studio 2 software;
- Connect EVO3 Pista / Pro to the PC USB port through the USB cable:
- Switch the logger on;
- Click on “Download” button in Race Studio 2 top toolbar;

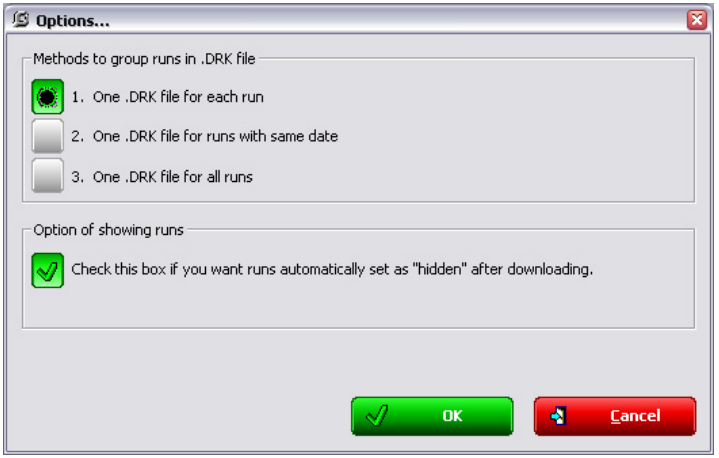


The following window appears.



- **Chose folder**: allows the user to choose download destination folder.
- **DRK File name**: allows the user to name downloaded data.
- **Select all**: selects all runs.
- **Deselect all**: deselect all runs.
- **Shows runs marked as Hidden**: shows/hides runs according with "Hidden" checkbox (highlighted by a red arrows in the figure below) status.
- **Option**; see next figure.
- **Clear data logger memory**: erases all data without downloading.
- **Download selected runs, then clear memory**: downloads data related to a selected track session and erases the memory of EVO3 after download.
- **Download selected**: downloads only selected runs.
- **Cancel**: exit download without erasing or downloading data.

Pressing “Option” button this window appears:



It allows you to group runs in different ways (one file for each run, one file for each date, one file for all runs) as well as choosing how to show your runs after download.

Chapter 7 – EVO3 Memory

All EVO3 models are equipped with a non-volatile FLASH internal memory whose dimensions depend on the logger version.
This memory is saved even when power is off or disconnected.

Memory size:

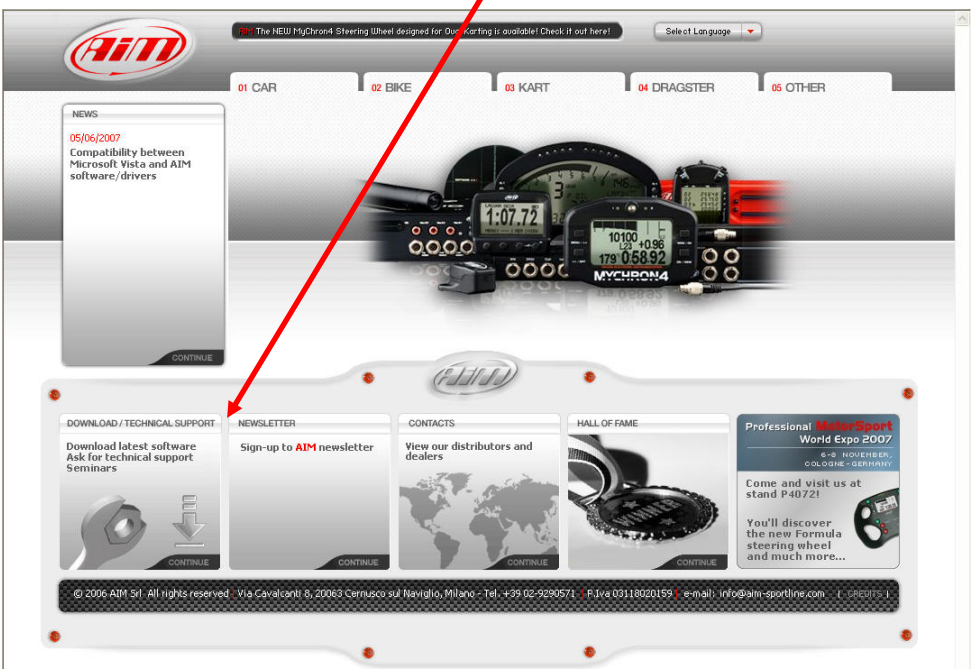
- EVO3 Pista: 8 MB
- EVO3 Pro: 16 MB

When memory is completely full, EVO3 automatically overwrites oldest data.

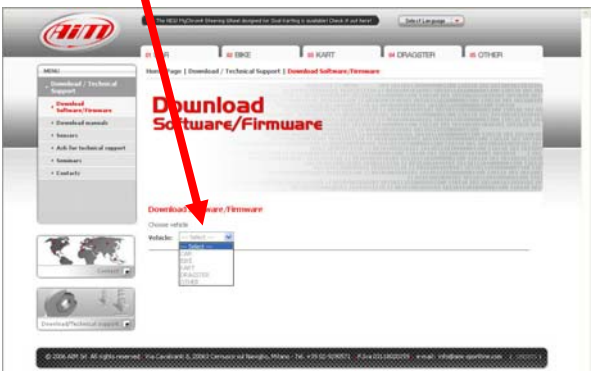
Chapter 8 – EVO3 Maintenance

EVO3 does not need any special maintenance. Provided that adequate care is taken of logger and components we only suggest to periodically check for software / firmware upgrades.
Upgrades are released by AIM and published on www.aim-sportline.com
To upgrade software / firmware user should:

- connect to www.aim-sportline.com
- go to “Download / Technical support” section



- Select vehicle type;



- Select the software / firmware to upgrade;

- Check if any software or firmware upgrade has been released;
- Download clicking on it;
- Run it;
- Follow the instruction prompted on the screen

Chapter 9 – Installation Notes

9.1 – Connecting an AIM dashboard to EVO3

EVO3 can be connected to various types of AIM dashboards in order to visualize channels and alarms during the race.
Available dashboards are

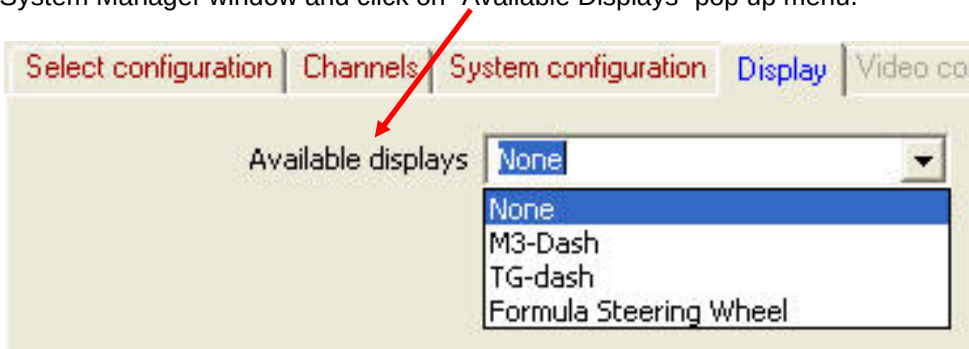
- TG Dash

- MyChron3 Dash

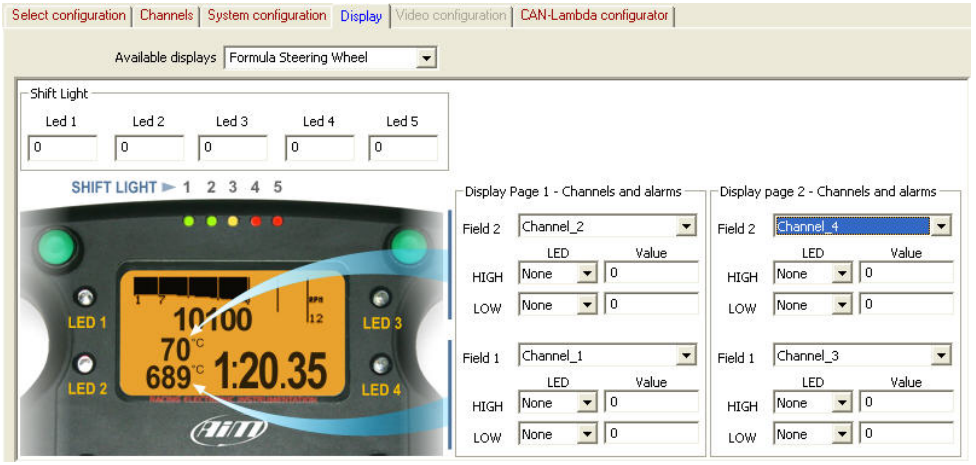
- Formula Steering Wheel

The number of displayed channels depends on the dash connected to EVO3. Channel setting is stored by the gauge and restored at switch on.

To **configure** the dash for EVO3, activate “Display” layer in Race Studio 2 System Manager window and click on “Available Displays” pop up menu.



- Select the Dash EVO3 is connected to and its configuration window appears.



9.2 – TG Dash

Easy to install, compact and small sized, equipped with a wide display, AIM TG Dash allows you to view EVO3 acquired lap times and data in real time. Perfectly suitable on sport cars and motorbikes and on all racing applications where light weight is important.

9.3 – MyChron3 Dash

MyChron3 Dash is the perfect replacement of the stock dash and allows you to visualize and customize EVO3 channels like RPM, speed, engaged gear number, temperatures, oil pressure, lap time, alarms, etc as well as all signals coming from custom sensors, merged with those coming from the vehicle ECU.

9.4 – Formula Steering Wheel

This EVO3 Dash merges an high tech-steering wheel with a smart dashboard. Anodized aluminium frame, ergonomic shape, hand-woven shammy leather as well as an amazing “racing look” are some of the technical features professional drivers appreciate.
Thanks to its integrated amber or green backlighted display, all data are available at a glance:

- Lap time and lap number
- Speed or RPM digital value
- RPM bar graph
- 5 shift light led
- 4 fully configurable alarm led
- 4 (two by two) displayed channels among all available channels.

Moreover, it is possible to remote up to four functions like Neutral, Radio, Speed limiter, Launch control or other functions you may need on your vehicle.

9.4.1 – Formula Steering Wheel advanced functions

Formula Steering Wheel has some advanced functions designed and developed to satisfy all driver’s needs; among all the most innovative are:

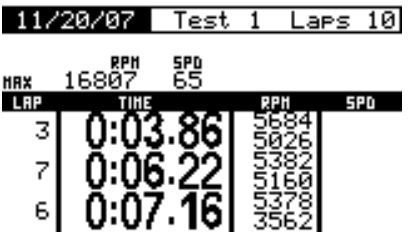
- Main data driving session review
- Predictive lap time (a sub-menu of Control Panel option).
- Hour Meter

All function are managed through the steering wheel menu. Pressing “menu/<<” button, main menu page appears:

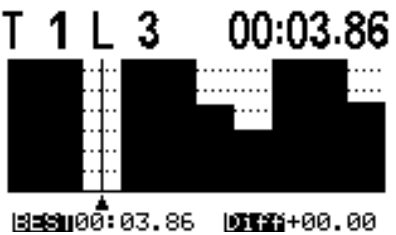
9.4.1.1 – Main driving session data review

At the end of a track day, you can give a look to lap times and RPM peaks (Session summary). To do that:

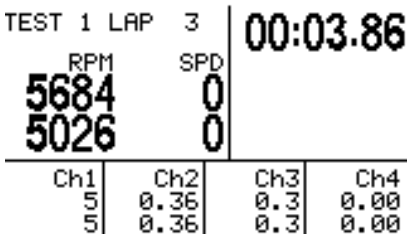
- Press “Mem/OK” button: **session summary** page appears. It shows max RPM, Speed and max CH_1 and CH_2 values as well as the three best lap times with lap number, highest and lower rpm and maximum speed.



- “>>” and “<<” buttons, **switch between** stored **Tests**.
- Pressing **again** “mem/OK” button the display shows Lap Histogram, that means the complete test session in a graphical way, allowing user to compare every lap to best lap. Pressing “>>” and “<<” buttons it is possible to switch between stored laps.



- Pressing “mem/OK” button **again** Lap Details page is shown. It displays Maximum and Minimum speed and RPM values, custom channel from 1 to 4 values and split times (if sampled).

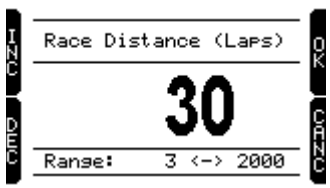


9.4.1.2 – Session mode

Once entered Session mode menu, you can choose between Lap Counter, Timed and Race.

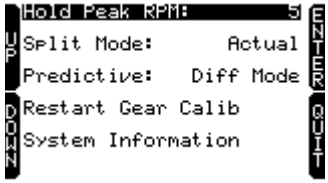
- **Lap counter**: the display shows lap number increasing it each time a lap is finished until your logger is turned off.
- **Timed**: shows the remaining time until the end of the session. To set it insert the number of minutes you are going to race and press OK button.

- **Race**: shows the remaining laps until the end of the session. To set it insert the total number of laps you are going to run and press OK button.

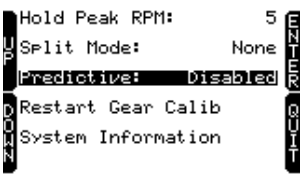


9.4.1.3 – Control panel

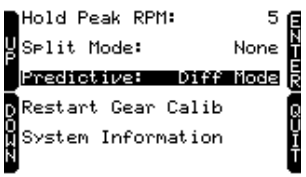
Once entered Control panel you can choose to set: Hold peak RPM, Split Mode, Predictive, Restart Gear Calib, System Information.



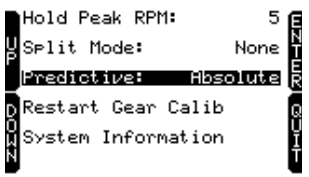
- **Hold peak RPM**: through "mem/ok" button you can set how long the RPM peak marker is shown on display (accepted values are from 5 to 10 seconds) or disable it selecting OFF function.
- **Split mode**: you can choose:
  - **+/- Best**: shows the gap between current lap and the best one
  - **Actual**: shows actual split time
  - **Accumulative**: shows elapsed time from lap counter to last split line.
  - **None**: split mode is not active
- **Predictive** (lap time): this function needs to be enabled. Available options are:



Disabled: predictive lap time is not active



Diff Mode: predicts gap between next lap time and best one



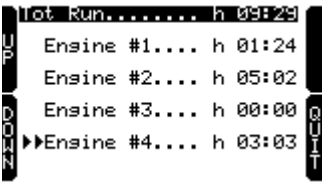
Absolute: predicts next lap time

- **Restart gear calib**: This function allows you to restart Gear Calibration procedure directly from your Steering Wheel. For further information, please refer to the related (10.2.1) paragraph

- **System information**: this function shows your steering wheel firmware version and serial number. In case you need Technical support from AIM, please remember to always communicate your System Information.

9.4.1.4 – Hour Meter

This valuable function allows you to view engine running time. Formula steering wheel can record running time of up to four engines.



To **start** running engine time counter:

- press “Menu” button,
- move to Hour Meter Menu,
- press “OK” button,
- select the engine you want to time-count pressing “>>” and “<<” buttons,
- press “OK” button to confirm

To **reset** engine time counter, once selected the engine:

- press twice “OK” button and engine time counter is reset.

Please note: engine total running time cannot be reset.

9.5 – How to install and power infrared transmitter and receiver

9.5.1 – The infrared transmitter

AIM infrared transmitters are: the lap transmitter and the split transmitter. The split transmitter emits a different signal and EVO3 recognizes it.

The lap transmitter can be powered by

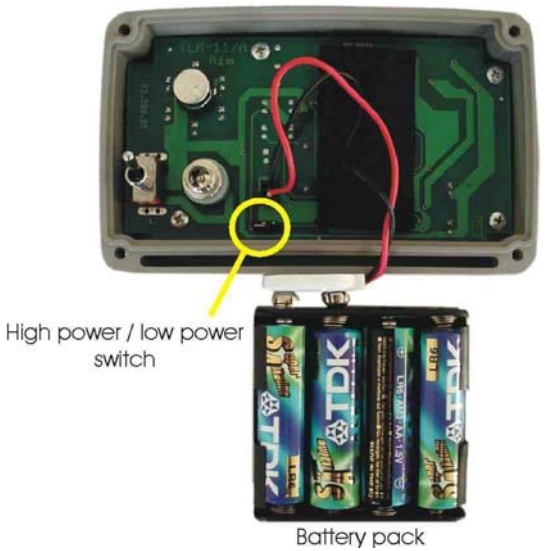
- 8 AA batteries (placed in the transmitter case): when battery charge status is low, power led starts blinking each second.
- an external 12V power cable: in case battery charge status is low, the power led starts blinking each second.

The transmitter has two operating mode:

- Low power mode: for track whose width is less than 10 m (30 ft)
- High power mode: for track whose width is more than 10 m (30 ft).**Please note**: 12V external power is needed and both power led lights up when the transmitter is switched on.

To activate High/Low power function

- Unscrew the transmitter case on its back
- Place the jumper clip, yellow circled in the picture below,
  - over one of the two connectors for “Low power” mode
  - over both connectors for “High power” mode; **please note**: 12V external power is needed.



Warning: please be sure of the number of transmitters already placed on the track while placing your one. There may be elsewhere than at start-finish line.
The simplest way to take correct lap values is to use the same transmitter(s) for all racers. Through “Obscuring time” setting (see “How to set the system configuration” paragraph) you can ensure that EVO3 reads only your selected transmitter(s). Incorrect “Obscuring time” settings or unknown multiple transmitters can cause EVO3 to record inaccurate or confusing lap times.

9.5.2 – The infrared receiver

The infrared receiver needs to “see” the transmitter placed on the trackside.
Install it on the vehicle with the receiver’s eye pointed toward the beacon transmitter on the correct side of the vehicle. The red arrow below indicates the receiver’s eye position.

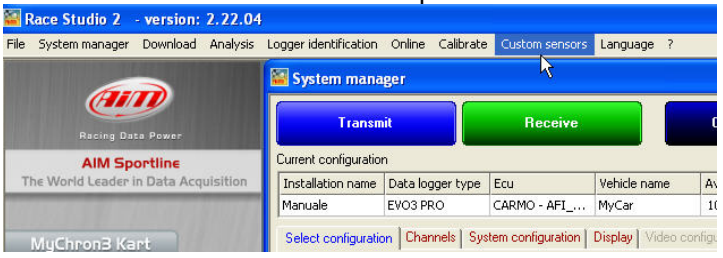
Chapter 10 – Sensors management

EVO3 manages a wide range of sensors. Some of them, like potentiometers and accelerometers need to be calibrated / auto-calibrated

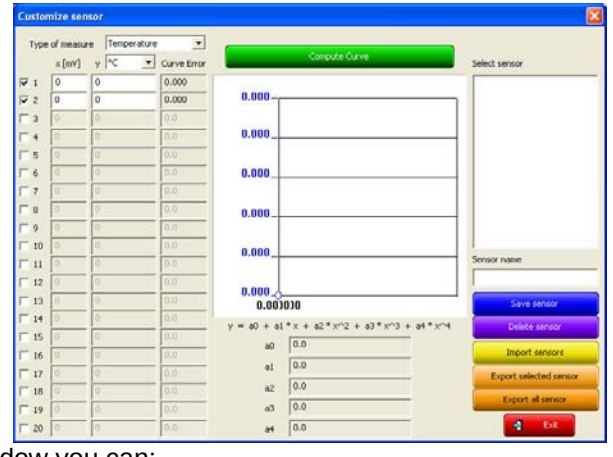
10.1 – Custom sensors management (expert users only)

To create a custom sensor:

- Press “Custom Sensor” button on the top toolbar.



- The following window appears.

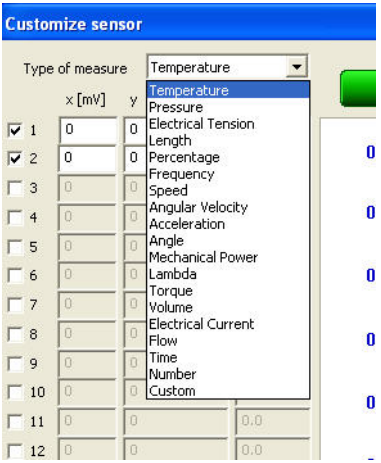


Through this window you can:

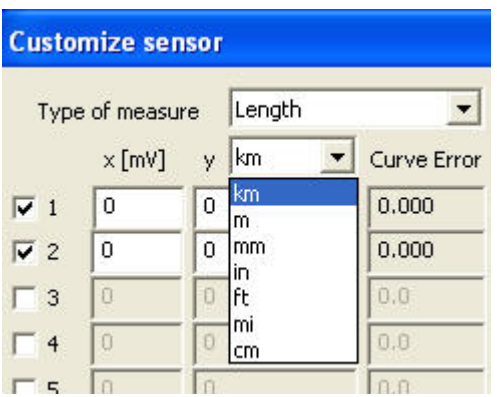
- Create a new custom sensor;
- Modify an existing sensor;
- Import / Export a sensor or all sensors using the related button;
- Delete an existing sensor.

10.1.1 – How to create a Custom sensor

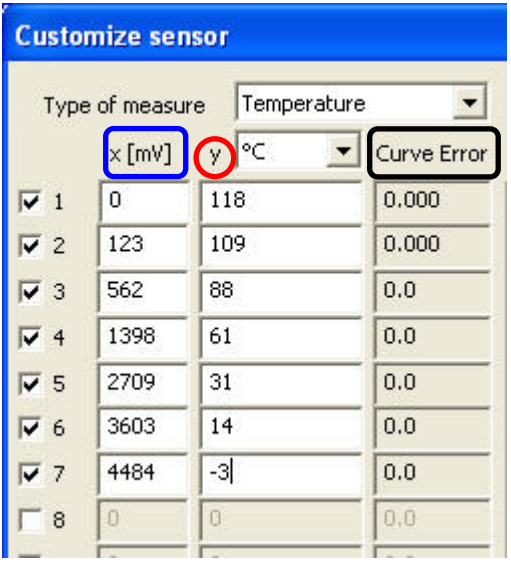
- Click on Type of measure box and select the category the sensor belongs to.

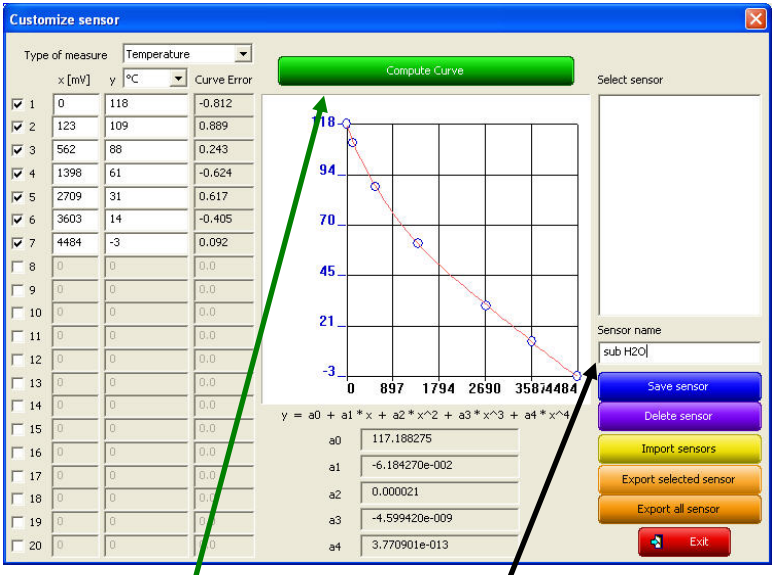


- Select the unit of measure corresponding to the sensor to create.



- Enable the checkboxes on the left, corresponding to the number of experimental values you want to use (you can use up to 20 experimental values).
- Insert the values corresponding to the sensor you want to create in the three columns on the left.
  - **x[mV]**: logger output voltage in mV (X-axis of the calibration curve)
  - **y**: temp./ press. values related to voltage output - values are interpolated using a polynomial – (Y axis);
  - **Curve Error**: useful to verify that the curve calculated by the software is faithful to the experimental values





After inserting experimental sensor values:

- click on "**compute curve**" button;
- fill in "**Sensor name**" box;
- click on "**Save Sensor**" button
- click on "**Exit**" button.

Set the new sensor on the corresponding channel in channel table (see "Setting EVO3 channels" paragraph).

10.2 – How to calibrate / auto-calibrate a sensor

Once the configuration has been transmitted to EVO3, sensors installed on the vehicle may need to be calibrated/auto-calibrated and the calibration has to be transmitted to the logger.

Sensors to be auto-calibrated are:

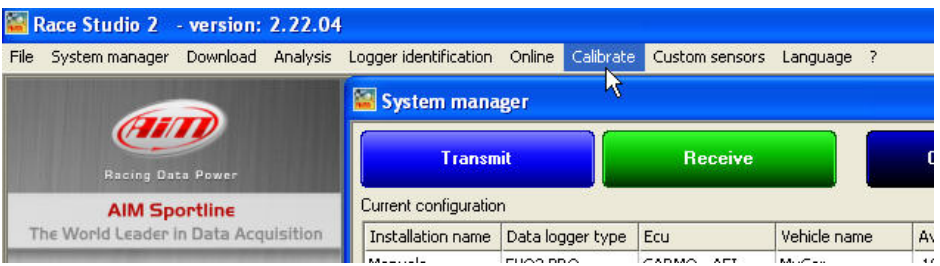
- Internal biaxial accelerometer;
- Gyroscope(if present) ;
- Potentiometer distance (if present);

Sensors to be calibrated are:

- Mid zero potentiometer (if present);
- Zero based potentiometer (if present);
- Gear sensor (see "How to calibrate a gear sensor" paragraph)

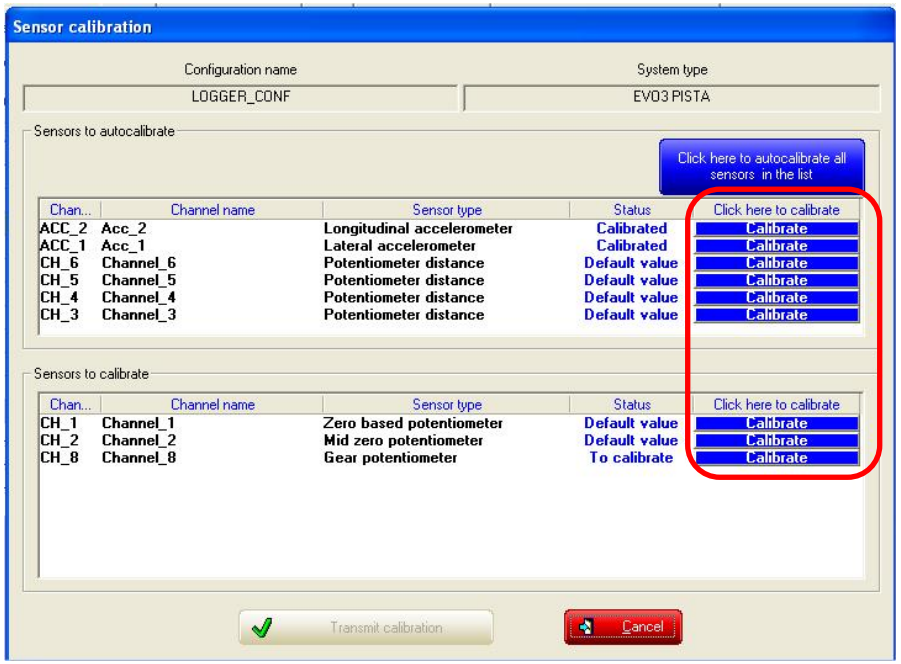
To calibrate/autocalibrate sensors:

- Press "Calibrate" button on the top menu:

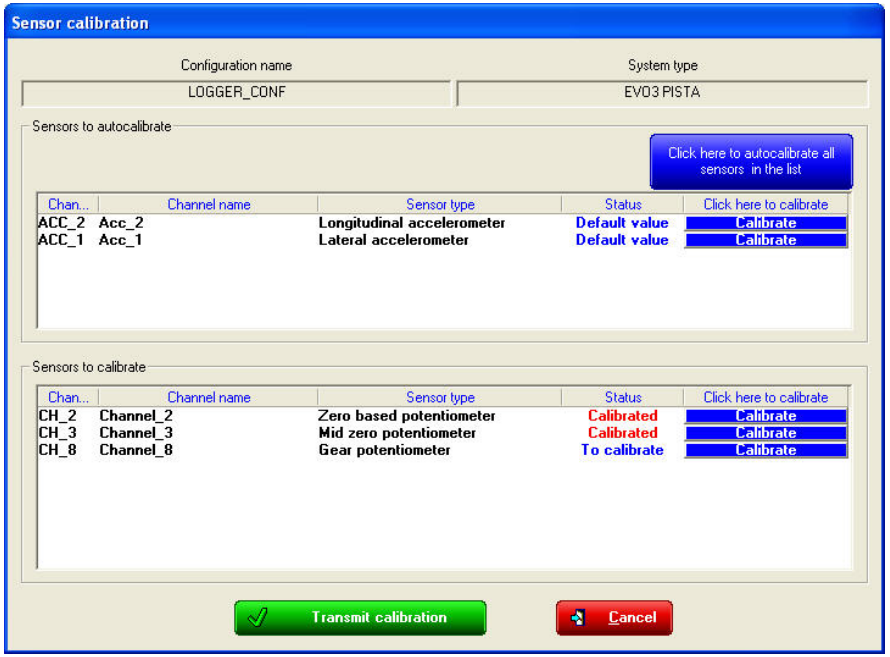


- Keep the vehicle as horizontal as possible (if your vehicle is a bike, leave it on the prop stand) and set the sensor to calibrate/auto-calibrate in its 0 position.

- Press "**Click here to auto-calibrate all sensors in the list**" if you're going to auto-calibrate accelerometer, gyroscope or potentiometer distance.
- Press "**Calibrate**" button corresponding to the sensor you're going to calibrate if the sensor is a Mid zero potentiometer, Zero based potentiometer or Gear sensor.

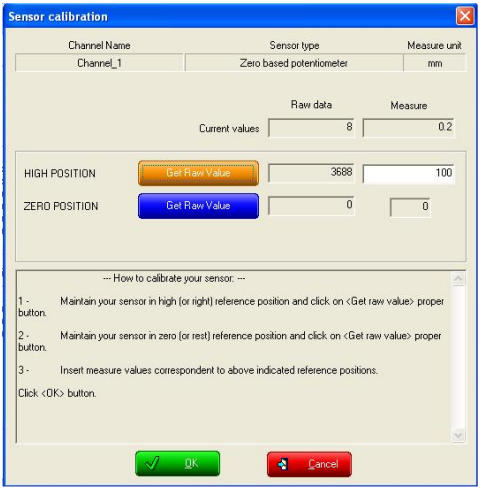

Sensor calibration
Configuration name
LOGGER_CONF
System type
EVO3 PISTA
Sensors to autocalibrate
Click here to autocalibrate all sensors in the list
Chan... Channel name Sensor type Status Click here to calibrate
ACC_2 Acc_2 Longitudinal accelerometer Calibrated Calibrate
ACC_1 Acc_1 Lateral accelerometer Calibrated Calibrate
CH_6 Channel_6 Potentiometer distance Default value Calibrate
CH_5 Channel_5 Potentiometer distance Default value Calibrate
CH_4 Channel_4 Potentiometer distance Default value Calibrate
CH_3 Channel_3 Potentiometer distance Default value Calibrate
Sensors to calibrate
Chan... Channel name Sensor type Status Click here to calibrate
CH_1 Channel_1 Zero based potentiometer Default value Calibrate
CH_2 Channel_2 Mid zero potentiometer Default value Calibrate
CH_8 Channel_8 Gear potentiometer To calibrate Calibrate
Transmit calibration
Cancel

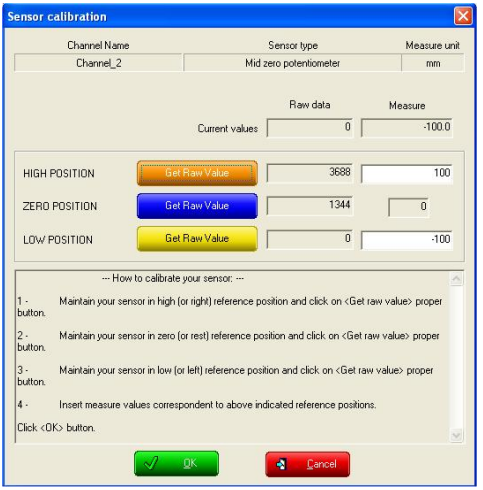
- Follow the instruction prompted by your Pc: calibration status will turn from "**Default value/To calibrate**" to "**Calibrated**"



- Transmit the configuration to the logger

Here below are shown two calibration window: a zero based potentiometer on the left and a mid zero potentiometer on the right. The Pc prompts itself the proper instruction according to the sensor is being calibrated/auto-calibrated.



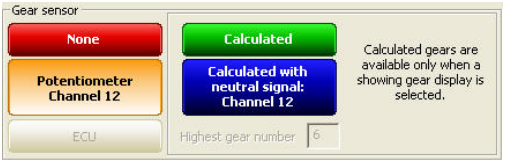


Please note – the sensor calibration procedure is necessary to acquire correct data.

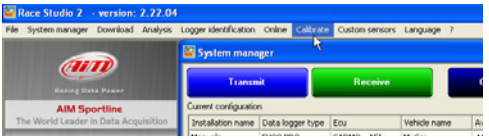
10.2.1 – How to calibrate a gear sensor (potentiometer)

To calibrate the gear sensor:

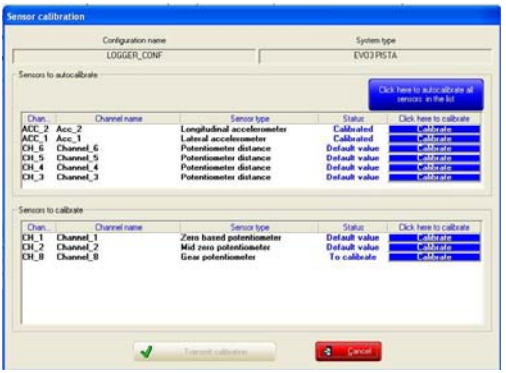
- set “Potentiometer channel 8/12” in “System configuration” layer;



- click on “Calibrate” button on Race Studio 2 top toolbar;

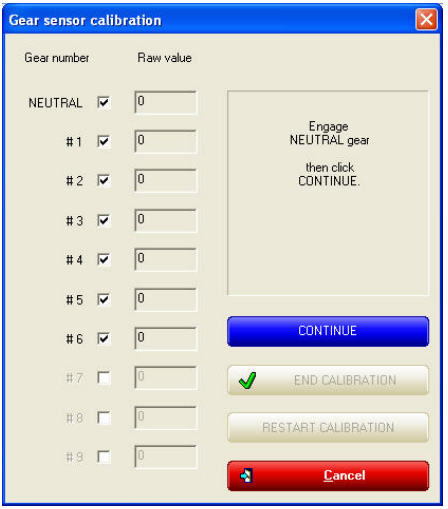


- click on “**Calibrate**” button corresponding to Gear sensor.

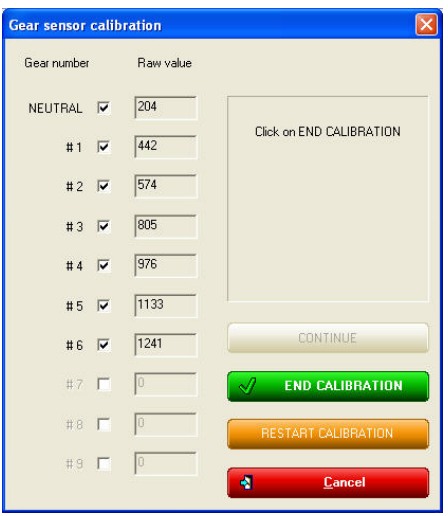


The window on the right appears:

- check the boxes corresponding to available gears (up to 9)
- engage neutral gear
- press "**continue**" button
- engage first gear
- press "**continue**" button
- repeat this procedure until the last gear has been engaged.



- Press "**end calibration**" button
- Transmit the final calibration to your EVO3.



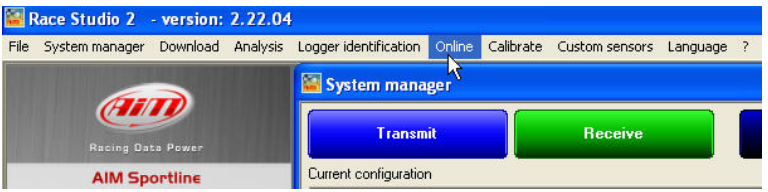
Please note: to correctly execute this procedure the logger has to be turned ON and correctly connected to PC.

Chapter 11 – “Online” function

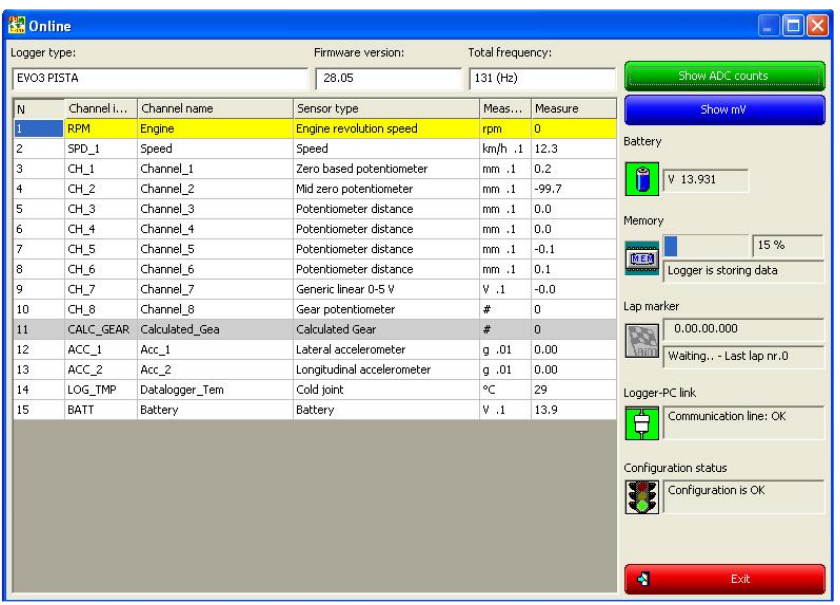
”Online” function is used to check that everything works properly.

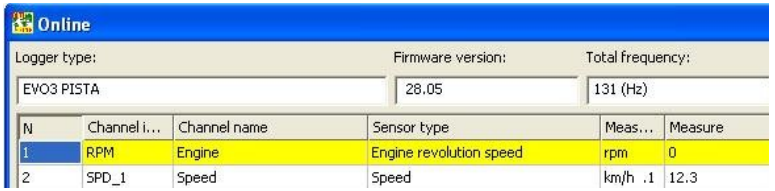
After sensor calibration / auto calibration, we suggest you to enter “Online”.
To do so, please:

- ensure that EVO3 is connected to the PC and switched on
- press “Online” button in Race Studio 2 top toolbar.



On line windows opens:



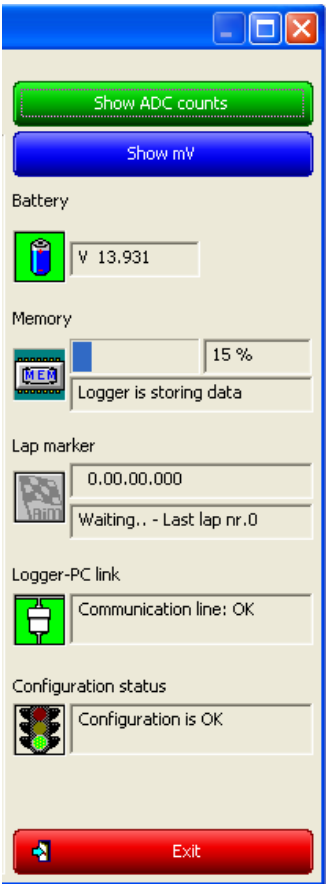


On top it shows:

- Logger type: EVO3 Pista/Pro
- Firmware version of the logger
- Total sampling frequency: it's the sum of the sampling frequencies of all logger channels.

In the centre it shows channels table.

N	Channel i...	Channel name	Sensor type	Meas...	Measure
1	RPM	Engine	Engine revolution speed	rpm	0
2	SPD_1	Speed	Speed	km/h .1	12.3
3	CH_1	Channel_1	Zero based potentiometer	mm .1	0.2
4	CH_2	Channel_2	Mid zero potentiometer	mm .1	-99.7
5	CH_3	Channel_3	Potentiometer distance	mm .1	0.0
6	CH_4	Channel_4	Potentiometer distance	mm .1	0.0
7	CH_5	Channel_5	Potentiometer distance	mm .1	-0.1
8	CH_6	Channel_6	Potentiometer distance	mm .1	0.1
9	CH_7	Channel_7	Generic linear 0-5 V	V .1	-0.0
10	CH_8	Channel_8	Gear potentiometer	#	0
11	CALC_GEAR	Calculated_Gea	Calculated Gear	#	0
12	ACC_1	Acc_1	Lateral accelerometer	g .01	0.00
13	ACC_2	Acc_2	Longitudinal accelerome:er	g .01	0.00
14	LOG_TMP	Datalogger_Tem	Cold joint	°C	29
15	BATT	Battery	Battery	V .1	13.9

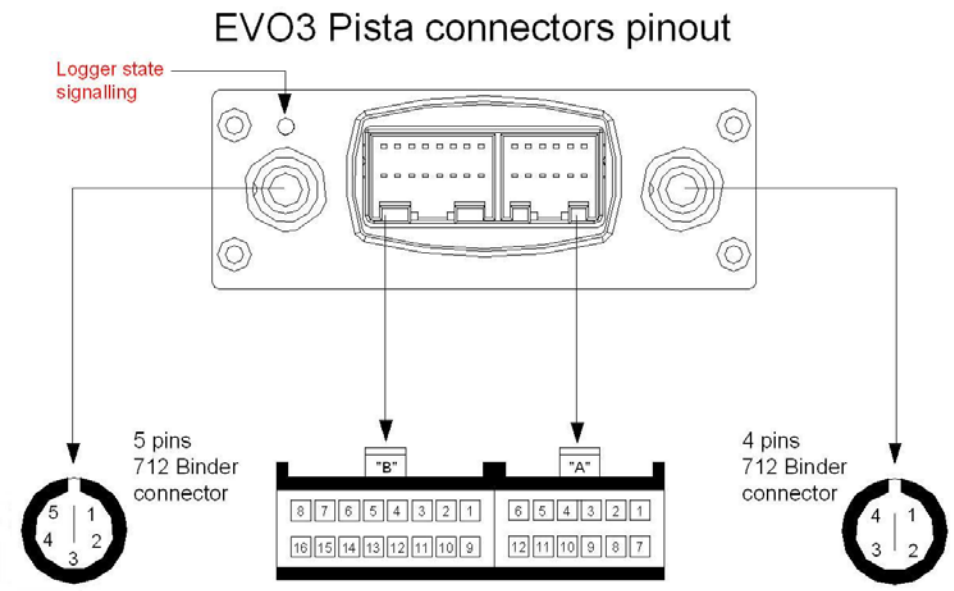


On the right it shows:

- "Show ADC counts" button mainly used by AIM staff
- "Show mV" button mainly used by AIM staff
- Battery: shows the actual battery voltage
- Memory: shows memory status (used and available)
- Lap marker: checks transmitter / receiver channels. **Please place** the transmitter in front of the receiver to test this function.
- Logger-Pc link: shows USB connection status
- Logger configuration: shows logger configuration status.
- Exit: exit on line window.

Please note: if this warning message appears, check that USB cable is correctly plugged in Pc USB ports and in logger one and try again.

Appendix – technical draws



5 Pins 712 Binder Connector pinout

PIN	Connection
1	CAN 0+
2	GND
3	+ VB
4	CAN 0-
5	9-15V Ext. battery

4 Pins 712 Binder Connector pinout

PIN	Connection
1	Magnetical Lap
2	GND
3	+VB
4	Optical Lap

Logger State signalling

Led Status	Logger Status
Blinking 1 Hz	Waiting to record
On (not blinking)	Recording
Blinking 3 Hz	Logger status non ok

"A" 12 pins AMP connector pinout		"B" 16 pins "AMP" connector pinout	
PIN	Connection	PIN	Connection
1	GND	1	+ Analog Input 4
2	9-15V Ext. Battery	2	V reference
3	CAN 1- (ECU Interface)	3	Analog GND
4	CAN 1+ (ECU Interface)	4	+ Analog Input 3
5	RS232TX (ECU Interface)	5	+ Analog Input 2
6	RS232RX (ECU Interface)	6	V reference
7	USB D-	7	Analog GND
8	Rpm 150-400 coil & sq.wave RPM (>8V)	8	+ Analog Input 1
9	+VB	9	+ Analog Input 8
10	GND	10	USB D+
11	+VB	11	Analog GND
12	Speed	12	+ Analog Input 7
		13	+ Analog Input 6
		14	V reference
		15	Analog GND
		16	+ Analog Input 5

N.rev. / Rev. N.	Descrizione / Description	Data / date	Firma / Sign	Contr. da / Ckd. by

EVO3 Pista metallic Binder connectors harness

Rif. / Ref.	Q.tà / Q.ty	Materiale / Material			N. articolo / Item N.	
Progettato da / Designed by: LI		Contr. da / Ckd. by	Approvato da / Approved by	Nome file / File name: Cavo_EVO 3_Pista_Binder_metallic_tpl_eng.dwg	Data / Date: 22.11.2007	Scala / Scale

Titolo / Title: EVO3 Pista metallic Binder connectors harness		
N. disegno / Drawing N.: 04.554.56	Rev. / Rev.	Foglio / Sheet: 1 di 3

Table 1 - Binder 712 female connectors

Label	PIN Binder	Cable Type	Cable colour	PIN AMP 12	PIN AMP 16	Connection	Lenght
Ch. 1	1 2 3 4	4x0.35mm²	white black red bleu		8 7 6	Analog input 1 Analog GND V reference	350 mm
Ch. 2	1 2 3 4	4x0.35mm²	white black red bleu		5 7 6	Analog input 2 Analog GND V reference	350 mm
Ch. 3	1 2 3 4	4x0.35mm²	white black red bleu		4 3 6	Analog input 3 Analog GND V reference	350 mm
Ch. 4	1 2 3 4	4x0.35mm²	white black red bleu	9	1 3 2	Analog input 4 Analog GND +VB V reference	400 mm
Ch. 5	1 2 3 4	4x0.35mm²	white black red bleu	9	16 15 2	Analog input 5 Analog GND +VB V reference	400 mm
Ch. 6	1 2 3 4	4x0.35mm²	white black red bleu	9	13 15 2	Analog input 6 Analog GND +VB V reference	400 mm
Ch. 7	1 2 3 4	4x0.35mm²	white black red bleu	11	12 11 14	Analog input 7 Analog GND +VB V reference	450 mm
Ch. 8	1 2 3 4	4x0.35mm²	white black red bleu	11	9 11 14	Analog input 8 Analog GND +VB V reference	450 mm
Speed	1 2 3 4	4x0.35mm²	white black red bleu	12 10 11		Speed GND +VB	450 mm

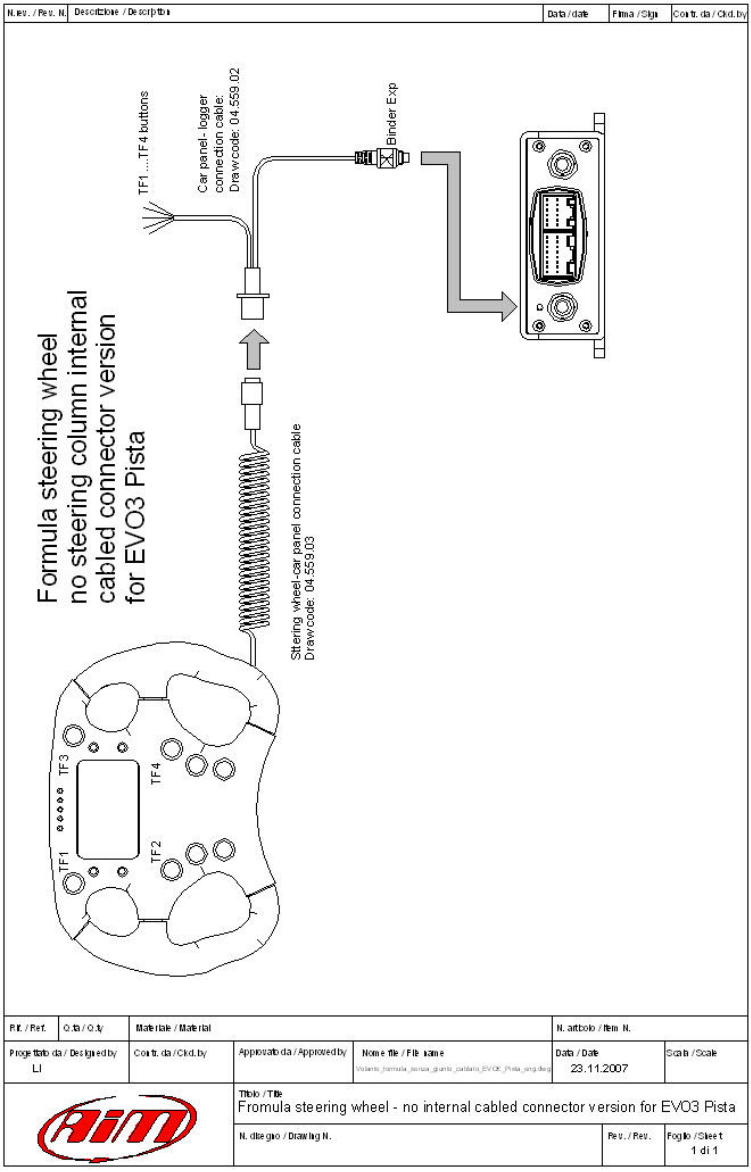
Table 2 - Binder 719 female connector

Label	PIN Binder	Cable type	Cable Colour	PIN AMP 12	PIN AMP 16	Connection	Lenght
USB	1 2 3 4	4x0.35mm²	white black red bleu	10 7	10	USB D+ GND USB D-	1000 mm

Table 3 - Channels cabled without connectors

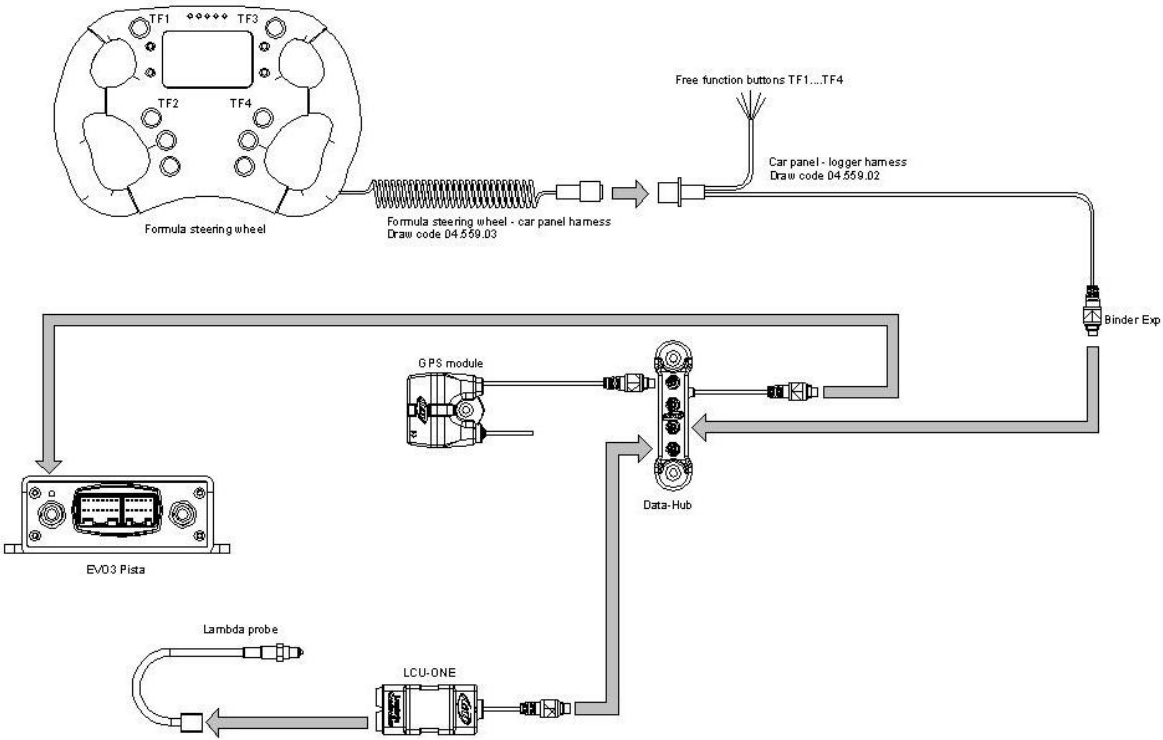
Channel	Cable type	Cable Colour	PIN AMP 12	PIN AMP 16	Connection	Lenght
Power	1x0,5 mm² 1x0,5 mm²	red black	2 1		9-15VDC GND	500 mm
RPM	1x0,5 mm²	white	8		rpm coil-square wave	500 mm
CAN	1x0,5 mm² 1x0,5 mm²	white bleu	4 3		CAN+ CAN-	500 mm
RS232	1x0,5 mm² 1x0,5 mm²	white blu	6 5		RS 232 RX RS 232 TX	500 mm

Rif. / Ref. / O.ta / O.ty	Materiale / Material			N. articolo / Item N.	
Progettato da / Designed by: LI	Contr. da / Ckd. by	Approvato da / Approved by	Nome file / File name: Cavo_EVO3_Pista_Binder_metallic_ip3_eng.dwg	Data / Date: 23.11.2007	Scala / Scale
	Titolo / Title: EVO3 Pista metallic Binder connectors harness				
	N. disegno / Drawing N.: 04.554.56			Rev. / Rev.	Foglio / Sheet: 3 di 3

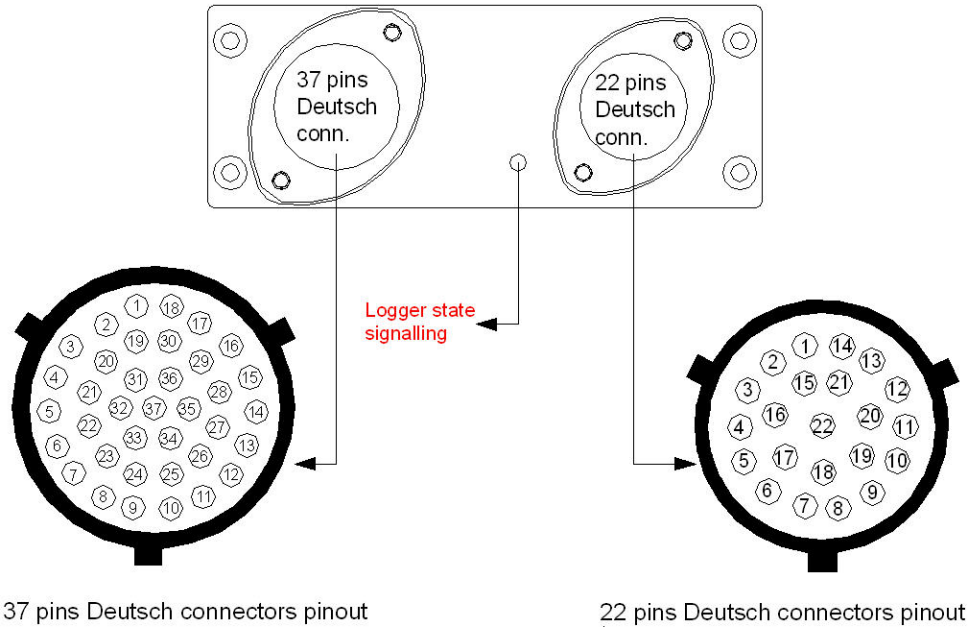

N.rev. / Rev. N.
Descrizione / Description
Data / date
Firma / Sign
Contr. da / Ckd. by
Formula steering wheel
no steering column internal
cabled connector version
for EVO3 Pista
TF1 ....TF4 buttons
Car panel- logger
connection cable:
Draw code: 04.559.02
Binder Exp
Sttering wheel-car panel connection cable
Draw code: 04.559.03
TF1
TF2
TF3
TF4
Rif. / Ref.
Q.tà / Q.ty
Materiale / Material
N. articolo / Item N.
Progettato da / Designed by
LI
Contr. da / Ckd. by
Approvato da / Approved by
Nome file / File name
Data / Date
23.11.2007
Scala / Scale
Titolo / Title
Fromula steering wheel - no internal cabled connector version for EVO3 Pista
N. disegno / Drawing N.
Rev. / Rev.
Foglio / Sheet
1 di 1

Example of Formula steering wheel with

EVO3 Pista - GPS and LCU Expansion modules wiring diagram



EVO3 Pro Deutsch connectors pinout



37 pins Deutsch connectors pinout

22 pins Deutsch connectors pinout

Logger State signalling

Led Status	Logger Status
Blinking 1 Hz	Waiting to record
On (not blinking)	Recording
Blinking 3 Hz	Logger status not ok

37 Pins Deutsch Connector Pinout	
PIN	**CONNECTION**
1	VB Ext.
2	+Analog Input 1
3	+Analog Input 2
4	Analog GND
5	Analog GND
6	V reference 3
7	V reference 2
8	+Analog Input 3
9	+Analog Input 4
10	+Analog Input 6
11	Analog GND
12	RPM 4-8V
13	RPM in
14	+VB
15	GND
16	+VB
17	+VB
18	GND
19	+Analog Input 11
20	+Analog Input 12
21	V reference 5
22	V reference 1
23	+Analog Input 10
24	V reference 6
25	+Analog Input 9
26	+Analog Input 8
27	Analog GND
28	GND
29	+VB
30	Speed1
31	Analog GND
32	+Analog Input 5
33	+Analog Input 7
34	V reference 4
35	Analog GND
36	Speed
37	Lap in

22 pins Deutsch connector Pinout	
PIN	**CONNECTION**
1	+VB
2	GND
3	CAN 0-
4	CAN0+
5	Speed 2
6	Speed 3
7	D+
8	D-
9	GND
10	+VB
11	GND
12	GND
13	+VB CAN
14	Ext. Gear Flash
15	Ext. input 1
16	Ext. input 2
17	232 RX
18	232 TX
19	GND
20	CAN 1+
21	CAN 1-
22	VB ext.

N.rev. / Rev. N.	Descrizione / Description	Data / date	Firma / Sign	Contr. da / Ckd. by

EVO3 Pro - 37 pin Deutsch connector harness

4 pins Binder 719
female connector pinout
solder termination view

SEZ A-A

37 pin Deutsch connector pinout
Contact insertion view

Rif. / Ref.	Q.tà / Q.ty	Materiale / Material		N. articolo / Item N.	
Progettato da / Designed by: LI	Contr. da / Ckd. by	Approvato da / Approved by	Nome file / File name: Cavo_EVO3Pro_37pin_fg1_eng.dwg	Data / Date: 23.11.2007	Scala / Scale

Titolo / Title
EVO3 Pro - 37 pins Deutsch connector harness

N. disegno / Drawing N.	Rev. / Rev.	Foglio / Sheet
04.549.50	2	1 di 3

Table 1 - channels cabled with connectors

37 Pins Deutsch Connector pin	Cable Colour	Destination Connector	Destination Connector pin	Cable type	Lenght	Channel
2 4 21	white black red bleu	Binder Ch.1	1 2 3 4	4x0.35 mm²	340 mm	+An. Input Ch.1 GND V reference
3 4 21	white black red bleu	Binder Ch.2	1 2 3 4	4x0.35 mm²	340 mm	+An. Input Ch.2 GND V reference
8 5 6	white black red bleu	Binder Ch.3	1 2 3 4	4x0.35 mm²	360 mm	+An. Input Ch.3 GND V reference
9 5 6	white black red bleu	Binder Ch.4	1 2 3 4	4x0.35 mm²	360 mm	+An. Input Ch.4 GND V reference
32 31 7	white black red bleu	Binder Ch.5	1 2 3 4	4x0.35 mm²	380 mm	+An. Input Ch.5 GND V reference
10 31 7	white black red bleu	Binder Ch.6	1 2 3 4	4x0.35 mm²	380 mm	+An. Input Ch.6 GND V reference
33 35 34	white black red bleu	Binder Ch.7	1 2 3 4	4x0.35 mm²	400 mm	+An. Input Ch.7 GND V reference
26 35 16 34	white black red bleu	Binder Ch.8	1 2 3 4	4x0.35 mm²	400 mm	+An. Input Ch.8 GND V battery V reference
25 11 16 24	white black red bleu	Binder Ch.9	1 2 3 4	4x0.35 mm²	420 mm	+An. Input Ch.9 GND V battery V reference
23 11 29 24	white black red bleu	Binder Ch.10	1 2 3 4	4x0.35 mm²	420 mm	+An. Input Ch.10 GND V battery V reference
19 27 29 22	white black red bleu	Binder Ch.11	1 2 3 4	4x0.35 mm²	440 mm	+An. Input Ch.11 GND V battery V reference
20 27 17 22	white black red bleu	Binder Ch.12	1 2 3 4	4x0.35 mm²	440 mm	+An. Input Ch.12 GND V battery V reference
37 28 14 37	white black red bleu	Binder Lap o	1 2 3 4	4x0.35 mm²	320 mm	Lap GND V battery Lap
36 28 14	white black red bleu	Binder Speed 1	1 2 3 4	4x0.35 mm²	320 mm	Speed 1 GND V battery
30 28 14	white black red bleu	Binder Speed 2	1 2 3 4	4x0.35 mm²	320 mm	Speed 2 GND V battery

Table of channels cabled without connector					
37 pin Deutsch Connector pin	Cable Colour	Not cabled channel	Cable Type	Lenght	Channel
13 18 12	white black bleu	RPM	1x0.5 mm² 1x0.5 mm² 1x0.5 mm²	520 mm	RPM in GND RPM +8V
15 1	black red	Power	1x0.5 mm² 1x0.5 mm²	520 mm	GND 9-15V Power in

Rif. / Ref.	Q.tà / Q.ty	Materiale / Material			N. articolo / Item N.	
Progettato da / Designed by: LI		Contr. da / Ckd. by	Approvato da / Approved by	Nome file / File name: Cavo_EVO3Pro_37pin_fg3_eng.dwg	Data / Date: 23.11.2007	Scala / Scale

Titolo / Title: EVO3 Pro - 37 pins Deutsch connector harness

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EVO3 Pro 12 Ch. - 22 pins Deutsch Connector Harness

P.N. / Part.	Q.tà / Q.ty	Materiale / Material		N. articolo / Item N.	
Progettato da / Designed by: LI	Contr. da / Ckd. by	Approvato da / Approved by	Nome file / File name: Cavo_EVO3Pro_22pls_fgl_eng.dwg	Data / Date: 23.11.2007	Scala / Scale

Titolo / Title: EVO3 Pro - 22 pin Deutsch Connector Harness		
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Table 1 - Channels cabled with connectors							
22 pins Deutsch Connector pin	Cable colour	Destination Connector	Destination Connector pin	Cable Type	Length	Channel	Label
7 9 8 n.c.	white black red bleu	Binder USB	1 2 3 4	4x0.35 mm²	1100 mm	USB D+ GND USB D-	USB
5 11 10 n.c.	white black red bleu	Binder Speed 3	1 2 3 4	4x0.35 mm²	300 mm	Speed 3 GND V battery	Speed 3
6 11 10 n.c.	white black red bleu	Binder Speed 4	1 2 3 4	4x0.35 mm²	300 mm	Speed 4 GND V battery	Speed 4
4 2 13 3	white black red bleu	Binder met. Exp.	1 2 3 4 5	4x0.35 mm²	350 mm	CAN 0+ GND V battery CAN 0-	Exp.
14 2 14 1	white black bleu red	Bind. gear flash	1 2 3 4	4x0.35 mm²	350 mm	gear flash GND gear flash V battery	gear flash

Table 2 - Channels cabled without connectors					
22 pins Deutsch connector pin	Cable Colour	Not cabled channel	Cable type	Length	Channel
15 12	white black	Digit. input 1	1x0.5 mm² 1x0.5 mm²	550 mm	IN 1 GND
16 12	yellow black	Digit. input 2	1x0.5 mm² 1x0.5 mm²	550 mm	IN 2 GND
20 19 21	white black bleu	CAN	1x0.5 mm² 1x0.5 mm² 1x0.5 mm²	550 mm	CAN 1+ GND CAN 1-
17 19 18	white black bleu	RS232	1x0.5 mm² 1x0.5 mm² 1x0.5 mm²	550 mm	RS232 RX GND RS232 TX

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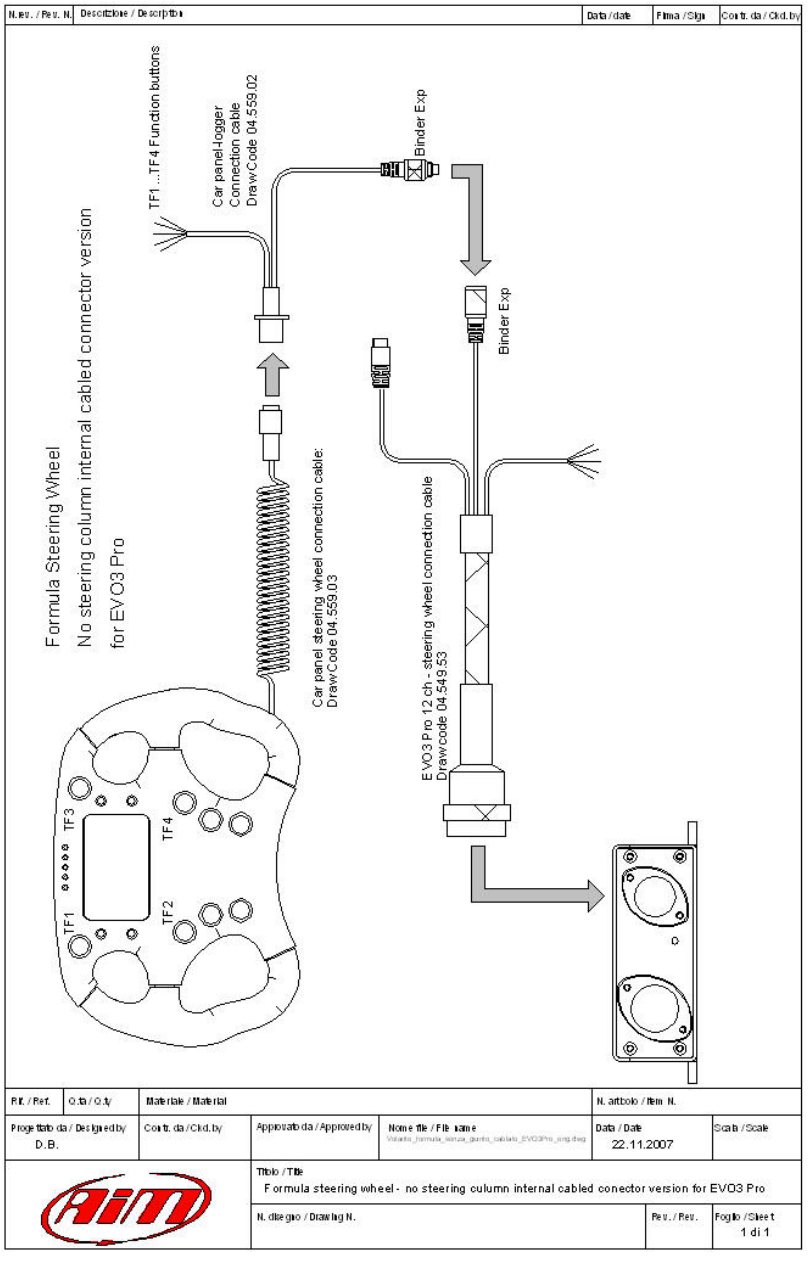
Progettato da / Designed by: LI	Contr. da / Ckd. by	Approvato da / Approved by	Nome file / File name: Cavo_EVO3Pro_22pin_fg2_eng.dwg	Data / Date: 23.11.2007	Scala / Scale	
Titolo / Title: EVO3 Pro - 22 pin Deutsch Connector Harness						
N. disegno / Drawing N.: 04.549.53				Rev. / Rev.: 4	Foglio / Sheet: 2 di 2	


N.rev. / Rev. N.
Descrizione / Description
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Firma / Sign
Contr. da / Ckd. by
Formula Steering Wheel
No steering column internal cabled connector version
for EVO3 Pro
TF1 ...TF4 Function buttons
Car panel-logger
Connection cable
DrawCode 04.559.02
Binder Exp
Binder Exp
Car panel steering wheel connection cable:
DrawCode 04.559.03
EVO3 Pro 12 ch. steering wheel connection cable
Draw code 04.549.53
TF1
TF2
TF3
TF4
Rif. / Ref.
Q.tà / Q.ty
Materiale / Material
N. articolo / Item N.
Progettato da / Designed by
D.B.
Contr. da / Ckd. by
Approvato da / Approved by
Nome file / File name
Data / Date
22.11.2007
Scala / Scale
Titolo / Title
Formula steering wheel - no steering column internal cabled conector version for EVO3 Pro
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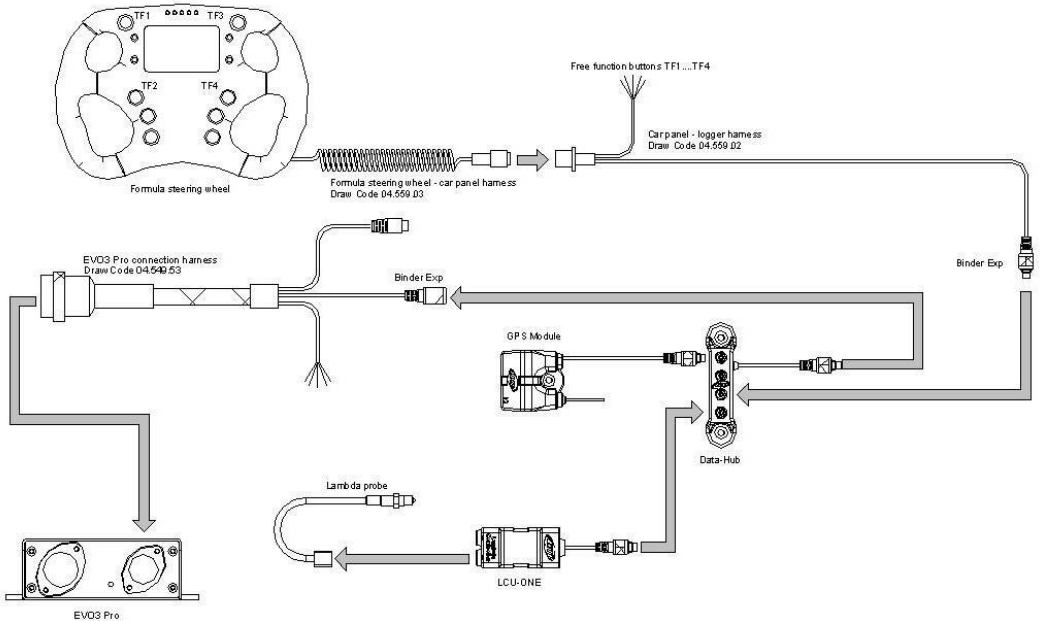
Example of

Formula steering wheel with EVO3 Pro - GPS and LCU expansion modules wiring diagram



N.rev. / Rev. N.	Descrizione / Description	Data / date	Firma / Sign	Contr. da / Ckd. by

Formula steering wheel - car panel connection harness

8 pins ITT male flying connector pinout
Contact insertion view

Channels cabled with connectors						
10 pins Hirose female connector pinout	Cable Colour	8 pins ITT male flying connector pinout	Channel	Cable type	Lenght
1	Green	A	CAN 0+	8x0.14 mm²	300 mm
2	Grey	B	GND		
3	White	C	Vbattery		
4	Light bleu	D	CAN 0-		
5	Pink	E	TF4		
6	Brown	F	TF3		
7	Yellow	G	TF2		
8	Violet	H	TF1		
9					
10					

P.N. / Part.	Q.tà / Q.ty	Materiale / Material		N. articolo / Item N.	
Progettato da / Designed by: LI	Contr. da / Ckd. by	Approvato da / Approved by	Nome file / File name: Cavo_volante_Formula-pannello_eng.dwg	Data / Date: 23.11.2007	Scala / Scale
	Titolo / Title: Formula steering wheel - car panel connection harness				
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Formula steering wheel from car panel to logger harness

5 pins Binder 712
mail connector
pinout
contact insertion view

8 pins ITT female
on the panel
connector pinout
contact insertion view

Rif. / Ref.	Q.tà / Q.ty	Materiale / Material			N. articolo / Item N.	
Progettato da / Designed by: LI	Contr. da / Ckd. by	Approvato da / Approved by	Nome file / File name: Cavo_pannello_Formula-logger_fg1_eng.dwg		Data / Date: 23.11.2007	Scala / Scale
	Titolo / Title: Formula steering wheel from car panel to logger harness					
	N. disegno / Drawing N.: 04.559.02				Rev. / Rev.	Foglio / Sheet: 1 di 2

Table 1 - Channels cabled with connectors							
8 pins ITT female on the panel connector pinout	Cable colour	Destination Connector	Destination Connector pin	Cable type	Lenght	Channel	Label
A B C D	bianco nero rosso blu	Binder met. Exp.	1 2 3 4 5	4x0.35mm²	450 mm	CAN 0+ GND V battery CAN 0-	Exp.

Table 2 - channels cabled without connectors				
8 pins ITT female on the panel connector pinout	Cable Colour	Cable type	Lenght	Channel
H G F E B	white red bleu orange black	5x0.25mm²	2350 mm	TF1 TF2 TF3 TF4 GND

Pz. / Pcs.	Q.tà / Q.ty	Materiale / Material		N. articolo / Item N.	
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Titolo / Title: Formula steering wheel from car panel to logger harness

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