Solo 2 DL GPS Lap Timer

USER GUIDE 1.00

Made in Italy

www.aim-sportline.com

Solo 2 DL GPS Lap Timer

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1. Solo 2 DL in a few words

What is Solo 2 DL?

Solo 2 DL is the new AiM GPS log-timer (laptimer with internal data logger) that combines small dimensions, usability and logging capability.

Why Solo 2 DL?

Because it features:

- ECU connection
- up to 8 configurable display pages in addition to all Solo 2 DL features, to say:
- integrated GPS + Glonass receiver
- a huge tracks database that Solo 2 DL manages to automatically select the track where you are racing
- a powerful and comfortable Wi-Fi connection
- different type of races: speed and performance
- 10 RGB LEDs that clearly show if you are improving or not
- a huge amount of internal memory (four gigabytes) capable of recording a lot of tests

What about ECU connection?

Solo 2 DL manages all the hardware ECU connections as well as all the communication lines: CAN, K-Line, RS232. Its huge database includes more than 1500 protocols you can load in your Solo 2 DL.

If the vehicle does not have an ECU?

In case your vehicle does not have an ECU, you can anyway connect Solo 2 DL to an RPM wave to synchronize RPM to the position on the track thanks to the RPM power cable.

Anything else?

Of course yes.
An app for iPhone is coming! In a few weeks you will be able to analyse essential data on your iPhone; furthermore, you will be able to see in real time all the values Solo 2 DL samples, upgrade its firmware, create new tracks as well as update your database and modify Wi-Fi settings.

2. What is in the kit?

Solo 2 DL kit includes:

1 - Solo 2 DL
2 - Solo 2 cable to choose among:
CAN/K-Line/External power cable with OBDII connector
CAN/RS232 external power cable
RPM/External power cable
(if your vehicle has no ECU)
3 - Solo 2 DL battery charger, available in four versions with Australian, UK, USA and European adaptor
4 - Solo 2 DL mounting bracket with screws

Solo 2 DL user manual
Race Studio 3 software installation CD
AiM sticker and AiM 2018 Racing Guide

2

2

1

3

2

4

3. Installation, powering and accessories

Thanks to its small dimensions and to the different accessories available for installation Solo 2 DL can be installed on almost any kind of motorsport vehicle.
Solo 2 DL is powered by the vehicle battery and its switches off with the vehicle engine.
AiM provides different installation accessories, to say:

- support for roll-bar:
  X46KSTG00

- support for generic tube:
  X46KSTP00

- support for suction cup:
  X46KSVS00

4. What is multiple configurations feature?

Solo 2 DL can receive up to 10 configurations, allowing you to select the one you need in each situation. This is also very helpful for a team manager, that can customize the configuration(s) for each racer.

Multiple configurations can be transmitted to Solo 2 DL and selected using Solo 2 DL keyboard as explained in the related paragraphs.

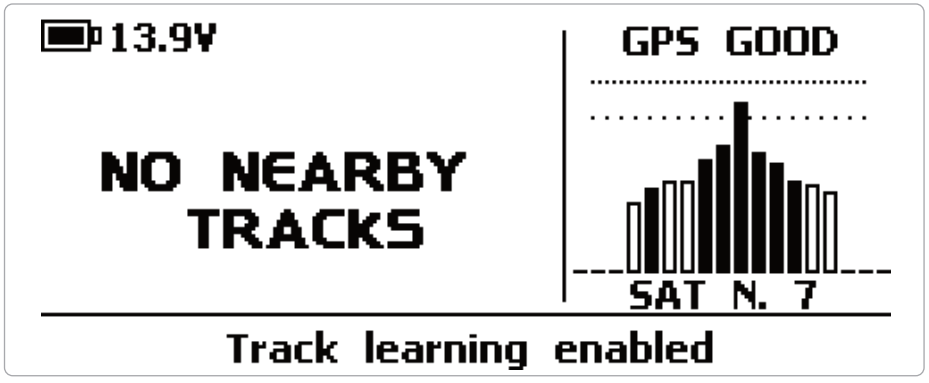
Solo 2 DL

Wide display
Integrated GPS
Magnets
SOLO 2 DL
SAT 8
RPM
10752
KMH
196
RGB predictive lights
Power and battery charge
Nylon body

R
AUTO
SOLO 2 DL
L 3
1:42.37
1:42.56

5. At power ON

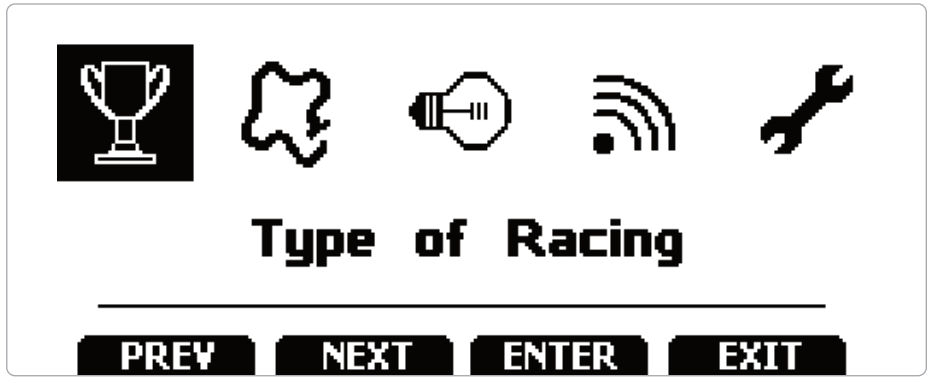
When switched on Solo 2 DL shows satellite page.



To optimize the display management, the keyboards disappears when not necessary.
Please simply press one of the pushbuttons for making it show up again.

6. What you can do via keyboard

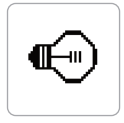
Solo 2 DL is mainly configurable using Race Studio 3 software but some functions are settable via keyboard as explained here below.
Press "MENU" and this page shows up.



The icons are to manage:

Type of racing

Tracks Management



Backlight

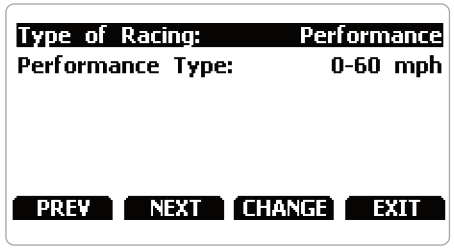
Wi-Fi

System settings

6.1 Type of racing

Solo 2 DL features two different type of races, each of them with different options:

- speed (left image below)
- performance (right image below)



Speed racing

Solo 2 DL automatically selects the track in which you are performing. After having found the proper track, it may calculate and show:

- the lap times
- the predictive lap time: the time at the end of the current lap computed looking at the actual speed, compared with a reference lap; the predictive lap time may be shown as an **Absolute Time** (i.e. 1:34:45) or as a **Gap** (i.e. +/- 0.25 sec) between the actual lap and a reference lap. The reference lap may be:
  - the best lap of the test or
  - the best lap of the day

"Memo trigger" " option allows you to decide when your Solo 2 DL starts recording. Available options are:

- RPM or Speed values: Solo 2 DL starts recording when one of the following condition is first met: RPM higher than 500 or speed higher than 10 km/h
- Speed value: Solo 2 DL starts recording when speed is higher than 10 km/h

Performance racing:

This racing mode shows you different performance options according to the measure unit you set in "System settings" –> "Unit of measure" menu:

- using **imperial** unit of measure (mph) the available performance options are:
  - 0 - 60 mph
  - 60 - 0 mph
  - 1/8 miles
  - 1/4 miles

- using **decimal** unit of measure (km/h) the available options are:
  - 0 -100 km/h
  - 0 -160 km/h
  - 100 m
  - 150 m
  - 400 m
  - 1000 m

6.2 Track management

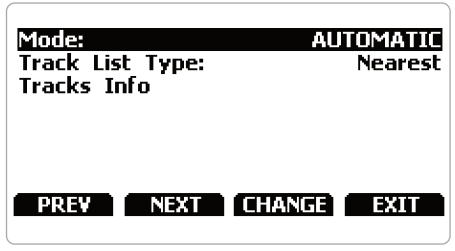
Solo 2 DL built in GPS receiver is used for:

- Lap time calculation
- Speed calculation
- Predictive lap time calculation
- Position on the track in Analysis.

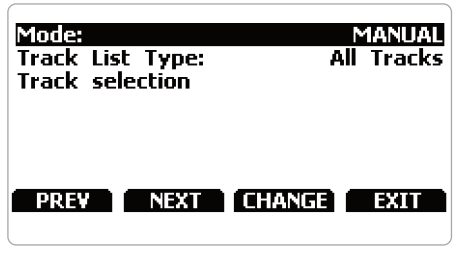
To calculate these data the system needs to know the Start/Finish line coordinates.

Solo 2 DL comes with a long list of the world main tracks, list that is constantly updated by our technicians and is downloaded on your PC when you run our Analysis software and an Internet connection is available.
Solo 2 DL provides two track selection modes: automatic and manual.

Automatic:
The system automatically recognizes the track you are running on, loads start/finish line and calculates lap times. This is the best mode in most cases.



Manual:
allows you to manually select the track from the internal database.
This mode is to be preferred when multiple track configurations are available nearby. In this case Solo 2 DL would anyway recognize the track but would need at least one complete track lap.
To be ready from the first lap manual mode would be helpful.



Both track modes provide three track list type:

- nearest: shows only tracks in a 10 km distance with max 50 tracks shown
- all tracks: shows all tracks stored in the system in alphabetical order
- custom: shows only the tracks you have previously created (learning mode)

6.2.1 Creating a track with Solo 2 DL

If you are running in a track NOT included in Solo 2 DL database the device switches to "learning" mode and behave this way:

- it starts sampling all track points
- when detects that it is crossing the same points for the second time it realizes that the track is closed and sets a temporary start/finish line showing lap time each time it crosses that point;
- at the end of the session the system shows the track map with start/finish line: you can move start/finish line using Solo 2 DL bottom buttons;
- you can add this new map to Solo 2 DL database, modify start/finish line coordinates, name the track and transmit it to the PC at first PC-Solo 2 DL connection

You find a deeper explanation of track management with Race Studio 3 in the related chapter and a "Track manager" user manual is available in documentation area, firmware/software of www.aim-sportline.com.

6.3 Backlight

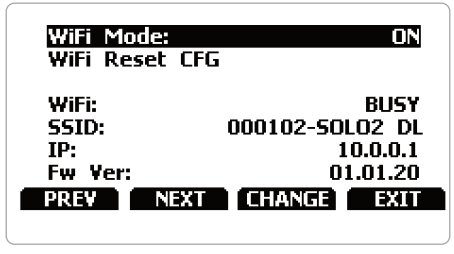
You can set Solo 2 DL backlight as "ON" (default setting) or "OFF" as well as choose among eight different colours: white, purple, red, green, yellow, blue, magenta and cyan.

6.4 Wi-Fi

Here you can manage Wi-Fi as well as reset its configuration. **Wi-Fi modes** are:

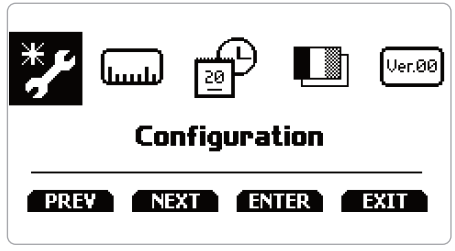
- ON
- Auto: switches Wi-Fi on when the vehicle is stopped and automatically switches it off when Solo 2 DL starts recording (according to "Memo" trigger setting)
- OFF

"Wi-Fi Reset CFG" allows you to reset Wi-Fi configuration and is very useful if you do not remember Wi-Fi password.



6.5 System settings

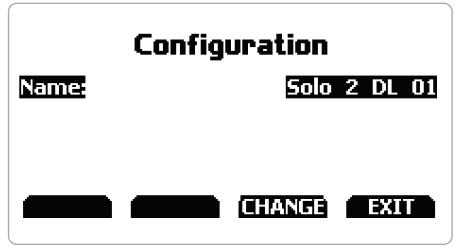
Selecting this icon you enter this page:

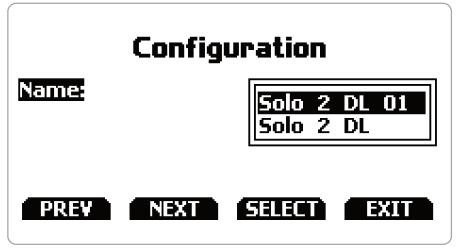


6.5.1 Configurations

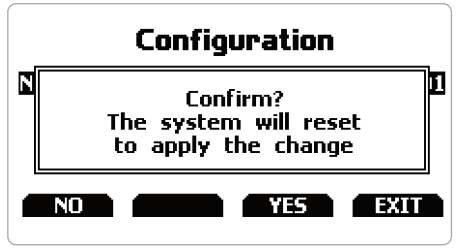
In case you transmitted multiple configurations (max allowed number of configuration is 10 – see the related paragraph) this page shows the one currently in use. To change it:

- press "CHANGE"
- use "PREV" and "NEXT" button to select the configuration to set and press "EXIT"





- The system asks for confirmation: press "YES"



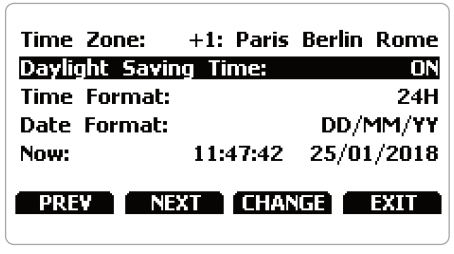
6.5.2 – Unit of measure

You can set the measure unit of:

- speed: km/h or mph: please remember that the measure unit you set here will make you see different options in "Type of Race" menu if selecting "Performance" type (refer to the related paragraph for further information)
- temperature: Celsius/Fahrenheit
- pressure: bar/PSI

6.5.3 Date Time

Here you can set the time zone of your Solo 2 DL as well as enable/disable "Daylight Saving time" option. Time zone is always set manually. Date and time can be shown in different format.
Time is automatically synchronized as Solo 2 DL receives the GPS signal.



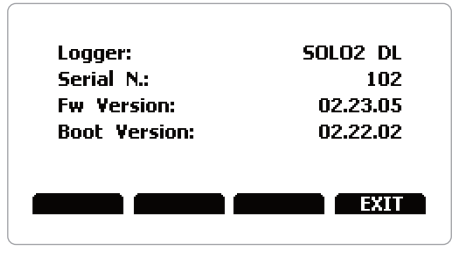
6.5.4 Language

You can set Solo 2 DL language. Default setting is English.
At present available languages are (in this order):

- English
- Italian
- German
- Spanish
- French
- Dutch
- Danish
- Portuguese
- Japanese
- Czech

6.5.5 System info

This page shows serial number as well as firmware and boot version of your Solo 2 DL.



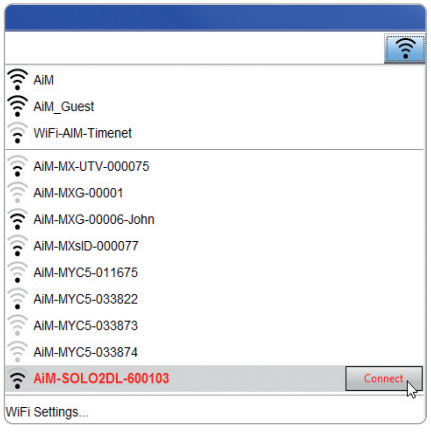
7. Solo 2 DL and the PC

Using AiM Race Studio 3 software you can configure Solo 2 DL, manage its tracks as well as check other device functions using the device window.

7.1 Connection to the PC

Solo 2 DL can be connected to the PC only via Wi-Fi. To do it:

- check that Solo 2 DL Wi-Fi is set on "AUTO" or on "ON"
- read your Solo 2 DL name – mid of Solo 2 DL home page bottom line – or look for it in "System Information" page.
- click Race Studio 3 Wi-Fi icon and select your Solo 2 DL.



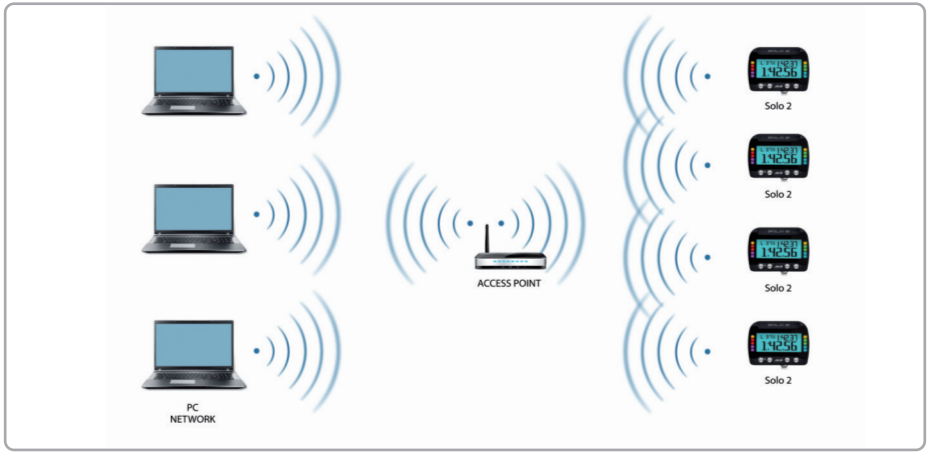
7.1.1 Wi-Fi configuration

Solo 2 DL configuration can be made only using Race Studio 3 software. Two possible Wi-Fi modes are available.

1 – As an Access Point (AP – default)
This is the ideal configuration if you have one only device and one only computer. In this situation your Solo 2 DL creates a Wi-Fi network and works as an Access Point you can connect your PC to.

2 – Existing network (to connect to an existing Wi-Fi network – WLAN)

This mode is complex and implies an external access point (AP) but it is also more flexible and powerful because allows you to communicate with more than one device and with more than one computer in the same network. Solo 2 DL and the PC must connect to an existing Wi-Fi network made by a device that works as an external access point.



When working in WLAN mode Solo 2 DL has two available security levels:

- network authentication: network password
- device authentication: Solo 2 DL password

Both levels allow you to use different strategies. A PC in WLAN, for example, can see several AiM devices but can communicate only with those he knows the password of.

If you forget the password you can reset Wi-Fi configuration from Solo 2 DL menu as explained before.

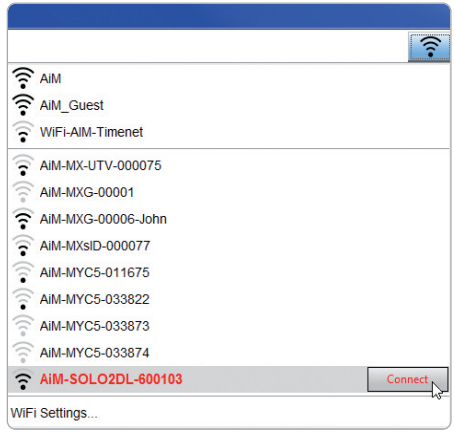
7.1.2 Configuring Solo 2 DL as an access point (AP)

This is Solo 2 DL default configuration and is the easiest and most direct connection mode, ideal if you want to communicate with one Solo 2 DL using one PC. It is free and so completely accessible by anyone. Please set an access password as soon as possible.

To establish a Wi-Fi connection:

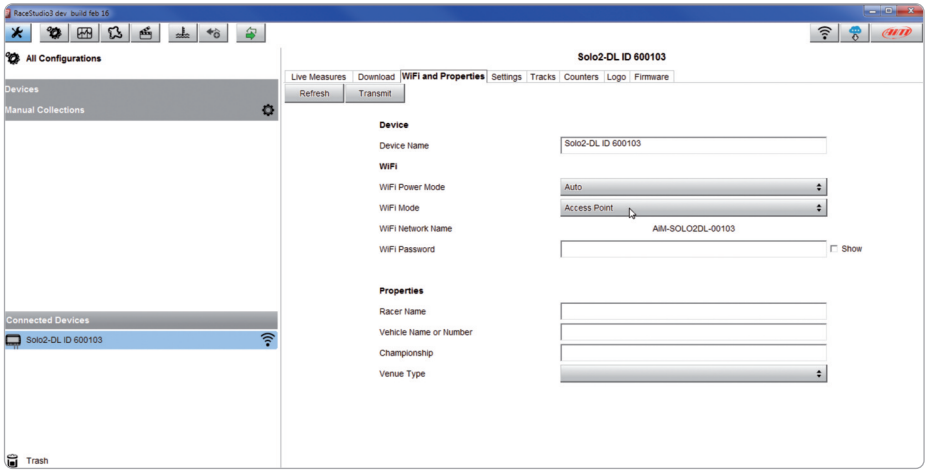
- ensure that the Wi-Fi is enabled
- read your Solo 2 DL Name

- run Race Studio 3
- click Wi-Fi icon and select your device
- in a few seconds the connection is established



To set other parameters create a unique password to protect your device/your network.
With a password the communication is safe and encrypted using WPA2-PSK standard.

Characters allowed in the password are all letters, also capital, all digits and these characters: '+-_()[]{}$£!?^#@*\\\"=~.:;/%"
"Space" type can be used if it is not the first one because this could cause incomprehension in some Windows™ versions.



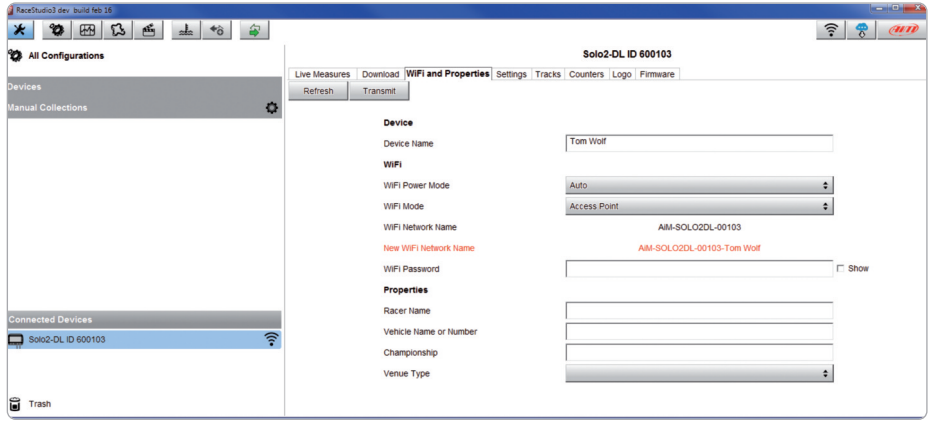
This AP or SSID name is unique for your device.
An example of name is:" AiM-Solo2DL-00103" where:

- "AiM" is the prefix of all AiM devices
- "Solo 2DL" is the device identifier
- "00103" is your device serial number assigned by the factory.

To make your device more recognizable you can add a name to the SSID. The limit is of eight characters. Allowed characters are all letters, capital too, all digits and these characters: '+ - _ () [] {}!.
"Space" type can be used provided that it is not the first one because it can cause incomprehension in some Windows™ versions.
If, for example you add the driver's name, Tom Wolf, the network name (SSID) becomes:

"AiM-Solo2DL-00103-TomWolf"

Once all parameters set click "Transmit". Solo 2 DL reboots and is configured with the new parameters. If Solo 2 DL is protected by a password, as recommended, Race Studio 3 will ask that password to authenticate.



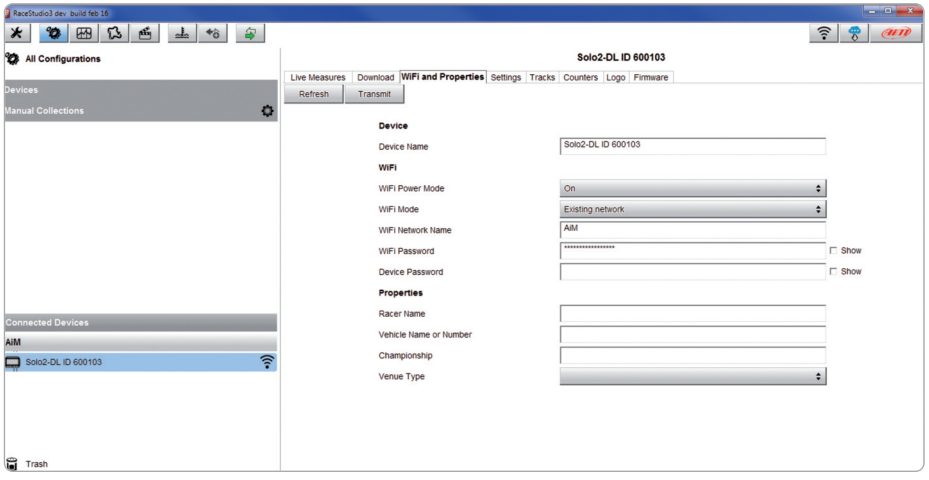
Please Note: the same Wi-Fi connection can be created with the operative system tool. Once the device has been authenticated in the Wi-Fi network you can communicate with it using Race Studio 3.

7.1.3 Adding Solo 2 DL to an existing network

This situation is ideal for a team with multiple drivers and staff members and is desired to communicate with one or more AiM devices using the same PC network.
Each Solo 2 DL can have its password that adds another security and privacy level to the network.
Race Studio 3 will show all Solo 2 DL connected to the same network under " Connected devices" label, bottom left of the software page: click your device.

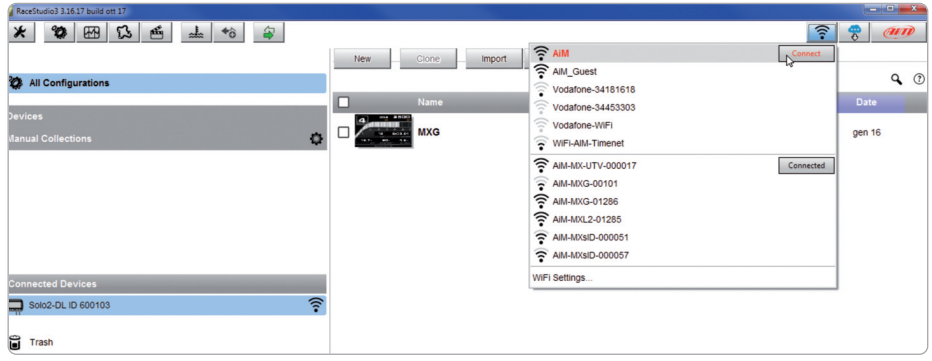
Enter "Wi-Fi and properties" tab and set it on "Existing Network"; fill in network name, network password and device password. Transmit the network settings to your device clicking "Transmit": your device reboots and joins that network.
Please note: the only admitted password are those following WPA2-PSK standard.

To complete this procedure use Race Studio 3 software as here explained.

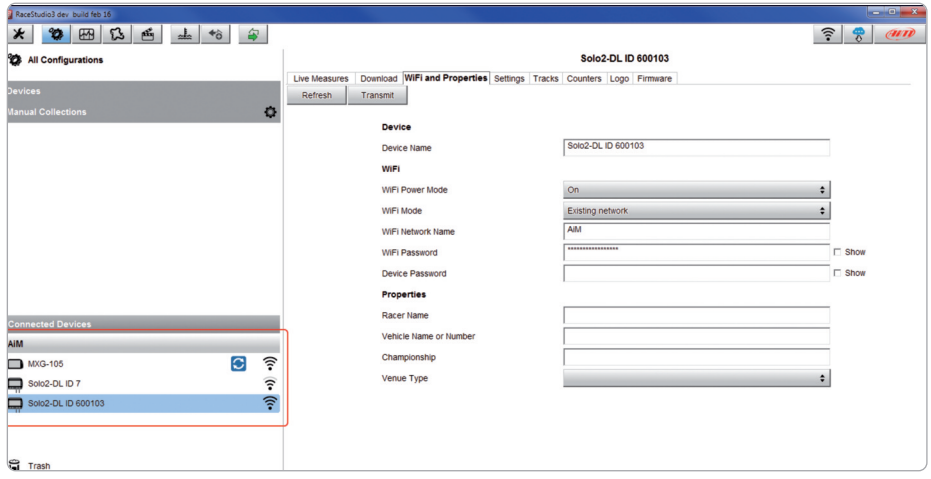


Here above you see a device "Solo2 DL-600103" that switched from AP to WLAN mode (Existing Network).
Network name is "AiM" and does not work with free access because is protected by a password.

To obtain connectivity on the device the PC has to be authenticated to the same network as shown here below.



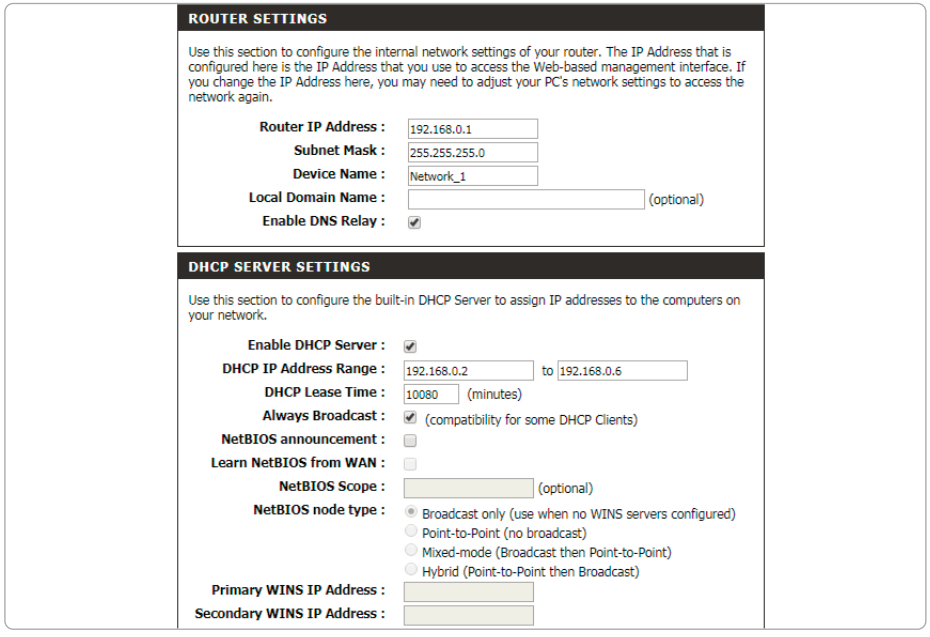
When the PC is authenticated to the network called "AiM" it can see all devices you configured to access the same network. In the image below three AiM devices are connected to the same "AiM" WLAN.



7.1.4 Wi-Fi network settings

In this chapter you find a short description of how to configure a WLAN including AiM devices and a PC.

Here below is an example of configuration.



For better network performances, we suggest the use of a network device equipped with a DHCP server and using 3x3 MIMO technology like, for example a Linksys AS3200.
To maximize the bandwidth, you should not allow the Internet on this WLAN; this means the DHCP server should be configured without any DNS address nor gateway by default.

The parameters for the device network configuration in this example are:

- **Wireless network name: network_1**
  It means that the WLAN network name is "network_1." A PC has to be authenticated in this network to interact with any AiM device of 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 on this WLAN.)

- **Subnet mask: 255.255.255.248**
  Enable DHCP server: yes
  DHCP IP address range: 192.168.0.2 to 192.168.0.6

These settings enable a DHCP server running on this WLAN and provide an IP address in a 2-6 range. This means that this network allows 5 network hosts.

The number of devices on a WLAN network depends on the subnet mask.
Here below you see typical examples of network masks and IP addresses range.

The configuration in bold is the one we suggest (if a greater number of devices is not needed), being the one that makes it easier and quicker for Race Studio 3 the identification of the devices in the network.

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**

7.1.5 The Internet connectivity

For an optimal speed of your AiM device(s) we recommend not to allow the Internet on the same network and to set the WLAN in the same way.
You can of course allow the Internet access on your network but this would degrade the communication.

This slightly slower speed can be suitable for your needs but you can also have a second Wi-Fi connection using an additional hardware (NIC).

This configuration would provide an optimal speed of the data network of your AiM device(s) and at the same time would provide an internet connectivity with the second NIC.

7.1.6 Connection issues

It can occur that Solo 2 DL is correctly connected to Race Studio 3 via Wi-Fi but the user interface does not show it.
This may be because Wi-Fi port setting is set with a static IP. To switch it to dynamic (DHCP):

- open "Network and sharing centre" in the Windows™ research engine
- right click on the Wi-Fi connection and a panel shows up
- select "Properties" option
- double click on "Internet Protocol version 4 (TCP/IPv4)"
- verify that option "Obtain an IP address" is active

For further information refer to FAQ section, Wi-Fi of www.aim-sportline.com.

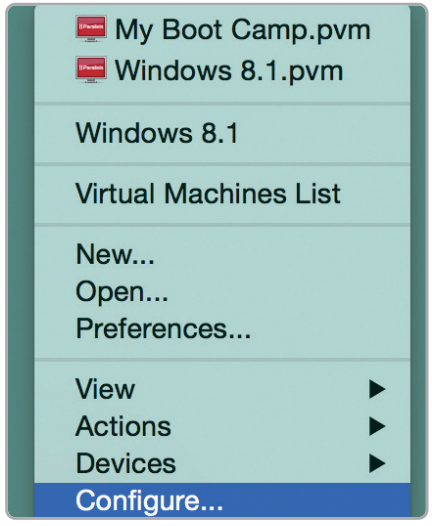
7.1.7 Working on Mac™ with virtualized Windows™

Race Studio 3 only works on Windows™ operative systems; Mac users can use a virtualized Windows™ machine.

The main problem is that the host OS (Mac) must share its Wi-Fi interface with the virtualized operative system (Windows) as Ethernet interface and not as Wi-Fi interface.

Configuring Parallels(™)

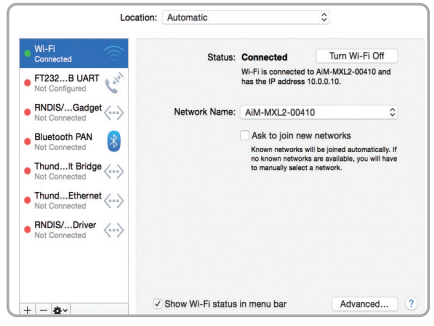
Select "Menu –> Configure…" in Parallels.



Press "Hardware" – top on the page that shows up – and select "Network" in the drop-down menu on the left.

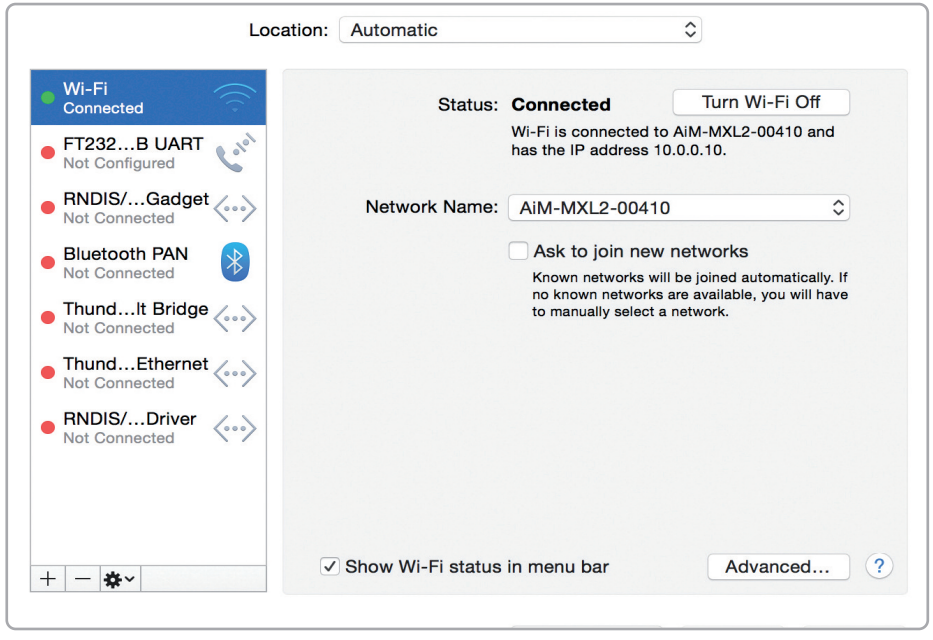
Right on the configuration panel set "Type" field on "Wi-Fi".

Then select the device you want to communicate with.



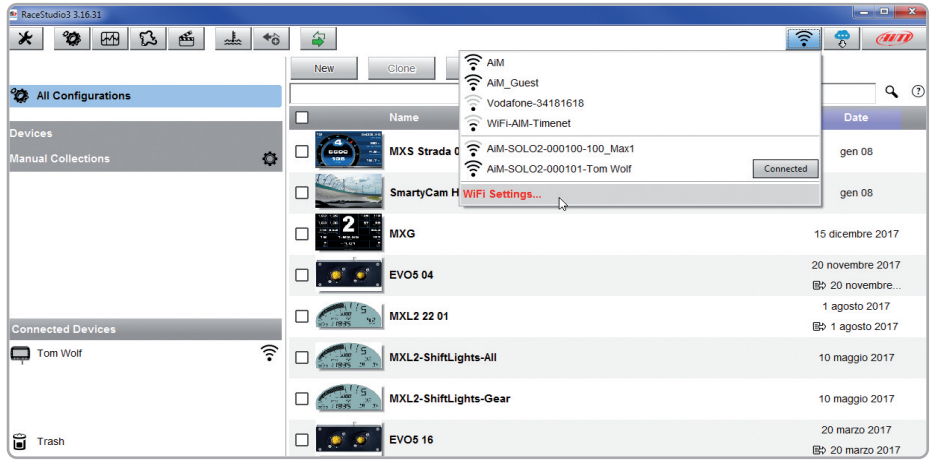
To ensure that the communication works select
"Open Network preferences"
menu.

Verify that the status in the window that shows up is "Connected"
and that the IP address associated is, for example, 10.0.0.10 (could be 10.0.0.11, 10.0.0.12, or generically 10.0.0.x).

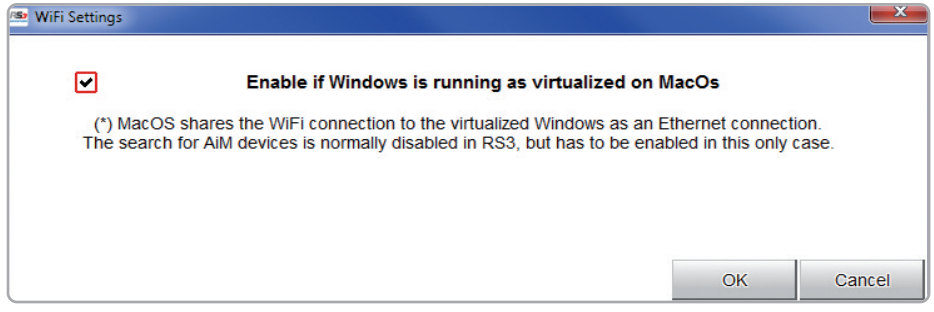


To enable Race Studio 3 correctly working on a Mac with virtualized Windows™:

- press Wi-Fi icon
- select "Wi-Fi Settings" icon



- enable the checkbox shown here below.



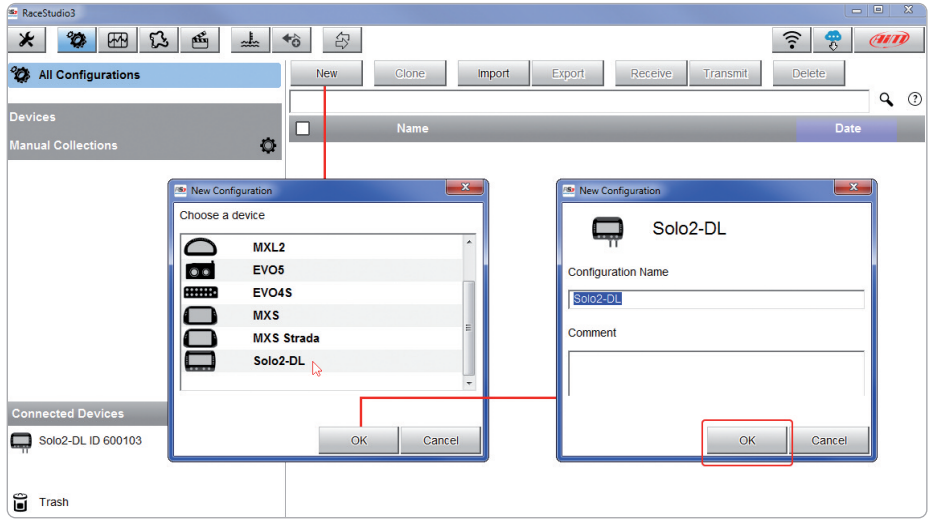
7.1.8 Connected device visualization issues

It may occur that using Race Studio 3 on an iMac with virtualized Windows the device connected via Wi-Fi takes some time to be shown in the network or is not shown at all. This is why we always suggests using an Wi-Fi (WLAN) router.
This router work as an Access Point allowing more external devices to connect to its network. Solo 2 DL Wi-Fi configuration is to be set on Existing Network as explained before.

7.2 Configuration of Solo 2 DL

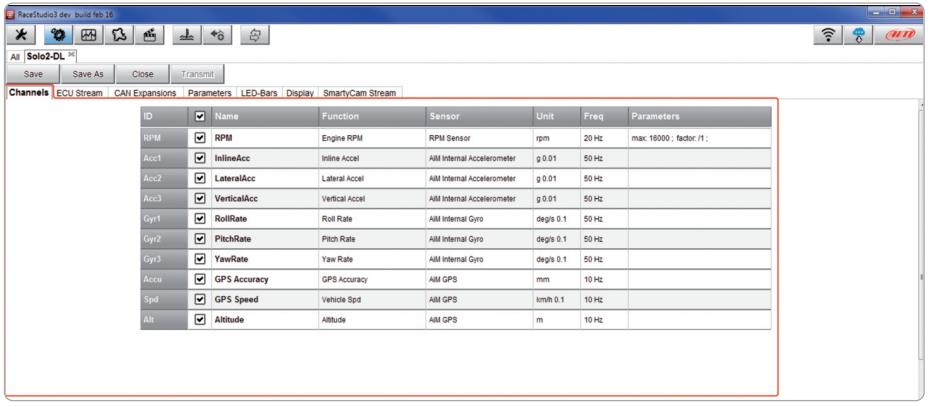
Once Solo 2 DL connected to the PC

- click "Configurations" icon and configurations page appears
- click "New" and new configuration panel appears: select "Solo 2-DL" and press "OK".



7.2.1 Channels configuration

"Channels" layer opens; all channels are enabled by default. Here you can set all Solo 2 DL channels.



To set a channel just click on its line and the related panel shows up. You can name each channel and set its sampling frequency.

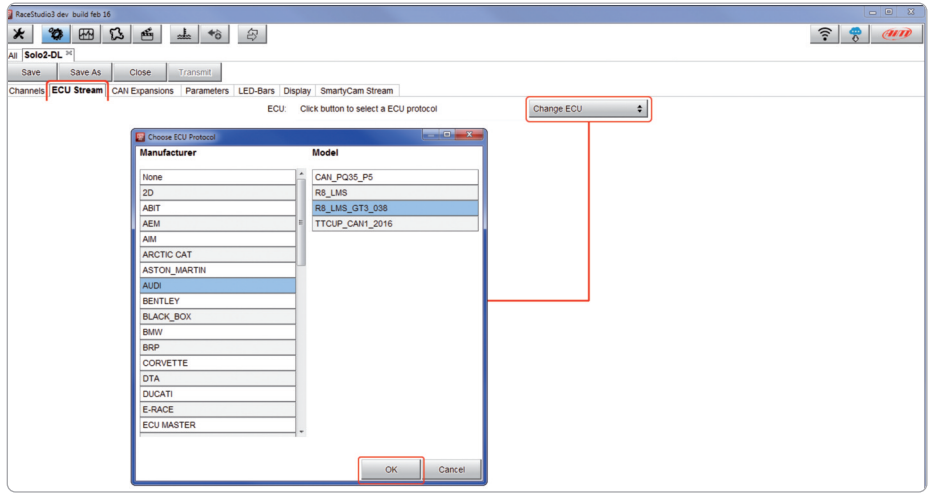
Some channels allows you to set measure units, display precision or specific parameters.

7.2.2 ECU Connection and configuration

Solo 2 DL can be connected to your vehicle ECU. When possible, documents explaining how to connect your Solo 2 DL to your vehicle ECU are published on our website www.aim-sportline.com.
As explained, Solo 2 DL can communicate with your ECU using all currently available communication lines: CAN, RS232, K-Line.

To load the ECU protocol in Solo 2 DL configuration:

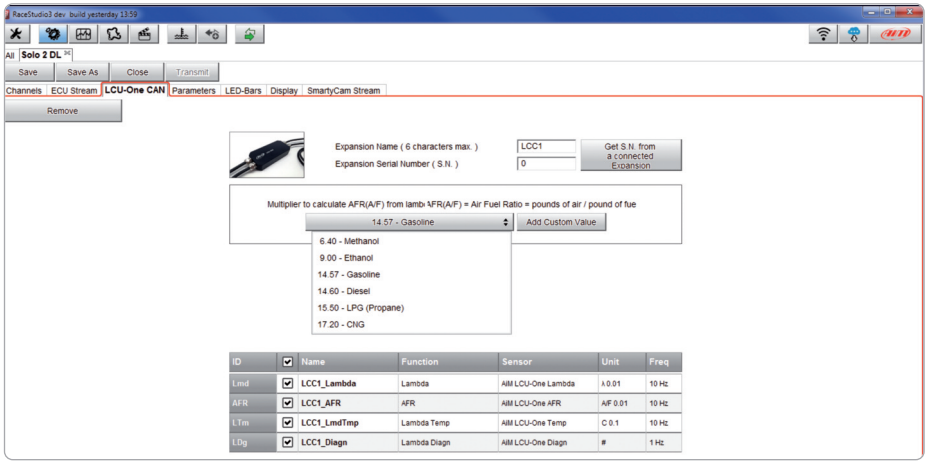
- enter "ECU Stream" tab
- press "Change ECU" button
- select ECU Manufacturer and ECU Model (in the example AUDI/ R8_LMS_GT3_038)
- press OK



7.2.3 LCU-One CAN setting

Solo 2 DL can be connected to AiM LCU One CAN lambda controller plugging the 5 pins male Binder connector of LCU one in the female one bottom left of Solo 2 DL. Once the expansion connected you need to set it:

- enter "LCU-One CAN" tab
- press "ADD" button; it switches to "Remove"
- name your LCU One and fill in its serial number or press "Get SN from a connected expansion" to receive the serial number from the connected LCU-One
- select the multiplier to calculate AFR from lambda (in the example "14.57 Gasoline") or add a custom value pressing "Add Custom Value"
- set the LCU One channels double clicking on each channel and setting the panel that shows up

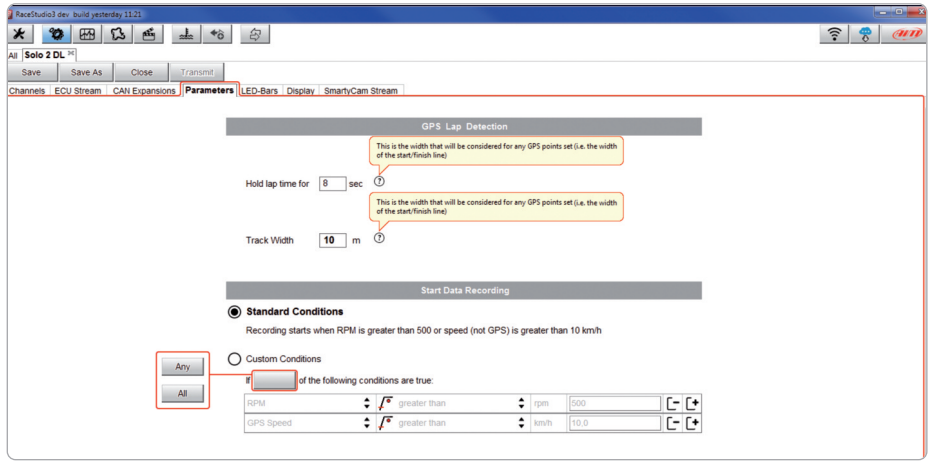


7.2.4 Parameters settings

Parameters page is divided in two parts.

- on top **GPS Lap detection** parameters; mousing over the question marks a pop-up message will explain you the working mode of:
  - hold lap time for: the time period for which lap time is shown on your Solo 2 DL display
  - the track width: width that will be considered for any GPS point you set

- bottom **Start data recording** conditions;
  - standard conditions (default setting) make Solo 2 DL start recording when RPM is higher than 500 or speed is higher than 10 km/h
  - custom conditions: you can set two conditions and decide if making Solo 2 DL start recording when only one of them is reached ("ANY") or when both are satisfied ("ALL"); pressing the button it sets the condition as shown here below.

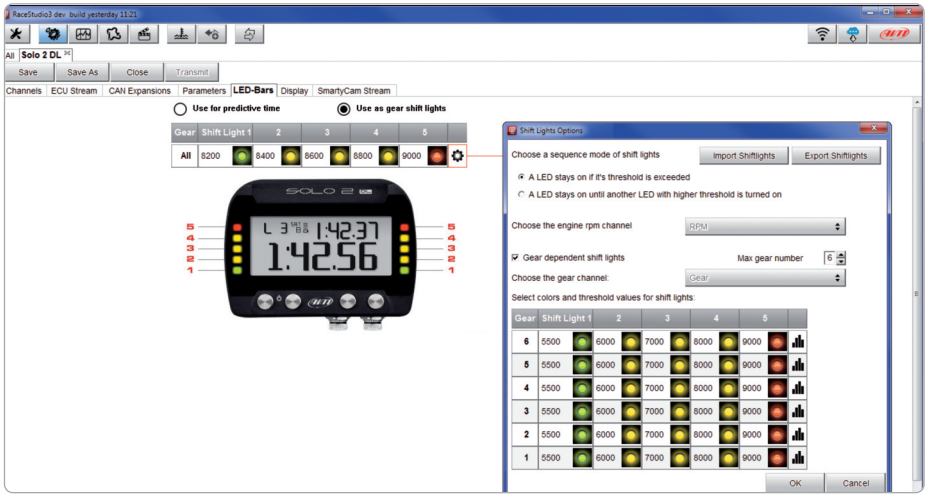


7.2.5 Led-Bars setting

Led bar page sets Solo 2 DL top led bar working mode. Available options are shift lights and predictive time.

Use as gear shift lights (default)
To use the led bar as shift lights, click the setting icon and the related panel shows up. You can:

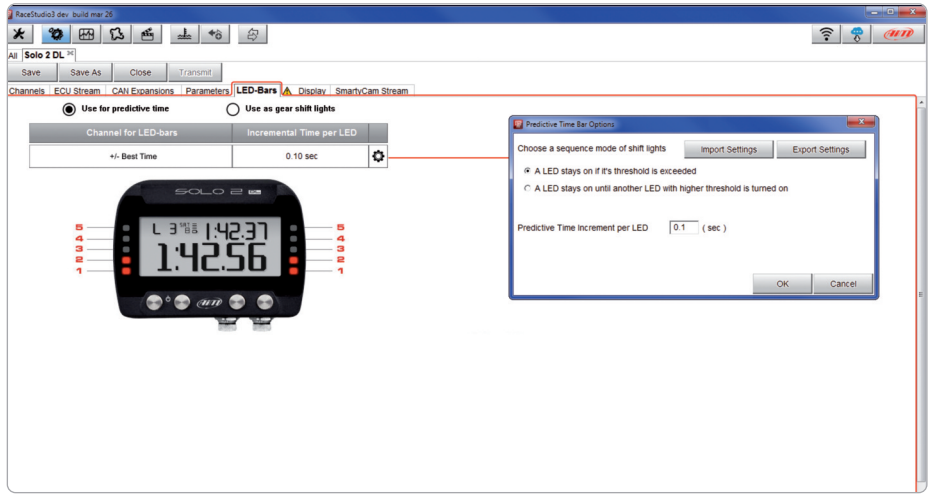
- import/export shift lights setting using the proper buttons
- decide the sequence mode of the LEDs enabling the desired option:
  - a LED stays on if its threshold is exceeded
  - a LED stays on until another LED with higher threshold turns on or
- link the shift lights to the engaged gear enabling the related checkbox; in this last case you need to fill in max gear number and set LEDs colours and threshold values for each gear.



Use for predictive time

To use the LED bar for predictive lap time enable the related option and press the setting icon .
You can:

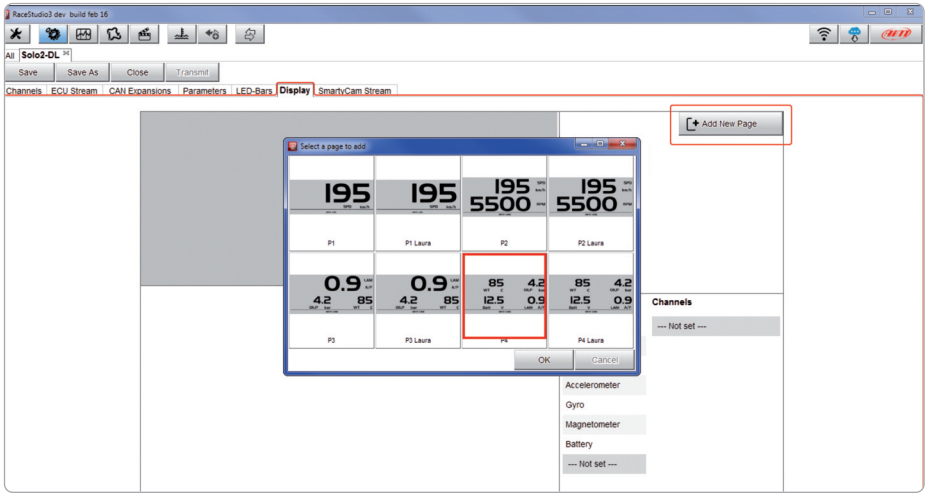
- import/export shift lights setting using the proper buttons
- decide the sequence mode of the LEDs enabling the desired option:
  - a LED stays on if its threshold is exceeded
  - a LED stays on until another LED with higher threshold turns on or
- fill in the predictive time increment of each LED. The LED value indicates the time gap to be assigned to each LED. Assuming you fill in "0.1" and your lap time is improving of 0.3 sec toward the reference lap your, Solo 2 DL will switch on 3 LEDs green; if, on the contrary, your lap time is worsening the LEDs will switch on red. The lap considered as reference is the one you set using Solo 2 DL keyboard in "Type of racing" (see the related paragraph).



7.2.6 Display settings

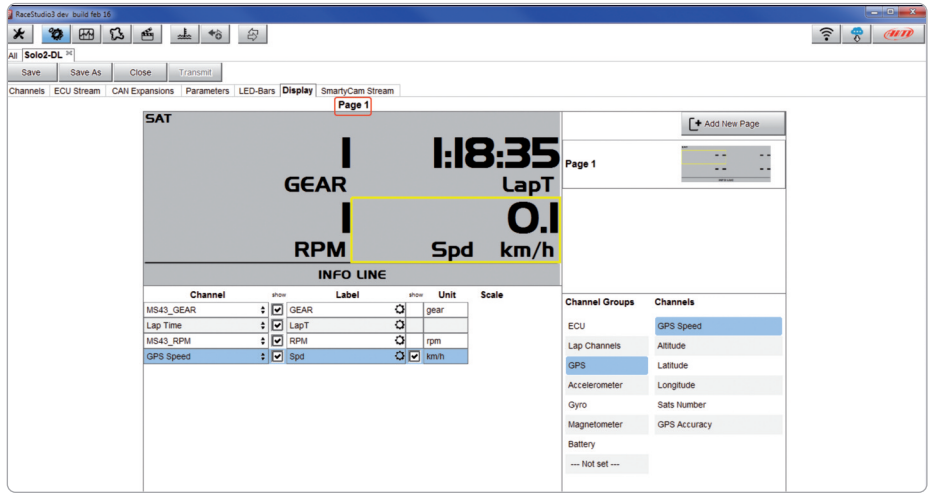
Solo 2 DL can have up to eight pages to be set via software. Each page can have from 1 to 4 fields and can be set as you prefer.

- enter "Display" tab
- a panel shows up where you can select the display page you prefer (in the example a four fields page has been chosen)
- select the page and press "OK"
- repeat the operation for the number of pages you want to set



When the page has been selected two setting panels appears bottom of the page:

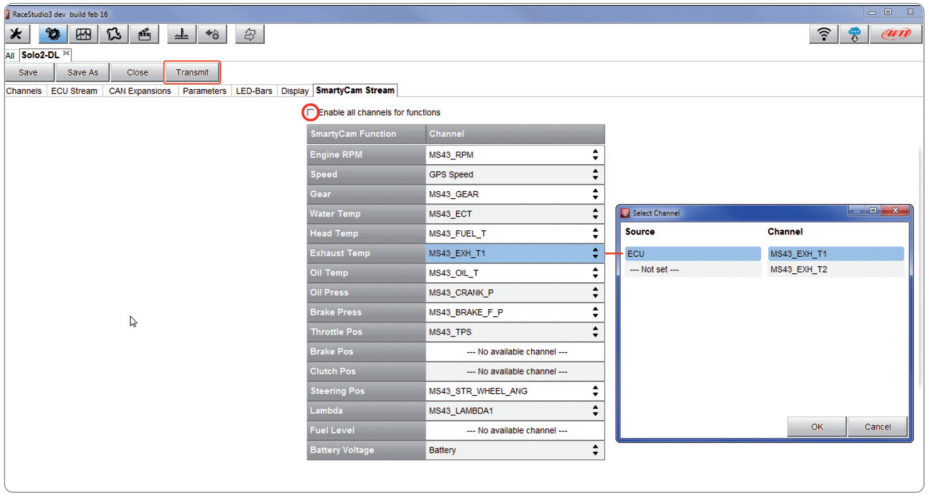
- on the left a panel that shows as many rows as the fields to be set (in the example four fields)
- on the right a panel shows the channels group you can set in that field and all the channels in it included; you can drag and drop the channel you want to set in the desired field or double click on it
- if you added more display pages the one you are setting is indicated top of the tab as highlighted here below.



7.2.7 SmartyCam stream setting

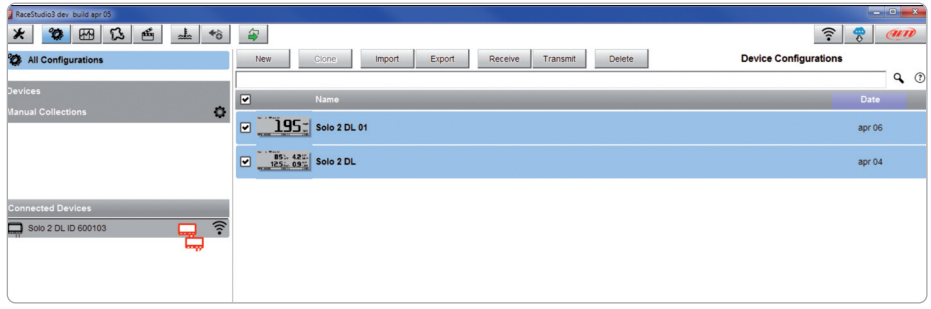
Solo 2 DL can be connected to AiM SmartyCam to show the data you wish on SmartyCam video. To set each channel:

- click on it and a setting panel shows up
- it shows all channels and/or sensors that fits the selected function
- in case you do not find the channel or the sensor in the list enable "Enable all channels for functions" checkbox and all channels/sensors will be shown
- once all channels set press "Transmit" on the page top keyboard.

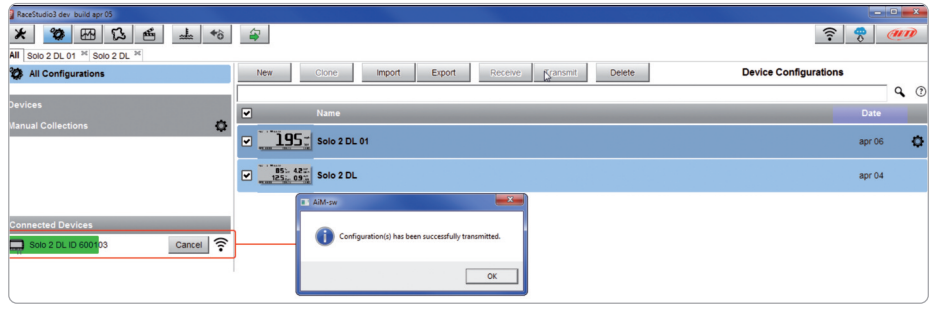


7.3 Transmitting multiple configurations

Once all parameters have been set you can transmit the configuration(s) to your Solo 2 DL selecting them and pressing transmit or in "drag and drop" mode.
The software shows that you are transmitting multiple configurations.



A time bar appears and at the end the software gives confirmation as shown in the image below.



7.4 Managing a track on Solo 2 DL with RS3

With Track Manager function of Race Studio 3 you can create, delete and modify tracks, transmit and receive them to/from your Solo 2 DL. Press "Tracks" icon.

The main page is divided in three columns; on the **left:**

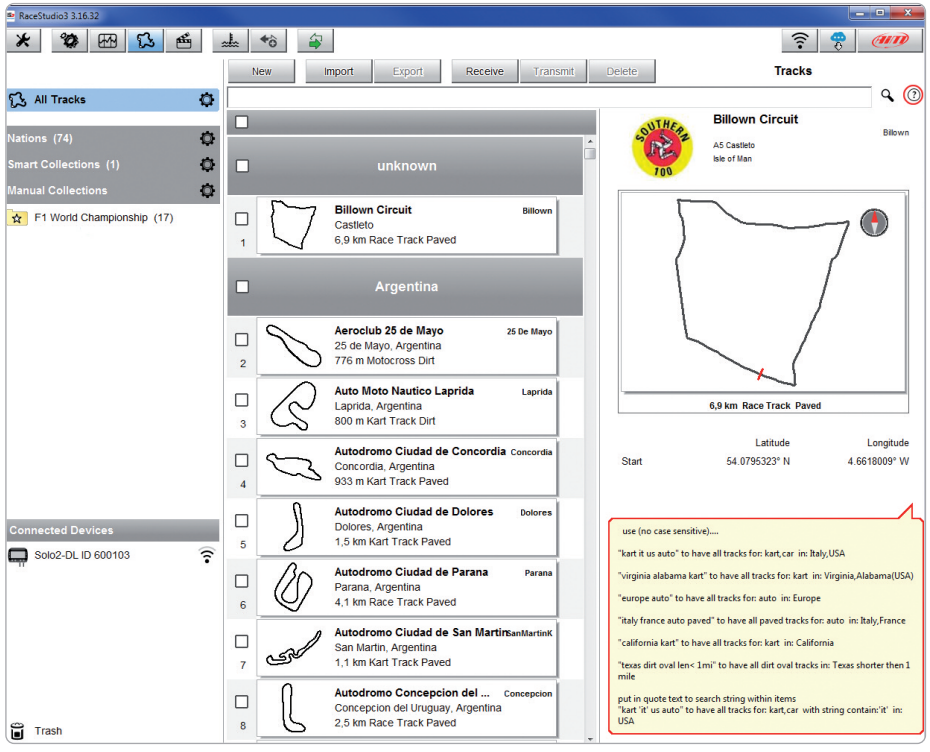
- on top, the filters that allow to collect many tracks following customized criteria; by default, all tracks are shown (light blue "All Tracks" filter in the image below).
- bottom left, the connected devices (in the image, "Solo 2-DL ID 600103")

The column i**n the middle** shows:

- on top a fast search bar, that allows to select the tracks which satisfy your personal research criteria; by pressing "?"a pop-up window shows research examples (highlighted in red below).
- all the tracks listed in Race Studio 3 database. It automatically updates at start up if a connection to the Internet is available.

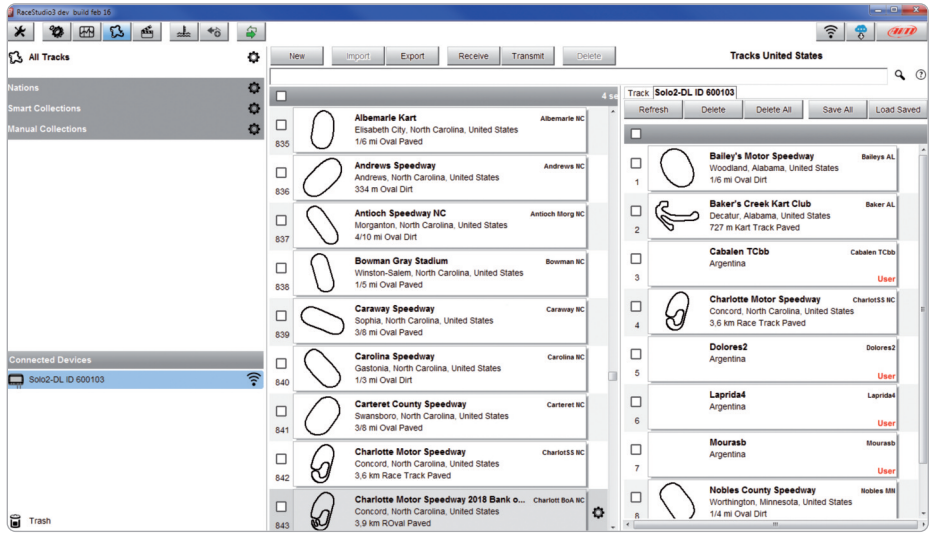
The column on the **Right** shows:

- the data sheet of the track you are mousing over.



When your Solo 2 DL is connected it is shown on the left bottom part of the page as said before.

Clicking on it all the tracks it contains are shown in the right column of the page. The tracks you created are labelled "user" on the right of the track panel.



The page keyboards are used to manage the tracks.

The keyboard you find above the central column allows you to:

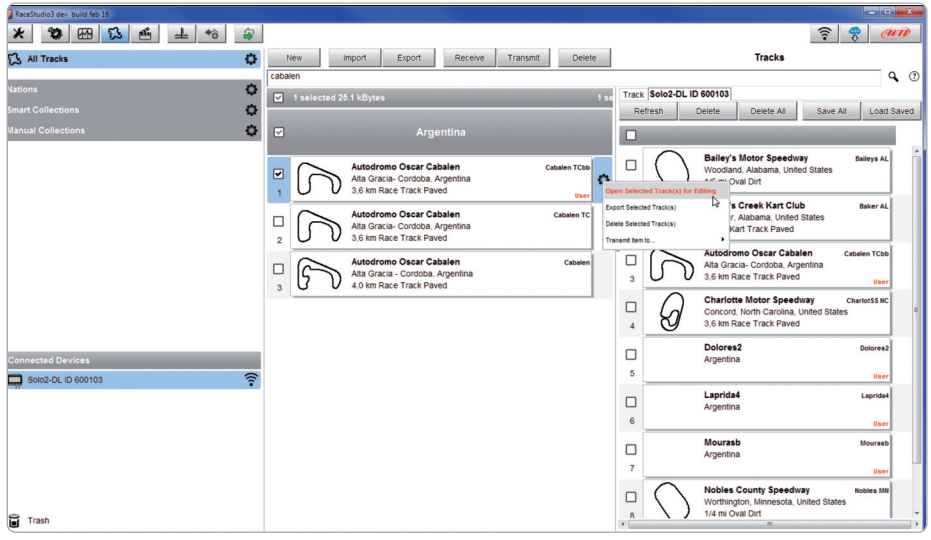
- New: create a new track
- Import: import one or more tracks you stored in your Solo 2 DL or on another external device
- Export: export one or more tracks to a specific PC folder or to another peripheral device
- Receive: receive from your connected Solo 2 DL the tracks you created (if no device is connected the button is disabled)
- Transmit: transmit one or more tracks form the PC to your connected Solo 2 DL (if no device is connected the button is disabled)
- Delete: delete one or more tracks from Race Studio 3 Database

The keyboard you find above the right column allows you to:

- Refresh: refresh the track list stored in your connected Solo 2 DL
- Delete: delete one or more tracks from your Solo 2 DL memory
- Delete All: delete all tracks stored in your Solo 2 DL memory
- Save all: save all the tracks stored in your connected Solo 2 DL; it creates a zip file you can load to another AiM device
- Load Saved: load the tracks you previously saved in your connected Solo 2 DL memory

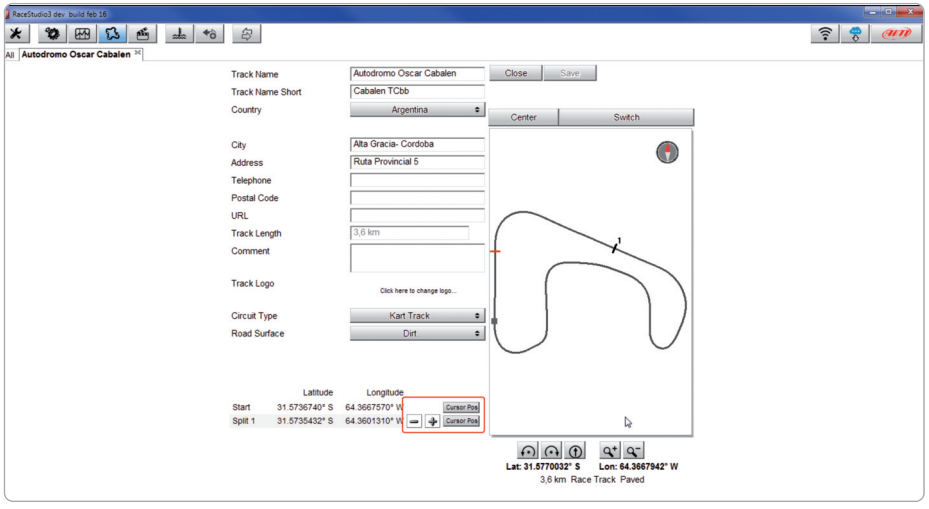
As said before, if your Solo 2 DL detects if the track it is racing on is not included in its database, it starts recording in "learning" mode. At the end of the session you can connect it to the PC to add the track map to your PC database.

- click the device name bottom left of Race Studio 3 page
- select the track map and press "Receive": the track map appears in the central column list
- right click on the map and select "Edit option"



A page for adding some useful information appears.
It may be useful to know that:

- "Short Track Name" is the name you will see on your device.
- "Circuit type" and "Road surface", even if not necessary to set the track, are used by the research filters.



It is possible to change the start line position (move the cursor and set "Cursor Position") and to add split points, in order to organize the track in different segments. This will be used in Data Analysis.

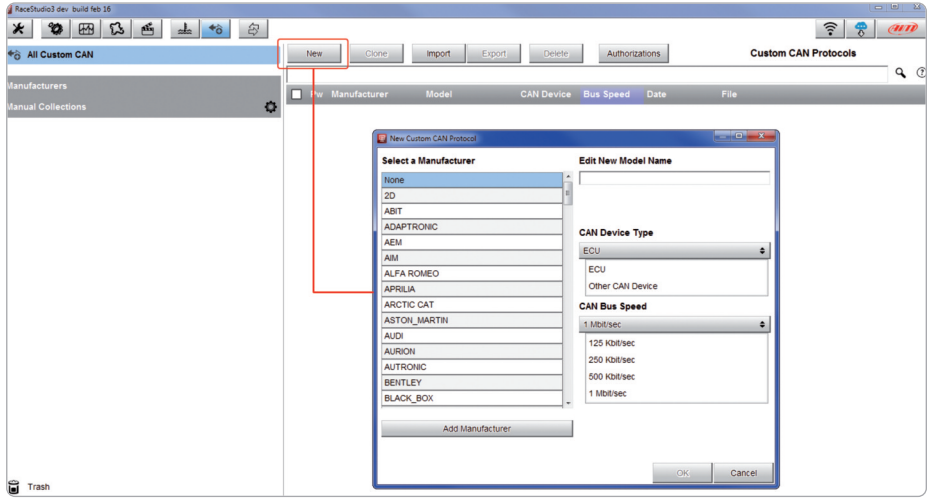
Press "Save" and the new track will appear in the list labelled "User".
Since the software is constantly updated, may be other information or features will be available soon. Please check our website www.aim-sportline.com documentation area software section "Track Manager" manual.

7.5 ECU Driver builder

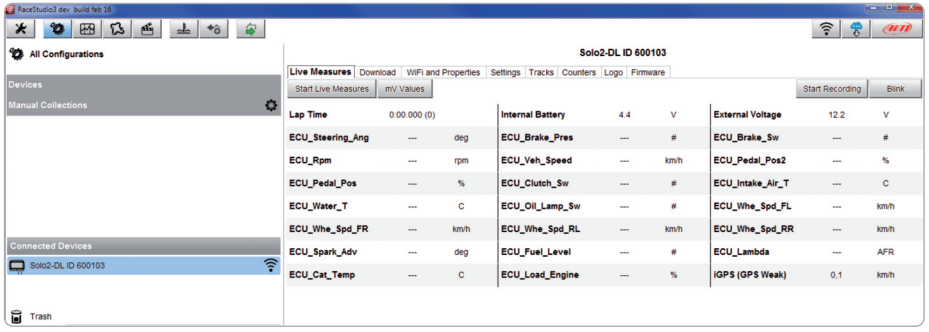
If your vehicle ECU is not included in Race Studio 3 software you can use CAN Driver builder to create your own CAN protocol. Press CAN Protocols button shown here above and then "New". The panel shown below appears.

You can add a new ECU Manufacturer and/or a new ECU model.

Please note: this Race Studio function is for expert users only and a CAN Driver builder user manual can be freely downloaded from AiM website at www.aim-sportline.com, documentation area software/firmware section.



7.6 The device window



If you click your Solo 2 DL you enter the device window and have these options:

- Live Measures: to check all Solo 2 DL channels;
- Download: to download data, see the related chapter;
- Wi-Fi and Properties: to manage the Wi-Fi configuration – see the related paragraph;
- Settings to:
  - set date format
  - enable/disable daylight time
  - set time format and time zone
  - set backlight colour
  - enable/disable night vision
- Tracks: to manage the tracks stored in the device memory
- Counters: to set each user odometer decimal places as well as reset it
- Logo: transmit/receive the logo that shows up when switching Solo 2 DL on; supported image format are JPEG or BMP; always use the most recent Windows™ versions (Windows8 or Windows10) whose graphic libraries are more updated
- Firmware: to check or update your Solo 2 DL firmware version.

8. On the track

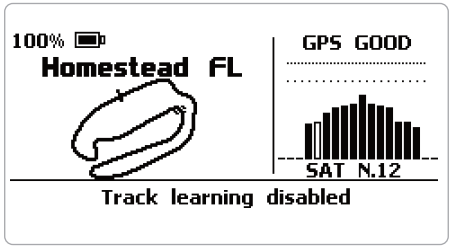
Some Solo 2 pages are available for online visualization. To scroll them press "NEXT" ("Type of Race: Speed" only).

Pages can change according to the device configuration.

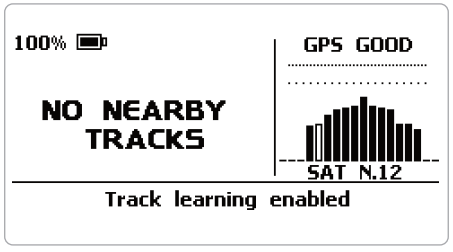
8.1 Track page

This is the first page that appears when you switch Solo 2 DL on and can be re-called pressing "TRACK" button. When you start the engine of your car it goes away automatically. It shows:

- on the left the selected track; you can select a new one manually or automatically ("MENU"/ Track Management); in case of "Automatic" selection the track is selected according to the coordinates of your vehicle; in case the track you are running on is not included in your Solo 2 DL database the laptimer switches to "learning mode" as shown in the bottom image here on the right



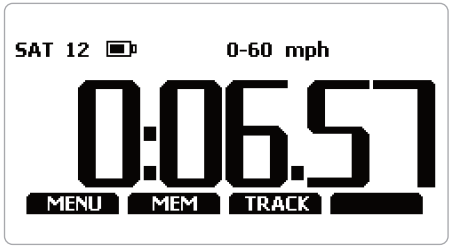
- on the right the satellite bar (visible satellites and signal level of each one) useful to evaluate the status of the GPS signal.



8.2 Other pages

Other available pages are: Laptime Page, predictive Page and eight custom Pages. Use "NEXT" button to scroll them.

Laptime page is shown no matter which type of race you set your Solo 2 DL on. It shows the lap time.



Predictive page: shows the predicted current lap time in the format you set:

- +/- in relation to the Reference Lap
- Predicted lap time

Custom pages you may freely customize up to eight pages for showing all the information you wish.
The pages needs to be created as explained in Display settings paragraph.

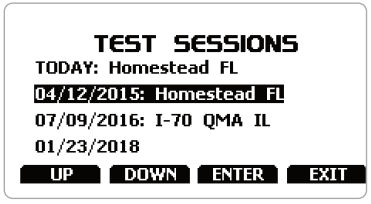
9. Data Recall

At the end of the test you can recall sampled data pressing "MEM".
Data recall is different according to the race type you set on Solo 2 DL.

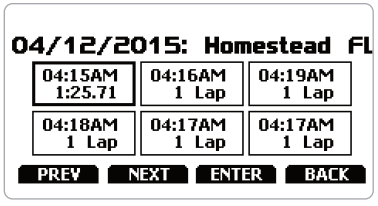
9.1 Data Recall "Speed" mode

If you set "Type of Race – Speed" data recall shows these pages.

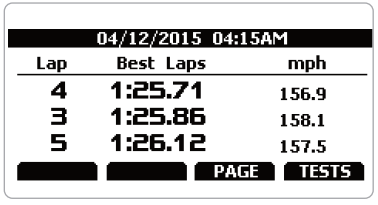
First is "Summary" page.
Select the session you want to see and press "ENTER"



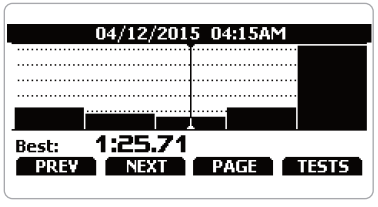
Once the session selected you see all tests in a box showing time of the test and best lap of the test.
Select the test you want to see and press "ENTER".



Here you see the three best lap of the test with max speed value per every lap.Press "PAGE"



This page is a histogram test summary.
Moving the cursor left and right you can see all laps.

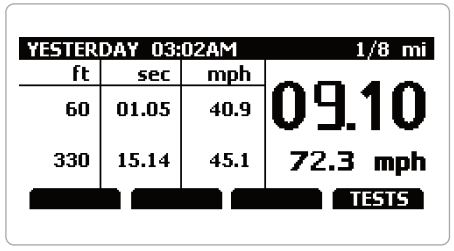


9.2 Data Recall "Performance" mode

If you set "Type of Race – Performance" data recall shows these pages.

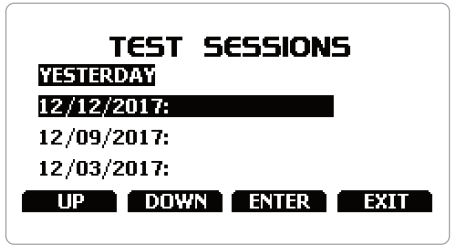
If your test is max two hours old you are automatically forwarded to the "Test" page. This page shows:

- top right: the selected performance (1/8 mile in the example)
- on the right: the lap time and the speed (9.10 and 72.3 mph)
- on the left: a table showing length time and speed at the of the performance and in a set split
- press "TESTS"



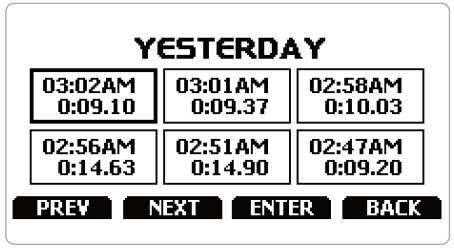
You come to "Test sessions summary" page, that is the first one you see if your last test is more than 2 hours old.
It shows all the sessions from the most recent backwards.

Select the session you want to see and press "ENTER".



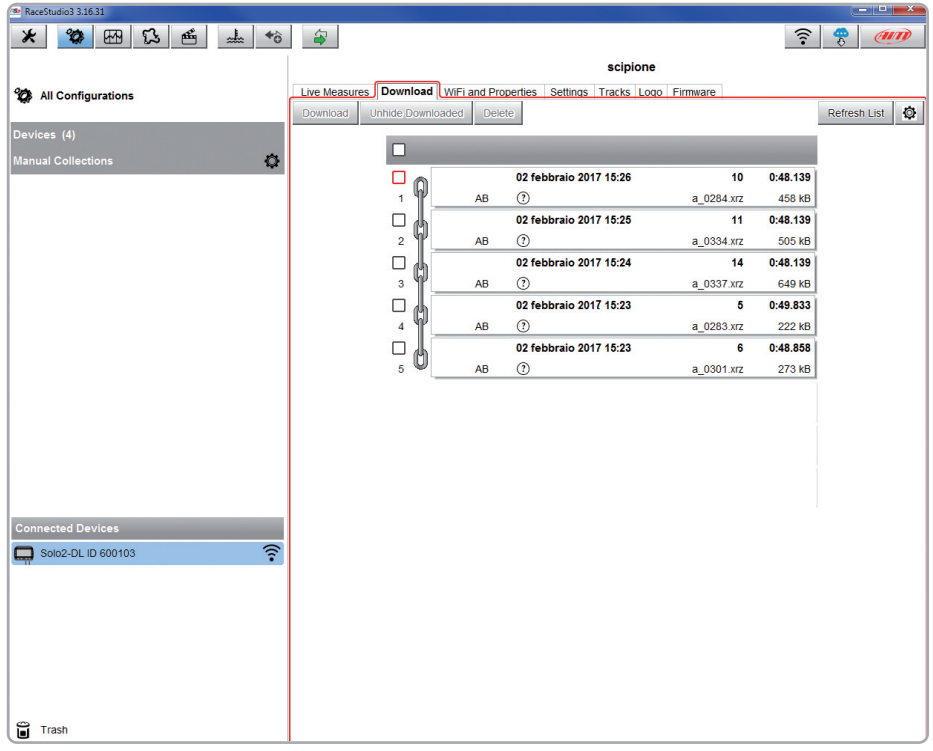
"Session page" shows you all the laps of the session from the most recent backwards.

Press "ENTER" to enter "TEST" page.



10. Data download

Once Solo 2 DL-PC connection is established activate "Download" tab to download sampled data.

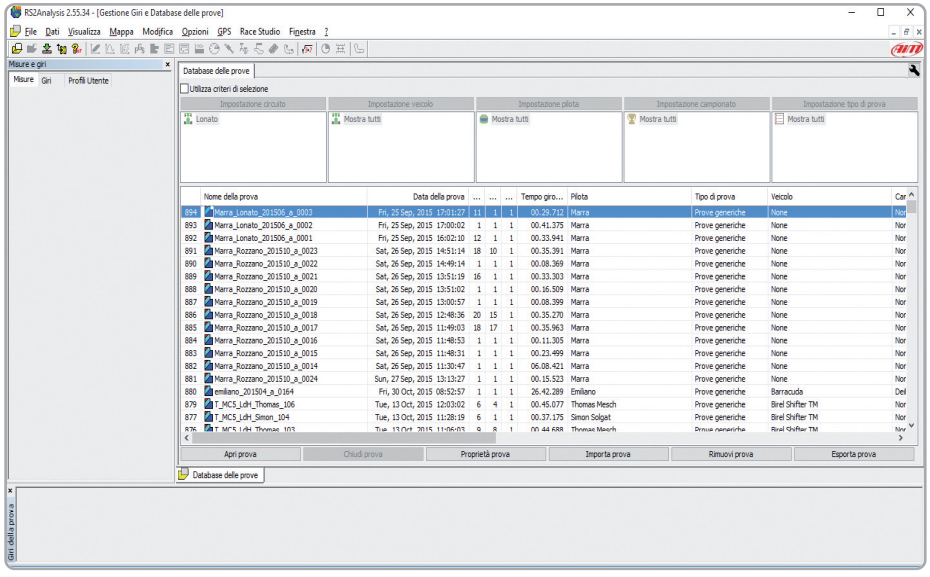


This page shows all information about the files stored in the system: number of laps, best lap, date/time and file dimensions.

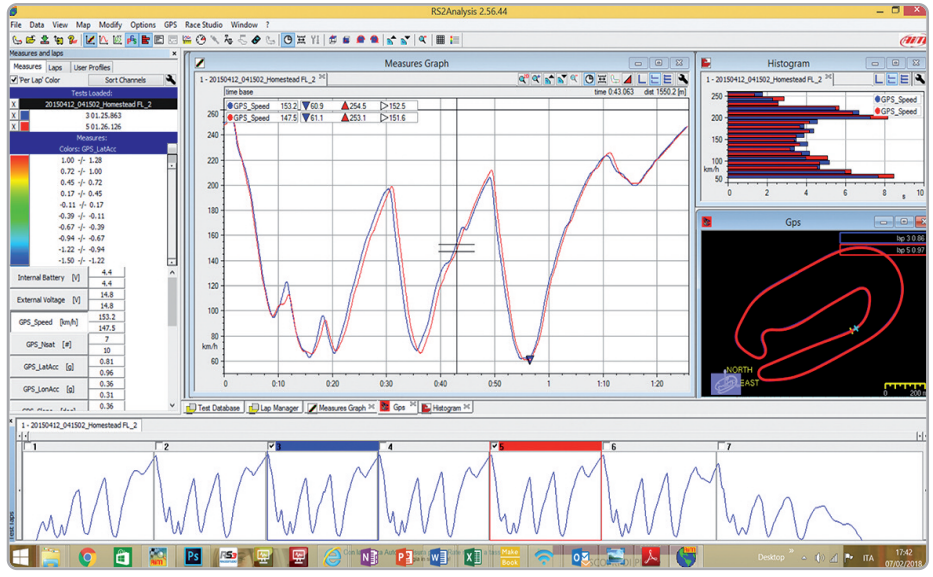
Select one or more files and press "Download" to download and analyse them.

11. Data Analysis

When data have been downloaded press Analysis icon and Race Studio Analysis software will open showing this page.



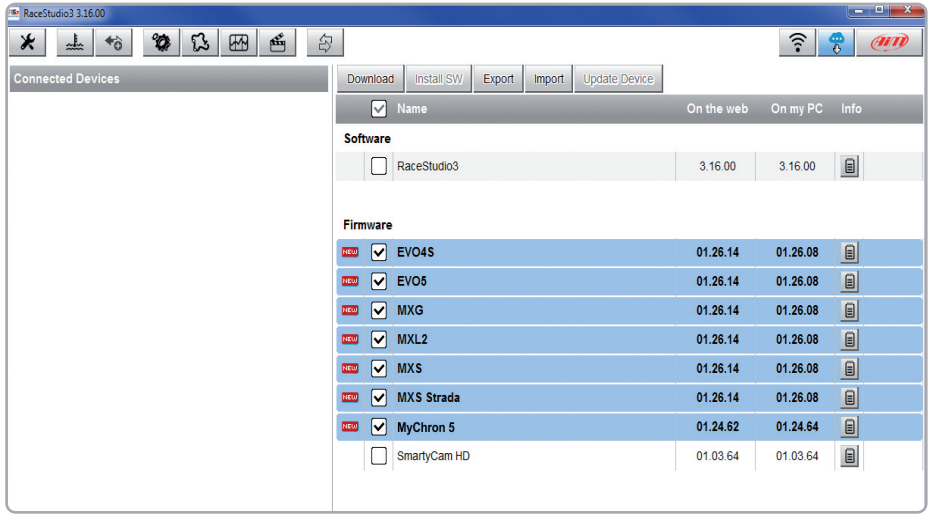
Select your file double clicking on it and start analysing it. A lot of pages, graphs and images will help you analysing your data in the best way.



12. New firmware upgrade

Our technicians and engineers are constantly working to improve both the firmware (the application that manages your device) and the software (the application you install on your PC).
Each time a new firmware and/or software version is available the icon here above appears with an arrow indicating that something is available for download (otherwise the icon only shows the cloud).

Click it and freely download the new applications.



Once the new firmware has been downloaded connect your device to the PC via Wi-Fi to perform a firmware upgrade. In a few seconds the device is ready.

13. RPM

As said Solo 2 DL is sold with different additional cables. To receive RPM value from the ECU you can use one of the available ECU connection cables.

If on the contrary your vehicle does not have an ECU you can sample RPM using the RPM+external power cable.

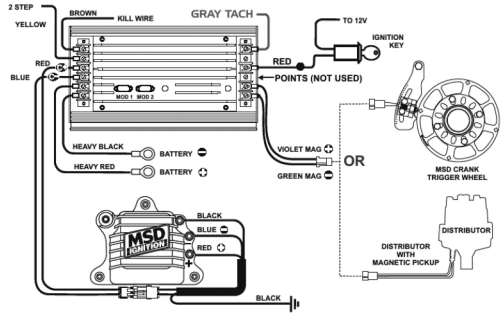
13.1 RPM from ECU

To get the RPM from the ECU you only need to connect your Solo 2 DL to the ECU and it will automatically sample that value.

13.2 RPM via a 5-50V square wave or coil (150-400V)

If your vehicle has no ECU you need to have the kit including RPM+external power cable to be connected to the 8 pins connector placed bottom right of Solo 2 DL.
This way Solo 2 DL can read the signal form 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 50 V).

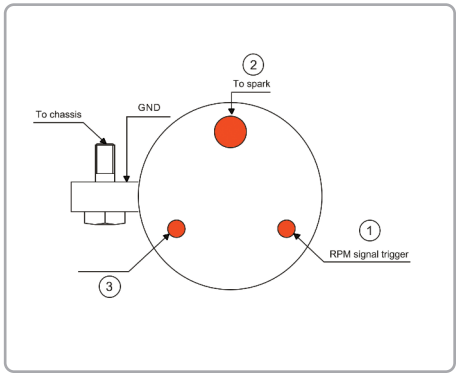
The image below shows an example of wiring of the ignition system.

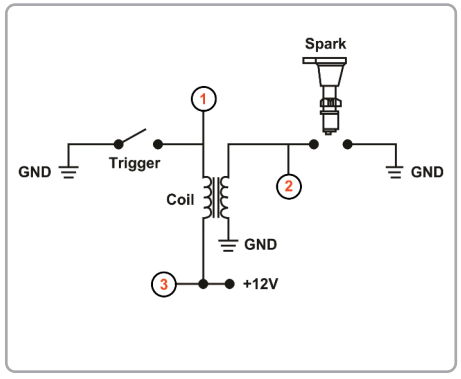


The output labelled "GRAY TACH" gives a 5-50V output that can be directly sampled by Solo 2 DL.

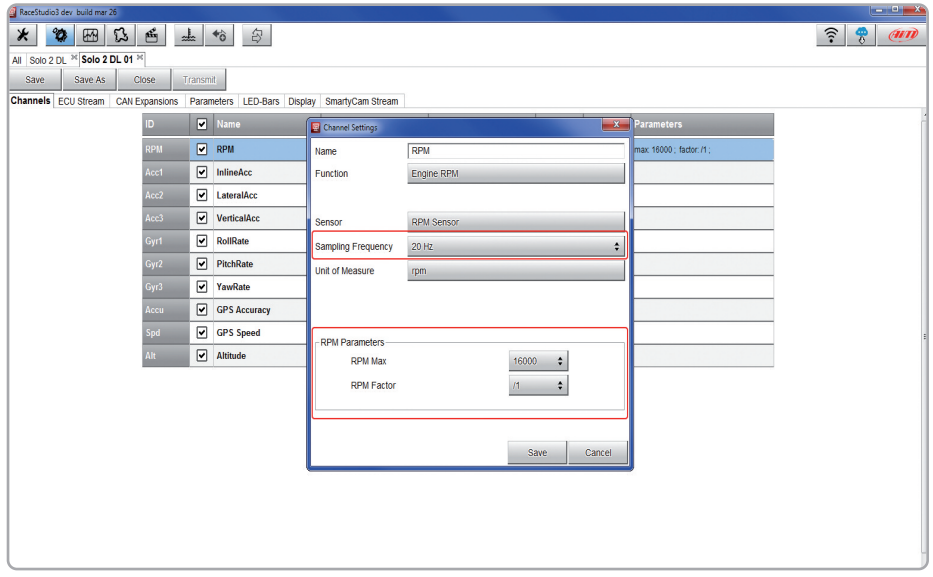
In case the vehicle ignition system has no output you need to connect Solo 2 DL to the low voltage of the coil as shown in the following images.

Point 1: low voltage of the coil
Point 2: connected to the spark plug
Point 3: connected to the +12V of the battery





Once Solo 2 DL connected to RPM signal you can set its parameters in channels layer of Race Studio 3.



14. Connection with SmartyCam and LCU-One

Your Solo 2 DL can be connected to AiM SmartyCam HD, SmartyCam GP HD and LCU-One CAN as shown in the images below.

Please remember that all channels transmitted by these AiM expansions have to be set in Race Studio 3 software as already explained in the related paragraphs ("LCU-One CAN setting" and "SmartyCam stream setting").

Moreover for further information concerning SmartCam HD, SmartyCam GP HD and LCU One refer to the related manuals you can download from "Documentation" area of AiM website www.aim-sportline.com.

To connect Solo 2 DL to SmartyCam HD use SmartyCam CAN cable and connect 5 pins Binder connector placed bottom left of Solo 2 DL to 7 pins Binder connector placed rear left of SmartyCam HD as shown here below.

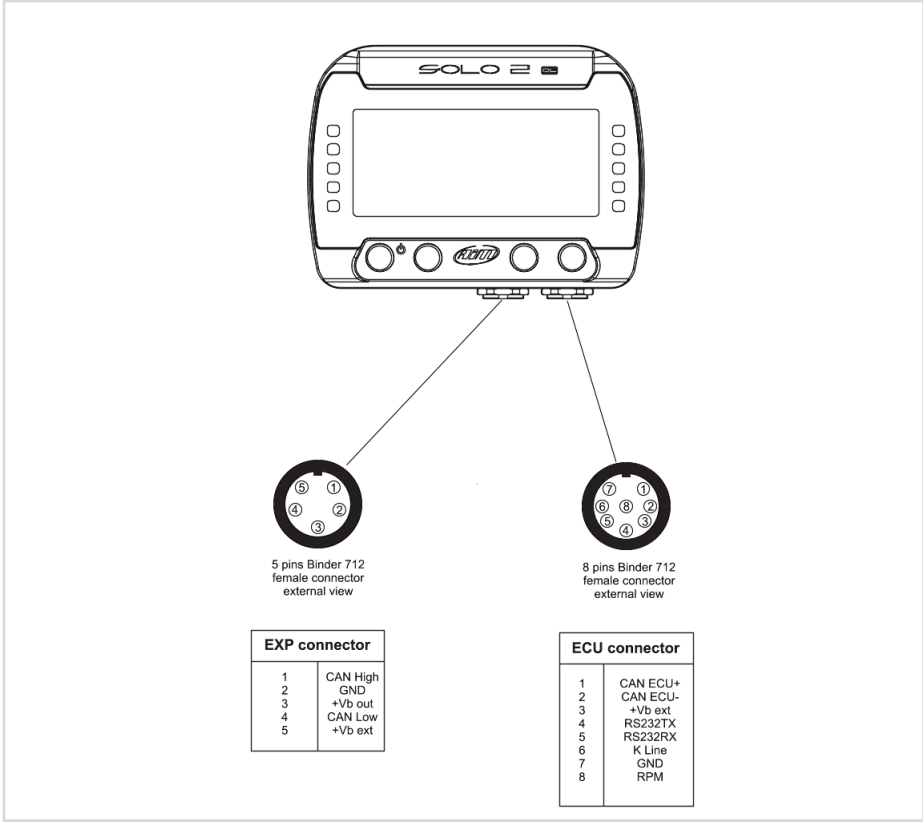
To connect Solo 2 DL to SmartyCam GP HD use SmartyCam CAN cable and connect 5 pins Binder connector placed bottom left of Solo 2 DL to 7 pins central Binder connector of SmartyCam HD as shown here below.

To connect Solo 2 DL to LCU-One CAN connect 5 pins Binder connector placed bottom left of Solo 2 DL to 5 pins Binder connector of LCU-One as shown here below.

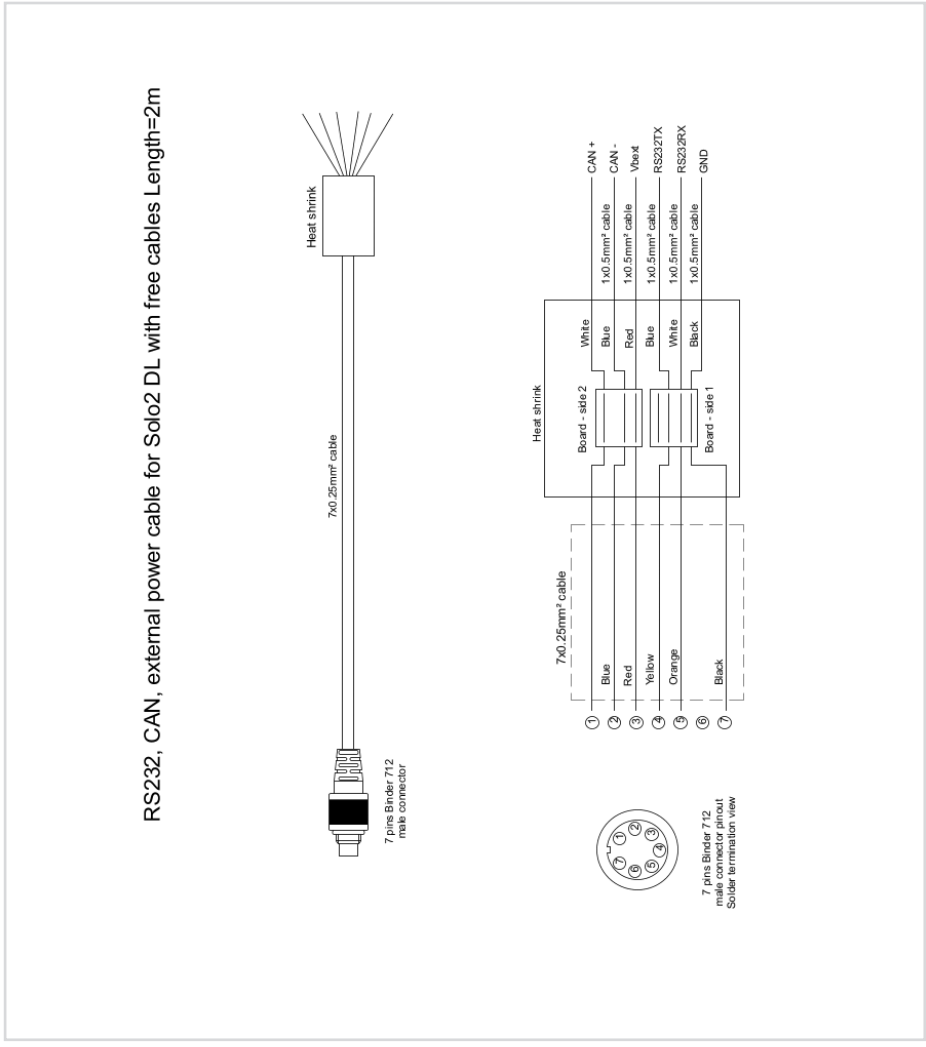
15. Technical specification and drawings

■ Display	Graphical
■ Display resolution	238 x 99 pixels
■ Display pages	Up to 8 freely configurable
■ Backlight	7 configurable RGB colour
■ ShiftLights/alarms LEDs	10 configurable RGB LEDs
■ Integrated track database	Yes
■ Inertial platform	Internal 3 axis ±5g accelerometer + 3 axis gyro + 3 axis magnetometer
■ Wi-Fi connection	Yes
■ Integrated GPS	10Hz GPS+Glonass
■ ECU Connection	CAN, RS232, K-Line
■ External power	12V
■ Memory	4GB
■ Battery type	Rechargeable Lithium
■ Pushbuttons	Metallic
■ Weight	240g battery included
■ Dimensions	98x73.7x30.2mm
■ Waterproof	IP67
■ Analysis software	Race Studio Analysis freely downloadable from www.aim-sportline.com

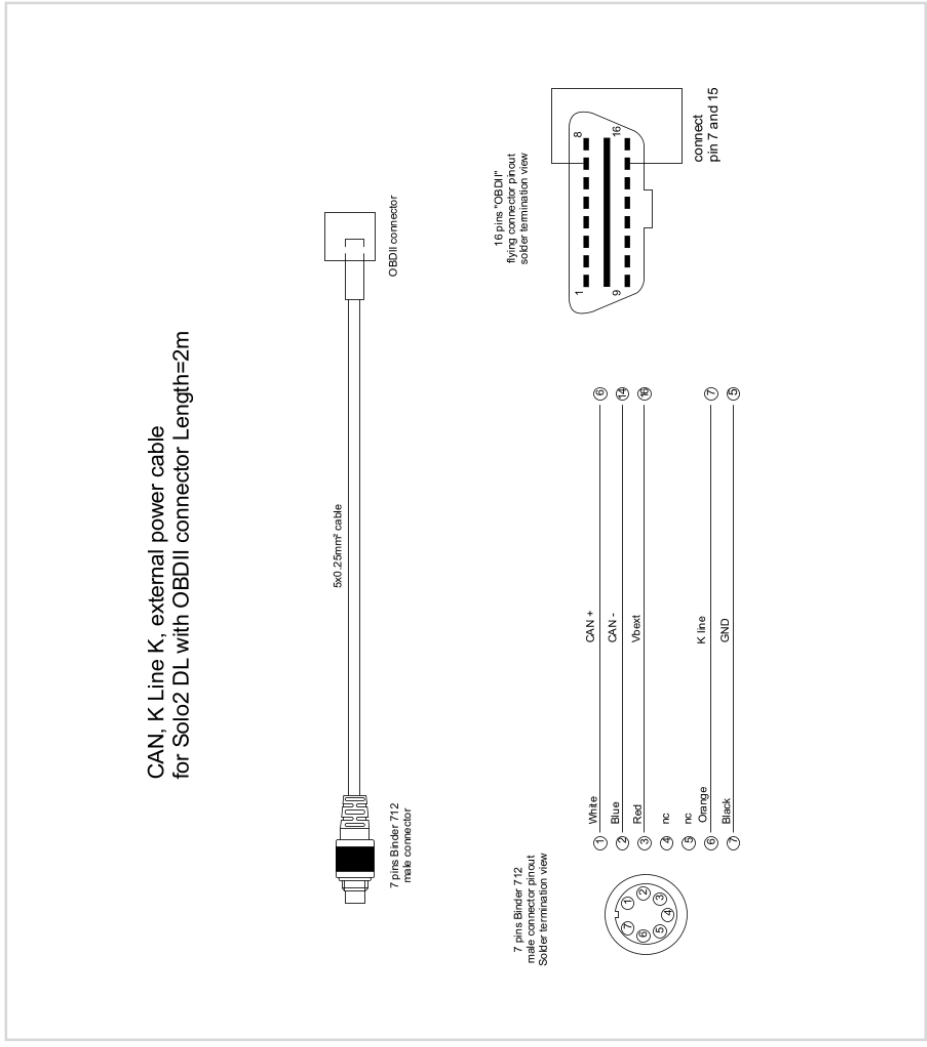
Pinout Solo 2 DL



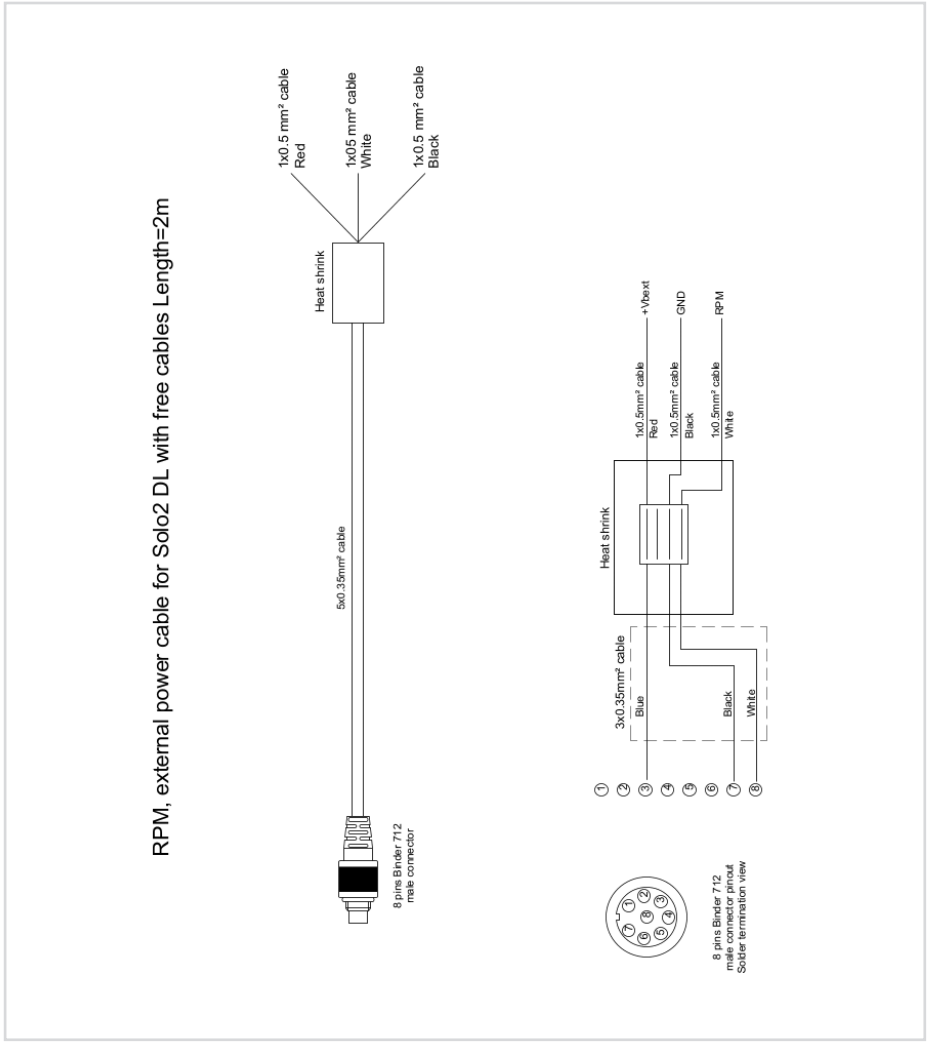
CAN+RS232+External Power cable – 2m length



CAN+K-Line+ power cable with OBDII connector – 2m length



RPM+Power cable – 2m length



Our web site, www.aim-sportline.com is constantly updated.
Please refer to it to download the last release of our documentation