# RACE STUDIO CONFIGURATION USER MANUAL







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# Chapter 1 – Race Studio 2 software

**Race Studio 2** is the application properly designed and developed by AIM to configure its loggers and analyze their data using a PC. It is made up of two software: Race studio Configuration and Race Studio Analysis.

This user manual refers to the Race Studio Configuration (from 2.30.05) only.

**Race Studio 2** developed following the evolution of AIM loggers and ever improving its potentialities. Thanks to the configuration, the user can better customize its logger to take the most out of it.

With **Race Studio 2** it is possible to integrate in a flexible and dynamic system all the external expansion modules and the innovative devices that AIM Research and Development Dept. creates as well as all the custom sensors that any user can connect to his logger.

Configuring a logger with **Race Studio 2** means adapting it to one's needs, taking the most out of it.

#### **1.1 – Compatibility between Race Studio 2 and operative systems**

**Race Studio 2** has been developed to guarantee the maximum working reliability and its correct working has been tested with the following operative systems: Microsoft Windows XP Microsoft Windows Vista and Microsoft Widows 7.

All operative systems (Linux, Unix, Macintosh®) not indicated in this tutorial are to be considered not supported by this application.

For any problem it is suggested to check <u>www.aim-sportline.com</u> website to verify if any recent news has been issued and, if not, to contact the technical support that can be found in home page at <u>www.aim-sportline.com</u>.



# Chapter 2 – Installing Race Studio 2 and the USB Driver

To configure most of AIM loggers it is necessary to install **Race Studio 2** and the AIM USB driver.

#### 2.1 – Preliminary operation.

Before starting software installation disconnect any AIM logger from the PC USB port and close all running applications.

A suggested preliminary operation is to check Windows<sup>™</sup> "Driver signing" setting.

- Follow this path: Start → setting → Control Panel → System and select "Hardware" layer (figure below on the left).
- Click on "Driver signing" and select "Warn Prompt me each time to choose an action" (figure below in the right).
- Confirm pressing OK button and close all windows.

| System Properties  | ? 🔀   |
|--|---|
| System Restore Automatic Updates Rem<br>General Computer Name Hardware Adva  |   |
| Device Manager<br>The Device Manager lists all the hardware devices installed<br>on your computer. Use the Device Manager to change the<br>properties of any device.                     | During hardware installation, Windows might detect soft<br>has not passed <u>Windows Logo testing to verify</u> its comp<br>Windows. ( <u>Fell me why this testing is important</u> .)                        |
| Drivers Drivers Driver Signing lets you make sure that installed drivers are compatible with Windows. Windows Update lets you set up how Windows connects to Windows Update for drivers. | What action do you want Windows to take?<br>Ignore - Install the software anyway and don't as<br>approval<br>Warn - Prompt me each time to choose an action<br>Block - Never install unsigned driver software |
| Driver Signing         Windows Update           Hardware Profiles         Hardware profiles provide a way for you to set up and store different hardware configurations.                 | Administrator option  |
| Hardware Profiles  |   |

? ×

oftware that mpatibility with

ask for my

Cancel



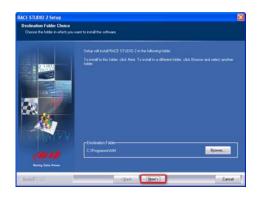
### 2.2 – Installing Race Studio 2 under Microsoft Windows XP

Before installing the software close all applications and insert **Race Studio 2** CD. If "auto play" option is enabled the installation starts automatically, otherwise click twice on "SETUP" icon.

In case of very first Race Studio 2 installation the window on the right appears. It allows to select the window where to install the software.

Press "Browse" button to select Race Studio 2 installation folder.

Press "Next" to install the software in the default folder X/program files/AIM, where "X" is the hard disk where the operative system is installed.



In case of new release of **Race Studio 2** the window on the right appears: enable "New Release of Race Studio 2" checkbox and click on "Next>"

From here onward the installation is the same. The window on the right appears and **Race Studio 2** is installed.

When the installation is over, in case of new release of **Race Studio 2**, the window on the right appears. Click "Finish". Installation is completed.









In case of very first installation, on the contrary, the software starts AIM USB driver installation and the window on the right appears.

Disconnect any AIM USB cable from the PC USB port and click on "Start" button.

Close all applications and click "Start".

Click "Continue".

Three panels will assist in the following steps.

Connect the USB cable to the PC USB port and switch the logger on. Wait some seconds and the following panel appears.

This pop up informs the user that the logger is correctly connected to the PC.

**Note**: when the procedure is over, connecting the logger to another PC USB port, the system could ask for USB driver installation on the new port too.



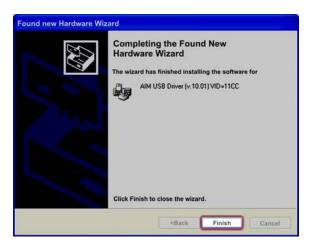






| ound new hardware w | Azaro  |
|---------------------|--|
|                     | Welcome to the Found New<br>Hardware Wizard                          |
| 2                   | This wizard helps you install software for:                          |
|                     | AIM USB Driver (v. 10.01) VID=11CC                                   |
|                     | Connect to Windows Update to search the<br>software for the driver ? |
|                     | O Yes, only now  |
|                     | Yes, now and every time a device is connected     No, not now        |
|                     | Select Next to continue.   |
|                     | KBack Next> Cancel   |

| Found new Hardware V | Vizard  |
|----------------------|---|
|                      | Welcome to the Found New<br>Hardware Wizard                               |
|                      | This wizard helps you install software for                                |
|                      | AIM USB Driver (v.10.01) VID=11CC   |
|                      | If your hardware came with installation CD or floppy disk, insert it now. |
|                      | What do you want the wizard to do?  |
|                      | Install the software automatically (Recommended)                          |
|                      | Install from a list or specific location (Advanced)                       |
|                      | Click next to continue  |
|                      | <pre>- Cancel</pre>   |



Enable "No, not now" checkbox and click "Next>".

Enable "Install the software automatically" checkbox and click "Next >".

Click "Finish".



Click "OK".

Click "Finish".

manual.

After the first installation two new icons,

shown on the right, appear on the PC

desktop: Race Studio 2 (Configuration)

icon and Race Studio Analysis one. For

this last one refer to the proper user

 Add USD Automatic: Installation Jun 8, 2000 ; .....

 Found New Hard Award Wizzeld

 Marco Star Award Wizzeld

 Add USB Device Is installing the columner law

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| Feat- |
|-------|
|       |



Race Studio 2 Race Studio Configuration icon

Race Studio Analysis

Race Studio Analysis icon

When the first **Race Studio 2** installation is over, all new release installations will jump driver installation (please remember to periodically check download/software area of <u>www.aim-sportline.com</u> if new release have been published).



# 2.3 – Troubleshooting

In case driver installation ends incorrectly for any reason, starts maintenance procedure running AIM\_USB\_Inst\_2008.exe. Follow this path: C:\Program files \ AIM \ AIM\_USB\_DRIVER\_2008.

| C:\Programmi\AIM\AIM_USB_DRIVER_2(  | 008                   |   |
|---|-----------------------|---|
| File Modifica Visualizza Preferiti Strumenti  | ?                     | 👹 🖉   |
| 🔇 Indietro 🝷 🌍 - 🎓 Cerca 🖡  | Cartelle              |   |
| Indirizzo 🗁 C:\Programmi\AIM\AIM_USB_DRIVER_2   | 2008                  | 🖌 🔁 Vai   |
| Cartelle  | × Nome 🔺              | Dimensione Tipo   |
| AIM<br>AIM_USB_DRIVER_2008<br>DriverDel<br>CFG<br>CFGEV3<br>COLORS<br>CONTACT_US<br>DASHBOARD<br>DATA<br>DATABASE<br>DragAnalyzer<br>DragAnalyzer<br>DRAGSTER_SUITE<br>DWL<br>ETpred<br>GPSManager<br>GPSManager<br>DAMBDA_CONFIGURATOR<br>LANGUAGES<br>DightAnalyzer | AIM_USB_Inst_2008.exe | Cartella<br>4.060 KB Applicazione<br>25 KB File di sistema<br>3 KB Informazioni di insta. |
|   |                       | >   |
| Oggetti: 4  | 3,99 MB               | 😼 Risorse del computer 🛛 🙀  |

Run AIM\_USB\_Inst\_2008.exe file.

| AIM-USB Installazione Automatica 8 Gen. 2008   |
|--|
|  |
| This is a Maintenance Procedure<br>to be used only in presence of TROUBLES.  |
| It seems that the AIM-USB driver is not COMPLETELY installed.<br>Did you try to connect the USB cable ?<br>You can click <exit> if AIM-USB driver works correctly,<br/>or click <reinstall driver=""> if you have problems.</reinstall></exit> |
| REINSTALL DRIVER EXIT  |

This panel appears. Click "Reinstall driver" and a procedure similar to the first installation starts.



# 2.4 – Installing Race Studio 2 under Microsoft Windows Vista

Microsoft Vista<sup>™</sup> operative system introduced more rigid safety procedures.

AIM USB driver is certified by Verisign but "unsigned" by Microsoft. "Unsigned" driver installation needs to run the program "As administrator" that means starting Microsoft Vista<sup>™</sup> using an "administrator" account. PC are normally sold with this account.

**Race Studio 2** installation creates a new icon on the PC desktop, that allows the user to start USB driver installation as "Administrator".



Before starting the installation, ensure that the logger is NOT connected to the PC USB port. In case it is, disconnect it.

Insert **Race Studio 2** CD in the CD Rom: if "auto play" option is enabled the installation starts automatically, otherwise click twice on "SETUP" icon.

In case of **Race Studio 2** very first installation the window on the right appears. It allows the user to select the software installation folder.

Click on "Browse" to select **Race Studio 2** destination folder or on "Next" to install the software in X/program files/AIM folder, where "X" is the hard disk where the operative system is installed on.

In case of new release of **Race Studio 2**, the window on the right appears: enable the checkbox "New Release of Race Studio 2" and click "Next>".







The window on the right appears.



After the installation – in case of new release of **Race Studio 2** – the window on the right appears. Click "Finish". The installation procedure is complete.

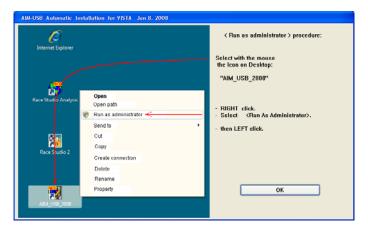


In case of very first installation the window on the right appears.

Click on "OK" button, to continue the installation.

Click on the question mark to know the <Run as Administrator> procedure. The following window appears. Race Studio 2

AIM-USB Automatic Installation Jan 8. 2008 -



It shows how to execute <Run as Administrator> procedure; click on "OK" to continue.

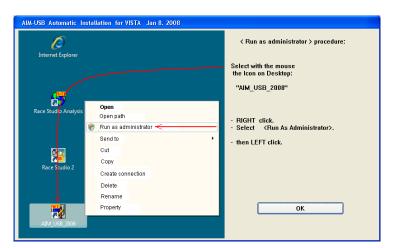
Click on "Finish".





### 2.5 – Installing the USB driver: "Run as Administrator" procedure

As explained in the image on the right, right click AIM\_USB\_2008 icon on the PC desktop and select "Run as Administrator" option.





Click "YES" to continue.

Disconnect any USB cable and click on "START".



|  | AIM-USB Automatic Installation Jan 8, 2008                                   |
|--|--|
|  | (111)  |
|  | Install AIM-USB driver 10.01/11CC for: Windows VISTA                         |
|  |  |
|  | Close all other applications then click <start> to begin</start>             |
| Click "START". AIM USB driver installation starts. | LEAVE ANY LOGGER DISCONNECTED FROM USB                                       |
|  | AlM-USB Automatic Installation Jan 6, 2008                                   |
|  | an 🛃 an  |
|  | Install AIM-USB driver 10.01/11CC for: Windows VISTA                         |
|  |  |
|  | Installation completed succesfully.  |
|  | Installation of AIM-USB Driver vers. 10.01/11CC                              |
|  | Installing files:<br>AIM_USBdrv_2008.inf                                     |
| Click "Continue".                                  | AIM-USB Driver vers. 10.01/11CC - Installation completed successfully        |
|  | You can continue with the next step.   |
|  |  |
|  | ~  |
|  | CONGRATULATIONS : INSTALLATION COMPLETED SUCCESSULLY                         |
|  | Continue   |
|  | Conunae  |
|  |  |
|  |  |
|  | AIM-USB Automatic Installation Jan 8, 2008                                   |
|  |  |
|  | Now you can plug the USB cable in. 🖘   |
|  |  |
|  | A complete automatic Windows VISTA installation for USB will<br>start.       |
|  | 51811.   |
| Connect the USB cable to the PC USB                |  |
| port.  | Device driver installation ×   |
| port.  |  |
|  |  |
|  |  |
|  | AIM USB Driver (v.10.01) VID=11CC ×<br>Device driver installation completed. |
|  |  |
|  |  |
|  |  |
|  |  |

During **Race Studio 2** and AIM USB driver installation, three new icons appear on the PC desktop:



As far as Race Studio Analysis icon is concerned, refer to the proper user manual.



### 2.6 – Troubleshooting

In case USB driver installation ended incorrectly for any reason it is possible to start the maintenance procedure repeating the "Run as Administrator" procedure.

As shown in the figure on the right, right click on "AIM\_USB\_2008" icon on the PC desktop and select "Run as administrator" option.



The panel on the right appears: click "Reinstall driver".

The first step completely erases the first installation.

| AIM-USB Automatic Installation Jan 8, 2008  |
|---|
|   |
| This is a Maintenance Procedure<br>to be used only in case of TROUBLES.   |
| It seams that the AIM-USB driver is NOT COMPLETLY installed.<br>Did you try to connect the USB cable ?<br>You can click <exit> if AIM-USB driver works correctly,<br/>or click <reinstall driver=""> if you have troubles.</reinstall></exit> |
| REINSTALL DRIVER EXIT   |

The system asks for confirmation.

Click "Yes" to complete the new installation.

Click "No" to quit and restart installation procedure later.





### 2.7 – Race Studio 2 visualization problems

Running **Race Studio 2** the display may show a misrepresented image like the one here below.

|  | m manager                    |                                |                 |                 |                 |                 |                             |                 |            |
|--|------------------------------|--------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------------------|-----------------|------------|
| Torrest Trans                              | Transmit                     |                                |                 |                 | <b>?</b> 0      | N-Net info      | (Alse                       | acquisition s   | vstom time |
| AIM Sportline                              |                              | 800                            |                 | -               |                 |                 |                             | Aces, Learning, |            |
| ortel Lauder to Data Acquisition Qurrent o | onfiguration                 | _                              |                 | -               | 2               |                 | 110 <sup>-101</sup>         |                 | 11         |
| Go to Analysis                             |                              | Ecu                            | Vehicle name    | Available time  | Time with GPS   | Tidal trequency |                             | Expensions tree |            |
| Go to Analysis                             | MOL PISTA                    | SUZUKI - OSXR                  | DEFAULT         | 8.44.55 (h.m.s) | 3.57.17 (h.m.s) | 132 (Hz)        | 91 (Hz)                     | 43 (Hz)         | 2          |
| Select of                                  | onliguration Channels        | System config                  | stration CANExp | ansions configu | rator           |                 |                             |                 |            |
| Download data                              |                              |                                | -               | ShiftLa         | ghts -S         | peed            |                             | -               |            |
|  | M sensor Multiply fa         | ktor                           | /2 •            | 11990           |                 | unnel Velocità  | _1                          | •               |            |
| AIM system                                 | U irmii MAX yaka             | 0 14                           | • 000           | (1) 11800       |                 |                 |                             |                 |            |
|  | rev log                      |                                |                 | . 11900         |                 |                 | ap<br>oscuring time         | - C             |            |
|  | larm led None 💌              | Over-rev time                  | hott 9          | 0 11400         | 0 1             |                 | ec.)                        | 1.              | 5          |
| AIM system                                 | sensor                       |                                |                 | 11300           | -10             | La              | p segments                  | 1               | the        |
|  | ALC: NOT A                   | akulated                       |                 |                 | 1.11            |                 |                             |                 |            |
| Online                                     |                              | ed with neutra<br>I: Channel 8 | 1 4.00          | 11000           |                 |                 | Show lap time               |                 |            |
|  | torret til                   | t gear number                  |                 |                 |                 |                 | Show odomet<br>Show running |                 |            |
|  |                              | 6                              |                 | 5 6 4 / 1       |                 |                 | _ som raring                | ing) on its     |            |
| AIM system<br>calibration                  |                              |                                | Sunter J .      | 071 1.00        | 94/ B           |                 |                             |                 |            |
| - List                                     | Channel for alarm            | Threshold                      | B4S             | 32              | 222             | 18              | Channel for a               | larm 1          | threshold  |
| Custom sensors                             | л 2                          | • 90                           | JEST LA         | IP LILL         | 13              |                 | Fuel_Level                  | *               | 2          |
| manager                                    | LPress 3                     | • 2                            |                 | ( )             | 100             | Ŧ               | None                        | •               | 4          |
|  | ittery 3                     | • 13.3                         | 1               |                 | 11              | H               | None                        | •               | 4          |
| Select Language                            |                              |                                |                 |                 |                 |                 | <i>a</i>                    |                 |            |
|  | Link alarm to measure        | fields                         |                 |                 |                 |                 |                             |                 |            |
|  | Measure                      | Shortname                      |                 |                 | 1               |                 | Measure                     |                 | rtname     |
| Field                                      | 1 - always displayed<br>mbda | LAM                            |                 | Enable st       | ate attains     | Field           | d 2 - always displa         | wed             | P          |
|  |                              | lass.                          |                 | 1 Drable by     | acting 1        |                 |                             | <u> </u>        |            |
| -Feid<br>LC_AF                             | R V                          | AFR                            | 1 percent       |                 |                 | Nore            | d 4 - page 1                | -1              |            |
| - Chinasa                                  | And and a second second      | Self.                          | Welcome ter     | a               |                 |                 |                             | -11             |            |
|  | 1 - page 2                   | DEAG                           | Text 1          | 1               |                 | Fast            | d 4 - page 2                | -1              |            |
| aim-sportline.com                          |                              |                                |                 |                 |                 |                 |                             |                 |            |

In this case it is necessary to change monitor settings.

**Warning**: close all running applications, Race Studio 2 included. This operation requires PC rebooting.

Here below the explanation of the procedure to modify monitor settings:

Follow this path: "Start/Setting/ Control Panel /Display".

The window "Display Properties", shown here on the right, appears.

Select "Settings" layer.

Press "Advanced".

| Display Properties 🔹 🕐 🔀  |
|---|
| Themes Desktop Screen Saver Appearance Settings   |
| Drag the monitor icons to match the physical arrangement of your monitors.  |
|   |
| 2 1   |
| Display:  |
| I. Plug and Play Monitor on 256MB ATI Radeon X1300PR0     Color quality   |
| Less More Highest (32 bit)  |
| 1280 by 1024 pixels   |
| <ul> <li>✓ Use this device as the primary monitor.</li> <li>✓ Extend my Windows desktop onto this monitor.</li> </ul> |
| Identify Troubleshoot Advanced  |
| OK Cancel Apply   |



Enable "Ask me before applying the new display settings" option. Set DPI setting on "Normal (96 DPI)"

| Color Management   | I CATALYST  | TALYST(R) Control Center |  |  |
|--|---|--------------------------|--|--|
| General Adapter  | Monitor   | Troubleshoot             |  |  |
| play<br>our screen resolution makes scrr<br>motrably, you can increase the D<br>it sizes only, click Cancel and go<br>it setting:<br>ormal size (96 DPI)<br>ormal size (96 DPI)<br>orge size (120 DPI)<br>ustom setting<br>mpatibility<br>me programs might not operate p<br>mouter after changing display set<br>er I change display settings:<br>Restart the computer before app<br>Apply the new display settings:<br>Ask me before applying the new<br>me games and other programs m<br>arn more about <u>running programs</u> | PI to compensate. To chan<br>to the Appearance tab. | \$                       |  |  |

The window here below appears.

| Change | DPI Setting  |
|--------|--|
| (į)    | Any font changes resulting from a new DPI setting will take effect after the fonts are installed and Windows is restarted. |
|        | ОК   |

Press "OK".

Press "Apply".

| General Adapt  |                                | 'ST(R) Control Center |
|--|--------------------------------|-----------------------|
|  | er Monitor                     | Troublesho            |
| ~ Display  |                                |                       |
| If your screen resolution makes s                                  | screen items too small to view | N                     |
| comfortably, you can increase th                                   |                                | hange                 |
| font sizes only, click Cancel and                                  | go to the Appearance tab.      |                       |
| DPI setting:   |                                |                       |
| Normal size (96 DPI)   | ×                              |                       |
|  |                                |                       |
|  |                                |                       |
| Compatibility  |                                |                       |
| Some programs might not operat<br>computer after changing display  |                                | the                   |
|  |                                |                       |
| After I change display settings:<br>Restart the computer before    | applying the new display set   | tings                 |
| Apply the new display setting                                      |                                | angs                  |
| <ul> <li>Ask me before applying the n</li> </ul>                   |                                |                       |
|  |                                |                       |
| Some games and other programs<br>Learn more about running programs |                                | ode.                  |
|  |                                |                       |



Yes

No

The window here below appears:

| ¢ | General |   |
|---|---------|---|
|   | (į)     | The required files are already installed on your hard disk. Setup can use these existing files, or Setup can recopy them from your original Windows<br>CD-ROM or from a network share.                        |
|   |         | Would you like to skip file copying and use the existing files? (If you click No, you will be prompted to insert your Windows CD-ROM or to supply an alternate location where the needed files may be found.) |
|   |         | Yes No  |

Press "Yes".

|                                     | Display Properties   |
|-------------------------------------|--|
|                                     | Themes Desktop Screen Saver Appearance Settings<br>Drag the monitor icons to match the physical arrangement of your monitors.  |
| Press "OK".                         | Display:<br>1. Plug and Play Monitor on 256MB ATI Radeon X1300PR0<br>Screen resolution<br>Less More<br>1280 by 1024 pixels<br>Use this device as the primary monitor.<br>Extend my Windows desktop onto this monitor.<br>Identify Troubleshoot Advanced<br>OK Cancel Apply |
| Press "Yes".<br>The system reboots. | You must restart your computer before the new settings will take effect.<br>Do you want to restart your computer now?  |

After rebooting run "Race Studio 2" and all works correctly.



# **Chapter 3 – System identification**

All AIM systems are univocally identified by **Race Studio 2** software. This allows to preliminarily check the communication between PC, software and the logger as to understand if the logger is supported by the software.

It is suggested to make a logger identification before starting any configuration. The procedure is:

- run Race Studio 2
- connect the USB cable to the PC and to the logger USB port
- switch the logger on
- press "System identification". It is on Race Studio 2 menu bar, in the left vertical keyboard and in system manager window (the button is labelled "System Identification" for all MyChron3 loggers and "CAN-net Info" for the other systems).



If all works correctly, "System identification/CAN-NET info" window, shown below, appears.

|       | MYCHRON 3                 |
|-------|---------------------------|
|       | Logger channels           |
|       | 1                         |
|       | Memory:                   |
|       | 64 KByte                  |
|       | Logger unique ID:         |
|       | 15071978                  |
|       | date ID:                  |
|       | 10/04/2006                |
|       | Driver vers VID           |
|       | 10.01 11CC                |
|       | BOOTER:                   |
| data: | 17/01/2005 vers: 00.01.41 |
|       | FIRMWARE                  |
| data: | 23/07/2005 vers: 2.34     |

| A. | Category of Logger | Type of Logger | Expansion Name | Logger ID | ID Date    | Firmware | Firmware D |
|----|--------------------|----------------|----------------|-----------|------------|----------|------------|
| L  | MASTER             | MXL PISTA      | Master         | 12345     | 16/01/2008 | 14.86.23 | 19/12/2007 |
|    |                    |                |                |           |            |          |            |
|    |                    |                |                |           |            |          |            |
|    |                    |                |                |           |            |          |            |
|    |                    |                |                |           |            |          |            |
|    |                    |                |                |           |            |          |            |
|    |                    |                |                |           |            |          |            |
|    |                    |                |                |           |            |          |            |
|    |                    |                |                |           |            |          |            |
|    |                    |                |                |           |            |          |            |
|    |                    |                |                |           |            |          |            |
|    |                    |                |                |           |            |          |            |
|    |                    |                |                |           |            |          |            |
|    |                    |                |                |           |            |          |            |
|    |                    |                |                |           |            |          |            |
|    |                    |                |                |           |            |          |            |
|    |                    |                | - C            | ancel     |            |          |            |

MyChron3 logger identification window

CAN-net info window (other systems)



# 3.1 – System identification of MyChron3

| Logger identification 🛛 🛛 🔀                |
|--|
| MYCHRON 3<br>Logger channels               |
| 1<br>Memory:                               |
| 64 KByte                                   |
| Logger unique ID:                          |
| 15071978<br>date ID:                       |
| 10/04/2006                                 |
| Driver vers VID 10.01 11CC                 |
| BOOTER:<br>data: 17/01/2005 vers: 00.01.41 |
| FIRMWARE<br>data: 23/07/2005 vers: 2.34    |

The window shows:

- Logger channels: number of channels of the logger
- **Memory**: memory size of the logger (no matter how much of it has already been used)
- Logger unique ID: logger serial number
- Date ID: logger production date
- Driver vers. and VID: information concerning the USB driver
- Booter (date and vers.): logger booter date and version
- Firmware (date and vers.): logger firmware date and version. It is suggested to check on <u>www.aim-sportline.com</u> that the logger firmware version is the latest available; if not, pls. download the latest one, install it and follow instructions that appear on the PC monitor.



# **3.2 – System identification of other loggers.**

| CAN - net info |                    |                |                |           |            |          |            |  |  |
|----------------|--------------------|----------------|----------------|-----------|------------|----------|------------|--|--|
| N              | Category of Logger | Type of Logger | Expansion Name | Logger ID | ID Date    | Firmware | Firmware D |  |  |
| 1              | MASTER             | MXL PISTA      | Master         | 12345     | 16/01/2008 | 14.86.23 | 19/12/2007 |  |  |
| 2              | CAN EXPANSION      | DaVid          |                | 47111881  | 18/01/2008 | 22.03    | 09/11/2007 |  |  |
| 3              | CAN EXPANSION      | LCU-ONE        | LC             | 111111    | 13/12/2007 | 25.09    | 19/11/2007 |  |  |
| 4              | CAN EXPANSION      | GPS            |                | 902499    | 14/01/2008 | 35.13    | 17/12/2007 |  |  |
| 5              | CAN EXPANSION      | MEMORY KEY     |                | 7613105   | 17/12/2007 | 37.05    | 18/12/2007 |  |  |
|                |                    |                |                |           |            |          |            |  |  |
|                |                    |                | <b><u></u></b> | ncel      |            |          |            |  |  |

The window shows:

- N: index of the item in the list. This window recognizes all loggers in their order starting always from the Master one (in the figure above an MXL Pista);
- Category of logger: role of the logger in the CAN net (master or CAN expansion)
- **Type of logger**: type of device connected
- **Expansion Name**: role of the logger in the CAN network
- Logger ID: logger univocal serial number
- ID Date: logger production date
- **Firmware Version**: firmware version installed on the logger. It is suggested to check on <u>www.aim-sportline.com</u> website that the firmware version is the latest available; if not, pls. download the latest one, install it and follow the instructions that appear on the PC monitor.
- Firmware Date: firmware date.



# Chapter 4 – How to configure MyChron3 kart Plus/Gold/Extreme

To correctly configure, **MyChron3 Kart** (**Plus, Gold, Extreme**) use a PC and **Race Studio 2** software.

MyChron3 Kart can be configured both via keyboard and via software but some parameters can be set only via software. To measure lateral acceleration (to create track maps), for instance, it is necessary to calibrate the internal accelerometer via software.

Before starting the configuration install **Race Studio 2** and the USB driver as explained in Chapter 2.

Run the software clicking on Race Studio 2 icon and the window below appears.



In the title bar – white on a blue background in the figure above – you can see the version of **Race Studio 2** installed on the PC.

Immediately under there is the menu bar, that is shown in a more immediate way on the left thanks to the graphic buttons: Go to Analysis (this button runs Race Studio Analysis software), Download data, AIM system manager, AIM system Identification, Online, AIM system calibration, Custom sensors manager, Select language.

From this window it is possible to perform all operations necessary to manage all AIM systems.



To enter configuration menu click on "AIM system manager". A panel showing all systems managed through **Race Studio 2** appears: double click on **MyChron3 Kart Plus/Gold/Extreme** button or click on it and then press "✓Go to" button.



Race Studio 2 "System manager" window appears.



| System | n manager       |   |              |             |            |           |      |             | X         |
|--------|-----------------|---|--------------|-------------|------------|-----------|------|-------------|-----------|
|        | General         | Configuration   | Channels     |             |            |           |      | Customi     | ze sensor |
|        |                 | Logger identification   | Transmit     | Receive     |            | Online    | •    | Cali        | brate     |
| N      | Logger          | 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - | Vehicle name | Obsc t      | Split time | Speed     | Temp | Created     |           |
| 1      | MYCHRON 3 - KAP | RT - PLUS   | DEFAULT      | 8           | 0          | mph       | °F   | February    | 04, 2008  |
| 2      | MYCHRON 3 - KAP | RT - GOLD   | DEFAULT      | 8           | 0          | mph       | °F   | February    | 04, 2008  |
| 3      | MYCHRON 3 - KAP | RT - EXTREME  | DEFAULT      | 8           | 0          | km/h      | °F   | February    | 04, 2008  |
|        | New             | Delete  | Clone        | Import      | Y          | Export    |      |             | Exit      |
|        | New             |   |              |             |            |           |      | 4           |           |
|        |                 | Logger ty   | pe V         | ehicle name | Availat    | ole time  |      | Total frequ | iency     |
|        |                 | MYCHRON 3 - KA  | RT - PLUS    | DEFAULT     | 1.01.3     | 3 (h.m.s) |      | 61 (Hz      | )         |

This window has two keyboards.

- **General**: shows "System manager" window. In the central part, with grey background, all configurations currently included in the software database are listed. In case of first configuration, the system shows automatically new configuration window.
- **Configuration**: allows to set or modify an existing configuration. In case of first configuration the central table shows up empty.
- Channels: sets all logger channels.
- **System Identification**: identifies the logger connected to the PC.
- **Transmit**: transmits a configuration. Needs the logger to be switched on and connected to the PC.
- **Receive**: reads and saves the configuration of the logger connected to the PC.
- **Online**: allows to verify that the configuration is correct and has been correctly transmitted to the logger and that all works properly.
- **Calibrate**: activates calibration/auto-calibration procedure of the sensors that need it.
- **New**: creates a new configuration
- **Delete**: deletes a configuration
- **Clone**: clones a configuration.
- **Import**: imports a configuration from a file.
- **Export**: exports a configuration to a file.
- Exit: quits "System manager" window.

To work on a configuration click on any cell of that configuration row and the entire row is selected (highlighted in yellow).



# 4.1 – Creating a new configuration



Pressing "New" button in system manager window, this window appears:

Some parameters need to be set:

- Data logger type: select the logger to be configured.
- Vehicle name: insert the vehicle name.
- Speeds unit of measure: choose between km/h and Mph;
- Temperatures unit of measure: choose between °C and °F;

Press "OK" to save ("Cancel" to quit without saving). The system comes back to system manager window.



The next step is channels setting. Press "Channels" button.



# 4.2 – Channels

| Gene      | ral       | Configuration           |         | Channels                |         |                             |            | Custom                | ze sensor |
|-----------|-----------|-------------------------|---------|-------------------------|---------|-----------------------------|------------|-----------------------|-----------|
|           |           | Logger identification   |         | Transmit                | Receive |                             | Online     | Cali                  | brate     |
| Channel i | Enabled/d | Channel name            | Samplin | Sensor type             | Mea     | Low scale                   | High scale | Param. 1              | Param. 2  |
| RPM       | Enabled   | Engine                  | 10 Hz   | Engine revolution speed | rpm     | 0                           | 20000      | 1.000                 | 20000     |
| SPD_1     | Enabled   | Speed_1                 | 10 Hz   | Speed                   | km/     | 0.0                         | 250.0      | 830.0                 | 1.0       |
| CH_1      | Enabled   | Channel_1               | 10 Hz   | Temperature sensor      | °C      | 0                           | 150        |                       |           |
| CH_2      | Enabled   | Channel_2               | 10 Hz   | Temperature sensor      | °C      | 0                           | 150        |                       |           |
| CH_3      | Enabled   | Channel_3               | 10 Hz   | Thermocouple            | °C      | 0                           | 150        |                       |           |
| CH_4      | Enabled   | Channel_4               | 10 Hz   | Thermocouple            | °C      | 0                           | 150        |                       |           |
| CH_5      | Enabled   | Gear                    | 10 Hz   | Calculated Gear         | #       | 0                           | 6          |                       |           |
| ACC_1     | Enabled   | Acc_1                   | 10 Hz   | Lateral 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       |                       |           |
|           |           |                         |         |                         |         |                             |            |                       |           |
|           |           |                         |         |                         |         |                             |            |                       |           |
|           |           | Logger                  | type    | Vehicle name            |         | Available ti                | me         | Total frequ           | Exit      |
|           |           | Logger<br>MYCHRON 3 - K |         |                         |         | Available ti<br>3.05.17 (h. |            | Total freq.<br>91 (Hz | iency     |

Pressing Channels button the window here below appears.

It shows all loggers channels with the related characteristics:

- Channel identifier: shows the channel label.
- Enabled/Disabled: shows the channel status (enabled/disabled). It can be modified double clicking on the cell except for RPM and SPD that can be modified only through system configuration window.
- Channel name: allows to name the channel.
- **Sampling Frequency**: sets each channel sampling frequency. This last one influences the total available time highlighted by a box in the figure above that diminishes increasing the sampling frequency because the memory fills up faster.
- Sensor type: allows to select the sensor installed on that channel from the drop down menu that appears clicking on that cell. Channels CH\_1 and CH\_2 are temperature channels: the logger can distinguish automatically a thermocouple from a thermo resistor and no configuration is needed. Channels CH\_3 and CH\_4 can be temperature or pressure channels: it is thereby necessary to configure them. CH\_5 is the gear sensor installed in the gearbox that allows MyChron3 to measure the engaged gear; MyChron3 Gold/Extreme has got an internal accelerometer to measure lateral "g". It allows to create track maps.
- **Measure unit**: show the selected unit of measure for each channel. It is possible to change it double clicking on the cell.
- **High/Low scale**: shows the range of values shown by the graph that will be created in Race Studio Analysis after data download.
- **Param.1/Param2**: values of RPM and speed set in system configuration window.

When all parameters have been set, it is necessary to transmit the configuration to the logger.



### 4.3 – System configuration

**MyChron3 Kart Plus/Gold/Extreme** has got 14 fully configurable coloured led; the 2 on the left and on the right of the display represent the 4 max and min alarm of the analog channels (temperatures and pressures), while the other 10 led on top of the display are the Shift lights that inform the pilot to shift gear.

| Configuration MYCHRON 3  | KART - PLUS   | X   |
|--|---|---|
| Speed<br>Wheel circumference<br>(mm)<br>830<br>Pulses per wheel revolution | Display language Italiano  Shift Light Led 1 Led 2 Led 3 Led 4 Led 5 0 0 0 0                                      | Rpm<br>Multiply factor<br>71 -                                  |
| Temperature 1 Alarms<br>HIGH<br>Led 1 0<br>LOW<br>Led 2 0                  | Shift light<br>1 2 3 4 5 5 4 3 2 1<br>1 3 4 5 5 4 3 2 1<br>1 3 12 16 20<br>2 9 70 16 800<br>2 9 889 120 35 4<br>4 | Temperature 2 Alarms<br>HIGH<br>Led 3 0<br>LOW<br>Led 4 0       |
| Measure Units<br>Speed unit<br>km/h •<br>Temperature unit<br>*C •          | Gear sensor<br>Calculated Highest gear number 6<br>Calculated Cancel  | Lap<br>Obscuring time<br>(sec.) 8<br>Number of split times<br>0 |

To set alarms, high/low threshold values and configuration parameters it is necessary to complete the window shown here above.

#### 4.3.1 – Display language box

| Display language | Italiano | <b>_</b> |
|------------------|----------|----------|

It allows to select the display language from the drop down menu.

#### 4.3.2 – Speed box

| Speed<br>Wheel circumference |
|------------------------------|
| (mm)                         |
| 830                          |
| Pulses per wheel revolution  |
| 1                            |

- Wheel circumference: fill in the kart wheel circumference (in mm or in inches); this value is fundamental to correlate the wheel revolution speed to the kart one.
- **Pulses per wheel revolution**: fill in the number of magnets installed on the wheel. When the magnet passes in face of the sensor it generates an electric pulse.



#### 4.3.3 – Shift Lights box



Sets the 5 RPM values, each one corresponding to two of the coloured led placed on top of MyChron3.

Led colours: the first two on the left and on the right are green, the central two are orange and the last four are red. To set the RPM threshold values fill in the cases. The led switches progressively on and when the engine reaches RPM value set in the fifth case all led start blinking, warning the pilot to shift gear. If a value is set on 0 the corresponding led is disabled.

#### 4.3.4 – RPM box

| Multiply factor |
|-----------------|
| /1 💌            |
|                 |
| Max value       |
| 20000 💌         |
|                 |

- **Multiply factor**: it is possible to choose among different values: for a one cylinder two strokes kart the proper value is /1.
- **Max value**: set the RPM high scale.

#### 4.3.5 – Channels alarm boxes

| Channel 1 Alarm |     |   |       |  |  |  |  |  |
|-----------------|-----|---|-------|--|--|--|--|--|
|                 | LED |   | Value |  |  |  |  |  |
| HIGH            | 1   | • | 0     |  |  |  |  |  |
| LOW             | 1   | - | 0     |  |  |  |  |  |

These boxes (2 for **MyChron3 Plus/Gold**, 4 for **MyChron3 Extreme**) allow to set the channels threshold values linking them to the four lateral led of the system.

For **MyChron3 Plus** and **Gold** it is possible to connect the min and max threshold values to different Led while for **MyChron3 Extreme** max and min threshold values have to be connected to the same led. Insert max and min value corresponding to the sensors installed on the kart.



#### 4.3.6 – Lap box

| -Lap                  |  |
|-----------------------|--|
| Obscuring time        |  |
| (sec.) 8              |  |
| Number of split times |  |
| ,                     |  |

- **Obscuring time**: is a time period during which the lap receiver installed on the kart, after having sampled a lap signal, is "blind" (it does not record signals). This function is useful for split times management on tracks with more magnetic strips/optical transmitters: set obscuring time on a minimum value to sample split times; not to record split times, set obscuring time on a value lower than best lap time and higher then the time elapsed between last split and start/finish line.
- **Number of split times**: is the number of splits the track is divided in and corresponds to the number of magnetic strips/optical transmitters installed there.

#### 4.3.7 – Gear sensor box

| iear sensor |                     |   |
|-------------|---------------------|---|
| None        |                     |   |
| Calculated  | Highest gear number | 6 |

- None: not to see the engaged gear number.
- **Calculated**: to calculate the engaged gear number (see the related chapter for further information). In this last case, "Highest gear number" case is enabled: fill in the kart number of gears.

#### 4.3.8 – Unit of measure box

| - Measure Units  |  |
|------------------|--|
| Speed unit       |  |
| km/h 💌           |  |
| Temperature unit |  |
| ℃ ▼              |  |
|                  |  |
|                  |  |

- **Speed Unit**: choose between km/h and mph
- Temperature unit: choose between °C and °F.

When all configuration parameters have been set, click on "OK" button to save ("Cancel" to quit without saving). It is now necessary to transmit the configuration to the logger.



### 4.4 – Transmitting the configuration

The procedure to transmit the configuration to the logger is the same for all AIM loggers. See chapter 13 for further information.

#### 4.5 – Auto calibration of the accelerometer (Gold/Extreme only)

The auto-calibration procedure is the same for all AIM loggers. See paragraph 14.2 for further information.

#### 4.6 – Gear Calculation

See chapter 15 for further information.

#### **4.7 – Online**

Online function is very useful to check the logger proper working. See chapter 18 for further information.



# Chapter 5 – How to configure MyChron3 Car/Bike Plus/Gold/Extreme

To correctly configure **MyChron3 Car/Bike Plus/Gold/Extreme** use a PC and Race Studio 2 software.

**MyChron3 Car/Bike** can be configured both via keyboard and via software but some channels, like these with temperature or pressure sensors, accelerometer or gyroscope, cannot be set via keyboard.

Before starting the configuration install **Race Studio 2** and the USB driver as explained in Chapter 2.

Run the software clicking on Race Studio 2 icon and the window below appears:



In the title bar – white on a blue background in the figure – you can see the version of **Race Studio 2** installed on the PC.

Immediately under there is the menu bar, that is shown in a more immediate way on the left thanks to graphic buttons: Go to Analysis (this buttons runs the analysis software Race Studio Analysis), Data download, AIM system manager, AIM system identification, Online, AIM System Calibration, Custom sensors management, Select language.

Through this window it is possible to perform all operations necessary to manage all AIM systems.



To enter configuration menu click on "AIM System manager". A panel showing all systems managed through **Race Studio 2** appears: double click on **MyChron3 Car/Bike Plus/Gold/Extreme** button or select it and click on "✓Go to" button.



Race Studio 2 System manager window appears.



| Syste | m manager      |                       |               |         |        |            |             |      |                   |
|-------|----------------|-----------------------|---------------|---------|--------|------------|-------------|------|-------------------|
|       | General        | Configuration         | ) d           | hannels |        |            |             |      | Customize sensor  |
|       |                | Logger identification | ) [ TI        | ransmit | Receiv | e (        | Online      |      | Calibrate         |
| N     | Logger         |                       | Vehicle nam   | e       | Obsc t | Split time | Speed       | Temp | Created           |
| 1     | MYCHRON 3 - CA | R / BIKE - PLUS       | DEFAULT       |         | 8      | 0          | km/h        | °C   | December 14, 2007 |
| 2     | MYCHRON 3 - CA | R - XG                | DEFAULT       |         | 8      | 0          | km/h        | °C   | March 06, 2008    |
| 3     | MYCHRON 3 - CA | AR - GOLD             | DEFAULT       |         | 8      | 0          | km/h        | °C   | March 06, 2008    |
| 4     | MYCHRON 3 - BI | KE - GOLD             | DEFAULT       |         | 8      | 0          | km/h        | °C   | March 06, 2008    |
| 5     | MYCHRON 3 - SM | - GOLD                | DEFAULT       |         | 8      | 0          | km/h        | °C   | March 06, 2008    |
| 6     | MYCHRON 3 - BI | KE - GOLD             | READ          |         | 8      | 0          | km/h        | °C   | March 12, 2008    |
|       |                |                       |               |         |        |            |             |      |                   |
|       | New            | Delete                |               | Clone   | Import |            | Export      |      | 🔹 Exit            |
|       |                | Logger ty             | pe            | Vehicle | name   | Avai       | ilable time |      | Total frequency   |
|       |                | MYCHRON 3 - CAP       | R / BIKE - PL | DEFA    | ULT    | 0.52       | .52 (h.m.s) |      | 71 (Hz)           |

This window has two keyboards.

- **General**: shows "System manager window". In the central part, with grey background, all configurations currently included in the software database are listed. In case of first configuration the software shows directly "New configuration" window.
- **Configuration**: allows to set or modify a configuration.
- Channels: allows to set all loggers channels.
- System Identification: identifies the logger connected to the PC.
- **Transmit**: transmits a configuration to the logger. It needs the logger to be switched on and connected to the PC.
- **Receive**: reads and saves the configuration of the logger connected to the PC.
- **Online**: allows to check that the configuration is correct and has been correctly transmitted to the logger and that all works properly.
- **Calibrate**: activates calibration/auto-calibration procedure of the sensors that need it.
- **New**: creates a new configuration.
- **Delete**: deletes a configuration.
- **Clone**: clones a configuration.
- **Import**: imports a configuration from a database or from a file.
- **Export**: exports a configuration in a file.
- **Quit**: quits "System Manager" window.

To work on a configuration click on any cell of that configuration row and the entire row is selected (highlighted in yellow).



## 5.1 – Creating a new configuration

Pressing "New" button in "System Manager" window, this window appears.



Some parameters need to be set:

- Data Logger type: select the logger to be configured.
- Vehicle Name: insert the vehicle name.
- Speeds unit of measure: choose between km/h and Mph.
- Temperatures unit of measure: choose between °C and °F.
- Pressures unit of measure: choose between Bar and PSI.

Press "OK" to save ("Cancel" to quit without saving). The system comes back to system manager window.

| Logger<br>MYCHRON 3 - Cr<br>MYCHRON 3 - Cr<br>MYCHRON 3 - C<br>MYCHRON 3 - S<br>MYCHRON 3 - S<br>MYCHRON 3 - B | AR - XG<br>AR - GOLD<br>IKE - GOLD<br>11-GOLD | Transmit<br>Vehicle name<br>DEFAULT<br>DEFAULT<br>DEFAULT<br>DEFAULT<br>DEFAULT<br>READ | Receive<br>Obsc t<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8 | Split time<br>0<br>0<br>0<br>0<br>0<br>0 | Online<br>Speed<br>km/h<br>km/h<br>km/h<br>km/h | Temp     | Calibrate<br>Created<br>December 14, 2007<br>March 06, 2008<br>March 06, 2008 |
|--|---|---|--|--|---|----------|---|
| MYCHRON 3 - CA<br>MYCHRON 3 - CA<br>MYCHRON 3 - C<br>MYCHRON 3 - B<br>MYCHRON 3 - SI                           | AR - XG<br>AR - GOLD<br>IKE - GOLD<br>11-GOLD | DEFAULT<br>DEFAULT<br>DEFAULT<br>DEFAULT<br>DEFAULT                                     | 8<br>8<br>8<br>8<br>8<br>8                                     | 0<br>0<br>0<br>0                         | km/h<br>km/h<br>km/h                            | °⊂<br>°⊂ | December 14, 2007<br>March 06, 2008   |
| MYCHRON 3 - CA<br>MYCHRON 3 - C<br>MYCHRON 3 - B<br>MYCHRON 3 - Sf   | AR - XG<br>AR - GOLD<br>IKE - GOLD<br>11-GOLD | DEFAULT<br>DEFAULT<br>DEFAULT<br>DEFAULT  | 8<br>8<br>8<br>8   | 0<br>0<br>0                              | km/h<br>km/h                                    | °⊂<br>°⊂ | March 06, 2008  |
| MYCHRON 3 - C<br>MYCHRON 3 - B<br>MYCHRON 3 - Sf   | AR - GOLD<br>IKE - GOLD<br>1 - GOLD           | DEFAULT<br>DEFAULT<br>DEFAULT   | 8<br>8<br>8  | 0  | km/h  | °C       |   |
| MYCHRON 3 - B<br>MYCHRON 3 - SI  | IKE - GOLD<br>1 - GOLD                        | DEFAULT<br>DEFAULT  | 8  | 0  |   |          | March 06, 2008  |
| MYCHRON 3 - SP   | 4 - GOLD                                      | DEFAULT   | 8  |  | km/b  |          |   |
|  |   |   |  | 0  | INTER   | °C       | March 06, 2008  |
| MYCHRON 3 - B  | IKE - GOLD                                    | READ  | 8  | 0  | km/h  | °C       | March 06, 2008  |
|  |   |   |  | 0  | km/h  | °C       | March 12, 2008  |
|  |   |   |  |  |   |          |   |
|  |   |   |  |  |   |          |   |
| New  | Delete  | Clone   | Import   |  | Export  |          | Exit  |
|  |   |   |  |  |   |          |   |

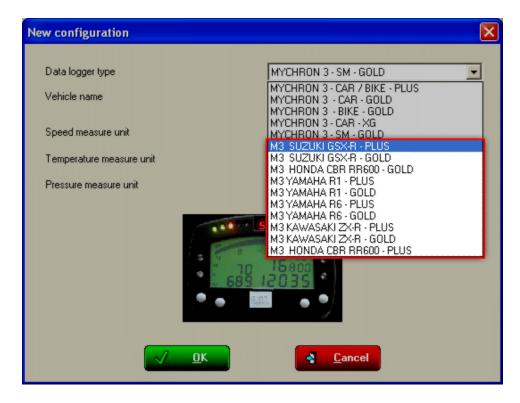
The next step is channels setting. Press "Channels".



### 5.1.1 – MyChron3 Plus/Gold Bike Plug&Play configurations

**MyChron3 Plus/Gold Plug&Play** kits for Bike installations include, beside the logger, all what is needed for an easy installation on the bike (wiring, bracket, screws, washers, etc.). At present, the most important models/brands have got their kits available. All information are on AIM website at <u>www.aim-sportline.com</u> clicking "Special Applications".

When the kit has been correctly installed (see each kit user manual for further information) just power on the bike. Should any configuration problem occur select the proper configuration in "New configuration" window, shown here below. Thre red box highlights Plug&Play configurations now available.



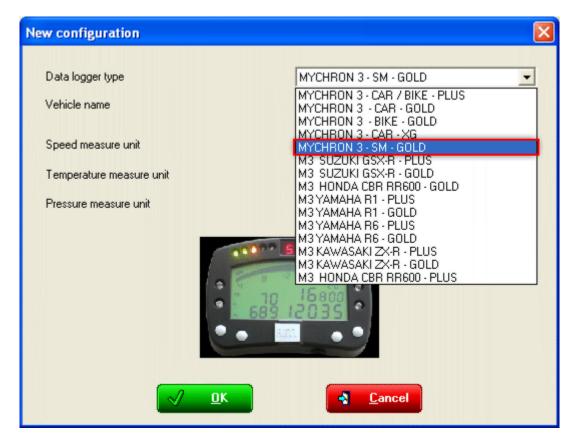
If the bike is completely corresponding to the stock one sold by the manufacturer, selecting the related configuration is enough to transmit it to the logger. In case, on the contrary, additional sensors have been installed, they need to be configured following the procedures here described.

**Warning**: all parameters set in Plug&Play configurations have been tested to work correctly. Refer to each kit user manual for any information concerning the configuration and to modify it.



### 5.1.2 – MyChron3 Gold Snow Mobile configuration

AIM produces a particular version of **MyChron3 Gold** for **Snowmobile** installations. This particular MyChron3 application is supported by the configuration labelled "MyChron3 – SM – Gold". When the logger has been correctly installed and the eventual additional sensors connected (refer to the related documentation for further information), it is necessary to configure the logger. Select the logger between these available in "New configuration" window.



Pressing "OK" the system comes back to System manager window. The next step is channels setting; press "Channels".



## 5.2 – Channels

| Gene            | eral               | Configuration              |               | Channels                |           |           |            | Custom      | ize sensor |
|-----------------|--------------------|----------------------------|---------------|-------------------------|-----------|-----------|------------|-------------|------------|
|                 |                    | Logger identification      |               | Transmit F              | eceive    |           | Online     | Cali        | brate      |
| Channel i       | Enabled/d          | Channel name               | Samplin       | Sensor type             | Mea       | Low scale | High scale | Param. 1    | Param.     |
| RPM             | Enabled            | Engine                     | 10 Hz         | Engine revolution speed | rpm       | 0         | 20000      | 1.000       | 20000      |
| SPD_1           | Enabled            | Speed_1                    | 10 Hz         | Speed                   | km/       | 0.0       | 250.0      | 1666.0      | 1.0        |
| CH_1            | Enabled            | Channel_1                  | 10 Hz         | Thermocouple            | °C        | 0         | 150        |             |            |
| CH_2            | Enabled            | Channel_2                  | 10 Hz         | Thermocouple            | °C        | 0         | 150        |             |            |
| CH_3            | Enabled            | Channel_3                  | 10 Hz         | Pressure VDO 0-5 bar    | bar       | 0.00      | 5.00       |             |            |
| CH_4            | Enabled            | Channel_4                  | 10 Hz         | Pressure VDO 0-5 bar    | bar       | 0.00      | 5.00       |             |            |
| CH_5            | Disabled           | Gear                       | 10 Hz         | Calculated Gear         | #         | 0         | 6          |             |            |
| ACC 1           | Enabled            | Acc_1                      | 10 Hz         | Lateral accelerometer   | g .01     | -3.00     | 3.00       |             |            |
|                 |                    |                            |               |                         |           |           |            |             |            |
| LOG_TMP         | Enabled            | Datalogger_Temp            | 10 Hz         | Cold joint              | °C        | 0         | 50         |             |            |
|                 | Enabled<br>Enabled | Datalogger_Temp<br>Battery | 10 Hz<br>1 Hz | Cold joint<br>Battery   | °⊂<br>∀.1 | 0<br>5.0  | 50<br>15.0 |             |            |
| LOG_TMP<br>BATT |                    |                            |               | ,                       |           | -         |            |             |            |
|                 |                    |                            | 1 Hz          | ,                       |           | -         | 15.0       | Total frequ | Exit       |

Pressing Channels button this window appears.

It shows all channels set on the logger with the related characteristics:

- Channel Identifier: shows channel label.
- Enabled/Disabled: shows channel status (enabled/disabled). It is modifiable with a double click on the cell except for RPM, Speed and Gear that can be modified only through System configuration window.
- Channel name: names the channel.
- **Sampling Frequency**: sets each channel sampling frequency. This last one influences the total available sampling time highlighted by a box in the figure above that diminishes increasing the sampling frequency because the memory fills up faster.
- Sensor type: allows to select the sensor installed on that channel from the drop down menu that appears clicking on that cell. Channels CH\_1-CH\_4 support temperature or pressure sensors (MyChron3 Plus), potentiometers and Lambda probe (MyChron3 Gold/Gold XG). User can set the desired sensor selecting it from the drop down menu. Channel CH\_5 is gear channel. MyChron3 Gold Bike allows to install an external gyroscope on channel CH\_7 to create the track map while MyChron3 Gold/Gold XG (Car) has a lateral internal accelerometer (labelled ACC\_1) for the same purpose.
- **Measure unit**: allows to select the sensor unit of measure.
- **High**/Low scale: shows the range of values visualized by the graph that will be created by Race Studio Analysis after data download.
- **Param.1/Param2**: the values of RPM and speed parameters set in system configuration window.

When all parameters have been set it is necessary to transmit the configuration to the logger.



### 5.3 – Creating a custom sensor

The procedure to create a custom sensor is the same for all AIM loggers. Refer to the related chapter for further information.

## 5.4 – System configuration

**MyChron3 Car/Bike Plus/Gold/Extreme** has 14 fully configurable alarm led; the 2 on the left and on the right of the display are the 4 high/low alarm led of the analog channels (temperatures and pressures), while the other 10 on top of the display are the Shift lights that warn the pilot to shift gear.

| Configuration MYCHRON 3 - BIKE   | - GOLD   | ×  |
|--|--|--|
| Speed  | Display language Italiano 💌  | Rpm  |
| Wheel circumference (mm) 1666  | Shift Light  | Multiply factor  |
| Pulses per wheel revolution  | Led 1         Led 2         Led 3         Led 4         Led 5           0         0         0         0         0         0  | Max value 20000 💌  |
| Channel 1 Alarm<br>LED Value<br>HTGH 1 V 0<br>LOW 1 V 0<br>Channel 2 Alarm<br>LED Value<br>HTGH 2 V 0<br>LOW 2 V 0 | Shift light<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 3 4 5 6 2 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 | Channel 3 Alarm           LED         Value           HIGH         3         •         0           LOW         3         •         0           Channel 4 Alarm         ED         Value           HIGH         4         •         0           LOW         4         •         0 |
| Measure Units  | Calculated         Image: with neutral signal           Potentiometer         Highest gear number         6  | Lap<br>Obscuring time (sec.) 8   |
| Temperature unit   |  | Number of split times 0  |

To set alarms, high/low threshold values and configuration parameters it is necessary to fill in the above reported window.

First of all select the display language red circled in the figure above.

**Note**: in case of a Plug&Play kit this window is already configured.

This window is to be completed like that of MyChron3 Kart (see paragraph 4.2.) except for Gear sensor box, shown here below. Available options are:

- "None": not to see the engaged gear on the display.
- "**Potentiometer**": a gear potentiometer<sup>1</sup> is available.
- "Calculated": to calculate the engaged gear<sup>2</sup>; specify whether a neutral sensor is available or not if required.

| Gear sensor   |                                  |
|---------------|----------------------------------|
| None          | Calculated 🔽 with neutral signal |
| Potentiometer | Highest gear number 6            |

<sup>&</sup>lt;sup>1</sup> See paragraph 14.3 for further information.

<sup>&</sup>lt;sup>2</sup> See chapter 15 for further information.



### 5.4.1 – System configuration of MyChron3 Gold Snow Mobile

In case of a **MyChron3 Gold Snowmobile**, configuration window is slightly different, as shown below. It has an additional box labelled "Shaft rotation speed".

| Configuration MYCHRON 3 - SM -  | GOLD   |                                   |            |  | × |
|---|--|-----------------------------------|------------|--|---|
| Speed Wheel circumference (mm)  | Display language<br>- Shift Light<br>Led 1 Led 2 | Italiano<br>Led 3 Led 4           | ▼<br>Led 5 | Rpm<br>Multiply factor   | - |
| Pulses per wheel revolution 1 - Shaft rotation speed  | 0  | 0 0<br>Shift light                | 0          | Max value 20000  | - |
| Pulses per revolution 1<br>Channel 1 Alarm<br>LED Value<br>HIGH 1 0<br>LOW 1 0<br>Channel 2 Alarm<br>LED Value<br>HIGH 2 0<br>LOW 2 0 |  |                                   |            | Channel 3 Alarm<br>LED Value<br>HIGH 3<br>LOW 3<br>Channel 4 Alarm<br>HIGH 4<br>LED Value<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0 |   |
| - Measure Units<br>Speed unit km/h ▼<br>Temperature unit ℃ ▼  | Gear sensor<br>None<br>Potentiometer             | Calculated<br>Highest gear number | ncel       | Lap<br>Obscuring time (sec.) 8<br>Number of split times 0  |   |

The window is to be completed like the other MyChron3 of this group (see paragraphs 4.2 and 5.2) except for Shaft rotation speed box, reported here below.

Fill in the pulses for shaft revolution. This value corresponds to the number of magnets installed on the snowmobile transmission shaft.

| - Shaft rotation speed |   |
|------------------------|---|
| Pulses per revolution  | 1 |



### 5.5 – Transmitting the configuration

The procedure to transmit the configuration to the logger is the same for all AIM loggers. Refer to chapter 13 for further information.

### 5.6 – Sensors calibration and auto-calibration

When the configuration has been transmitted it is necessary to perform calibration procedure, to say auto-calibrate accelerometer, gyroscope and distance potentiometer and calibrate the gear sensor, the mid zero potentiometer and the zero based potentiometer installed on the vehicle.

See chapter 14 for further information.

**Warning**: if potentiometers, gyroscope and accelerometers have not been correctly calibrated it is not possible to sample correct data, nor the engaged gear nor create the track map. It is recommended to pay particular attention to sensors calibration/auto-calibration procedures.

### **5.7 – Gear calculation**

Refer to chapter 15 for further information.

### 5.8 – Online

Online function is very useful to check the logger proper working. See chapter 18 for further information.



# Chapter 6 – How to configure MyChron3 Log/Visor/XGLog

To correctly configure **MyChron3 Log/Visor/XGLog**, use a PC and **Race Studio 2** software.

**MyChron3 Log/Visor/XGLog** can be configured both via keyboard and via software but some channels can only be set via software. Temperature or pressure sensors, as well as ECU signals cannot be set via keyboard, exactly like accelerometers, potentiometers, the gyroscope etc....

Before starting the configuration, install **Race Studio 2** and the USB driver as explained in chapter 2.

Run the software clicking on the related icon and the window here below appears.



In the title bar – white on a blue background in the figure – you can see the **Race Studio 2** version installed on the PC .

Immediately under there is menu bar, shown in a more intuitive way on the left thanks to the graphic buttons: Go to Analysis (this button runs Race Studio Analysis software), Data download, AIM system manager, AIM system identification, Online, AIM system calibration, Custom sensors management, Select language.

From this window it is possible to perform all operations necessary to manage all AIM systems.



To enter configuration menu click on "AIM system manager" button . A panel showing all systems managed through **Race Studio 2** software appears: double click on "**M3Log/Visor XGLog**" or select it and click on "✓Go to" button.



Race Studio 2 "System manager" window appears.



|   | stem manager            |          |                       |              |         |           |              |          |            |      |    | X                |
|---|-------------------------|----------|-----------------------|--------------|---------|-----------|--------------|----------|------------|------|----|------------------|
|   | General                 |          | Configuration         | Channels     |         |           |              |          |            |      |    | Customize sensor |
|   |                         | Log      | gger identification   | Transmit     |         | Re        | ceive        |          | Online     |      |    | Calibrate        |
| N | Installation name       | Logger   |                       | ECU Manufact | ECUM    | Model     | Vehicle name | 0        | Split time | Sp   | T  | Created          |
| 1 | GokeySL                 | M3 XG LC | )G                    | None         | None    |           | ShoLOG2      | 20       | 0          | mph  | °F | December 16,     |
| 2 | DEFAULT                 | M3LOG -  | Advanced              | MOTEC        | M4-M    | 48-Data5  | DEFAULT      | 8        | 0          | km/h | °C | March 06, 2008   |
| 3 | DEFAULT                 | M3 XG LC | G                     | AEM          | EMS v   | /1.19+    | DEFAULT      | 8        | 0          | km/h | °C | March 06, 2008   |
| 4 | DEFAULT                 | M3 XG LC | )G FR2000 J           | MARELLI      | FR200   | 00_J      | DEFAULT      | 8        | 0          | km/h | °C | March 06, 2008   |
| 5 | DEFAULT                 | M3LOG -  | Advanced              | PECTEL       | T_2/    | T_6       | DEFAULT      | 8        | 0          | km/h | °C | March 11, 2008   |
| 6 | DEFAULT                 | M3LOG -  | Advanced              | MOTEC        | M8_D    | ataSet1   | DEFAULT      | 8        | 0          | km/h | °C | March 11, 2008   |
|   |                         |          |                       |              |         |           |              |          |            |      |    |                  |
|   |                         |          |                       |              |         |           |              |          |            |      |    |                  |
|   | New                     |          | Delete                | Clone        |         | Imp       | U L          |          | Export     |      |    |                  |
|   | New<br>Installation nam | le       | Delete<br>Logger type |              | Vehicle | U <u></u> | U L          | railable | •          |      |    | Exit             |

Top and bottom keyboards allows the user to perform all needed operations to manage an AIM system. For further information concerning each button refer to the introductory paragraph of chapter 5.

Central is the database of the available configurations. To work on one of them click on any cell of that configuration and the entire row is selected (highlighted in yellow). In case of very first configuration, when selecting this logger the system shows "New configuration" window and not "General" window.



## 6.1 – Premise on MyChron3 Log/Visor/XGLog

Systems managed through this button are: **MyChron3 LOG Advanced**, **MyChron3 Visor**, **MyChron3 XG LOG FR2000J** (configuration properly created for Japanese Formula Renault 2000 championship), **MyChron3 XG LOG**, **MyChron3 LOG Bike** and they differ from these previously explained because they can be connected to the engine control unit (from here onward ECU) of the vehicle.

For any information regarding the ECUs currently supported by AIM loggers, the procedures for a proper communication and connection between ECUs and AIM loggers, please refer to "Download Area" of AIM corporate at <u>www.aim-sportline.com</u>.

## 6.2 – Creating a new configuration

Pressing "New" button in system manager window this window appears.

| New configuration        |            |   |
|--------------------------|------------|---|
| Data logger type         | M3LOG      | - |
| ECU Manufacturer         | AEM        | • |
| ECU Model                | EMS v1.19+ | • |
| New configuration name   | DEFAULT    |   |
| Vehicle name             | DEFAULT    |   |
| Speed measure unit       | km/h       | • |
| Temperature measure unit | °C         | • |
| Pressure measure unit    | bar        | • |
| -<br>-                   |            |   |

Some parameters need to be set:

- **Data logger type**: select the logger to be configured (please note: logger labelled M3 XG LOG FR2000J creates a configuration properly developed for Japanese Formula Renault 2000 championship);
- ECU Manufacturer: select the manufacturer of the ECU installed on the vehicle or none.<sup>3</sup>
- ECU Model: select the ECU model or none.
- New configuration name: fill in the configuration name.
- Vehicle name: fill in the vehicle name.
- Speeds unit of measure: choose between km/h and Mph.
- Temperatures unit of measure: choose between °C and °F.
- Pressure unit of measure: choose between Bar and PSI.

Press "OK" to save ("Cancel" to quit without saving). The system comes back to system manager window.

<sup>&</sup>lt;sup>3</sup> This last option is only available for **MyChron3 XG Log** and **MyChron3 Log Bike**, the only loggers of this group that can work also without being connected to an ECU.



| Sy | stem manager      |          |                     |           |  |           |              |         |            |      |     | X                |
|----|-------------------|----------|---------------------|-----------|--|-----------|--------------|---------|------------|------|-----|------------------|
|    | General           |          | Configuration       | Cha       | nnels  |           |              |         |            |      |     | Customize sensor |
|    |                   | Log      | gger identification | Tra       | nsmit  | Re        | ceive        |         | Online     |      |     | Calibrate        |
| N  | Installation name | Logger   |                     | ECU Manuf | act ECl  | J Model   | Vehicle name | 0       | Split time | Sp   | T   | Created          |
| 1  | GokeySL           | M3 XG LC | DG                  | None      | Nor  | e         | ShoLOG2      | 20      | 0          | mph  | ٩F  | December 16,     |
| 2  | DEFAULT           | M3LOG -  | Advanced            | MOTEC     | M4-  | M48-Data5 | DEFAULT      | 8       | 0          | km/h | °C  | March 06, 2008   |
| _  | DEFAULT           | M3 XG LC |                     | AEM       | in the second seco | 5 v1.19+  | DEFAULT      | 8       | 0          | km/h | °C  | March 06, 2008   |
|    | DEFAULT           |          | DG FR2000 J         | MARELLI   | FR2  | :000_J    | DEFAULT      | 8       | 0          | km/h | °C  | March 06, 2008   |
|    | DEFAULT           |          | Advanced            | PECTEL    | T_2  | /T_6      | DEFAULT      | 8       | 0          | km/h | °C  | March 11, 2008   |
| 6  | DEFAULT           | M3LOG -  | Advanced            | MOTEC     | M8_  | DataSet1  | DEFAULT      | 8       | 0          | km/h | °C  | March 11, 2008   |
|    |                   |          |                     |           |  |           |              |         |            |      |     |                  |
|    | New               |          | Delete              | C C       | lone   | Imp       | oort         |         | Export     |      |     | Exit             |
|    | Installation nam  | ne       | Logger type         |           | Vehic  | le name   | A            | ailable | e time     |      | Tot | al frequency     |
|    | GokeySL           |          | M3 XG LOG           | Γ         | Sn   | bLOG2     | 3.2          | 25.37   | (h.m.s)    |      |     | 82 (Hz)          |

The next step Is channels setting. Press "Channels".

#### 6.2.1 – MyChron3 XG Log FR2000J configuration

AIM produces a particular version of MyChron3 XG Log properly created for Japanese Formula Renault 2000 championship and labelled MyChron3 XG Log FR2000J. This particular application is supported by a configuration included in the available configurations database in MyChron3 Log/Visor XG Log menu. When the logger has been correctly installed and the sensors connected it is necessary to configure the logger. Select the logger between these available in "New Configuration" window.

| Gene       | ral         | Configuration         | Channe | k          |              |        |            |            | Oustomize servi | sor |  |
|------------|-------------|-----------------------|--------|------------|--------------|--------|------------|------------|-----------------|-----|--|
|            |             | Logger identification | Transm | •          | Receive      | Online |            | <u> </u>   | Calbrate        |     |  |
| Channel id | Enabled/dl. | Channel name          | Sampl  | Sensor t   | pe           | Mea    | LOH scale  | High scale | Parani, 1       |     |  |
| SPO_1      | Enabled     | Speed_1               | 10 HI  | Speed      |              | km/h   | 0.0        | 250.0      | 1666.0          |     |  |
| Of_1       | Enabled     | Channel_1             | 10 Hz  | Thermool   | ouple        | *C     | 0          | 150        |                 |     |  |
| 01_2       | Enabled     | Channel_2             | 10 Hz  | Thermoci   | ouple        | *C     | 0          | 150        |                 |     |  |
| CH_3       | Enabled     | Channel_3             | 10 Hz  | Thermoci   | ouple        | *C     | 0          | 150        |                 |     |  |
| CH_4       | Enabled     | Channel_4             | 10 Hz  | Thermocr   | ouple        | *C     | 0          | 1000       |                 |     |  |
| OLS        | Enabled     | Channel_5             | 10 Hz  | Thermoci   | ouple        | *C     | 0          | 50         |                 |     |  |
| 01.6       | Desabled    | Channel_6             | 10 Hz  | Calculate  | id Gear      | *      | 0          | 9          |                 |     |  |
| ACC_1      | Enabled     | Acc_1                 | 10 Hz  | Lateral a  | ccelerometer | 0.01   | -3.00      | 3.00       |                 |     |  |
| LOG_TMP    | Enabled     | Datalogger_Temp       | 10 Hz  | Cold joint | t.           | *C     | 0          | 50         |                 |     |  |
| BATT       | Enabled     | Battery               | 1 Hz   | Battery    |              | ¥ .1   | 5.0        | 15.0       |                 |     |  |
| ECU_1      | Enabled     | AEM_RPM               | 10 Hz  | Engine sp  | peed sensor  | rpm    | 0          | 20000      |                 |     |  |
| ECU_2      | Enabled     | AEM_LOAD              | 10 Hz  | Pressure   | sensor       | bar    | 0.00       | 150.00     |                 |     |  |
| ECU_3      | Enabled     | AEM_TPS               | E0 Hz  | Percenta   | ge sensor    | % .1   | 0.0        | 100.0      |                 |     |  |
| ECU_4      | Enabled     | AEM_AIR_TEMP          | 10 Hz  | Temperal   | ture sensor  | *C     | -30        | 60         |                 |     |  |
| ECU_5      | Enabled     | AEM_WATER_TEMP        | 10 Hz  | Temperal   | ture sensor  | °C     | -30        | 120        |                 |     |  |
| ECU_6      | Enabled     | AEM_ADCR11            | 10 Hz  | Voltmeter  |              | V .1   | 0.0        | 20.0       |                 |     |  |
| ECU_7      | Enabled     | AEM_ADCR13            | 10 Hz  | Voltmeter  | r            | ¥ .1   | 0.0        | 20.0       |                 |     |  |
| ECU_8      | Enabled     | AEM_ADCR14            | 10 Hz  | Volumeter  | r.)          | V.1    | 0.0        | 20.0       |                 |     |  |
| ECU_9      | Enabled     | AEM_ADCR17            | 10 Hz  | Voltmeter  |              | V.1    | 0.0        | 20.0       |                 |     |  |
| ECU 10     | Enabled     | AEM_ADCR10            | 10 Hz  | Voltmeter  | r i          | ¥ .1   | 0.0        | 20.0       |                 |     |  |
| ECU_11     | Enabled     | AEM_ADCR15            | 10 Hz  | Voltmeter  |              | V .1   | 0.0        | 20.0       |                 |     |  |
| ECU_12     | Enabled     | AEM_ADCR16            | 10 Hz  | Volmeter   | r            | V .1   | 0.0        | 20.0       |                 |     |  |
| ECU_13     | Enabled     | AEM_BATTERY           | 10 Hz  | Voltmeter  | e            | ¥ .1   | 0.0        | 20.0       |                 |     |  |
|            |             |                       |        |            |              |        |            |            | Ent             |     |  |
| Instal     | ation name  | Logger type           |        | Vehicle    | name         | Aval   | ble time   | Tot        | al frequency    |     |  |
| C.F        | FAULT       | M3LOG - Advance       | d      |            |              |        | 13 (h.m.s) | -          | 271 (Hz)        |     |  |

Pressing "OK" the system comes back to System manager window. The next step is channels setting, press "Channels".



## 6.3 – Channels

| Configuration         | Channel   | s  |   |   |  | Customize sens  | or  |
|-----------------------|---|--|---|---|--|---|---|
| Logger identification | Transmi   | t F  | Receive   | Online  |  | Calibrate   |   |
| Channel name          | Sampli  | Sensor type  | Mea   | Low scale   | High scale   | Param. 1  | ^   |
| Speed_1               | 10 Hz   | Speed  | km/h  | . 0.0   | 250.0  | 1666.0  |   |
| Channel_1             | 10 Hz   | Thermocouple   | °C  | 0   | 150  |   |   |
| Channel_2             | 10 Hz   | Thermocouple   | °C  | 0   | 150  |   |   |
| Channel_3             | 10 Hz   | Thermocouple   | °C  | 0   | 150  |   |   |
| Channel_4             | 10 Hz   | Thermocouple   | °C  | 0   | 1000   |   |   |
| Channel_5             | 10 Hz   | Thermocouple   | °C  | 0   | 50   |   |   |
| Channel_6             | 10 Hz   | Calculated Gear  | #   | 0   | 9  |   |   |
| Acc_1                 | 10 Hz   | Lateral accelerome   | ter g .01   | -3.00   | 3.00   |   |   |
| Datalogger_Temp       | 10 Hz   | Cold joint   | °C  | 0   | 50   |   |   |
| Battery               | 1 Hz  | Battery  | ۷.1   | 5.0   | 15.0   |   |   |
| AEM_RPM               | 10 Hz   | Engine speed sens  | or rpm  | 0   | 20000  |   |   |
| AEM_LOAD              | 10 Hz   | Pressure sensor  | bar   | . 0.00  | 150.00   |   |   |
| AEM_TPS               | 10 Hz   | Percentage sensor  | % .1  | 0.0   | 100.0  |   |   |
| AEM_AIR_TEMP          | 10 Hz   | Temperature sense  | or °⊂   | -30   | 60   |   |   |
| AEM_WATER_TEMP        | 10 Hz   | Temperature sense  | or °⊂   | -30   | 120  |   |   |
| AEM_ADCR11            | 10 Hz   | Voltmeter  | V.1   | 0.0   | 20.0   |   |   |
| AEM_ADCR13            | 10 Hz   | Voltmeter  | V.1   | 0.0   | 20.0   |   |   |
| AEM_ADCR14            | 10 Hz   | Voltmeter  | ۷.1   | 0.0   | 20.0   |   |   |
| AEM_ADCR17            | 10 Hz   | Voltmeter  | ۷.1   | 0.0   | 20.0   |   |   |
| AEM_ADCR18            | 10 Hz   | Voltmeter  | ۷.1   | 0.0   | 20.0   |   |   |
| AEM_ADCR15            | 10 Hz   | Voltmeter  | ۷.1   | 0.0   | 20.0   |   |   |
| AEM ADCR16            | 10 Hz   | Voltmeter  | ۷.1   | 0.0   | 20.0   |   |   |
| AEM_ADCR16            |   | Voltmeter  | ¥ .1  | 0.0   | 20.0   |   |   |
|                       | Logger identification Ugger identification Channel name Speed_1 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Channel_6 Acc_1 Datalogger_Temp Battery AEM_ARM AEM_LOAD AEM_TPS AEM_AIR_TEMP AEM_LOAD AEM_TPS AEM_ADCR11 AEM_ADCR13 AEM_ADCR17 AEM_ADCR17 AEM_ADCR17 | Logger identification         Transmi           Speed_1         10 Hz           Channel_name         Sampli           Channel_1         10 Hz           Channel_2         10 Hz           Channel_3         10 Hz           Channel_5         10 Hz           Channel_6         10 Hz           Channel_5         10 Hz           Channel_6         10 Hz           Datalogger_Temp         10 Hz           Battery         1 Hz           AEM_IOAD         10 Hz           AEM_IOAD         10 Hz           AEM_ADRH         10 Hz           AEM_ADAD         10 Hz           AEM_ADAD         10 Hz           AEM_ADAD         10 Hz           AEM_ADCR11         10 Hz           AEM_ADCR13         10 Hz           AEM_ADCR14         10 Hz           AEM_ADCR17         10 Hz | Logger identification         Transmit            Channel name         Sampli         Sensor type           Speed_1         10 Hz         Speed         Speed           Channel_1         10 Hz         Thermocouple           Channel_3         10 Hz         Thermocouple           Channel_4         10 Hz         Thermocouple           Channel_5         10 Hz         Thermocouple           Channel_6         10 Hz         Thermocouple           Channel_5         10 Hz         Thermocouple           Channel_6         10 Hz         Cold joint           Battery         1 Hz         Battery           AEM_IOAD         10 Hz         Perseure sensor           AEM_IOAD         10 Hz         Perseure sensor           AEM_ADAD         10 Hz         Temperature sensor           AEM_MORNI         10 Hz         Temperature sensor           AEM_ADCR11         10 Hz         Voltmeter           AEM_ADCR13         10 Hz         Voltmeter           AEM_ADCR13         10 Hz         Voltmeter | Logger identification         Transmit         Receive            Channel name         Sampli         Senor type         Mea           Speed_1         10 Hz         Speed         km/h           Channel_1         10 Hz         Thermocouple         °C           Channel_3         10 Hz         Thermocouple         °C           Channel_4         10 Hz         Thermocouple         °C           Channel_5         10 Hz         Thermocouple         °C           Channel_5         10 Hz         Thermocouple         °C           Channel_6         10 Hz         Cold joint         °C           Channel_5         10 Hz         Cold joint         °C           Channel_6         10 Hz         Cold joint         °C           Battery         1 Hz         Battery         V.1           AEM_LOAD         10 Hz         Pressure sensor         bar           AEM_LOAD         10 Hz         Percentage sensor         °C           AEM_MOR         10 Hz         Perserus esensor         °C           AEM_MOR         10 Hz         Temperature sensor         °C           AEM_MOR         10 Hz         Voltmeter         °C      < | Logger identification         Transmit         Receive         Online            Channel name         Sampli         Senor type         Mea         Low scale           Speed_1         10 Hz         Speed         kmyh         0.00           Channel_1         10 Hz         Thermocouple         °C         0           Channel_3         10 Hz         Thermocouple         °C         0           Channel_4         10 Hz         Thermocouple         °C         0           Channel_5         10 Hz         Thermocouple         °C         0           Channel_6         10 Hz         Thermocouple         °C         0           Channel_5         10 Hz         Thermocouple         °C         0           Channel_6         10 Hz         Calculated Gear         #         0           Acc_1         10 Hz         Calculated Gear         #         0           Datalogger_Temp         10 Hz         Calculated Gear         #         0           AEM_RPM         10 Hz         Engine speed sensor         rpm         0           AEM_LOAD         10 Hz         Persentage sensor         bar         0.00           AEM_LOAD         10 Hz </td <td>Logger identification         Transmit         Receive         Online            Channel name         Sampli         Sensor type         Mea         Low scale         High scale           Speed_1         10 Hz         Speed         km/h         0.0         250.0           Channel_1         10 Hz         Thermocouple         °C         0         150           Channel_3         10 Hz         Thermocouple         °C         0         150           Channel_4         10 Hz         Thermocouple         °C         0         150           Channel_5         10 Hz         Thermocouple         °C         0         1000           Channel_6         10 Hz         Thermocouple         °C         0         1000           Channel_5         10 Hz         Thermocouple         °C         0         1000           Channel_6         10 Hz         Calculated Gear         #         0         9           Acc_1         10 Hz         Cold joint         °C         0         50           Battery         1 Hz         Battery         V .1         5.0         15.0           AEM_RPM         10 Hz         Percentage sensor         rpm         <t< td=""><td>Logger identification         Transmit         Receive         Online         Calibrate           Speed_1         10 Hz         Speed         km/h         0.0         250.0         1666.0           Channel_1         10 Hz         Speed         km/h         0.0         250.0         1666.0           Channel_1         10 Hz         Thermocouple         °C         0         150         150           Channel_3         10 Hz         Thermocouple         °C         0         150         150           Channel_4         10 Hz         Thermocouple         °C         0         150</td></t<></td> | Logger identification         Transmit         Receive         Online            Channel name         Sampli         Sensor type         Mea         Low scale         High scale           Speed_1         10 Hz         Speed         km/h         0.0         250.0           Channel_1         10 Hz         Thermocouple         °C         0         150           Channel_3         10 Hz         Thermocouple         °C         0         150           Channel_4         10 Hz         Thermocouple         °C         0         150           Channel_5         10 Hz         Thermocouple         °C         0         1000           Channel_6         10 Hz         Thermocouple         °C         0         1000           Channel_5         10 Hz         Thermocouple         °C         0         1000           Channel_6         10 Hz         Calculated Gear         #         0         9           Acc_1         10 Hz         Cold joint         °C         0         50           Battery         1 Hz         Battery         V .1         5.0         15.0           AEM_RPM         10 Hz         Percentage sensor         rpm <t< td=""><td>Logger identification         Transmit         Receive         Online         Calibrate           Speed_1         10 Hz         Speed         km/h         0.0         250.0         1666.0           Channel_1         10 Hz         Speed         km/h         0.0         250.0         1666.0           Channel_1         10 Hz         Thermocouple         °C         0         150         150           Channel_3         10 Hz         Thermocouple         °C         0         150         150           Channel_4         10 Hz         Thermocouple         °C         0         150</td></t<> | Logger identification         Transmit         Receive         Online         Calibrate           Speed_1         10 Hz         Speed         km/h         0.0         250.0         1666.0           Channel_1         10 Hz         Speed         km/h         0.0         250.0         1666.0           Channel_1         10 Hz         Thermocouple         °C         0         150         150           Channel_3         10 Hz         Thermocouple         °C         0         150         150           Channel_4         10 Hz         Thermocouple         °C         0         150 |

Pressing Channels button this window appears.

It shows all channels set on the logger with the related characteristics:

- **Channel identifier**: shows channel label. "ECU\_X" are the ones received from the vehicle ECU.
- **Enabled/Disabled**: shows channel status (enabled/disabled). It can be modified with a double click on the cell except for RPM, speed and gear channel that are only modifiable through system configuration window.
- Channel name: names the channel.
- **Sampling frequency**: sets each channel sampling frequency. This last one influences the total available sampling time, highlighted by a box in the figure above, that diminishes increasing the sampling frequency because the memory fills up faster.
- Sensor type: allows to select the sensor installed on that channel selecting it from the drop down menu that appears clicking on that cell. On channels from CH\_1 to CH\_4 (for MyChron3 XG Log FR2000J, MyChron3 Log Bike) or CH\_5 (for MyChron3 Log Advanced, MyChron3 XG Log) it is possible to connect temperature or pressure sensors, potentiometers, Lambda probe and gyroscopes (except for MyChron3 Log Bike that has channel CH\_7 devoted to the gyroscope). To set the desired sensor select it from the available sensors list. Channel CH\_6 is the gear channel.
- **Measure unit**: allows to select the sensor unit of measure.
- **High**/Low scale: shows the range of values shown by the graph that will be created by Race Studio Analysis software after data download.
- **Param.1**: is the value of RPM or speed parameters set in system configuration window.

When all parameters have been set transmit the configuration to the logger.



#### 6.3.1 – MyChron3 Visor and MyChron3 XG Log FR2000J channels

**MyChron3 Visor**, being just a dash, does not allow sensor installation on the different channels but only receives ECU signals.

**MyChron3 XG Log FR2000J** channels are already set but it is possible to set additional temperature and pressure sensors, potentiometers, gyroscope and Lambda probe on channels from CH\_1 to CH\_4.

### 6.4 – Creating a custom sensor

The procedure to create a custom sensor is the same for all AIM loggers. Refer to chapter 12 for further information.

### 6.5 – System configuration

**MyChron3 Log/Visor/XGLog** has 14 fully configurable coloured led; the 2 on the left and on the right of the display are the four high/low alarm led of the analog channels (temperatures and pressures), while the other 10 led on top of the display are the Shift lights that warn the pilot to shift gear.

| Configuration M3LOG - Advanced   |   |  |
|--|---|--|
| Speed<br>Chan AEM_SPEED  | Display language English  | AlM sensor ECU signal  |
| Wheel circumference 1666 (mm) Pulses per wheel revolution 1  | Shift Light           Led 1         Led 2         Led 3         Led 4         Led 5           0         0         0         0         0 | Multiply factor 71 V<br>MAX value 5000 V   |
| LED         Value           HIGH         None         0           LOW         None         0           Field 1         Channel_1         •           HIGH         None         0           LOW         None         0           Field 2         Channel_1         •           HIGH         None         0           HIGH         None         0           UDW         None         0 | Shift light<br>1 2 3 4 5 5 4 3 2 1<br>1 3 6 6 6 6 9<br>2 9 6 8 9 12 0 3 5 9<br>4  | Display page 2 · Channels and alarms       Field 1     Channel_1       LED     Value       HIGH     None     0       MIN     None     0       Field 2     Channel_1     Value       HIGH     None     0       LED     Value       HIGH     None     0       LOW     None     0 |
| Measure Units<br>Speed unit<br>km/h v<br>Temperature unit<br>*C v  | Gear sensor       None     Potentiometer       Calculated     Highest gear number       6   | Lap<br>Obscuring time<br>(sec.) 8<br>Number of split times<br>0  |

To set alarms, high/low threshold values and all configuration parameters it is necessary to complete the window shown here above.

First of all select the display language red circled in the figure above.



### 6.5.1 – Speed box

| -Speed-                            | - Speed                       |
|------------------------------------|-------------------------------|
| Chan Speed_1                       | Chan Speed_1                  |
| None<br>Speed_1<br>PECTEL_WHEELSPD | Wheel circumference 1666 (mm) |
| Pulses per wheel revolution 1      | Pulses per wheel revolution 1 |

- **Channel**: select the speed channel to be used as reference and that will be shown by the logger display, used for gear calculation (chapter 15), for some Race Studio Analysis computations etc. Available options are: speed coming from the speed sensor ("Speed\_1 in the above image), speed coming from the ECU and none.
- Wheel circumference: fill in the vehicle wheel circumference;
- Number of pulses per wheel revolution: fill in the number of pulses per wheel revolution (that corresponds to the number of magnets installed on the wheel).

#### 6.5.2 – Shift Light box



Sets 10 led placed on top of MyChron3. Led colors: the first two on the left and on the right are green, the central two are orange and the last four are red. To set RPM threshold value fill in the cases. Led switches progressively on and when the engine reaches the RPM value set for Led 5 all led start blinking warning the pilot to shift gear. If a value is set on 0 the corresponding led is disabled.

#### 6.5.3 – RPM box

| Rpm             | _          | Rpm             |            |
|-----------------|------------|-----------------|------------|
| AIM sensor      | ECU signal | AIM sensor      | ECU signal |
| Multiply factor | /1 💌       | Multiply factor | /1 💌       |
| MAX value       | 20000 💌    | MAX value       | 5000 💌     |

This box layout depends on the logger and on the settings defined by the user when creating a new configuration.

**MyChron3 XG Log e MyChron3 Log Bike** are the only loggers of this group that can work also without the connection with the ECU. So, setting ECU parameters of the new configuration on "none", the button labelled AIM sensor is enabled – figure above on the left. Ensure that RPM sensor is correctly installed and connected and insert Multiply factor and RPM Max value.

All other loggers can work only if connected to the vehicle ECU, which means that their system configuration window always shows this box with the only ECU signal button enabled (figure above on the right). Fill in RPM max value.



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#### 6.5.4 – Display Pages 1/2 – Channels and alarms box

| – Display | Page 1 - Channels and alarms | Display | page 2 - Channels and a | alarms |
|-----------|------------------------------|---------|-------------------------|--------|
| Field 1   | Channel_1                    | Field 1 | Channel_1               |        |
|           | Value                        |         |                         |        |
| HIGH      | None 💌 0                     | HIGH    | None 🔽 0                |        |
| LOW       | None 💌 0                     | MIN     | None 💌 0                |        |
|           |                              |         |                         |        |
| Field 2   | Channel_1                    | Filed 2 | Channel_1               |        |
|           | LED Value                    |         | LEDValue                | •      |
| HIGH      | None 🔽 0                     | HIGH    | None 🔽 0                |        |
| LOW       | None 💌 0                     | LOW     | None 🔽 0                |        |
|           |                              |         |                         |        |

These boxes are connected to the field shown by the logger display. Each logger of this family shows two pages and each of them is configurable as follows:

- match each case labelled as field (1, 2, 3 e 4) with a channel
- match, if needed, a led to that channel max/min values and insert these values.

Available led for these function are the four logger lateral led. Each of them can be associated to each channel no matter its position and can work as minimum or maximum alarm.

#### 6.5.5 – Lap box

| - Lap  |                      |
|--------|----------------------|
|        | Obscuring time       |
| (sec.) | 8                    |
| N      | umber of split times |
|        | 0                    |

- **Obscuring time**: it's a time period during which the optical receiver installed on the vehicle, after having recorded a lap signal, is "blind": it does not record signals. This function is useful for split times management on tracks with more magnetic strips/optical transmitters: set obscuring time on a minimum value to sample split times; not to sample split times set obscuring time on a value lower than best lap time and higher then the time elapsed between last split and start finish line.
- **Number of split times**: is the number of segments the track is divided in and corresponds to the number of transmitters there installed.



#### 6.5.6 – Gear sensor box

| sensor     |                  |       |
|------------|------------------|-------|
| None       | Potentiometer    | ECU   |
| Calculated | Highest gear num | ber 6 |

| ensor      |                  |       |
|------------|------------------|-------|
| None       | Potentiometer    | ECU   |
| Calculated | Highest gear num | ber 6 |

- **None**: not to see the engaged gear on the display.
- **Potentiometer** (except for MyChron3 Visor): there is a gear potentiometer (see paragraph 14.3 for its calibration procedure).
- **ECU**: to sample gear signal from the ECU (assuming it can transmit it).
- **Calculated**: to calculate gears; fill in highest gear number. See chapter 15 for further information.

#### 6.6.7 – Measure unit box

| Measure Units    |  |
|------------------|--|
| Speed unit       |  |
| km/h 💌           |  |
| Temperature unit |  |
| °C 🗨             |  |

Choose the unit of measure for speeds (km/h or mph) and Temperatures (°C or °F).

#### 6.5.8 – System configuration of MyChron3 XG Log FR2000J

In case of a **MyChron3 XG Log FR2000J**, configuration window – shown below – is partially set.

| Configuration M3 XG LOG FR2000   | J  | X   |
|--|--|---|
| Speed       Chan     Wheel_Speed_Sx       Wheel circumference     1666 (mm)       Pulses per wheel revolution     1  | Display language  Italiano    Shift Light    Led 1    0    0    0  | Rpm       AlM sensor       ECU signal       Multiply factor       /1       MAX value  |
| Display Page 1 - Channels and alarms         Field 1       Clutch_Pos         LED       Value         HIGH       None       0         LOW       None       0         Field 2       Clutch_Pos       ▼         HIGH       None       0         LDW       Value       0         HIGH       None       0         LOW       None       0 | shift light<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 2 3 4 5 5 4 3 2 1<br>1 3 4 5 5 6 5 6 5 6 5 6 5 6 5 6 5 6 6 6 6 6 | Display page 2 · Channels and alarms         Field 1       Clutch_Pos         LED       Value         HIGH       None       0         MIN       None       0         Filed 2       Clutch_Pos          HIGH       None       0         HIGH       None       0         HIGH       None       0         LOW       None       0 |
| Measure Units<br>Speed unit<br>km/h v<br>Temperature unit  | Gear sensor       None     Potentiometer     ECU       Calculated     Highest gear number     6       V     Cancel   | Lap<br>Obscuring time<br>(sec.) 8<br>Number of split times<br>Q   |

This window is to be completed following the same procedure explained for all other MyChron3 of this group.



### 6.6 – Transmitting the configuration

The procedure to transmit the configuration to the logger is the same for all AIM loggers. Refer to chapter 13 for further information.

### 6.7 – Sensors calibration and auto-calibration

When the configuration has been transmitted it is necessary to perform calibration procedure, to say auto-calibrate accelerometer, gyroscope and distance potentiometer and calibrate the gear sensor, the mid zero potentiometer and the zero based potentiometer installed on the vehicle.

See chapter 14 for further information.

Warning: if potentiometers, gyroscope and accelerometers have not been correctly calibrated it is not possible to sample correct data, nor the engaged gear nor create the track map. It is recommended to pay particular attention to sensors calibration/auto-calibration procedures.

### 6.8 – Gear calculation

Refer to chapter 15 for further information.

### 6.9 – Online

Online function is very useful to check the logger proper working. Refer to chapter 18 for further information.



# Chapter 7 – How to configure MXL Strada/Pista/Pro/Pro05

To correctly configure **MXL Strada/Pista/Pro/Pro05** (from here onward **MXL**), use a PC and Race Studio 2 software. This logger can only be configured via software.

Before starting the configuration install **Race Studio 2** and the USB driver, as explained in chapter 2.

Run the program clicking on Race Studio 2 icon: the window below appears.



In the title bar – white on a blue background in the figure – you can see the **Race Studio 2** version installed on the PC.

Immediately under there is the menu bar, shown in a more intuitive way on the left thanks to the graphic keys buttons: Go to Analysis (this button runs Race Studio Analysis software), Data download, AIM system manager, AIM system identification, Online, AIM system calibration, Custom sensors management, Select language.

From this window it is possible to perform all necessary operations to manage all AIM systems.



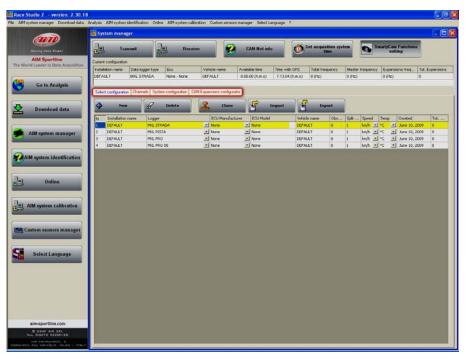
To enter configuration menu click on "AIM system manager" button. A panel showing all systems managed through **Race Studio 2** software appears: double click on "**MXL**" or select it and click on "**√**Go to".



Race Studio 2 system manager window appears.



## 7.1 – System manager window



Using the keyboards and the layers (highlighted in the figure here above) it is possible to perform all necessary operations to manage AIM systems.

The **top keyboard** of system manager window, shown here below, is made up of five buttons:

| Transmit | Receive | CAN-Net info | Set acquisition system | SmartyCam Functions<br>setting |
|----------|---------|--------------|------------------------|--------------------------------|
|          |         |              |                        |                                |

- **Transmit**: transmits a configuration to the logger and is active in any layer; needs the logger to be switched on and connected to the PC.
- **Receive**: reads and saves the configuration of the logger and is active only in "Select configuration" layer.
- CAN-Net info: identifies the CAN network connected to the PC, that means the logger and its eventual peripherals. Pressing it a waiting window appears and – once the connection established – "CAN-Net info" window shown here below appears. It shows all the CAN network components. In the example below the CAN network is made of an MXL Pista Master and four CAN expansions: DaVid, LCU-ONE, GPS and Memory Key.

| Ν | Category of Logger | Type of Logger | Expansion Name | Logger ID | ID Date    | Firmware | Firmware D |
|---|--------------------|----------------|----------------|-----------|------------|----------|------------|
| 1 | MASTER             | MXL PISTA      | Master         | 12345     | 16/01/2008 | 14.86.23 | 19/12/2007 |
| 2 | CAN EXPANSION      | DaVid          |                | 47111881  | 18/01/2008 | 22.03    | 09/11/2007 |
| 3 | CAN EXPANSION      | LCU-ONE        | LC             | 111111    | 13/12/2007 | 25.09    | 19/11/2007 |
| 4 | CAN EXPANSION      | GPS            |                | 902499    | 14/01/2008 | 35.13    | 17/12/2007 |
| 5 | CAN EXPANSION      | MEMORY KEY     |                | 7613105   | 17/12/2007 | 37.05    | 18/12/2007 |
|   |                    |                |                |           |            |          |            |
|   |                    |                |                |           |            |          |            |



 Set acquisition system time: makes the logger time matching the PC one. Pressing it "Acquisition system time" window – below on the left – appears with PC clock on the left and MXL one on the right. Pressing the central button, PC and MXL will have the same time. This operation does not modify data sampled by the logger nor influence its peripherals. In case the window on the right appears it means that PC-logger connection is wrong. Check it and try again.

| Acquisition system time           |                                | ×  | Acquisition system time           |                                | ×   |
|-----------------------------------|--------------------------------|--|-----------------------------------|--------------------------------|---|
| PC Time<br>12/03/2008<br>10.59.56 | Set acquisition<br>system time | Acquisition system time<br>08/12/2002<br>4.55.26 | PC Time<br>12/03/2008<br>11.00.25 | Set acquisition<br>system time | Acquisition system time<br>Impossible to read<br>time |
|                                   |                                | <b>A</b> <u>C</u> ancel                          |                                   |                                | Cancel  |

 SmartyCam functions settings: allows to set SmartyCam channels. Pressing it the related panel appears. With reference to the images here below, each function available options depends on the fact whether the all network is connected to the vehicle ECU or not. This means that if there is no ECU all functions not managed directly by SmartyCam are shown as "none available" and cannot be set while in case an ECU is available all function supported by that ECU are shown as "Not set" and can be set.

| FUNCTION        | CHANNEL         |   |
|-----------------|-----------------|---|
| ENGINE RPM      | none available  |   |
| REFERENCE SPEED | Speed_1         |   |
| SEAR            | Calculated_Gear |   |
| WATER TEMP      | none available  |   |
| HEAD TEMP       | none available  |   |
| EXHAUST TEMP    | none available  |   |
| DIL TEMP        | none available  |   |
| DIL PRESS       | none available  |   |
| BRAKE PRESS     | none available  |   |
| THROTTLE_POS    | none available  |   |
| BRAKE POS       | none available  |   |
| CLUTCH POS      | none available  |   |
| STEER POS       | none available  |   |
| AMBDA           | none available  |   |
| ATERAL ACCEL    | none available  |   |
| ONG ACCEL       | none available  |   |
| FUEL LEVEL      | none available  |   |
| BATTERY         | NOT SET         | • |
|                 |                 |   |

| FUNCTION        | CHANNEL         |  |
|-----------------|-----------------|--|
| ENGINE RPM      | SRA_RPM         |  |
| REFERENCE SPEED | Speed_1         |  |
| GEAR            | Calculated_Gear |  |
| WATER TEMP      | NOT SET         |  |
| HEAD TEMP       | NOT SET         |  |
| EXHAUST TEMP    | NOT SET         |  |
| OIL TEMP        | NOT SET         |  |
| OIL PRESS       | NOT SET         |  |
| BRAKE PRESS     | NOT SET         |  |
| THROTTLE_POS    | NOT SET         |  |
| BRAKE POS       | NOT SET         |  |
| CLUTCH POS      | NOT SET         |  |
| STEER POS       | none available  |  |
| LAMBDA          | NOT SET         |  |
| LATERAL ACCEL   | none available  |  |
| LONG ACCEL      | none available  |  |
| FUEL LEVEL      | NOT SET         |  |
| BATTERY         | NOT SET         |  |
|                 |                 |  |



In case an ECU is available it is necessary to decide which channel to associate with each function. To set SmartyCam water temperature channel – for example – click the arrow right of the function and a drop down menu opens showing all available temperature channels. Select the one that will be shown on SmartyCam video and press OK. In case the channel is not shown it is possible to enable "Disable channel filters" checkbox and all available channels will be shown no matter if they are temperature channels or not.

| FUNCTION        | CHANNEL              |        |
|-----------------|----------------------|--------|
| ENGINE RPM      | SRA_RPM              |        |
| REFERENCE SPEED | Speed_1              |        |
| GEAR            | Calculated Gear      |        |
| WATER TEMP      | NOT SET              | -      |
| REAU TEMP       | NOT SET              |        |
| EXHAUST TEMP    | SRA_WTEMP            |        |
| OIL TEMP        | SRA_OILT<br>SRA_AIRT |        |
| OIL PRESS       | SRA_TCK1             |        |
| BRAKE PRESS     | SRA TFUEL            | _      |
| THROTTLE_POS    | NOT SET              |        |
| BRAKE POS       | NOT SET              | -      |
| CLUTCH POS      | NOT SET              | •      |
| STEER POS       | none available       |        |
| LAMBDA          | NOT SET              |        |
| LATERAL ACCEL   | none available       |        |
| LONG ACCEL      | none available       |        |
| FUEL LEVEL      | NOT SET              | -      |
| BATTERY         | NOT SET              | •<br>• |
|                 |                      |        |
|                 |                      |        |
|                 |                      |        |

| FUNCTION        | CHANNEL         |
|-----------------|-----------------|
| ENGINE RPM      | none available  |
| REFERENCE SPEED | Speed_1         |
| GEAR            | Calculated_Gear |
| WATER TEMP      | none available  |
| HEAD TEMP       | none available  |
| exhaust temp    | none available  |
| OIL TEMP        | none available  |
| OIL PRESS       | none available  |
| BRAKE PRESS     | none available  |
| THROTTLE_POS    | none available  |
| BRAKE POS       | none available  |
| CLUTCH POS      | none available  |
| STEER POS       | none available  |
| LAMBDA          | none available  |
| LATERAL ACCEL   | none available  |
| LONG ACCEL      | none available  |
| FUEL LEVEL      | none available  |
| BATTERY         | NOT SET         |

**Current Configuration Table**, immediately under the keyboard and shown here below, shows the main information concerning the configuration user is working on.

| Current configuration |                  |             |              |                 |                 |                 |                  |                 |                 |
|-----------------------|------------------|-------------|--------------|-----------------|-----------------|-----------------|------------------|-----------------|-----------------|
| Installation name     | Data logger type | Ecu         | Vehicle name | Available time  | Time with GPS   | Total frequency | Master frequency | Expansions freq | Tot. Expansions |
| DEFAULT               | MXL PISTA        | None - None | DEFAULT      | 9.32.39 (h.m.s) | 4.06.35 (h.m.s) | 121 (Hz)        | 121 (Hz)         | 0 (Hz)          | 0               |
|                       |                  |             |              |                 |                 |                 |                  |                 |                 |

Again under this table are **four layers**:

Select configuration Channels System configuration CAN-Expansions configurator

- Select configuration: allows the user to select the configuration to work on; it is always active.
- **Channels**: allows to set MXL channels. It is active only if there are configurations in "Select configuration" layer.
- **System configuration**: allows to set or modify MXL configuration. It is active only if there are configurations in "Select configuration" layer.
- **CAN-expansions configurator**: allows to configure the expansions connected through the CAN bus to MXL, DaVid Slave video system included. It is active only if there are configurations in "Select configuration" layer; if not, it doesn't even appear. Refer to chapter 16 for further information concerning their configuration. **Note**: if the connected expansion in a DaVid slave expansion refer to paragraph 8.6 (DaVid Master) for information concerning its configuration.



### 7.1.1 – Select configuration layer

"Select configuration" layer shown here below, is made as follows:

| 4  | New               | Delete       |       |                 | :lor | ne 🔓 II          | mp | ort 🛃        | E   | kport |     |    |                 |    |                |    |     |     |
|----|-------------------|--------------|-------|-----------------|------|------------------|----|--------------|-----|-------|-----|----|-----------------|----|----------------|----|-----|-----|
| N  | Installation name | Logger       | E     | CU Manufacturer |      | ECU Model        |    | Vehicle name | Obs | Spli  | Spe | ed | Tem             | ηp | Created        | Vi | Tot | Tot |
| 1  | DEFAULT           | MXL STRADA   | - 1 N | lone            | -    | None             |    | DEFAULT      | 8   | 1     | k   | •  | <mark>°⊂</mark> | -  | February 13,   | 0  | 1   | 0   |
| 2  | DEFAULT           | MXL PISTA    | • A   | UTRONIC         | -    | SM2_V190/1 / SMC | •  | DEFAULT      | 8   | 1     | k   | -  | °⊂              | -  | February 13,   | 0  | 0   | 0   |
| 3  | DEFAULT           | MXL PRO      | ▼ B   | IOSCH _         | -    | MS3              | •  | DEFAULT      | 5   | 3     | k   | -  | °C              | -  | February 14,   | ۲  | 0   | 0   |
| 4  | DEFAULT           | MXL PRO 05   | • N   | lone            | -    | None             |    | DEFAULT      | 8   | 1     | k   | -  | °C              | -  | February 15,   | ۲  | 0   | 0   |
| 5  | DEFAULT           | MXL PISTA    | • N   | lone            | -    | None             |    | DEFAULT      | 8   | 1     | k   | -  | °C              | -  | February 15,   | ۲  | 0   | 0   |
| 6  | DEFAULT           | MXL PISTA    | • N   | lone            |      | None             |    | DEFAULT      | 8   | 1     | k   | -  | °C              | -  | February 15,   | 0  | 0   | 0   |
| 7  | DEFAULT           | MXL PISTA    | • Y.  | АМАНА           | -    | R1_04_06         | -  | DEFAULT      | 8   | 1     | k   | -  | °C              | -  | February 27,   | 0  | 0   | 0   |
| 8  | DEFAULT           | MXL PISTA    | • N   | lone            |      | None             |    | DEFAULT      | 8   | 1     | k   | -  | °C              | -  | February 15,   | 0  | 0   | 0   |
| 9  | DEFAULT           | MXL STRADA ] | 🖬 S   | UBARU           |      | SSM              |    | DEFAULT      | 8   | 1     | k   | -  | °C              | -  | March 06, 2008 | 0  | 0   | 0   |
| 10 | DEFAULT           | MXL STRADA   | - N   | lone            | -    | None             |    | DEFAULT      | 8   | 1     | k   | -  | °⊂              | -  | March 12, 2008 | 0  | 0   | 0   |

#### On top is a keyboard made up of five buttons.

- New: creates a new configuration;
- **Delete**: deletes a configuration;
- **Clone**: clones a configuration;
- **Import**: imports a new configuration from a file;
- **Export**: exports a configuration to a file;

Central is the available configurations database. To work on one of them click on any cell of its row and the entire row is selected (highlighted in yellow).

In case of first configuration central table shows up empty.



## 7.2 – Creating a new configuration

| New configuration        |           |   |
|--------------------------|-----------|---|
| Data logger type         | MXL PISTA | • |
| ECU Manufacturer         | None      | • |
| ECU Model                | None      | • |
| New configuration name   | DEFAULT   |   |
| Vehicle name             | DEFAULT   |   |
| Speed measure unit       | km/h      | • |
| Temperature measure unit | ٦°        | • |
| Pressure measure unit    | bar       | • |
|                          |           |   |

Pressing "New" button in select configuration layer this window appears:

Some parameters need to be set:

- Data logger type: select the logger to be configured.
- ECU Manufacturer: select the Manufacturer of the ECU installed on the vehicle if supported or none.
- ECU Model: select the ECU model.
- New configuration name: fill in the new configuration name.
- Vehicle name: fill in the vehicle name.
- Speeds unit of measure: choose between km/h and mph.
- Temperatures unit of measure: choose between °C and °F.
- **Pressures unit of measure**: choose between Bar and PSI.

Press "OK" to save ("Cancel" to quit without saving). The system comes back to system manager window.



### 7.2.1 – MXL Strada/Pista and Pro05 Plug&Play configurations

**MXL Strada/Pista/Pro05 Plug&Play** kits for Car or Bike installations include, beside the logger, all what is needed for an easy installation on the vehicle (wiring, bracket, screws, washers, user manuals etc..). Currently the most common models/brands are available. All information are available on AIM website at <u>www.aim-sportline.com</u> clicking "Special Applications" button in the home page.

Once correctly installed the kit (see the kits user manuals for further information) just switch the vehicle on. Should configuration problem occur select the correct configuration in "New configuration" window shown here below. The red box highlights Plug&Play configurations currently available.

| New configuration        |   |   |
|--------------------------|---|---|
| Data logger type         | MXL PISTA   | - |
| ECU Manufacturer         | MXL PISTA<br>MXL STRADA<br>MXL PRO 05   |   |
| ECU Model                | MXL PB0<br>MXL PISTA SUZUKI GSXR K3 - K5 (WIRING 04.554.13)   |   |
| New configuration name   | MXL PISTA SUZUKI GSXR 600 2006-2007 (WIRING 04.554.54)<br>MXL PISTA SUZUKI GSXR 750 2006-2007 (WIRING 04.554.54)<br>MXL PISTA SUZUKI GSXR 1000 2005-2006 (WIRING 04.554.54)   |   |
| Vehicle name             | MXL PISTA SUZUKI GSXR 600 2008 (WIRING 04.554.54)<br>MXL PISTA SUZUKI GSXR 750 2008 (WIRING 04.554.54)<br>MXL PISTA SUZUKI GSXR 1000 2007-2008 (WIRING 04.554.54)   |   |
| Speed measure unit       | MXL STRADA SUZUKI GSXR K3 - K5 (WIRING 04.554.14)<br>MXL STRADA SUZUKI GSXR 600 2006-2007 (WIRING 04.554.55)  |   |
| Temperature measure unit | MXL STRADA SUZUKI GSXR 750 2006-2007 (WIRING 04.554.55)<br>MXL STRADA SUZUKI GSXR 1000 2005-2006 (WIRING 04.554.55)   |   |
| Pressure measure unit    | MXL STRADA SUZUKI GSXR 600 2008 (WIRING 04.554.55)<br>MXL STRADA SUZUKI GSXR 750 2008 (WIRING 04.554.55)<br>MXL STRADA SUZUKI GSXR 1000 2007-2008 (WIRING 04.554.55)<br>MXL PRO 05 SUZUKI GSXR 1000 2007-2008<br>MXL PISTA GSXR YOSHIMURA |   |
|                          | MXL PRO 05 GSXR YOSHIMURA<br>MXL STRADA YOSHIMURA ZERO-50   |   |
|                          | MXL PISTA YAMAHA-R1-04-07<br>MXL PISTA YAMAHA-R6-04-05  |   |
|                          | MXL PISTA YAMAHA-R6-06-07-08<br>MXL STRADA YAMAHA-R1-04-07  |   |
|                          | MXL STRADA YAMAHA-R6-04-05<br>MXL STRADA YAMAHA-R6-06-07-08   |   |
| ſ                        | MXL STRADA KAWASAKI ZX6R_ZX10R  |   |
|                          | MXL STRADA NAWASAN ZX66_ZX106<br>MXL PISTA SUBARU 99-07<br>MXL STRADA SUBARU 99-07  |   |

Warning: all parameters set in Plug&Play configurations have been tested to work properly with vehicles completely corresponding to the stock ones sold by the manufacturers. Refer to the kits user manuals for further information.



# 7.3 – Channels

Enable "Channels" layer.

|  | ansmit  | Receive  |              | CAN-Net in   | fo 🚺 🔊 S  | et acquisition sys<br>time | tem 🕥   | SmartyCam Functio<br>setting  | Ins   |
|--|---|--|--------------|--|---|----------------------------|---|---|---|
| Current configuration  | on  |  |              |  |   |                            |   |   |   |
| Installation name  | Data logger type  | Ecu  | Vehicle name | Available time   | Time with GPS   | Total frequency            | Master frequen  | cy Expansions freq.   | Tot. Expansions   |
| DEFAULT  | MXL PISTA   | None - None  | DEFAULT      | 8.48.56 (h.m.s)  | 3.58.06 (h.m.s)   | 131 (Hz)                   | 131 (Hz)  | 0 (Hz)  | 0   |
| Wheel circumfer<br>Pulses per whee   |   | -  |              |  |   |                            |   |   |   |
|  |   |  |              |  |   |                            |   |   |   |
| Channel iden   | Enabled/disabled  | Channel name   |              | Sampling frequ   | Sensor type   |                            | Measure unit  | Low scale   | High scale  |
| RPM  | Enabled   | Engine   |              | 10 Hz 🗾  | Engine revolution speed   |                            | rpm   | 0 2   | 20000   |
| RPM<br>SPD_1   | <mark>☞ Enabled</mark><br>▼ Enabled   | Engine<br>Speed_1  |              | 10 Hz 💌  | Engine revolution speed<br>Speed  | •                          | rpm<br>km/h .1  | <mark>0 2</mark><br>0.0 2   | 20000<br>250.0  |
| RPM<br>SPD_1<br>CH_1   | <mark>☞ Enabled</mark><br>☞ Enabled<br>☞ Enabled  | Engine<br>Speed_1<br>Channel_1   |              | 10 Hz 💽<br>10 Hz 💽<br>10 Hz 💽  | Engine revolution speed<br>Speed<br>Mid zero potentiometer  | •<br>•                     | rpm<br>km/h.1<br>mm.1   | 0 2<br>0.0 2<br>0.0 5   | 20000<br>250.0<br>5.0   |
| RPM<br>SPD_1<br>CH_1<br>CH_2   | Enabled       Image: Enabled       Image: Enabled       Image: Enabled       Image: Enabled   | Engine<br>Speed_1<br>Channel_1<br>Channel_2  |              | 10 Hz<br>10 Hz | Engine revolution speed<br>Speed<br>Mid zero potentiometer<br>Generic linear 0-5 V  | •<br>•<br>•                | rpm<br>km/h .1<br>mm .1<br>V .1   | 0 2<br>0.0 2<br>0.0 5<br>0.0 5  | 20000<br>250.0<br>5.0<br>5.0  |
| RPM<br>SPD_1<br>CH_1<br>CH_2<br>CH_3   | ☑         Enabled           ☑         Enabled           ☑         Enabled           ☑         Enabled           ☑         Enabled           ☑         Enabled   | Engine<br>Speed_1<br>Channel_1<br>Channel_2<br>Channel_3   |              | 10 Hz<br>10 Hz | Engine revolution speed<br>Speed<br>Mid zero potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V  | •<br>•<br>•                | rpm<br>km/h .1<br>mm .1 •<br>V .1 •<br>V .1 •   | 0 2<br>0.0 2<br>0.0 5<br>0.0 5<br>0.0 5   | 20000<br>250.0<br>5.0<br>5.0<br>5.0   |
| RPM<br>SPD_1<br>CH_1<br>CH_2<br>CH_3<br>CH_4   | Enabled       Enabled       Enabled       Enabled       Enabled       Enabled       Enabled       Enabled   | Engine<br>Speed_1<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4  |              | 10 Hz         Image: Constraint of the second s   | Engine revolution speed<br>Speed<br>Mid zero potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V  | ।<br>।<br>।<br>।           | rpm<br>km/h .1<br>mm .1<br>V .1<br>V .1<br>V .1<br>V .1   | 0 2<br>0.0 2<br>0.0 5<br>0.0 5<br>0.0 5<br>0.0 5  | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0                             |
| RPM<br>SPD_1<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5   | Image: Constraint of the second system       Image: Constraint of the second system         Image: Constraint of the second system       Image: Constraint of the second system         Image: Constraint of the second system       Image: Constraint of the second system         Image: Constraint of the second system       Image: Constraint of the second system         Image: Constraint of the second system       Image: Constraint of the second system         Image: Constraint of the second system       Image: Constraint of the second system         Image: Constraint of the second system       Image: Constraint of the second system         Image: Constraint of the second system       Image: Constraint of the second system         Image: Constraint of the second system       Image: Constraint of the second system         Image: Constraint of the second system       Image: Constraint of the second system         Image: Constraint of the second system       Image: Constraint of the second system         Image: Constraint of the second system       Image: Constraint of the second system         Image: Constraint of the second system       Image: Constraint of the second system         Image: Constraint of the second system       Image: Constraint of the second system         Image: Constraint of the second system       Image: Constraint of the second system         Image: Constraint of the second system       Image: Consecond system <t< td=""><td>Engine<br/>Speed_1<br/>Channel_1<br/>Channel_2<br/>Channel_3<br/>Channel_4<br/>Channel_5</td><td></td><td>10 Hz         Image: Second secon</td><td>Engine revolution speed<br/>Speed<br/>Mid zero potentiometer<br/>Generic linear 0-5 V<br/>Generic linear 0-5 V<br/>Generic linear 0-5 V<br/>Generic linear 0-5 V</td><td>•<br/>•<br/>•<br/>•<br/>•</td><td>rpm         rpm           km/h .1         .1           W .1         .1           V .1         .1           V .1         .1           V .1         .1           V .1         .1</td><td>0 2<br/>0.0 2<br/>0.0 5<br/>0.0 5<br/>0.0 5<br/>0.0 5<br/>0.0 5</td><td>20000<br/>250.0<br/>5.0<br/>5.0<br/>5.0<br/>5.0<br/>5.0<br/>5.0</td></t<> | Engine<br>Speed_1<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_5   |              | 10 Hz         Image: Second secon   | Engine revolution speed<br>Speed<br>Mid zero potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V  | •<br>•<br>•<br>•<br>•      | rpm         rpm           km/h .1         .1           W .1         .1           V .1         .1           V .1         .1           V .1         .1           V .1         .1  | 0 2<br>0.0 2<br>0.0 5<br>0.0 5<br>0.0 5<br>0.0 5<br>0.0 5   | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0                      |
| RPM<br>SPD_1<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6   | ☑     Enabled   | Engine<br>Speed_1<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_5<br>Channel_6  |              | 10 Hz         Image: square squar   | Engine revolution speed<br>Speed<br>Mid zero potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V  | •<br>•<br>•<br>•<br>•<br>• | rpm         rpm           km/h .1         .1           W .1         .1           V .1         .1  | 0 2<br>0.0 2<br>0.0 5<br>0.0 5<br>0.0 5<br>0.0 5<br>0.0 5<br>0.0 5  | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0               |
| RPM           SPD_1           CH_1           CH_2           CH_3           CH_4           CH_5           CH_6           CH_7                     | Image: Constraint of the state of the st   | Engine           Speed_1           Channel_1           Channel_2           Channel_3           Channel_4           Channel_5           Channel_6           Channel_7                     |              | 10 Hz         Image: start s   | Engine revolution speed<br>Speed<br>Mid zero potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V  | ×<br>×<br>×<br>×<br>×<br>× | rpm         with .1           mm .1         Imm .1           V .1         Imm .1  | 0 2<br>0.0 2<br>0.0 5<br>0.0 5<br>0.0 5<br>0.0 5<br>0.0 5<br>0.0 5<br>0.0 5<br>0.0 5  | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0        |
| RPM<br>SPD_1<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>CH_6<br>CH_7<br>CH_8   | Image: Constraint of the state of the s   | Engine           Speed_1           Channel_1           Channel_2           Channel_3           Channel_4           Channel_5           Channel_6           Channel_7           Channel_8 |              | 10 Hz         Image: Constraint of the second s   | Engine revolution speed<br>Speed<br>Mid zero potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V                    | ×<br>×<br>×<br>×<br>×<br>× | rpm         with .1           mm .1         Imm .1           V .1         Imm .1  | 0 2<br>0.0 2<br>0.0 5<br>0.0 5<br>0.0 5<br>0.0 5<br>0.0 5<br>0.0 5<br>0.0 5<br>0.0 5<br>0.0 5<br>0.0 5  | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0               |
| RPM           SPD_1           CH_1           CH_2           CH_3           CH_5           CH_6           CH_7           CH_8           CALC_GEAR | Image: Constraint of the state of the st   | Engine<br>Speed_1<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Channel_7<br>Channel_8<br>Cakulated_Gear  |              | 10 Hz         ×  | Engine revolution speed<br>Speed<br>Mid zero potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Calculated Gear | ×<br>×<br>×<br>×<br>×<br>× | rpm            km/h .1            mm .1            V .1   | 0 2 2 0 0 0 2 2 0 0 0 2 2 0 0 0 2 2 0 0 0 0 2 2 0   | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0 |
| RPM<br>SPD_1<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>CH_6<br>CH_7<br>CH_8   | Image: Constraint of the state of the st   | Engine           Speed_1           Channel_1           Channel_2           Channel_3           Channel_4           Channel_5           Channel_6           Channel_7           Channel_8 |              | 10 Hz         ×  | Engine revolution speed<br>Speed<br>Mid zero potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V                    | ×<br>×<br>×<br>×<br>×<br>× | rpm         rpm           km/h .1         mm .1         ¥           V .1         ¥         Y           V .1         ¥         Y | 0 2<br>0.0 2<br>0.0 5<br>0.0 5<br>0. | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0        |

This layer sets all channels sampled by the logger and its layout depends on the logger version.

### 7.3.1 – Speed panels

On top of the layer you see the panels concerning speeds (1 for **MXL Strada** and **Pista** and 4 for **MXL Pro** and **Pro05**). They are labelled like speed channels in the table below. Changing the channel name in the tables the panel label is modified live.

The panels are enabled through the related checkbox as shown in the figure below. Fill in wheel circumference and number of pulses per wheel revolution (corresponding to the number of magnets installed on the vehicle wheel). Enable and set the speeds to be used and disable the ones not to be used.

| Select configura | ition Channels Sy | stem configuration CAN-Expansion con | figurator |
|------------------|-------------------|--------------------------------------|-----------|
| Speed_1          |                   |                                      |           |
| Wheel circumfe   | rence (mm) 16     | 66 Wheel circurgerence (mm)          | 1666      |
| Pulses per whe   | el revolution 1   | Pulses per wheel revolution          | 1         |
| Channel ide.     | Enabled/disabled  | Chap lel name                        | Samplir   |
| RPM 🔾            | Enabled           | Engine                               | 10 Hz     |
| SPD_1            | 🔽 Enabled 🔒       | Speed_1                              | 10 Hz     |
| SPD_2            | 🔲 Disabled 🥌      | Speed_2                              | 10 Hz     |
| SPD_3            | Enabled           | Speed_3                              | 10 Hz     |
| SPD_4            | 🔽 Enabled         | Speed_4                              | 10 Hz     |
| CH_1             | Enabled           | Channel_1                            | 10 Hz     |
| CH_2             | Enabled           | Channel 2                            | 10 Hz     |



### 7.3.2 – Channels table

| <u>]</u> 1        | [ransmi    | t f            | Receive                 | <b>\$</b>          | ) C     | CAN-Net i    | ifo 🛛 🔞                | Set acquisition sy<br>time | stem          | <b>b</b>   | martyCam Funct<br>setting | ions              |
|-------------------|------------|----------------|-------------------------|--------------------|---------|--------------|------------------------|----------------------------|---------------|------------|---------------------------|-------------------|
| urrent configura  | tion       |                |                         |                    |         |              |                        |                            |               |            |                           |                   |
| Installation name |            | ta logger type | Ecu                     | Vehicle name       | Availa  | able time    | ime with GPS           | Total frequency            | Master fre    | auenc      | Expansions fre            | g Tot. Expansions |
| DEFAULT           |            | L PRO 05       | BOSCH - MS3             | DEFAULT            |         | .17 (h.m.s)  | 4.35.05 (h.m.s)        | 346 (Hz)                   | 346 (Hz)      |            | 0 (Hz)                    | 0                 |
|                   |            |                |                         |                    |         |              |                        |                            |               |            |                           |                   |
| Select configura  | ation C    | hannels   Syst | em configuration   CAN- | Expansions configu | rator ) |              |                        |                            |               |            |                           |                   |
| Speed 1           |            | 1              |                         |                    |         |              |                        |                            |               |            |                           |                   |
| . –               |            | 1 100          |                         |                    |         |              |                        |                            |               | Л          | 1000                      |                   |
| Wheel circumfe    | erence     | (mm)   1000    | Wheel circumfere        | ence (mm) 166      |         |              | nference (mm) 16       |                            | umference (   | mm) [      | 1666                      |                   |
| Pulses per whe    | eel revolu | ution 1        | Pulses per wheel        | revolution 1       | -    ,  | Pulses per v | heel revolution 1      | Pulses per                 | wheel revolut | ion 🛛      | L                         |                   |
|                   |            |                |                         |                    |         |              |                        |                            |               |            |                           |                   |
| Channel iden      | . Enable   | ed/disabled    | Channel name            |                    | Samplin | ng frequ     | Sensor type            |                            | Measure ur    | nit L      | ow scale                  | High scale 🖉      |
| RPM               | 🔽 D        | isabled        | Engine                  |                    | 10 Hz   | •            | Engine revolution spee | d                          | rpm           | C          |                           | 20000             |
| SPD_1             | 🔽 Ei       | nabled         | Speed_1                 |                    | 10 Hz   | •            | Speed                  |                            | 🚽 km/h .1     | C          | .0                        | 250.0             |
| SPD_2             | D D        | isabled        | Speed_2                 |                    | 10 Hz   | -            | Speed                  |                            | 🚽 km/h .1     | C          | .0                        | 250.0             |
| SPD_3             | D D        | isabled        | Speed_3                 |                    | 10 Hz   | -            | Speed                  | 2                          | 🚽 km/h .1     | C          | .0                        | 250.0             |
| SPD_4             | D D        | isabled        | Speed_4                 |                    | 10 Hz   |              | Speed                  |                            | 🚽 km/h .1     | C          | .0                        | 250.0             |
| CH_1              | E E        | nabled         | Channel_1               |                    | 10 Hz   | •            | Generic linear 0-5 V   |                            | • V .1        |            | .0                        | 5.0               |
| CH_2              | E E        | nabled         | Channel_2               |                    | 10 Hz   | -            | Distance potentiomete  | r 📔                        | 🚽 mm .1       | <b>•</b> 0 | .0                        | 5.0               |
| CH_3              | E E        | nabled         | Channel_3               |                    | 10 Hz   | -            | Generic linear 0-5 V   |                            | • V .1        | <b>•</b> 0 | .0                        | 5.0               |
| CH_4              | E E        | nabled         | Channel_4               |                    | 10 Hz   | -            | Generic linear 0-5 V   |                            | • V .1        | <b>•</b> 0 | .0                        | 5.0               |
| CH_5              | E E        | nabled         | Channel_5               |                    | 10 Hz   | -            | Generic linear 0-5 V   |                            | • V .1        | <b>•</b> 0 | .0                        | 5.0               |
| CH_6              | E E        | nabled         | Channel_6               |                    | 10 Hz   | -            | Generic linear 0-5 V   |                            | • V .1        | <b>•</b> 0 | .0                        | 5.0               |
| CH_7              | E E        | nabled         | Channel_7               |                    | 10 Hz   | -            | Generic linear 0-5 V   |                            | • V .1        | <b>•</b> 0 | .0                        | 5.0               |
| CH_8              | E E        | nabled         | Channel_8               |                    | 10 Hz   | -            | Generic linear 0-5 V   |                            | • V .1        | <b>•</b> 0 | .0                        | 5.0               |
| CH_9              | E E        | nabled         | Channel_9               |                    | 10 Hz   | -            | Generic linear 0-5 V   |                            | • V .1        | <b>•</b> 0 | .0                        | 5.0               |
| CH_10             | E E        | nabled         | Channel_10              |                    | 10 Hz   | -            | Generic linear 0-5 V   |                            | • V .1        | <b>•</b> 0 | .0                        | 5.0               |
| CH_11             | E E        | nabled         | Channel_11              |                    | 10 Hz   | -            | Generic linear 0-5 V   |                            | • V .1        | <b>•</b> 0 | .0                        | 5.0               |
| CH_12             | E E        | nabled         | Channel_12              |                    | 10 Hz   | -            | Generic linear 0-5 V   |                            | • V .1        | <b>•</b> 0 | .0                        | 5.0               |
| CALC_GEAR         | 🔽 Ei       | nabled         | Calculated_Gear         |                    | 10 Hz   | •            | Calculated Gear        |                            | #             | 6          |                           | 9                 |
| ACC_1             |            | nabled         | LatAcc                  |                    | 10 Hz   |              | Lateral accelerometer  |                            | g .01         |            | 3.00                      | 3.00              |
| LOG_TMP           | -          | nabled         | Datalogger_Temp         |                    | 10 Hz   | -            | Cold joint             |                            | °C            |            |                           | 50                |
| BATT              |            | nabled         | Battery                 |                    | 1 Hz    |              | Battery                |                            | V .1          |            | .0                        | 15.0              |
| ECU_1             | -          | nabled         | BOSCH_RPM               |                    | 10 Hz   |              | Engine speed sensor    |                            | rpm           | 0          |                           | 18000             |
| ECU_2             | E E        |                | BOSCH_SPEED1            |                    | 10 Hz   |              | Bosch speed sensor     |                            | km/h .1       |            | .0                        | 500.0             |
| ECU_3             |            | nabled         | BOSCH_SPEED2            |                    | 10 Hz   |              | Speed sensor           |                            | km/h          | 0          |                           | 500               |
| ECU_4             |            | nabled         | BOSCH_OIL_PRESS         |                    | 10 Hz   |              | Pressure sensor        |                            | bar .1        |            |                           | 15.0              |
| ECU_5             |            | nabled         | BOSCH_FUEL_PRESS        |                    | 10 Hz   | -            | Pressure sensor        |                            | bar .1        |            |                           | 15.0              |
| ECU_6             |            | nabled         | BOSCH_ATM_PRESS         |                    | 10 Hz   |              | Pressure sensor        |                            | mbar          | <b>_</b> 0 |                           | 130               |
| ECU_7             |            | nabled         | BOSCH_FUEL_TEMP         |                    | 5 Hz    |              | Temperature sensor     |                            | °C            | -          |                           | 215               |
| ECU 8             | EI EI      | nabled         | BOSCH OIL TEMP          |                    | 5 Hz    | -            | Temperature sensor     |                            | l°⊂           | -          | 50                        | 215               |

This table shows al logger channels with the related characteristics:

- **Channel identifier**: shows the channel label. "ECU\_X" channels are the ones received from the vehicle ECU.
- **Enabled/disabled**: shows channel status (enabled or disabled). It can be modified double clicking on the cell except for RPM, Speed and Gear that has to be modified through "System Configuration" layer.
- Channel name: names the channel.
- **Sampling Frequency**: sets each channel sampling frequency. This last one influences the total available time, highlighted in the figure above, that diminishes growing sampling frequency because the memory fills up faster.
- **Sensor type**: shows the type of sensor installed on that channel; it is selected through the drop down menu that appears clicking on the cell. See the following page for further information.
- **Measure unit**: shows the selected unit of measure for each channel; it is possible to change it double clicking on the cell.
- **High/low scale**: shows high/low scale values of the sensor and can be modified double clicking on the cell.



|                    | Temperatures | Pressures | Potentiometers | Lambda<br>Probe | Gyroscope | Accelerometer |
|--------------------|--------------|-----------|----------------|-----------------|-----------|---------------|
| MXL Stra           | da/MXL Pista |           |                |                 |           |               |
| Ch_1               | Х            | Х         | Х              | Х               |           |               |
| Ch_2               | X            | Х         | Х              | Х               |           |               |
| Ch_3               | X            | X         | X              | Х               |           |               |
| Ch_4               | X            | X         | X              | Х               | X         | X             |
| Ch_5               | X            | Х         | Х              | Х               | Х         | Х             |
| Ch_6               | X            | Х         | Х              | Х               | Х         | Х             |
| Ch_7               | X            | Х         | Х              | Х               | Х         | Х             |
| Ch_8*⁴             | X            | Х         | Х              | Х               | Х         | Х             |
| MXL Pro            |              |           |                |                 |           |               |
| Ch_1               | Х            | Х         | Х              | Х               | Х         | х             |
| Ch_2               | X            | Х         | х              | Х               | Х         | х             |
| Ch_3               | X            | Х         | х              | Х               | Х         | х             |
| Ch_4               | X            | Х         | Х              | Х               | Х         | х             |
| Ch_5               | X            | Х         | х              | Х               | Х         | х             |
| Ch_6               | X            | Х         | Х              | Х               | Х         | х             |
| Ch_7               | X            | X         | X              | X               | X         | X             |
| Ch_8 <sup>₄</sup>  | X            | X         | X              | Х               | X         | Х             |
| MXL PRO            | 005          |           |                |                 |           |               |
| Ch_1               | Х            | Х         | Х              | Х               |           |               |
| Ch_2               | X            | X         | X              | Х               |           |               |
| Ch_3               | X            | X         | X              | Х               |           |               |
| Ch_4               | X            | X         | X              | X               |           |               |
| Ch_5               | X            | X         | X              | Х               |           |               |
| Ch_6               | X            | X         | Х              | Х               |           |               |
| Ch_7               | X            | X         | Х              | Х               | Х         | Х             |
| Ch_8               | Х            | Х         | Х              | X               | Х         | Х             |
| Ch_9               | X            | Х         | Х              | Х               | Х         | Х             |
| Ch_10              | X            | X         | X              | X               | Х         | Х             |
| Ch_11              | X            | Х         | Х              | Х               | Х         | Х             |
| Ch_12 <sup>4</sup> | X            | X         | Х              | X               |           |               |

This table shows which sensors can be installed on each channel of MXL.

<sup>&</sup>lt;sup>4</sup> Channels CH\_8 (MXL Strada/Pista/Pro) and CH\_12 (Pro05) are gear channels. If system configuration window (paragraph 7.5) sets them on "Potentiometer CH\_8" (MXL Strada/ Pista/Pro), "Potentiometer CH\_12" (Pro05) or on "Calculated+Neutral Signal" channel CH\_8 or CH\_12 sets on calculated gear and it is only possible to set channel name, sampling frequency, high and low scale. If not these channels work as shown in the table.



Setting some sensor on some channels that support them a configuration panel appears (bottom left of Channels layer). The figure below shows distance potentiometer configuration panel.

| m) 1666 When  | tion CAN-Expansions confi   |   | s) 4.35.05 (h.m.s)   | Total frequency<br>346 (Hz)  | Master freq<br>346 (Hz)   | uency Expansi<br>0 (Hz)   | ions freq Tot. Exp<br>0   | ansions  |
|---|---|---|--|--|---|---|---|--|
| RO 05 BOSCH<br>inels System configure<br>m) 1666<br>n 1 Pulse | - MS3 DEFAULT<br>ation CAN-Expansions confi<br>id_2-<br>el circumference (mm)   | 6.42.17 (h.m.:<br>igurator  | s) 4.35.05 (h.m.s)   | 346 (Hz)   | 346 (Hz)  |   |   | unaiona  |
| mels System configura<br>m) 1666 When<br>n 1 Pulse            | ition CAN-Expansions confi<br>id_2-<br>el circumference (mm)  | igurator  |  |  |   | 0 (12)  |   |  |
| m) 1666 When<br>n 1 Pulse                                     | el circumference (mm)   |   |  | Speed_4-   |   |   |   |  |
| lisabled Chappel par  |   | Pulses per  | cumference (mm) 1666<br>er wheel revolution 1  | _  | cumference (m<br>r wheel revolution   |   |   |  |
| isabida penaniterria  | ne  | Sampling frequ  | Sensor type  |  | Measure unit  | Low scale   | High scale  | _  |
| oled Engine   |   |   | Engine revolution speed  |  | rpm   | 0   | 20000   |  |
| led Speed_1   |   | 10 Hz 💌   | Speed  |  | km/h .1   | 0.0   | 250.0   |  |
| oled Speed_2  |   | 10 Hz 🗾   | Speed  | <b>_</b>   | km/h .1   | 0.0   | 250.0   |  |
| oled Speed_3  |   |   |  |  |   | 0.0   | 250.0   |  |
| oled Speed_4  |   |   |  |  |   | 0.0   | 250.0   |  |
|   |   |   |  |  |   | -   |   |  |
|   |   |   |  |  |   |   |   |  |
|   |   |   |  |  |   | -   |   |  |
|   |   |   |  |  |   |   |   |  |
|   |   |   |  |  |   |   |   |  |
|   |   |   |  |  |   | -   |   |  |
|   |   |   |  |  |   |   |   |  |
| led Channel 9   |   |   |  |  |   | ·   | 5.0   |  |
| led Channel_10  |   |   | ·  |  | V.1   | 0.0   | 5.0   |  |
| led Channel_11  |   | 10 Hz 💽   | Generic linear 0-5 V   |  | ¥.1   | 0.0   | 5.0   |  |
| led Channel_12  |   | 10 Hz 💌   | Generic linear 0-5 V   | -  | ⊻.1   | 0.0   | 5.0   |  |
| led Calculated_   | Gear  | 10 Hz 🗾   | Calculated Gear  |  | #   | 0   | 9   |  |
| led LatAcc  |   |   | ·  |  | g .01   | -3.00   | 3.00  |  |
|   | Temp  |   |  |  |   |   | 50  |  |
| led Battery   |   |   |  |  |   |   |   |  |
|   | led Speed_2<br>led Speed_3<br>ed Channel_1<br>ed Channel_2<br>ed Channel_3<br>ed Channel_4<br>ed Channel_5<br>ed Channel_6<br>ed Channel_6<br>ed Channel_7<br>ed Channel_10<br>ed Channel_11<br>ed Channel_11<br>ed Channel_12<br>ed Calculated_c<br>ed LatAcc<br>ed LatAcc | led         Speed_2           led         Speed_3           led         Speed_4           ed         Channel_1           ed         Channel_2           ed         Channel_3           ed         Channel_6           ed         Channel_6           ed         Channel_7           ed         Channel_7           ed         Channel_7           ed         Channel_7           ed         Channel_8           ed         Channel_10           ed         Channel_11           ed         Channel_12           ed         Channel_12           ed         Channel_12           ed         Channel_12           ed         Channel_12           ed         Channel_28           ed         Channel_10           ed         Channel_20           ed         Channel_20           ed         Datalogger_Temp           ed         Battery | ied         Speed_2         10 Hz         I           ied         Speed_4         10 Hz         I           ied         Speed_4         10 Hz         I           ied         Speed_4         10 Hz         I           ied         Channel_1         10 Hz         I           ied         Channel_3         10 Hz         I           ied         Channel_4         10 Hz         I           ied         Channel_5         10 Hz         I           ied         Channel_6         10 Hz         I           ied         Channel_6         10 Hz         I           ied         Channel_7         10 Hz         I           ied         Channel_8         10 Hz         I           ied         Channel_11         10 Hz         I           ied         Channel_12         10 Hz         I           ied         Channel_12         10 Hz         I           ied         Channel_12         10 Hz         I           ied         Claulated_Gear         10 Hz         I           ied         LatAccc         10 Hz         I           ied         Batlery         10 Hz | led         Speed_2         10 Hz         Speed           led         Speed_3         10 Hz         Speed           led         Speed_4         10 Hz         Speed           ed         Channel_1         10 Hz         Speed           ed         Channel_2         10 Hz         Speed           ed         Channel_3         10 Hz         Speed           ed         Channel_3         10 Hz         Speed           ed         Channel_4         10 Hz         Speed           ed         Channel_5         10 Hz         Generic Inear 0-5 V           ed         Channel_6         10 Hz         Generic Inear 0-5 V           ed         Channel_7         10 Hz         Generic Inear 0-5 V           ed         Channel_8         10 Hz         Generic Inear 0-5 V           ed         Channel_9         10 Hz         Generic Inear 0-5 V           ed         Channel_9         10 Hz         Generic Inear 0-5 V           ed         Channel_11         10 Hz         Generic Inear 0-5 V           ed         Channel_12         10 Hz         Generic Inear 0-5 V           ed         Channel_12         10 Hz         Generic Inear 0-5 V | ied         Speed_2         10 Hz         Y         Speed         Y           ied         Speed_3         10 Hz         Y         Speed         Y           ied         Speed_4         10 Hz         Y         Speed         Y           ied         Channel_1         10 Hz         Y         Speed         Y           ied         Channel_2         10 Hz         Y         Generic linear 0-5 V         Y           ied         Channel_4         10 Hz         Y         Generic linear 0-5 V         Y           ied         Channel_5         10 Hz         Y         Generic linear 0-5 V         Y           ied         Channel_6         10 Hz         Y         Generic linear 0-5 V         Y           ied         Channel_7         10 Hz         Y         Generic linear 0-5 V         Y           ied         Channel_8         10 Hz         Y         Generic linear 0-5 V         Y           ied         Channel_9         10 Hz         Y         Generic linear 0-5 V         Y           ied         Channel_11         10 Hz         Y         Generic linear 0-5 V         Y           ied         Channel_12         10 Hz         Y         Gener | led         Speed_2         10 Hz         x         Speed         x         m/h         1           led         Speed_3         10 Hz         x         Speed         x         m/h         1           led         Speed_4         10 Hz         x         Speed         x         m/h         1           led         Speed_4         10 Hz         x         Speed         x         m/h         1           ed         Channel_1         10 Hz         x         Generic linear 0-5 V         x         V         1         x           ed         Channel_3         10 Hz         x         Generic linear 0-5 V         x         V         1         x           ed         Channel_5         10 Hz         x         Generic linear 0-5 V         x         V         1         x           ed         Channel_5         10 Hz         x         Generic linear 0-5 V         x         V         1         x           ed         Channel_7         10 Hz         x         Generic linear 0-5 V         x         V         1         x           ed         Channel_9         10 Hz         x         Generic linear 0-5 V         x         V | ield         Speed_2         10 Hz         I Speed         Impl. 1         0.0           ield         Speed_3         10 Hz         Speed         Impl. 1         0.0           ield         Speed_4         10 Hz         Speed         Impl. 1         0.0           ield         Speed_4         10 Hz         Speed         Impl. 1         0.0           ield         Speed_1         10 Hz         Speed         Impl. 1         0.0           ield         Channel_1         10 Hz         Speed         Impl. 1         0.0           ield         Channel_2         10 Hz         Generic Inear 0.5 V         V .1         V         0.0           ield         Channel_3         10 Hz         Generic Inear 0.5 V         V .1         V         0.0           ield         Channel_5         10 Hz         Generic Inear 0.5 V         V .1         V         0.0           ield         Channel_6         10 Hz         Generic Inear 0.5 V         V .1         V         0.0           ield         Channel_7         10 Hz         Generic Inear 0.5 V         V .1         V         0.0           ield         Channel_9         10 Hz         Generic Inear 0.5 V         V .1 | ield         Speed_2         10 Hz         Speed         I km/h         1         0.0         250.0           ield         Speed_3         10 Hz         Speed         x         km/h         1         0.0         250.0           ield         Speed_4         10 Hz         Speed         x         km/h         1         0.0         250.0           ield         Speed_4         10 Hz         Speed         x         km/h         1         0.0         250.0           ield         Channel_1         10 Hz         Speed         x         km/h         1         0.0         5.0           ed         Channel_2         10 Hz         Distance potentioneter         x         v         1         x         0.0         5.0           ed         Channel_5         10 Hz         Generic Inear 0-5 V         x         V         1         x         0.0         5.0           ed         Channel_5         10 Hz         Generic Inear 0-5 V         x         V         1         x         0.0         5.0           ed         Channel_6         10 Hz         Generic Inear 0-5 V         x         V         1         x         0.0         5.0 |

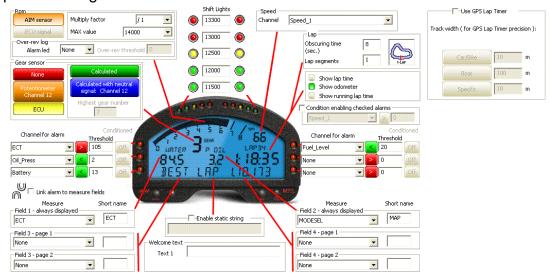


### 7.4 – Creating a custom sensor

The procedure to create a custom sensor is the same for all AIM loggers. Refer to chapter 12 for further information.

## 7.5 – System configuration

**MXL** has 16 fully configurable coloured led; the 3 on the left and on the right of the display represent the 6 max or min alarms of the analog channels (temperatures and pressures), while the other 10 led on top of the display are the Shift Lights that warn the pilot to shift gear.



To set the alarms, max and min threshold values and all parameters it is necessary to fill in the window above.

Note: in case of Plug&Play kit this window is already set.

#### 7.5.1 – RPM box

| AIM sensor                | Multiply factor | / 1             | ~ | AIM sensor                | Multiply factor | / 1            | ~   |
|---------------------------|-----------------|-----------------|---|---------------------------|-----------------|----------------|-----|
| ECU signal                | MAX value       | 16000           | ~ | ECU signal                | MAX value       | 16000          | ~   |
| Over-rev log<br>Alarm led | None 🗸 Over-    | rev threshold 0 |   | Over-rev log<br>Alarm led | 4 🗸 Over-r      | ev threshold 3 | 000 |

Select "**AIM Sensor**" to sample this value from an RPM sensor installed on the vehicle; fill in multiply factor and RPM max value. RPM row in channel table (see paragraph 7.3) is enabled.

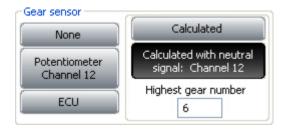
Select "**ECU sensor**" and set RPM max value to sample this value from the ECU, assuming it can transmit it.

It is also possible to connect RPM max value to one of the 6 alarm led (in the figure above on the right it has been linked to led 4) so that it switches on when the engine reaches a fixed RPM value. The led does not switch off until data download is made. In this situation, the channel for alarm corresponding to that led is disabled. It is suggested to set over-rev threshold on a value corresponding to the ECU limiter<sup>5</sup>.

<sup>&</sup>lt;sup>5</sup> This setting can be very useful to detect over-revs situation without opening Race Studio Analysis.



#### 7.5.2 – Gear sensor box

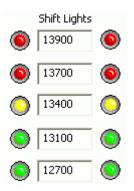


**MXL** can sample the engaged gear from a gear sensor, from the vehicle ECU or can calculate it with an algorithm based on RPM and speed. Available options are:

- "**None**": there is no gear sensor on the vehicle (or not to see the engaged gear). This option is disabled on the display.
- "Potentiometer Channel 8/12": there is a gear potentiometer installed on channel 8/12. The corresponding row in channel table (see paragraph 7.3) is set on Calculated Gear.
- "ECU": to sample this information from the vehicle ECU (assuming it can transmit it).
- "**Calculated**": to calculate the engaged gear with an algorithm based on RPM and speed; fill in "Highest gear number" case. See chapter 15 for further information.
- "Calculated with neutral signal: Channel 8/12":there is a neutral sensor to be used to see neutral gear and to calculate gears. "Highest gear number" case enables: fill it in. See chapter 15 for further information.

**Note**: gear channel is always the last one of the logger. This means that it's Channel 8 for **MXL Strada**, **Pista** and **Pro** (having 8 channels) and channel 12 for **MXL Pro05** (having 12 channels).

#### 7.5.3 – Shift light box



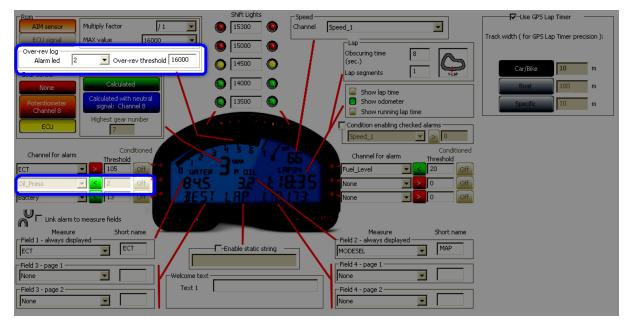
It manages the 10 led placed on top of **MXL**. Led colours: the first two on the left and on the right are green, the central two are orange and the last two are red. To set RPM threshold values fill in the cases. The led switch progressively on and when the engine reaches RPM values set for the top case all led start blinking, warning the pilot to shift gear.

If one case is set on "0" the corresponding led is disabled.



### 7.5.4 – Channel for alarm and measure boxes

Channel for alarm boxes are linked to the 6 alarm led of MXL.



- Set each channel as Max (">") or Min ("<") alarm.
- Fill in the threshold value.
- See paragraph 7.5.8 for further information concerning "status" (grey) button right of "threshold" cases, disabled in the figure above.

**Note**: setting "Over-rev log/alarm led" in RPM box, the channel linked to that channel is completely disabled as shown above.



Channels for alarm cases are linked to the field shown by MXL display. The first on the left and on the right are always shown. The other four channels can be shown two by two on the display static string with the name set in "Short name" case or as "CH\_X".

Select the channel to show and fill in its short name.

| HIGH<br>LOW Channel for alarm Thresho             | ld HIGH Channel for alarm  | Threshold            |
|---|----------------------------|----------------------|
| H Channel_1 🔽 0                                   | H Channel_1                | <b>V</b> 0           |
| H Channel_3 💽 0                                   | H Channel_3                | 0                    |
| H Channel_5 💽 0                                   | H Channel_5                | 0                    |
| Link alarm to measure fields<br>Measure Short nam |                            | fields<br>Short name |
| Field 1 - always displayed Channel_1 CH_1         | Field 1 - always displayed | , СН_1               |
| -Field 3 - page 1<br>Channel_3                    | Field 3 - page 1           | СН_З                 |
| Field 3 - page 2<br>Channel_5                     | Field 3 - page 2           | , CH_S               |

"Link alarm to measure field" option (enabled in the figure on the right) allows to link the 6 alarm led to the 6 shown alarms.

In this case channel for alarm cases disables and it is only possible to set threshold value and ">"/"<" (except if over-rev alarm led has been set as explained before).

#### 7.5.5 – Speed box

| $\_$ Speed $\_$ |                   |   |
|-----------------|-------------------|---|
| Channel         | Speed_1           | • |
|                 | Speed 1           |   |
|                 | AUTR_SPEED        |   |
|                 | AUTR DRVWHEEL SPD |   |

It is possible to select the reference speed, that will be used for gear calculation and for some Race Studio Analysis computations. Available options are logger speed(s) (1 speed for **MXL Strada/Pista** and up to 4 speeds for **MXL Pro/Pro05**) and ECU speed(s). In the above figure the logger is connected to an Autronic ECU that transmits two speed channels.



### 7.5.6 – Lap box

| Lap<br>Obscuring time<br>(sec.)<br>Lap segments | Lap<br>Obscuring time 5<br>(sec.)<br>Lap segments 3      |
|---|--|
| Show lap time                                   | <ul> <li>Show lap time</li> <li>Show odometer</li> </ul> |
| Show odometer Show running lap time             | Show running lap time                                    |

**Obscuring time**: is a time period during which the optical receiver installed on the vehicle, after having recorded a lap signal, is "blind": it does not record signals. This function is useful to manage split times on tracks where more optical receivers are installed: set obscuring time on a low value (min accepted value is 3 seconds) to record splits and set it on a value lower than best lap time and higher than the time elapsed between last split and start/finish line (max accepted value is 255 seconds) not to record splits.

**Lap segments**: is the number of segment the track is divided in and corresponds to the number of transmitters there installed.

Show lap time: MXL display shows lap time in the related field.

Show odometer: MXL display shows odometer in the related field.

**Show running lap time**: MXL display shows running lap time from last lap signal in the related filed. The value resets when the logger detects a lap signal.

#### Notes:

- Setting "Show odometer", the system switches automatically on "Show lap time" when detects a lap signal.
- The logger stores the visualization set.
- Refer to **MXL** user manual for any further information concerning the fields shown by the logger display.

#### 7.5.7 – Use GPS Lap timer box

| Use GPS Lap Timer                            |     |   |  |
|--|-----|---|--|
| Track width ( for GPS Lap Timer precision ): |     |   |  |
|  |     |   |  |
| Car/Bike                                     | 10  | m |  |
| Boat   | 100 | m |  |
| Specific                                     | 10  | m |  |

It allows to use GPS lap timer in spite of the track beacon equipment. It is necessary to enable the corresponding checkbox and set the track width. Available options are:

- Car/Bike and Boat whose measures are set by default and
- specific that allows to set a specific track width.



#### 7.5.8 – Condition enabling checked alarms box

| Condition enabling checked alarms |   |   |   |  |
|-----------------------------------|---|---|---|--|
| Engine                            | - | > | 0 |  |

This box – disabled by default – allows, if enabled, to condition the alarm led to an additional condition that – once set – becomes discriminating. It is very useful to avoid "false alarms", as explained in the following pages.

Warning: to set the condition that enables checked alarms it is necessary to have previously set channels for alarm.

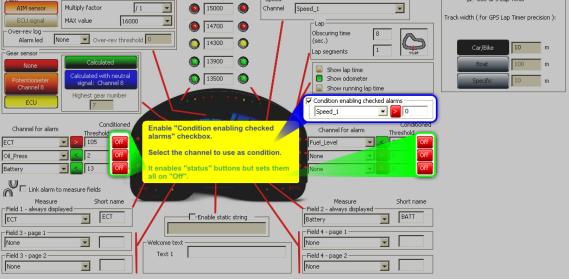
To set channels for alarms follow this procedure:

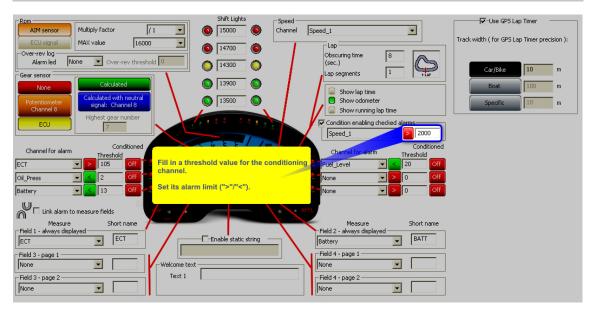
- 1. set selecting from the drop down menu the channels for alarm to be shown;
- **2.** fill in its threshold value;
- **3.** set the alarm limit (">"/"<");
- **4.** enable "Condition enabling selected alarms" case (this operation enables "status" button but shows them all red and set on "Off");
- 5. select the channel to use as conditioning one from the drop down menu;
- 6. fill in its threshold value;
- **7.** set its alarm limit (">"/"<");
- **8.** select the alarms to condition setting the related button on "On" (green).
- **9.** this setting implies that the led of the conditioned alarms switches on only if two conditions occur contemporarily: their threshold value is overcome and, at the same time, the threshold value of the conditioning channel is overcome.

The images in the following pages show this procedure.



| Rom  | Shift Lights Spe                      | ed  | Use GPS Lap Timer                             |
|--|---------------------------------------|---|---|
| AIM sensor Multiply factor / 1                     | 🔇 15000 🌑 Chai                        |   | Track width ( for GPS Lap Timer precision ):  |
| CU signal MAX value 16000                          | 14700                                 |   | Track widen ( for GPS cap filler precision ): |
| Alarm led None Ver-rev threshold                   | 14300                                 | Obscuring time 8<br>(sec.)  | Car/Bike 10 m                                 |
| Gear sensor  | 13900                                 | Lap segments  |   |
| Calculated with peutral                            |                                       | Show lap time   |   |
| Potentiometer signal: Channel 8                    |                                       | Show odometer   | Specific 10 m                                 |
| ECU Highest gear number                            | 111 111 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | Condition enabling checked alarms   |   |
|  |                                       |   |   |
|  | nannel fo alarm to sh                 |   |   |
| ECT  ID5 Off Fill in its                           | threshdold value                      | Fuel_Level  |   |
| Oil_Press     <     2     Off       Battery     ▼< |                                       | None         ▼         >         0         Off           None         ▼         >         0         Off |   |
|  | limit (">"/"<")                       | None  |   |
| CLink alarm to measure fields                      |                                       |   |   |
| Measure Short name                                 |                                       | Measure Short name<br>Field 2 - always displayed  |   |
|  | Enable static string                  | Battery BATT  |   |
| Field 3 - page 1                                   |                                       | Field 4 - page 1  |   |
| Field 3 - page 2                                   |                                       | Field 4 - page 2  |   |
| None   |                                       | None  |   |
|  |                                       |   |   |
|  | Shift Lights Spe                      | ed  |   |
| AIM sensor Multiply factor                         | 🔊 15000 🚳 Chai                        |   | ,   |

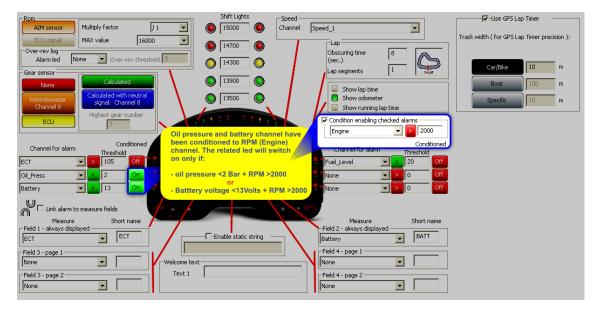






#### Race Studio Configuration (from 2.30.05 onwards) User manual Release 1.08

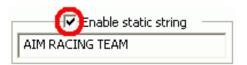
| AIM sensor / 1  | Shift Lights Speed Speed Channel   | Speed 1  | Use GPS Lap Timer                            |
|---|--|--|--|
| ECU signal MAX value 16000  |  |  | Track width ( for GPS Lap Timer precision ): |
| Over-rev log Alarm led None Over-rev threshold                          |  | Obscuring time 8<br>(sec.)                       |  |
| Gear sensor   |  | Lap segments 1                                   | Car/Bike 10 m                                |
| None Calculated   | S 13900  | Show lap time                                    | Boat 100 m                                   |
| Potentiometer<br>Channel 8 Calculated with neutral<br>signal: Channel 8 |  | Show odometer                                    | Specific 10 m                                |
| ECU Highest gear number   | THE REAL PROPERTY OF   | Condition enabling checked alarms                |  |
| Conditioned   | 4551/  | Conditioned                                      |  |
| Channel for alarm Threshold   |  | Channel for alarm Threshold                      |  |
|   | ch alarms between these set of the termination of the termination setting the set in the termination setting the set in t | Fuel_Level 👤 < 20 Off                            |  |
|   | atus" button on "On" (green).  | None 🔽 > 0 Off                                   |  |
| Battery 🔽 🚺 On  |  | None 🔽 > 0 Off                                   |  |
| Link alarm to measure fields  |  |  |  |
| Field 1 - always displayed  |  | Measure Short name<br>Field 2 - always displayed |  |
|   | -Enable static string  | Battery BATT                                     |  |
| Field 3 - page 1  |  | Field 4 - page 1                                 |  |
| None Welcome text   |  | None   |  |
| Field 3 - page 2 Text 1   |  | Field 4 - page 2                                 |  |
| None  |  | None   |  |
|   |  |  |  |



| Rpm   | Shift Lights Speed                        |  | Use GPS Lap Timer                            |
|---|---|--|--|
| AIM sensor Multiply factor / 1 💌 🚳                      | 15000 🙆 Channe                            | el Speed_1                                 |  |
| ECU signal MAX value 16000                              |   |  | Track width ( for GPS Lap Timer precision ): |
| Over-rev log  | 14700 🍥                                   |  |  |
| Alarm led None  Over-rev threshold                      | 44000                                     | Obscuring time 8                           |  |
|   | 14300                                     | Lap segments                               | 10 m   |
| Gear sensor   | 13900                                     | Lop segments                               |  |
| None 🖉  |   | Show lap time                              | Boat 100 m                                   |
| Potentiometer Calculated with neutral Signal: Channel 8 | 13500                                     | Show odometer                              | Specific 10 m                                |
| Channel 8   |   | 💋 🞑 Show running lap time                  |  |
| ECU Highest gear number                                 |   | Condition enabling checked alarms          |  |
| Water temper  | ature (ECT) and fuel leve                 | Engine                                     |  |
| Conditioned Conditioned                                 | e not been conditioned.                   | Conditioned                                |  |
|   | arm led will switch on                    | Conditioned<br>Channel for alarm Threshold |  |
| ECT V 105 Off when:                                     |   | Fuel_Level                                 |  |
|   |   | None V > 0 Off                             |  |
|   | rature >105°C<br>0% of fuel tank capacity |  |  |
| Battery I3 On Con Con Con Con Con Con Con Con Con Co    | 5% of fuel tank capacity                  | None 🔽 > 0 Off                             |  |
| (()) regardless RF                                      | PM (Engine) value.                        |  |  |
| Link alarm to measure fields                            |   |  |  |
| Measure Short name                                      |   | Measure Short name                         |  |
| Field 1 - always displayed                              | Enable static string                      | Field 2 - always displayed                 |  |
|   | anable static string                      | Battery BATT                               |  |
| Field 3 - page 1  |   | Field 4 - page 1                           |  |
| None 🔽 Velcome text                                     |   | None 🔽                                     |  |
| Field 3 - page 2 Text 1                                 |   | Field 4 - page 2                           |  |
| None  |   | None                                       |  |
|   |   |  |  |



### 7.5.9 – Enable static string and welcome message boxes



The static string is a message that is shown on bottom of MXL display. To enable it enable the related checkbox and fill in the text of the message to show.

When the static string is disabled the corresponding part of the display shows two by two the fields connected to field 3 and 4 of page 1 and 2 of the display.

**Note**: if gear sensor box is set on "Calculated", **MXL** has to calculate the engaged gear (paragraph 5.7). During this procedure the static string is excluded and the display shows "Running Gear Cal" on its bottom part.

| - Welcome text - |             |
|------------------|-------------|
| Text 1           | HI CHAMPION |
| 10/101           | J           |
|                  |             |
| L                |             |

The welcome message is a text shown for some seconds at start up on the bottom of the logger display. To show it fill in the text in the case shown here above.



## 7.6 – Configuring the CAN expansions

**MXL**, like other AIM loggers, can be connected to numerous expansions that communicate with it through the CAN bus. See chapter 16 For further information.

**Note**: in case the expansion is a DaVid Slave refer to paragraph 8.6 (**DaVid** master) to configure it.

## 7.7 – Transmitting the configuration

The procedure to transmit the configuration to the logger is the same for all AIM loggers. Refer to chapter 13 for further information.

## 7.8 – Sensors calibration and auto-calibration

When the configuration has been transmitted it is necessary to perform calibration procedure, to say auto-calibrate accelerometer, gyroscope and distance potentiometer and calibrate the gear sensor, the mid zero potentiometer and the zero based potentiometer installed on the vehicle. See chapter 14 for further information.

**Warning**: if potentiometers, gyroscope and accelerometers have not been correctly calibrated it is not possible to sample correct data, nor the engaged gear nor create the track map. It is recommended to pay particular attention to sensors calibration/auto-calibration procedures.

### 7.9 – Gear calculation

See chapter 15 for further information.

### 7.10 – Online

Online function is very useful to check the logger proper working. Refer chapter 18 for further information.



# **Chapter 8 – How to configure DaVid**

To configure **DaVid**, use a PC and Race Studio 2 software. This logger can only be configured via software.

Before starting the configuration, install **Race Studio 2** and the USB driver as explained in chapter 2.

Run the software clicking on **Race Studio 2** icon and the window here below appears.



In the title bar – white with blue background in the figure – you can see the **Race Studio 2** version installed on the PC.

Immediately under there is the menu bar, shown in a more intuitive way on the left thanks to the graphic buttons: Go to Analysis (this button runs Race Studio Analysis software), Data download, AIM system manager, AIM system identification, Online, AIM system calibration, Custom sensors management, Select language.

From this window it is possible to perform all operations necessary to manage all AIM systems.



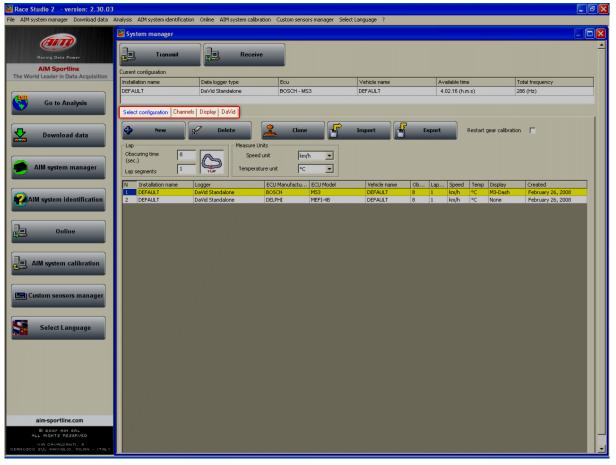
To enter configuration menu press "AIM system manager" button; a panel showing all systems managed through **Race Studio 2** software appears: double click on "**MXL**" or select it and click on " $\checkmark$  Go to".



Race Studio 2 system manager window appears.



# 8.1 – System manager window



Using the keyboards and the layers (red circled in the figure above) it is possible to perform all operations needed to manage an AIM system.

The top keyboard, shown below, is made up of two buttons:



- **Transmit**: transmits a configuration to the logger and is active with any layer; it needs the logger to be switched on and connected to the PC.
- **Receive**: reads and saves the configuration of the logger and is active only in "Select Configuration" layer.

Current configuration table, immediately under the keyboard and shown here below, shows the main information concerning the configuration user is working on.

| Current configuration |                  |                            |              |                 |                 |  |
|-----------------------|------------------|----------------------------|--------------|-----------------|-----------------|--|
| Installation name     | Data logger type | Ecu                        | Vehicle name | Available time  | Total frequency |  |
| DEFAULT               | DaVid Standalone | AUTRONIC - SM2_V190/1 / SM | DEFAULT      | 4.59.57 (h.m.s) | 231 (Hz)        |  |
|                       |                  |                            |              |                 |                 |  |



Again, under this table there are four layers:

Select configuration Channels Display DaVid

- Select configuration: allows to select the configuration to work on; it is always active.
- **Channels**: allows to set DaVid channels. It is active only if there are configurations in "Select Configuration" layer.
- **Display**: allows to set the configuration of DaVid display. It is active only if there are configurations in "Select Configuration" layer. Refer to the related chapter for further information concerning the displays configuration.
- **DaVid**: allows to configure DaVid video. It is active only if there are configurations in "Select Configuration" layer.

#### 8.1.1 – Select configuration layer

"Select configuration" layer is shown here below:

| Sele       | Select configuration Channels   Display   DaVid   |                  |                  |           |              |      |     |       |          |               |                    |
|------------|---|------------------|------------------|-----------|--------------|------|-----|-------|----------|---------------|--------------------|
| ¢          | New   | Delete           | Clone            | Impo      | ort 🛃        | Ехро | rt  | Res   | tart gea | r calibration |                    |
| Obs<br>(se | Lap<br>Obscuring time 8<br>(sec.)<br>Lap segments 1 Measure Units<br>Speed unit km/h ✓<br>Temperature unit °C ✓ |                  |                  |           |              |      |     |       |          |               |                    |
| N          | Installation name   | Logger           | ECU Manufacturer | ECU Model | Vehicle name | Obs  | Lap | Speed | Temp     | Display       | Created            |
| 1          | DEFAULT   | DaVid Standalone | BOSCH            | MS3       | DEFAULT      | 8    | 1   | km/h  | °C       | None          | July 23, 2008      |
| 2          | DEFAULT   | DaVid Standalone | DELPHI           | MEFI-4B   | DEFAULT      | 8    | 1   | km/h  | °C       | None          | September 05, 2008 |
|            |   |                  |                  |           |              |      |     |       |          |               |                    |

#### On top is a keyboard whose buttons are used to:

- New: creates a new configuration;
- **Delete**: deletes a configuration;
- **Clone**: clones a configuration;
- **Import**: imports a new configuration from a file.
- **Export**: exports a configuration to a file.

#### Beside the keyboard is a checkbox:

• **Restart gear calibration**: it allows to start/re-start DaVid gear calibration; to do so enable this checkbox, transmit the configuration to the logger and follow the procedure described at chapter 15.



#### Under the keyboard there are two panels:

#### Lap box:

| Lap                      |   |        |
|--------------------------|---|--------|
| Obscuring time<br>(sec.) | 8 | $\sim$ |
| Lap segments             | 1 | 1-LAP  |

- **Obscuring time**: is a time period during which the optical receiver installed on the vehicle, after having recorded a lap signal, is "blind": it does not record signals. This function is useful to manage split times on tracks where more optical receivers are installed: set obscuring time on a low value (min accepted value is 3 seconds) to record splits and set it on a value lower than best lap time and higher than the time elapsed between last split and start/finish line (max accepted value is 255 seconds) not to record splits.
- Lap segments: is the number of segments the track is divided into and corresponds to the number of transmitters installed there .

#### Measure units box:

| Measure Units    |        |
|------------------|--------|
| Speed unit       | km/h 💌 |
| Temperature unit | ∘⊂ ▼   |

- **Speed units**: allows to modify the unit of measure to be used for speed (mph or km/h) in the selected configuration (highlighted in yellow).
- **Temperature unit**: allows to modify the temperatures unit of measures (°C or °F) in the selected configuration (highlighted in yellow).

**Central in the layer** is configurations database. To work on one of them click on any cell of its row and the entire row is selected (highlighted in yellow). In case of first configuration the central table shows up empty.



## 8.2 – Creating a new configuration

Pressing "New" in "Select configuration" layer of "System manager" window this window appears:

| New configuration         |         |   |
|---------------------------|---------|---|
|                           |         |   |
| ECU Manufacturer          | None    | • |
| ECU Model                 | None    | • |
| New configuration name    | DEFAULT |   |
| Vehicle name              | DEFAULT |   |
| Display Type              | None    | • |
| Speeds measure unit       | km/h    | • |
| Temperatures measure unit | °C      | • |
| Pressures measure unit    | bar     | • |
|                           |         |   |
|                           |         |   |
|                           |         |   |
|                           |         |   |
|                           |         |   |
|                           | Cancel  |   |

Some parameters need to be set:

- ECU Manufacturer: select the manufacturer of the ECU installed on the vehicle or none.
- ECU Model: select the ECU model.
- **New configuration name**: fill in the configuration name.
- Vehicle name: fill in the vehicle name.
- **Display type**: select the type of display installed and connected to DaVid.
- **Speeds measure unit**: choose between km/h and mph.
- Temperatures unit of measure: choose between °C and °F.
- **Pressures unit of measure**: choose between Bar and PSI.

Press "OK" to save (or "Cancel" to quit without saving). The system comes back to "System Manager" window.



# 8.3 – Channels

### Activate "Channels" layer.

|   | ~   |  |   |  |  |   |  |                  |            |   |
|---|---|--|---|--|--|---|--|------------------|------------|---|
| Trar  | nsmit   | Receive  |   |  |  |   |  |                  |            |   |
| Current configuration   |   |  |   |  |  |   |  |                  |            |   |
| Installation name   | Da  | ta logger type   | Ecu   | Vehicle name   | Avail  | able time   |  | Total frequenc   | у          |   |
| DEFAULT   | Dai   | Vid Standalone   | BOSCH - MS3   | DEFAULT  | 4.06   | 6.35 (h.m.s)  | :  | 281 (Hz)         |            |   |
|   |   |  |   |  |  |   |  |                  |            |   |
| Select configuration  | Channels Disp   | olay DaVid   |   |  |  | /   |  | 113 /            |            |   |
| Rpm   |   | Speed_1  | Spee  | ed_2   | Gear sensor  |   |  |                  |            |   |
| AIM sensor  | E Cut stand   |  |   |  | None   | )[  | Calculated   |                  |            |   |
| All <sup>M</sup> sensor   | ECU signal  | Enabled  |   | Enabled  | None   |   | Calculated   |                  |            |   |
| Multiply factor   | 11  |  | m) 1666 When  | el circumference (mm) 1666   | ECU  | the local beau  |  |                  |            |   |
| multiply ractor   | 1/ I -  | Wheel circumference (m   | m) 1000 Whe   | el circumference (mm) 1666   |  | Hig   | ghest gear num   | ber              |            |   |
| MAX value   | 4000 -  | Pulses per wheel revolutio   | n 1 Pulse   | es per wheel revolution  | Potentiome   |   | 6  |                  |            |   |
|   | 1,000   |  |   |  | Channel  | 5   |  |                  |            |   |
|   |   |  |   |  |  |   |  |                  |            |   |
| Reference speed   |   |  |   |  |  |   |  |                  |            |   |
| Chan  | Speed_2   | •  |   |  |  |   |  |                  |            |   |
|   |   |  |   |  |  |   |  |                  |            |   |
| Channel identifier  | Enabled/disab   | Channel name   | Samplin   | Sensor type  | Measure uni  |   | High scale   |                  | Param. 2   | ^ |
| RPM   | Disabled  | Engine   | 10 Hz   | Engine revolution speed  |  |   |  | 1.000            | 16000      |   |
|   |   |  |   |  | rpm  | 0   | 20000  |                  |            |   |
| SPD_1   | Enabled   | Speed_1  | 10 Hz   | Speed  | km/h .1  | 0.0   | 250.0  | 1666.0           | 1.0        |   |
| SPD_2   | Enabled<br>Enabled  | Speed_1<br>Speed_2   | 10 Hz   | Speed<br>Speed   | km/h .1<br>km/h .1   | 0.0   | 250.0<br>250.0   | 1666.0<br>1666.0 | 1.0<br>1.0 |   |
| SPD_2<br>CH_1   | Enabled<br>Enabled<br>Enabled   | Speed_1<br>Speed_2<br>Channel_1  | 10 Hz<br>10 Hz  | Speed<br>Speed<br>Distance potentiometer   | km/h .1<br>km/h .1<br>mm .1  | 0.0 0.0 0.0   | 250.0<br>250.0<br>5.0  | 1666.0           |            |   |
| SPD_2<br>CH_1<br>CH_2   | Enabled<br>Enabled<br>Enabled<br>Enabled  | Speed_1<br>Speed_2<br>Channel_1<br>Channel_2   | 10 Hz<br>10 Hz<br>10 Hz   | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V   | km/h .1<br>km/h .1<br>mm .1<br>V .1  | 0.0<br>0.0<br>0.0<br>0.0  | 250.0<br>250.0<br>5.0<br>5.0   | 1666.0<br>1666.0 |            |   |
| SPD_2<br>CH_1<br>CH_2<br>CH_3   | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled   | Speed_1<br>Speed_2<br>Channel_1<br>Channel_2<br>Channel_3  | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz   | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V   | km/h .1<br>km/h .1<br>mm .1<br>V .1<br>V .1  | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0  | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0   | 1666.0<br>1666.0 |            |   |
| SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4   | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled  | Speed_1<br>Speed_2<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4   | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz  | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V   | km/h .1<br>km/h .1<br>mm .1<br>V .1<br>V .1<br>V .1<br>V .1  | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0   | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0  | 1666.0<br>1666.0 |            |   |
| SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5   | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled   | Speed_1           Speed_2           Channel_1           Channel_2           Channel_3           Channel_4           Channel_5  | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz   | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple   | km/h .1<br>km/h .1<br>mm .1<br>V .1<br>V .1<br>V .1<br>V .1<br>∘⊂  | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0  | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0  | 1666.0<br>1666.0 |            |   |
| SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6   | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled  | Speed_1<br>Speed_2<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_5<br>Channel_6   | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz  | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear  | km/h .1<br>km/h .1<br>W .1<br>V .1<br>V .1<br>V .1<br>× .1   | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0  | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5<br>6  | 1666.0<br>1666.0 |            |   |
| SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1  | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled   | Speed_1<br>Speed_2<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Acc_1  | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz   | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer   | km/h .1<br>km/h .1<br>W .1<br>V .1<br>V .1<br>V .1<br>e⊂<br>#<br>g .01   | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0<br>-3.00   | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5<br>6<br>3.00  | 1666.0<br>1666.0 |            |   |
| SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2   | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled  | Speed_1<br>Speed_2<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_6<br>Acc_1<br>Acc_2  | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz   | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer   | km/h .1<br>km/h .1<br>W .1<br>V .1<br>V .1<br>∝⊂<br>#<br>g .01<br>g .01  | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0<br>0<br>0<br>0   | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5<br>6<br>3.00<br>3.00  | 1666.0<br>1666.0 |            |   |
| SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_TMP  | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled  | Speed_1<br>Speed_2<br>Channel_1<br>Channel_2<br>Channel_2<br>Channel_4<br>Channel_5<br>Channel_6<br>Acc_1<br>Acc_2<br>Datalogger_Temp  | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz  | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint   | km/h .1<br>km/h .1<br>W .1<br>V .1<br>V .1<br>V .1<br>°⊂<br>#<br>g .01<br>g .01<br>°⊂  | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>-3.00<br>0<br>-3.00<br>0  | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5<br>6<br>3.00<br>3.00<br>50   | 1666.0<br>1666.0 |            |   |
| SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT   | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled  | Speed_1           Speed_2           Channel_1           Channel_2           Channel_4           Channel_5           Channel_6           Acc_1           Acc_2           Datalogger_Temp           Battery  | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>1 Hz  | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery  | km/h .1<br>km/h .1<br>mm .1<br>V .1<br>V .1<br>v .1<br>¢<br>#<br>g .01<br>g .01<br>°⊂<br>V .1  | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>-3.00<br>-3.00<br>0<br>5.0  | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5<br>6<br>3.00<br>3.00<br>3.00<br>50<br>15.0   | 1666.0<br>1666.0 |            |   |
| SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT<br>ECU_1   | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled   | Speed_1<br>Speed_2<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_6<br>Acc_1<br>Acc_2<br>Datalogger_Temp<br>Battery<br>BOSCH_RPM   | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>1 Hz<br>10 Hz   | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor   | km/h .1<br>km/h .1<br>mm .1<br>V .1<br>V .1<br>V .1<br>v .1<br>g .01<br>g .01<br>g .01<br>v .1<br>v .1<br>rpm  | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>-3.00<br>-3.00<br>0<br>5.0<br>0   | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5<br>6<br>3.00<br>3.00<br>3.00<br>50<br>50<br>15.0<br>18000  | 1666.0<br>1666.0 |            |   |
| SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT<br>ECU_1<br>ECU_2  | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled   | Speed_1           Speed_2           Channel_1           Channel_2           Channel_5           Channel_6           Acc_1           Acc_2           Datalogger_Temp           Battery           BOSCH_EPM           BOSCH_SPEED1   | 10 Hz<br>10 Hz   | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor   | km/h .1<br>km/h .1<br>mm .1<br>∀ .1<br>∀ .1<br>∀ .1<br>₹<br>g .01<br>°C<br>¥<br>g .01<br>°C<br>V .1<br>rpm<br>km/h .1  | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>-3.00<br>-3.00<br>0<br>5.0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0  | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>3.00<br>3.0   | 1666.0<br>1666.0 |            |   |
| SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_1<br>ACC_2<br>LOG_IMP<br>BATT<br>ECU_1<br>ECU_1<br>ECU_2<br>ECU_3   | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled   | Speed_1           Speed_2           Channel_1           Channel_2           Channel_3           Channel_5           Channel_6           Acc_1           Datalogger_Temp           Battery           BOSCH_RPM           BOSCH_SPEED1           BOSCH_SPEED1  | 10 Hz<br>10 Hz  | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Speed sensor   | km/h .1<br>km/h .1<br>mm .1<br>V .1<br>V .1<br>V .1<br>V .1<br>Q .01<br>C<br>C<br>V .1<br>rpm<br>km/h .1<br>km/h   | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0<br>-3.00<br>-3.00<br>0<br>5.0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0   | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5<br>6<br>3.00<br>3.00<br>3.00<br>50<br>15.0<br>15.0<br>18000<br>500.0  | 1666.0<br>1666.0 |            |   |
| SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT<br>ECU_1<br>ECU_2<br>ECU_3<br>ECU_4  | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled  | Speed_1           Speed_2           Channel_1           Channel_3           Channel_4           Channel_6           Acc_1           Acc_2           Datalogger_Temp           Battery           BOSCH_SPEED1           BOSCH_SPEED2           BOSCH_SPEED2           BOSCH_OIL_PRESS   | 10 Hz<br>10 Hz  | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Speed sensor   | km/h .1<br>km/h .1<br>mm .1<br>∀ .1<br>∀ .1<br>∀ .1<br>0<br>C<br>#<br>g .01<br>0<br>C<br>V .1<br>rpm<br>km/h .1<br>km/h<br>bar .1  | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>-3.00<br>0<br>5.0<br>0<br>0<br>5.0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0  | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5<br>6<br>3.00<br>3.00<br>3.00<br>50<br>15.0<br>18000<br>500.0<br>500<br>15.0   | 1666.0<br>1666.0 |            |   |
| SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_1<br>ACC_2<br>LOG_IMP<br>BATT<br>ECU_1<br>ECU_1<br>ECU_2<br>ECU_3   | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled   | Speed_1           Speed_2           Channel_1           Channel_2           Channel_5           Channel_6           Acc_1           Acc_2           Datalogger_Temp           Battery           BOSCH_RPM           BOSCH_SPEED1           BOSCH_PRESS           BOSCH_FRESS   | 10 Hz<br>10 Hz  | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Speed sensor   | km/h .1<br>km/h .1<br>mm .1<br>V .1<br>V .1<br>V .1<br>V .1<br>Q .01<br>C<br>C<br>V .1<br>rpm<br>km/h .1<br>km/h   | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0<br>-3.00<br>-3.00<br>0<br>5.0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0   | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5<br>6<br>3.00<br>3.00<br>3.00<br>50<br>15.0<br>15.0<br>18000<br>500.0  | 1666.0<br>1666.0 |            |   |
| SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT<br>ECU_1<br>ECU_1<br>ECU_2<br>ECU_3<br>ECU_4<br>ECU_5<br>ECU_6   | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled   | Speed_1           Speed_2           Channel_1           Channel_2           Channel_3           Channel_5           Channel_6           Acc_1           Datalogger_Temp           Battery           BOSCH_SPEED1           BOSCH_SPEED1           BOSCH_SPEED2           BOSCH_FUL_PRESS           BOSCH_FUL_PRESS           BOSCH_MIT_PRESS   | 10 Hz<br>10 Hz   | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longltudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Speed sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor  | km/h .1<br>km/h .1<br>mm .1<br>∀ .1<br>∀ .1<br>∀ .1<br>g .01<br>g .01<br>oC<br>¥<br>g .01<br>oC<br>V .1<br>rpm<br>km/h .1<br>km/h<br>bar .1<br>bar .1  | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0<br>-3.00<br>0<br>5.0<br>0<br>0<br>0.0<br>0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0  | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5<br>6<br>3.00<br>50<br>15.0<br>15.0<br>15.0<br>18000<br>500.0<br>500.0<br>500.1<br>5.0<br>15.0   | 1666.0<br>1666.0 |            |   |
| SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT<br>ECU_1<br>ECU_1<br>ECU_2<br>ECU_3<br>ECU_4<br>ECU_5   | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled  | Speed_1           Speed_2           Channel_1           Channel_2           Channel_5           Channel_6           Acc_1           Acc_2           Datalogger_Temp           Battery           BOSCH_RPM           BOSCH_SPEED1           BOSCH_PRESS           BOSCH_PRESS   | 10 Hz<br>10 Hz   | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Speed sensor<br>Pressure sensor<br>Pressure sensor   | km/h .1<br>km/h .1<br>mm .1<br>∀ .1<br>∀ .1<br>∀ .1<br>₹<br>g .01<br>g .01<br>€C<br>¥<br>y .1<br>rpm<br>km/h .1<br>km/h<br>bar .1<br>mbar  | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0<br>-3.00<br>-3.00<br>0<br>5.0<br>0<br>0<br>0.0<br>0<br>0<br>0.0<br>0<br>0<br>0.0<br>0<br>0<br>0  | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5<br>6<br>3.00<br>3.00<br>3.00<br>50<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.   | 1666.0<br>1666.0 |            |   |
| SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT<br>ECU_1<br>ECU_2<br>ECU_3<br>ECU_4<br>ECU_4<br>ECU_5<br>ECU_6<br>ECU_7<br>ECU_6<br>ECU_7<br>ECU_8  | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled   | Speed_1           Speed_2           Channel_1           Channel_2           Channel_4           Channel_6           Acc_1           Acc_2           Datalogger_Temp           Battery           BOSCH_SPEED1           BOSCH_SPEED1           BOSCH_OIL_PRESS           BOSCH_CL_PRESS           BOSCH_FUEL_PRESS           BOSCH_FUEL_TEMP  | 10 Hz<br>10 Hz  | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Speed sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor   | km/h .1<br>km/h .1<br>km/h .1<br>wm .1<br>V .1<br>V .1<br>v .1<br>v .1<br>o<br>C<br>#<br>g .01<br>o<br>C<br>V .1<br>rpm<br>km/h .1<br>km/h<br>bar .1<br>bar .1<br>mbar<br>o<br>C   | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0<br>-3.00<br>0<br>5.0<br>0<br>0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.   | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>3.00<br>50<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.   | 1666.0<br>1666.0 |            |   |
| SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT<br>ECU_1<br>ECU_2<br>ECU_2<br>ECU_3<br>ECU_4<br>ECU_3<br>ECU_4<br>ECU_5<br>ECU_6<br>ECU_7<br>ECU_9   | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled   | Speed_1           Speed_2           Channel_1           Channel_2           Channel_5           Channel_6           Acc_1           Acc_2           Datalogger_Temp           Battery           BoSCH_SPEED1           BoSCH_SPEED2           BoSCH_UPRESS           BoSCH_FUEL_PRESS           BoSCH_FUEL_TEMP           BoSCH_FUEL_TEMP           BoSCH_OIL_TEMP   | 10 Hz<br>10 Hz<br>5 Hz<br>5 Hz   | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Speed sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Temperature sensor   | km/h .1<br>km/h .1<br>mm .1<br>∀ .1<br>∀ .1<br>∀ .1<br>₹<br>g .01<br>9 .01<br>°C<br>¥<br>y .1<br>rpm<br>km/h .1<br>km/h<br>bar .1<br>bar .1<br>mbar<br>°C<br>°C  | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>-3.00<br>0<br>5.0<br>0<br>5.0<br>0<br>0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0 | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5<br>6<br>3.00<br>50<br>3.00<br>50<br>15.0<br>18000<br>500.0<br>500.0<br>500.0<br>500.0<br>15.0<br>18.0<br>13.0<br>13.0<br>215<br>215   | 1666.0<br>1666.0 |            |   |
| SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT<br>ECU_1<br>ECU_2<br>ECU_2<br>ECU_3<br>ECU_4<br>ECU_3<br>ECU_4<br>ECU_5<br>ECU_6<br>ECU_7<br>ECU_9   | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled   | Speed_1           Speed_2           Channel_1           Channel_2           Channel_5           Channel_6           Acc_1           Acc_2           Datalogger_Temp           Battery           BOSCH_SPEED1           BOSCH_SPEED1           BOSCH_PRESS           BOSCH_PUEL_PRESS           BOSCH_FUEL_TEMP           BOSCH_FUEL_TEMP           BOSCH_FUEL_TEMP           BOSCH_FUEL_TEMP           BOSCH_FUEL_TEMP           BOSCH_FUEL_TEMP   | 10 Hz<br>10 Hz<br>5 Hz<br>5 Hz  | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Speed sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Temperature sensor<br>Temperature sensor   | km/h .1<br>km/h .1<br>mm .1<br>V .1<br>V .1<br>V .1<br>V .1<br>Q .01<br>g .01<br>g .01<br>v .1<br>rpm<br>km/h .1<br>km/h .1<br>bar .1<br>mbar<br>oc<br>v.2<br>v.2<br>v.2<br>km/h .1  | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0<br>0<br>3.00<br>0<br>5.0<br>0<br>0<br>0.0<br>0<br>0<br>0.0<br>0<br>0<br>0.0<br>0<br>0<br>0   | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5<br>6<br>3.00<br>50<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15. | 1666.0<br>1666.0 |            |   |
| SPD_2           CH_1           CH_2           CH_3           CH_4           CH_5           CH_6           ACC_1           ACC_1           ACC_2           DG_TMP           BATT           ECU_1           ECU_2           ECU_4           ECU_6           ECU_7           ECU_9           ECU_9           ECU_10  | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled  | Speed_1           Speed_2           Channel_1           Channel_3           Channel_4           Channel_6           Acc_1           Acc_2           Datalogger_Temp           Battery           BOSCH_SPEED1           BOSCH_SPEED2           BOSCH_PLEL_PRESS           BOSCH_FUEL_TEMP           BOSCH_OIL_TEMP           BOSCH_OIL_TEMP           BOSCH_OIL_TEMP           BOSCH_ENGINE_TEMP  | 10 Hz<br>10 Hz<br>5 Hz<br>5 Hz<br>5 Hz  | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Speed sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Temperature sensor<br>Temperature sensor<br>Temperature sensor  | km/h .1           km/h .1           mm .1           V .1           •C           #           g .01           •C           V .1           rpm           km/h .1           km/h .1           km/h .1           km/h .1           km/h .1           km/h .2           v .1   | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0<br>-3.00<br>0<br>-3.00<br>0<br>0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0   | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>3.00<br>50<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0   | 1666.0<br>1666.0 |            |   |
| SPD_2           CH_1           CH_2           CH_3           CH_4           CH_5           CH_6           ACC_1           ACC_1           BATT           ECU_1           ECU_2           ECU_3           ECU_4           ECU_5           ECU_6           ECU_7           ECU_8           ECU_9           ECU_11   | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled   | Speed_1           Speed_2           Channel_1           Channel_2           Channel_4           Channel_5           Channel_6           Acc_1           Acc_2           Datalogger_Temp           Battery           BOSCH_SPEED1           BOSCH_SPEED2           BOSCH_OIL_PRESS           BOSCH_FUEL_TEMP           BOSCH_OIL_TEMP           BOSCH_OIL_TEMP           BOSCH_OIL_TEMP           BOSCH_LITEMP           BOSCH_ICH_TEMP           BOSCH_TIEMP           BOSCH_TEMP           BOSCH_TEMP | 10 Hz<br>10 Hz<br>5 Hz<br>5 Hz<br>5 Hz<br>5 Hz<br>10 Hz   | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Speed sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Temperature sensor<br>Temperature sensor<br>Temperature sensor<br>Temperature sensor  | km/h .1<br>km/h .1<br>mm .1<br>V .1<br>V .1<br>V .1<br>V .1<br>g .01<br>g .01<br>o_C<br>V .1<br>rpm<br>km/h .1<br>km/h<br>bar .1<br>bar .1<br>mbar<br>o_C<br>o_C<br>v_C<br>v_C<br>v_C<br>v_C<br>v_C<br>v_C<br>v_C<br>v_C<br>v_C<br>v   | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>-3.00<br>0<br>5.0<br>0<br>5.0<br>0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0      | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5<br>6<br>3.00<br>50<br>15.0<br>18000<br>500.0<br>500.0<br>500.0<br>500.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0   | 1666.0<br>1666.0 |            |   |
| SPD_2           CH_1           CH_2           CH_3           CH_4           CH_5           CH_6           ACC_1           ACC_2           LOG_TMP           BATT           ECU_1           ECU_2           ECU_2           ECU_4           ECU_5           ECU_6           ECU_7           ECU_9           ECU_9           ECU_10           ECU_111           ECU_12  | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled  | Speed_1           Speed_2           Channel_1           Channel_2           Channel_5           Channel_6           Acc_1           Acc_2           Datalogger_Temp           Battery           BOSCH_SPEED1           BOSCH_SPEED1           BOSCH_PRESS           BOSCH_ULP.PRESS           BOSCH_FUEL_PRESS           BOSCH_FUEL_TEMP           BOSCH_LTEMP           BOSCH_LTEMP           BOSCH_AIR_TEMP           BOSCH_AIR_TEMP           BOSCH_THROTT_ANG           BOSCH_IGNIT_ANG            | 10 Hz<br>10 Hz<br>5 Hz<br>5 Hz<br>5 Hz<br>5 Hz<br>5 Hz<br>10 Hz   | Speed<br>Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Temperature sensor<br>Temperature sensor<br>Temperature sensor<br>Temperature sensor<br>Temperature sensor<br>Temperature sensor  | km/h .1<br>km/h .1<br>mm .1<br>∀ .1<br>∀ .1<br>∀ .1<br>₹<br>g .01<br>°C<br>¥<br>g .01<br>°C<br>V .1<br>rpm<br>km/h .1<br>km/h<br>bar .1<br>bar .1<br>bar .1<br>mbar<br>°C<br>°C<br>°C<br>°C<br>°C<br>°C  | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>-3.00<br>0<br>5.0<br>0<br>5.0<br>0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0      | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5<br>6<br>3.00<br>50<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15. | 1666.0<br>1666.0 |            |   |
| SPD_2           CH_1           CH_2           CH_3           CH_4           CH_5           CH_6           ACC_1           ACC_1           ACC_2           LOG_TMP           BATT           ECU_1           ECU_2           ECU_3           ECU_5           ECU_6           ECU_7           ECU_8           ECU_9           ECU_11           ECU_12           ECU_13           ECU_13           ECU_14                     | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled   | Speed_1           Speed_2           Channel_1           Channel_4           Channel_5           Channel_6           Acc_1           Acc_2           Datalogger_Temp           Battery           BOSCH_SPEED1           BOSCH_PEED2           BOSCH_PIEL_PRESS           BOSCH_FUEL_TEMP           BOSCH_OIL_TEMP           BOSCH_ENGINE_TEMP           BOSCH_FUEL_TEMP           BOSCH_INGINE_TEMP           BOSCH_TIROTT_ANG           BOSCH_IGNIT_ANG           BOSCH_JAIR_CHARGE                    | 10 Hz<br>10 Hz<br>5 Hz<br>5 Hz<br>5 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz   | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Speed sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Temperature sensor<br>Throttle position sensor<br>Angle sensor | km/h .1           km/h .1           mm .1           V .1           vC           #           g.01           vC           V .1           vC           #           g.01           vC           V.1           rpm           km/h .1           km/h .1           bar .1           bbar .1           mbar           vC           vC | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0<br>-3.00<br>0<br>-3.00<br>0<br>-3.00<br>0<br>0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0   | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>3.00<br>50<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0    | 1666.0<br>1666.0 |            |   |
| SPD_2           CH_1           CH_2           CH_3           CH_4           CH_5           CH_6           ACC_1           ACC_2           LOG_TMP           BATT           ECU_1           ECU_2           ECU_4           ECU_6           ECU_7           ECU_9           ECU_10           ECU_11           ECU_11           ECU_12           ECU_11           ECU_11           ECU_12           ECU_11           ECU_12 | Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enab | Speed_1           Speed_2           Channel_1           Channel_4           Channel_5           Channel_6           Acc_1           Acc_2           Datalogger_Temp           Battery           BOSCH_SPEED1           BOSCH_SPEED1           BOSCH_GUL_PRESS           BOSCH_FUEL_PRESS           BOSCH_GUL_TEMP           BOSCH_GUL_TEMP           BOSCH_GUL_TEMP           BOSCH_MIN_TAMG           BOSCH_IGNIT_ANG           BOSCH_GULT_MAGE   | 10 Hz<br>10 Hz<br>5 Hz<br>5 Hz<br>5 Hz<br>5 Hz<br>10 Hz | Speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Bosch speed sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Temperature sensor<br>Temperature sensor<br>Temperature sensor<br>Temperature sensor<br>Throttle position sensor<br>Angle sensor<br>Percentage sensor<br>System dock  | km/h .1<br>km/h .1<br>mm .1<br>V .1<br>V .1<br>V .1<br>g .01<br>g .01<br>eC<br>V .1<br>rpm<br>km/h .1<br>km/h<br>bar .1<br>bar .1<br>bar .1<br>mbar<br>eC<br>vC<br>vC<br>vC<br>vC<br>vC<br>vC<br>vC<br>vC<br>vC<br>v   | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>-3.00<br>0<br>-3.00<br>0<br>5.0<br>0<br>0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0                       | 250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5<br>6<br>3.00<br>50<br>15.0<br>18000<br>500.0<br>500.0<br>500.0<br>500.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0<br>16.0   | 1666.0<br>1666.0 |            |   |

This layer allows to set the logger sampled channels.

On top of the window are the panels concerning RPM, speed and gear sensor. Their layout depends on the configuration set.

Enable and set the speed to be used and disable the ones not to be used.



### 8.3.1 – RPM panel

| Select configuration | Channels     | Display |
|----------------------|--------------|---------|
| Rpm                  |              |         |
| AIM sensor           | ECU sign     | al      |
| Multiply factor      | / 1          | •       |
| MAX value            | 4000         | •       |
| -Reference speed -   |              |         |
| Chan                 | BOSCH_S      | 5PEED1  |
| Channel identifier   | Enabled/disa | Cł      |
| RPM E                | Enabled      | En      |
| SPD_1 [              | Disablea     | Sp      |
| SPD_2 E              | Enabled      | Sp      |
| CH 1 E               | Enabled      | Ch      |

| Select configuration | Channels     | Display |
|----------------------|--------------|---------|
| Rpm                  |              | _       |
| AIM sensor           | ECU sign     | al      |
| Multiply Factor      |              | -       |
| MAX value            | 4000         | •       |
|                      |              |         |
| Reference speed -    | 1            |         |
| Chan                 | BOSCH_       | SPEED1  |
|                      | L            |         |
| Channel identifier   | Enabled/disa |         |
| RPM                  | Disabled     | En      |
| SPD_1                | Disabled     | Sp      |
| SPD_2                | Enabled      | Sp      |
| CH_1                 | Enabled      | Ch      |

- Select "AIM Sensor" to sample this information from an RPM sensor installed on the vehicle; set Multiply factor and RPM Max value. RPM row in the table below enables (figure below on the left).
- Select "ECU Signal" and set RPM Max value to sample this value from the vehicle ECU. RPM row in the table below disables (figure above on the right).

| Select configuration                       | n Channels Dis | play DaVid  |         |   |
|--|----------------|---|---------|---|
| AIM sensor<br>Multiply Factor<br>MAX value |                | Speed_1 Disabled Wheel or cumference (mm) 16 Puses per wheel revolution 1 | 566 Wh  | Enabled<br>Enabled<br>eet circumference (mm) 1666<br>ses per wheel revolution 1 |
| Reference speed                            |                |   |         |   |
| Chan                                       | BOSCH_SPEE     | ED1 🔹   |         |   |
| Channel identifier                         | Enabled disa   | Charmel name  | Samplin | Sensor type   |
| RPM  | Disabled       | Engine  | 10 Hz   | Engine revolution speed   |
| SPD 1                                      | Disabled       | Speed 1   | 10 Hz   | Speed   |
| SPD 2                                      | Enabled        | Speed 2   | 10 Hz   | Speed   |
| CH_1                                       | Enabled        | Channel_1   | 10 Hz   | Temperature VDO 50-150 °C   |

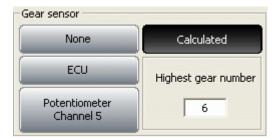
### 8.3.2 – Speed panel

The panels and their channels are enabled/disabled through the related button, as shown here above. The button changes its colour.

Once enabled the speed fill in wheel circumference and number of pulses per wheel revolution (corresponding to the number of magnets installed on the vehicle wheel).



### 8.3.3 – Gear sensor panel



**DaVid** can sample the engaged gear from a gear sensor, from the vehicle ECU or can calculate it with an algorithm based on RPM and speed. Available options are:

- "None": there is no gear sensor on the vehicle (or not to see the engaged gear). This option is disabled on the display and channel table shows row labelled CH\_5 enabled with configurable sensor and row labelled CH\_6 disabled.
- "ECU": to sample this information from the vehicle ECU (assuming it can transmit it); channel table shows row labelled CH\_5 enabled with configurable sensor and row labelled CH\_6 set on calculated gear.
- **"Potentiometer Channel 5**": there is a gear potentiometer installed on channel 5. Channel table shows row labelled CH\_5 enabled and set on gear potentiometer and row labelled CH\_6 disabled and set on calculated gear.
- "Calculated": to compute the engaged gear with an algorithm based on RPM and speed; fill in "Highest gear number". Channel table shows row labelled CH\_5 disabled (but can be enabled with configurable sensor) and row labelled CH\_6 enabled and set on calculated gear. See the related chapter for further information.

#### 8.3.4 – Reference speed panel

| Reference speed |  |
|-----------------|--|
| Chan            | Speed_2                                    |
|                 | Speed_2<br>AUTR_SPEED<br>AUTR_DRVWHEEL_SPD |

It is possible to select the reference speed, that is used for gear calculation and for some Race Studio Analysis calculation.

Available options are: logger speed/speeds (depending on how many of them were enabled) and speed(s) coming from the vehicle ECU.

In the figure below the logger has one only speed enabled and is connected to an Autronic ECU that transmits two speed channels.



## 8.3.5 – Channel table:

| Trai  | nsmit   | Receive  |   |   |  |  |  |               |          |   |
|---|---|--|---|---|--|--|--|---------------|----------|---|
| urrent configuration  |   | <u> </u>   |   |   |  |  |  |               |          |   |
| nstallation name  | D   | ata logger type  | Ecu   | Vehicle name  | Augil  | able time  |  | otal frequenc |          |   |
|   |   |  |   |   |  |  |  |               | .y       |   |
| DEFAULT   | Da  | Vid Standalone   | BOSCH - MS3   | DEFAULT   | 4.06   | i.35 (h.m.s)   |  | 81 (Hz)       |          |   |
| Select configuration  | Channels Dis  | play DaVid   |   |   |  |  |  |               |          |   |
| Rpm   |   | Speed_1  | Spee  | ed_2  | Gear sensor  |  |  |               |          |   |
| AIM sensor  | ECU signal  | Enabled  |   | Enabled   | None   |  | Calculated   |               |          |   |
|   |   |  |   |   |  |  |  | -             |          |   |
| Multiply Factor   | /1 -  | Wheel circumference (m   | m) 1666 Whee  | el circumference (mm) 1666  | ECU  | Hig  | ghest gear numb  | ber           |          |   |
| MAX value   | 4000  | Pulses per wheel revolution  | n 1 Pulse   | es per wheel revolution 1   | Potentiome   | eter   | 6  |               |          |   |
| 111111000   | 1,000   |  |   | s per wheel revolution 1.   | Channel  | 5  |  |               |          |   |
|   |   |  |   |   |  |  |  |               |          |   |
| Reference speed   |   |  |   |   |  |  |  |               |          |   |
| Chan  | Speed_2   | <b>_</b>   |   |   |  |  |  |               |          |   |
| Channel identifier  | Enabled/disab   | Channel name   | Samplin   | Sensor type   | Measure unit   | t Low scale  | High scale   | Param. 1      | Param. 2 | ^ |
| RPM   | Disabled  | Engine   | 10 Hz   | Engine revolution speed   | rpm  | 0  | 20000  | 1.000         | 16000    |   |
| SPD_1   | Enabled   | Speed_1  | 10 Hz   | Speed   | km/h .1  | 0.0  | 250.0  | 1666.0        | 1.0      |   |
| SPD_2   | Enabled   | Speed_2  | 10 Hz   | Speed   | km/h .1  | 0.0  | 250.0  | 1666.0        | 1.0      |   |
| CH_1  | Enabled   | Channel_1  | 10 Hz   | Distance potentiometer  | mm .1  | 0.0  | 5.0  | 100.0         |          |   |
| CH 2  |   |  | 10 Hz   |   |  |  |  |               | 1        |   |
|   | Enabled   | Channel_2  | 10 12   | Generic linear 0-5 V  | V .1   | 0.0  | 5.0  |               |          |   |
| -   | Enabled<br>Enabled  | Channel_2<br>Channel_3   | 10 Hz   | Generic linear 0-5 V<br>Generic linear 0-5 V  | V .1<br>V .1   | 0.0  | 5.0<br>5.0   |               |          |   |
| CH_3<br>CH_4  |   | -  |   |   |  |  |  |               |          |   |
| сн_з<br>сн_4  | Enabled   | Channel_3  | 10 Hz   | Generic linear 0-5 V  | V .1   | 0.0  | 5.0  |               |          |   |
|   | Enabled<br>Enabled  | Channel_3<br>Channel_4   | 10 Hz<br>10 Hz  | Generic linear 0-5 V<br>Generic linear 0-5 V  | V .1<br>V .1   | 0.0  | 5.0  |               |          |   |
| сн_з<br>сн_4<br>сн_5<br>сн_6  | Enabled<br>Enabled<br>Disabled<br>Disabled  | Channel_3<br>Channel_4<br>Channel_5<br>Channel_6   | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz   | Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear   | V .1<br>V .1<br>°⊂<br>#  | 0.0<br>0.0<br>0<br>0   | 5.0<br>5.0<br>5<br>6   |               |          |   |
| CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1   | Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled   | Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Acc_1  | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz  | Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer  | V .1<br>V .1<br>°⊂<br>#<br>g .01   | 0.0<br>0.0<br>0<br>0<br>-3.00  | 5.0<br>5.0<br>5<br>6<br>3.00   |               |          |   |
| CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2  | Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled  | Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Acc_1<br>Acc_2   | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz   | Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer  | V .1<br>V .1<br>°⊂<br>#<br>g .01<br>g .01  | 0.0<br>0.0<br>0<br>0<br>-3.00<br>-3.00   | 5.0<br>5.0<br>5<br>6<br>3.00<br>3.00   |               |          |   |
| CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_TMP   | Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled   | Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Acc_1<br>Acc_2<br>Datalogger_Temp  | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz  | Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint  | V .1<br>V .1<br>°⊂<br>#<br>g .01<br>g .01<br>°⊂  | 0.0<br>0.0<br>0<br>-3.00<br>-3.00<br>0   | 5.0<br>5.0<br>5<br>6<br>3.00<br>3.00<br>50   |               |          |   |
| CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT   | Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled  | Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Acc_1<br>Acc_2<br>Detalogger_Temp<br>Battery   | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz   | Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery   | V .1<br>V .1<br>°⊂<br>#<br>g .01<br>g .01<br>°⊂<br>V .1  | 0.0<br>0.0<br>0<br>-3.00<br>-3.00<br>0<br>5.0  | 5.0<br>5.0<br>5<br>6<br>3.00<br>3.00<br>50<br>15.0   |               |          |   |
| CH_3<br>CH_4<br>CH_5<br>CH_5<br>ACC_1<br>ACC_2<br>LOS_TMP<br>BATT<br>ECU_1  | Enabled<br>Enabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled  | Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Acc_1<br>Acc_2<br>Datalogger_Temp<br>Battery<br>BOSCH_RPM  | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz  | Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor  | V .1<br>V .1<br>°⊂<br>#<br>g .01<br>g .01<br>°⊂<br>V .1<br>rpm   | 0.0<br>0.0<br>0<br>-3.00<br>-3.00<br>0<br>5.0<br>0   | 5.0<br>5.0<br>5<br>6<br>3.00<br>3.00<br>50<br>15.0<br>18000  |               |          |   |
| CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT<br>ECU_1<br>ECU_2   | Enabled<br>Enabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled   | Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Acc_1<br>Datalogger_Temp<br>Battery<br>BoSCH_RPM<br>BOSCH_SPEED1   | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>1 Hz<br>10 Hz<br>10 Hz   | Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor  | V .1<br>V .1<br>°⊂<br>#<br>g .01<br>g .01<br>°⊂<br>V .1<br>rpm<br>km/h .1  | 0.0<br>0.0<br>0<br>-3.00<br>-3.00<br>0<br>5.0<br>0<br>0<br>0.0   | 5.0<br>5.0<br>5<br>6<br>3.00<br>3.00<br>50<br>15.0<br>18000<br>500.0   |               |          |   |
| CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT<br>ECU_1<br>ECU_2<br>ECU_2<br>ECU_3   | Enabled<br>Enabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled  | Channel 3<br>Channel 4<br>Channel 5<br>Channel 6<br>Acc_1<br>Acc_2<br>Detalogger_Temp<br>Battery<br>BoSCH_RPM<br>BOSCH_SPEED1<br>BOSCH_SPEED2  | 10 Hz<br>10 Hz   | Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Bosch speed sensor  | V .1<br>V .1<br>°⊂<br>#<br>g .01<br>g .01<br>°⊂<br>V .1<br>rpm<br>km/h .1<br>km/h  | 0.0<br>0.0<br>0<br>-3.00<br>-3.00<br>0<br>5.0<br>0<br>0<br>0.0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0   | 5.0<br>5.0<br>5<br>6<br>3.00<br>3.00<br>50<br>15.0<br>15.0<br>18000<br>500.0<br>500.0  |               |          |   |
| CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT<br>ECU_1<br>ECU_1<br>ECU_2<br>ECU_3<br>ECU_4  | Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled  | Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Acc_1<br>Acc_2<br>Datalogger_Temp<br>Battery<br>BOSCH_SPED1<br>BOSCH_SPED2<br>BOSCH_SPED2<br>BOSCH_OIL_PRESS   | 10 Hz<br>10 Hz  | Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Pressure sensor<br>Pressure sensor  | V .1<br>V .1<br>°⊂<br>#<br>g .01<br>g .01<br>°⊂<br>V .1<br>rpm<br>km/h .1<br>km/h<br>bar .1  | 0.0<br>0.0<br>0<br>-3.00<br>-3.00<br>0<br>5.0<br>0<br>0.0<br>0.0<br>0<br>0.0   | 5.0<br>5.0<br>5<br>6<br>3.00<br>50<br>15.0<br>18000<br>500.0<br>500<br>15.0  |               |          |   |
| CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT<br>ECU_1<br>ECU_2<br>ECU_3<br>ECU_3<br>ECU_4<br>ECU_5   | Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled   | Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Acc_1<br>Datalogger_Temp<br>Battery<br>BOSCH_SPED1<br>BOSCH_SPED1<br>BOSCH_SPEED2<br>BOSCH_ORESS<br>BOSCH_PRESS  | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>1 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz  | Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Speed sensor<br>Pressure sensor<br>Pressure sensor  | V.1<br>V.1<br>°C<br>#<br>g.01<br>g.01<br>°C<br>V.1<br>rpm<br>km/h .1<br>km/h<br>bar.1<br>bar.1   | 0.0<br>0.0<br>0<br>-3.00<br>-3.00<br>0<br>5.0<br>0<br>0.0<br>0.0<br>0.0<br>0.0   | 5.0<br>5.0<br>5<br>6<br>3.00<br>50<br>15.0<br>15.0<br>18000<br>500.0<br>500<br>15.0<br>15.0  |               |          |   |
| CH_3<br>CH_4<br>CH_5<br>CCL_6<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT<br>ECU_1<br>ECU_2<br>ECU_2<br>ECU_3<br>ECU_4<br>ECU_5<br>ECU_6   | Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled   | Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Acc_1<br>Detalogger_Temp<br>Battery<br>BoSCH_PRM<br>BOSCH_SPEED1<br>BOSCH_SPEED2<br>BOSCH_OIL_PRESS<br>BOSCH_OIL_PRESS<br>BOSCH_ATM_PRESS  | 10 Hz<br>10 Hz  | Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Speed sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor   | V .1<br>V .1<br>vC<br>#<br>g .01<br>vC<br>V .1<br>rpm<br>km/h .1<br>km/h<br>bar .1<br>mbar   | 0.0<br>0.0<br>0<br>-3.00<br>-3.00<br>0<br>5.0<br>0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0  | 5.0<br>5.0<br>5<br>6<br>3.00<br>50<br>15.0<br>18000<br>500.0<br>500<br>15.0<br>15.0<br>13.0  |               |          |   |
| CH_3<br>CH_4<br>CH_5<br>CCL_6<br>ACC_1<br>ACC_1<br>ACC_2<br>BATT<br>ECU_1<br>ECU_1<br>ECU_2<br>ECU_2<br>ECU_3<br>ECU_4<br>ECU_5<br>ECU_6<br>ECU_6<br>ECU_7  | Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled   | Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Acc_1<br>Acc_2<br>Detalogger_Temp<br>Battery<br>BOSCH_PPM<br>BOSCH_SPEED1<br>BOSCH_SPEED1<br>BOSCH_SPEED2<br>BOSCH_OIL_PRESS<br>BOSCH_FUEL_PRESS<br>BOSCH_FUEL_TEMP  | 10 Hz<br>10 Hz   | Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Speed sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Temperature sensor   | V .1<br>V .1<br>C<br>V .1<br>V .1<br>V .1<br>V .1<br>V .1<br>V .1<br>V .1<br>V .1  | 0.0<br>0.0<br>0<br>-3.00<br>-3.00<br>0<br>5.0<br>0<br>0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.  | 5.0<br>5.0<br>5<br>6<br>3.00<br>3.00<br>50<br>15.0<br>18000<br>500.0<br>500<br>15.0<br>15.0<br>15.0<br>15.0<br>130<br>215  |               |          |   |
| CH_3<br>CH_4<br>CH_5<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT<br>ECU_2<br>ECU_3<br>ECU_2<br>ECU_3<br>ECU_4<br>ECU_5<br>ECU_6<br>ECU_6<br>ECU_7<br>ECU_8   | Enabled<br>Enabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled  | Channel_3<br>Channel_4<br>Channel_5<br>Channel_5<br>Channel_6<br>Acc_1<br>Datalogger_Temp<br>Battery<br>BOSCH_PRM<br>BOSCH_PRM<br>BOSCH_PRED1<br>BOSCH_PRED1<br>BOSCH_OIL_PRES5<br>BOSCH_OIL_PRES5<br>BOSCH_FUEL_PRES5<br>BOSCH_FUEL_TEMP<br>BOSCH_OIL_TEMP  | 10 Hz<br>10 Hz<br>5 Hz<br>5 Hz   | Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Speed sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Temperature sensor<br>Temperature sensor   | V .1<br>V .1<br>°C<br>#<br>g .01<br>g .01<br>°C<br>V .1<br>rpm<br>km/h .1<br>km/h<br>bar .1<br>bar .1<br>bar .1<br>c<br>°C<br>°C   | 0.0<br>0.0<br>0<br>-3.00<br>0<br>5.0<br>0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0   | 5.0<br>5.0<br>5<br>6<br>3.00<br>50<br>15.0<br>18000<br>500.0<br>500.0<br>500<br>15.0<br>15.0<br>15.0<br>15.0   |               |          |   |
| CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_TMP<br>ECU_1<br>ECU_2<br>ECU_2<br>ECU_3<br>ECU_4<br>ECU_4<br>ECU_6<br>ECU_6<br>ECU_6<br>ECU_7<br>ECU_9<br>ECU_9   | Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled  | Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Acc_1<br>Datalogger_Temp<br>Battery<br>BOSCH_PPED1<br>BOSCH_PPED1<br>BOSCH_PPED2<br>BOSCH_PLEL_PRES5<br>BOSCH_FUEL_PRES5<br>BOSCH_FUEL_PRES5<br>BOSCH_FUEL_PRES5<br>BOSCH_FUEL_TEMP<br>BOSCH_FUEL_TEMP<br>BOSCH_FUEL_TEMP  | 10 Hz<br>10 Hz<br>5 Hz<br>5 Hz  | Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Speed sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Temperature sensor<br>Temperature sensor   | V .1<br>V .1<br>°C<br>#<br>g .01<br>°C<br>V .1<br>rpm<br>km/h .1<br>km/h<br>bar .1<br>mbar<br>°C<br>°C<br>°C<br>°C   | 0.0<br>0.0<br>-3.00<br>-3.00<br>0<br>5.0<br>0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0   | 5.0<br>5.0<br>5<br>6<br>3.00<br>3.00<br>50<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0 |               |          |   |
| CH_3<br>CH_4<br>CH_5<br>CCL_5<br>CCL_6<br>ACC_1<br>ACC_2<br>ECU_6<br>ECU_1<br>ECU_1<br>ECU_1<br>ECU_4<br>ECU_5<br>ECU_6<br>ECU_6<br>ECU_7<br>ECU_8<br>ECU_9<br>ECU_9<br>ECU_9<br>ECU_9  | Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled   | Channel 3<br>Channel 4<br>Channel 5<br>Channel 6<br>Acc_1<br>Acc_2<br>Detalogger_Temp<br>Battery<br>BOSCH_RPM<br>BOSCH_SPEED1<br>BOSCH_SPEED2<br>BOSCH_OIL_PRESS<br>BOSCH_OIL_PRESS<br>BOSCH_OIL_PRESS<br>BOSCH_FUEL_PRESS<br>BOSCH_OIL_TEMP<br>BOSCH_OIL_TEMP<br>BOSCH_OIL_TEMP<br>BOSCH_OIL_TEMP<br>BOSCH_AIR_TEMP   | 10 Hz<br>10 Hz<br>5 Hz<br>5 Hz<br>5 Hz   | Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Speed sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Temperature sensor<br>Temperature sensor<br>Temperature sensor<br>Temperature sensor   | V .1<br>V .1<br>V .1<br>V .1<br>V .1<br>V .1<br>V .1<br>V .1   | 0.0<br>0.0<br>-3.00<br>-3.00<br>0<br>5.0<br>0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>-50<br>-50<br>-50<br>-50  | 5.0<br>5.0<br>5<br>6<br>3.00<br>50<br>15.0<br>18000<br>500.0<br>500<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>215<br>215<br>215<br>150<br>150   |               |          |   |
| CH_3<br>CH_4<br>CH_5<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT<br>ECU_2<br>ECU_2<br>ECU_2<br>ECU_3<br>ECU_4<br>ECU_4<br>ECU_5<br>ECU_6<br>ECU_7<br>ECU_6<br>ECU_7<br>ECU_9<br>ECU_9<br>ECU_10<br>ECU_11  | Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled   | Channel_3<br>Channel_4<br>Channel_5<br>Channel_5<br>Channel_6<br>Acc_1<br>Datalogger_Temp<br>Battery<br>BOSCH_PPM<br>BOSCH_PPM<br>BOSCH_PPED1<br>BOSCH_PPED1<br>BOSCH_PIEL_PRESS<br>BOSCH_FUEL_PRESS<br>BOSCH_FUEL_PRESS<br>BOSCH_FUEL_PRESS<br>BOSCH_FUEL_TEMP<br>BOSCH_FUEL_TEMP<br>BOSCH_ENGINE_TEMP<br>BOSCH_FIROTT_ANG  | 10 Hz<br>10 Hz<br>5 Hz<br>5 Hz<br>5 Hz<br>5 Hz<br>10 Hz   | Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Speed sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Temperature sensor<br>Temperature sensor<br>Temperature sensor<br>Temperature sensor<br>Temperature sensor<br>Temperature sensor<br>Temperature sensor   | V .1<br>V .1<br>°C<br>#<br>g .01<br>g .01<br>°C<br>V .1<br>rpm<br>km/h .1<br>km/h<br>bar .1<br>bar .1<br>bar .1<br>bar .1<br>c<br>°C<br>°C<br>°C<br>°C<br>°C                               | 0.0<br>0.0<br>-3.00<br>-3.00<br>5.0<br>0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.  | 5.0<br>5.0<br>5<br>6<br>3.00<br>3.00<br>50<br>15.0<br>18000<br>500.0<br>500<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15. |               |          |   |
| CH_3<br>CH_4<br>CH_5<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT<br>ECU_1<br>ECU_2<br>ECU_2<br>ECU_3<br>ECU_4<br>ECU_4<br>ECU_5<br>ECU_6<br>ECU_7<br>ECU_6<br>ECU_9<br>ECU_9<br>ECU_10<br>ECU_11<br>ECU_11<br>ECU_12   | Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled  | Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Acc_1<br>Datalogger_Temp<br>Battery<br>BOSCH_PPED1<br>BOSCH_SPEED1<br>BOSCH_SPEED2<br>BOSCH_OIL_PRESS<br>BOSCH_FUEL_PRESS<br>BOSCH_FUEL_PRESS<br>BOSCH_FUEL_TEMP<br>BOSCH_FUEL_TEMP<br>BOSCH_OIL_TEMP<br>BOSCH_OIL_TEMP<br>BOSCH_INGINE_TEMP<br>BOSCH_INGINE_TEMP  | 10 Hz<br>10 Hz<br>5 Hz<br>5 Hz<br>5 Hz<br>5 Hz<br>5 Hz<br>10 Hz<br>10 Hz   | Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Speed sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Temperature sensor  | V .1<br>V .1<br>°C<br>#<br>g .01<br>°C<br>V .1<br>rpm<br>km/h .1<br>km/h<br>bar .1<br>bar .1<br>mbar<br>°C<br>°C<br>°C<br>°C<br>°C<br>°C<br>°C<br>°C<br>°C                                 | 0.0<br>0.0<br>-3.00<br>-3.00<br>0<br>5.0<br>0<br>0.0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0   | 5.0<br>5.0<br>5<br>6<br>3.00<br>3.00<br>50<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0 |               |          |   |
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CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT<br>ECU_1<br>ECU_2<br>ECU_3<br>ECU_4<br>ECU_5<br>ECU_6<br>ECU_7<br>ECU_8<br>ECU_7<br>ECU_9<br>ECU_10<br>ECU_11<br>ECU_11<br>ECU_12<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_13<br>ECU_14<br>ECU_15<br>ECU_15<br>ECU_15<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_17<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_16<br>ECU_17<br>ECU_16<br>ECU_17<br>ECU_16<br>ECU_17<br>ECU_16<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_18<br>ECU_17<br>ECU_18<br>ECU_17<br>ECU_18<br>ECU_17<br>ECU_18<br>ECU_17<br>ECU_18<br>ECU_19<br>ECU_10<br>ECU_10<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_117<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17<br>ECU_17 | Enabled<br>Enabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled  | Channel 3<br>Channel 4<br>Channel 5<br>Channel 6<br>Acc_1<br>Acc_2<br>Detalogger_Temp<br>Battery<br>BoSCH_SPED1<br>BOSCH_SPEED1<br>BOSCH_SPEED2<br>BOSCH_OIL_PRESS<br>BOSCH_OIL_PRESS<br>BOSCH_FUEL_TEMP<br>BOSCH_FUEL_TEMP<br>BOSCH_ENSINE_TEMP<br>BOSCH_ENSINE_TEMP<br>BOSCH_INSINE_TEMP<br>BOSCH_INSINE_TEMP<br>BOSCH_INSINE_TEMP<br>BOSCH_INSINE_TEMP<br>BOSCH_INSINE_TEMP   | 10 Hz<br>10 Hz<br>5 Hz<br>5 Hz<br>5 Hz<br>10 Hz  | Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Bosch speed sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Temperature sensor<br>Temperature sensor<br>Temperature sensor<br>Temperature sensor<br>Temperature sensor<br>Throttle position sensor<br>Angle sensor  | V .1<br>V .1<br>V .1<br>V .1<br>V .1<br>V .1<br>V .1<br>rpm<br>km/h .1<br>km/h<br>bar .1<br>mbar .1<br>mbar<br>V .2<br>V .1<br>km/h<br>bar .1<br>deg<br>V .1                               | 0.0<br>0.0<br>-3.00<br>-3.00<br>0<br>5.0<br>0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0   | 5.0<br>5.0<br>5<br>6<br>3.00<br>50<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0 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| CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_1<br>LOG_TMP<br>BATT<br>ECU_2<br>ECU_3<br>ECU_4<br>ECU_3<br>ECU_4<br>ECU_5<br>ECU_6<br>ECU_7<br>ECU_8<br>ECU_9<br>ECU_9<br>ECU_9<br>ECU_10<br>ECU_11<br>ECU_11<br>ECU_12<br>ECU_13<br>ECU_14   | Enabled<br>Enabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled  | Channel_3<br>Channel_4<br>Channel_5<br>Channel_5<br>Channel_6<br>Acc_1<br>Datalogger_Temp<br>Battery<br>BOSCH_PRM<br>BOSCH_PRM<br>BOSCH_PED1<br>BOSCH_OIL_PRESS<br>BOSCH_PUEL_PRESS<br>BOSCH_FUEL_PRESS<br>BOSCH_FUEL_PRESS<br>BOSCH_FUEL_TEMP<br>BOSCH_OIL_TEMP<br>BOSCH_OIL_TEMP<br>BOSCH_OIL_TEMP<br>BOSCH_INAINE_TEMP<br>BOSCH_INAINE_TEMP<br>BOSCH_INAINE_TEMP<br>BOSCH_INAINE_TEMP<br>BOSCH_INAINE_TEMP<br>BOSCH_INAINE_TEMP<br>BOSCH_INAINE_CHARGE<br>BOSCH_INJ_TM1 | 10 Hz<br>10 Hz<br>5 Hz<br>5 Hz<br>5 Hz<br>10 Hz | Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Speed sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Temperature sensor<br>Throttle position sensor<br>Angle sensor<br>Percentage sensor<br>System dock | V .1<br>V .1<br>°C<br>#<br>g .01<br>g .01<br>°C<br>V .1<br>rpm<br>km/h .1<br>km/h<br>bar .1<br>bar .1<br>bar .1<br>bar .1<br>c<br>°C<br>°C<br>°C<br>°C<br>°C<br>% .1<br>deg<br>%<br>ms .01 | 0.0<br>0.0<br>-3.00<br>-3.00<br>5.0<br>0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>-50<br>-50<br>-50<br>-50<br>0.0<br>-90<br>0.0<br>0.00  | 5.0<br>5.0<br>5<br>6<br>3.00<br>3.00<br>50<br>15.0<br>18000<br>500.0<br>500<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10. |               |          |   |
| CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT<br>ECU_1<br>ECU_2<br>ECU_2<br>ECU_3<br>ECU_4<br>ECU_3<br>ECU_4<br>ECU_5<br>ECU_6<br>ECU_7<br>ECU_6<br>ECU_9<br>ECU_10<br>ECU_10<br>ECU_11<br>ECU_11<br>ECU_112<br>ECU_13<br>ECU_14<br>ECU_15  | Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enab | Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Acc_1<br>Datalogger_Temp<br>Battery<br>BOSCH_PPED1<br>BOSCH_SPEED1<br>BOSCH_SPEED2<br>BOSCH_PIEL_PRESS<br>BOSCH_FUEL_PRESS<br>BOSCH_FUEL_PRESS<br>BOSCH_FUEL_TEMP<br>BOSCH_FUEL_TEMP<br>BOSCH_FUEL_TEMP<br>BOSCH_ING_TEMP<br>BOSCH_ING_TEMP<br>BOSCH_INGT_ANG<br>BOSCH_INGT_ANG<br>BOSCH_INJ_TM1<br>BOSCH_INJ_TM1  | 10 Hz<br>10 Hz<br>5 Hz<br>5 Hz<br>5 Hz<br>5 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz  | Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Speed sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Temperature sensor<br>Spester dock  | V .1<br>V .1<br>°C<br>#<br>g .01<br>°C<br>V .1<br>rpm<br>km/h .1<br>km/h<br>bar .1<br>bar .1<br>bar .1<br>mbar<br>°C<br>°C<br>°C<br>°C<br>°C<br>°C<br>°C<br>°C<br>°C<br>°C                 | 0.0<br>0.0<br>-3.00<br>-3.00<br>0<br>5.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0<br>0.0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0 | 5.0<br>5.0<br>5<br>6<br>3.00<br>3.00<br>50<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>10.0<br>90<br>21.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0<br>20.0   |               |          |   |
| CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT<br>ECU_1<br>ECU_2<br>ECU_3<br>ECU_4<br>ECU_5<br>ECU_6<br>ECU_7<br>ECU_5<br>ECU_6<br>ECU_7<br>ECU_9<br>ECU_9<br>ECU_9<br>ECU_11<br>ECU_11<br>ECU_11<br>ECU_12<br>ECU_13<br>ECU_14   | Enabled<br>Enabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled  | Channel_3<br>Channel_4<br>Channel_5<br>Channel_5<br>Channel_6<br>Acc_1<br>Datalogger_Temp<br>Battery<br>BOSCH_PRM<br>BOSCH_PRM<br>BOSCH_PED1<br>BOSCH_OIL_PRESS<br>BOSCH_PUEL_PRESS<br>BOSCH_FUEL_PRESS<br>BOSCH_FUEL_PRESS<br>BOSCH_FUEL_TEMP<br>BOSCH_OIL_TEMP<br>BOSCH_OIL_TEMP<br>BOSCH_OIL_TEMP<br>BOSCH_INAINE_TEMP<br>BOSCH_INAINE_TEMP<br>BOSCH_INAINE_TEMP<br>BOSCH_INAINE_TEMP<br>BOSCH_INAINE_TEMP<br>BOSCH_INAINE_TEMP<br>BOSCH_INAINE_CHARGE<br>BOSCH_INJ_TM1 | 10 Hz<br>10 Hz<br>5 Hz<br>5 Hz<br>5 Hz<br>10 Hz | Generic linear 0-5 V<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Speed sensor<br>Pressure sensor<br>Pressure sensor<br>Pressure sensor<br>Temperature sensor<br>Throttle position sensor<br>Angle sensor<br>Percentage sensor<br>System dock | V .1<br>V .1<br>°C<br>#<br>g .01<br>g .01<br>°C<br>V .1<br>rpm<br>km/h .1<br>km/h<br>bar .1<br>bar .1<br>bar .1<br>bar .1<br>c<br>°C<br>°C<br>°C<br>°C<br>°C<br>% .1<br>deg<br>%<br>ms .01 | 0.0<br>0.0<br>-3.00<br>-3.00<br>5.0<br>0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>-50<br>-50<br>-50<br>-50<br>0.0<br>-90<br>0.0<br>0.00  | 5.0<br>5.0<br>5<br>6<br>3.00<br>3.00<br>50<br>15.0<br>18000<br>500.0<br>500<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>15.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10.0<br>10. |               |          |   |

This table shows all loggers channels with the related characteristics:

- **Channel identifier**: shows the channel label. "ECU\_X" channels are the ones coming form the ECU.
- **Enabled/disabled**: shows the channel status (enabled or disabled). It can be modified double clicking on the cell except for RPM, Speed and CH\_6 that need to be modified through the above described panels.
- Channel name: names the channel.
- **Sampling frequency**: sets each channel sampling frequency. This last one influences the total available time highlighted by a box in the figure above, that diminishes increasing sampling frequency because the memory fills up faster.



• Sensor type: allows to select the sensor installed on that channel from the drop down menu that appears clicking on the cell. Channel labelled CH\_5 is always configurable except when "Gear Sensor" panel is set on calculated gear. N.B.: setting some sensors on some channels that support them, a configuration panel appears on bottom of the layer. The figure below shows the distance potentiometer configuration panel.

| Installation name  |  | Data logger type  | Ecu  | Vehicle name   | ∆vs  | ailable time   | 1   | otal frequenc             | v            |   |
|--|--|---|--|--|--|--|---|---------------------------|--------------|---|
| DEFAULT  |  | DaVid Standalone  | BOSCH - MS3  | DEFAULT  |  | 16.35 (h.m.s)  |   | 81 (Hz)                   | y            | _ |
| JEFAULT  |  | David Standalone  | BUSCH - MSS  | DEFAOLI  | 4.0  | (8.111.11) 66.00   | 4   | 01 (112)                  |              | - |
|  |  |   |  |  |  |  |   |                           |              |   |
| Select configuration   | on Channels  | Display DaVid   |  |  |  |  |   |                           |              |   |
| Rpm  |  | Speed_1   |  | peed_2   |  |  |   |                           |              |   |
| <u> </u>   | C.C.L. store   |   |  |  | None   |  | Calculated  |                           |              |   |
| AIM sensor   | ECU signa  | Enabled   |  | Enabled  | Norie  |  | Calculateu  |                           |              |   |
| Multiply Factor  | / 1  | Wheel circumference   | (mm) 1666 W  | /heel circumference (mm) 1666  | ECU  |  |   |                           |              |   |
|  | 1/ ×   | wheel circumierence   |  | inteer circumierence (min) 1 1000  |  |  | lighest gear numb   |                           |              |   |
| MAX value  | 4000   | Pulses per wheel revolu   | ution 1 P  | ulses per wheel revolution 1   | Potention  |  | 6   |                           |              |   |
|  |  | -   | · · · · · · · · · · · · · · · · · · ·  | . ,  | Channe   | el 5   |   |                           |              |   |
| -Reference speed   |  |   | ] []   |  |  |  |   |                           |              |   |
|  |  |   |  |  |  |  |   |                           |              |   |
| Chan   | Speed_2  | <b>_</b>  |  |  |  |  |   |                           |              |   |
|  | _  |   |  | -  |  | sit Lou coslo  | High scale  | Deven 1                   | Param. 2     |   |
| Channel identifier   | <ul> <li>Enabled/disal</li> </ul>  | b I Channel name  | Samplin  | I Sensor type  | Measure ur   |  |   |                           |              |   |
|  | Enabled/disal  |   | Samplin<br>10 Hz   |  | Measure ur<br>rpm  |  | 20000   | 1.000                     | 16000        |   |
| RPM  |  | Engine<br>Speed_1   |  | Engine revolution speed Speed  | measure ur<br>rpm<br>km/h .1   |  |   |                           |              |   |
| RPM<br>SPD_1   | Disabled   | Engine  | 10 Hz  | Engine revolution speed  | rpm  | 0  | 20000   | 1.000                     | 16000        |   |
| Channel identifier<br>RPM<br>SPD_1<br>SPD_2<br>CH_1  | Disabled<br>Enabled  | Engine<br>Speed_1   | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz  | Engine revolution speed<br>Speed   | rpm<br>km/h .1   | 0<br>0.0   | 20000<br>250.0  | 1.000<br>1666.0           | 16000<br>1.0 |   |
| SPD_1<br>SPD_2<br>CH_1<br>CH_2   | Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled   | Engine<br>Speed_1<br>Speed_2<br>Channel_1<br>Channel_2  | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz   | Engine revolution speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5-1   | rpm<br>km/h .1<br>km/h .1<br>mm .1<br>V .1   | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0   | 20000<br>250.0<br>250.0<br>5.0<br>5.0   | 1.000<br>1666.0<br>1666.0 | 16000<br>1.0 |   |
| RPM<br>SPD_1<br>SPD_2<br>CH_1<br>CH_2<br>CH_3  | Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled  | Engine<br>Speed_1<br>Speed_2<br>Channel_1<br>Channel_2<br>Channel_3   | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz  | Engine revolution speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5-V<br>Generic linear 0-5-V   | rpm<br>km/h .1<br>km/h .1<br>Mm .1<br>V .1<br>V .1   | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0  | 20000<br>250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0                                       | 1.000<br>1666.0<br>1666.0 | 16000<br>1.0 |   |
| RPM<br>SPD_1<br>SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4  | Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled   | Engine<br>Speed_1<br>Speed_2<br>Channel_1<br>Channel_3<br>Channel_4   | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz   | Engine revolution speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-54<br>Generic linear 0-5 V<br>Generic linear 0-5 V  | rpm<br>km/h .1<br>km/h .1<br>mm .1<br>V .1<br>V .1<br>V .1<br>V .1   | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0   | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0                                  | 1.000<br>1666.0<br>1666.0 | 16000<br>1.0 |   |
| RPM<br>SPD_1<br>SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_3<br>CH_4<br>CH_5  | Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled   | Engine<br>Speed_1<br>Speed_2<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_5  | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz  | Engine revolution speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-54<br>Generic linear 0-54<br>Generic linear 0-5 V<br>Theraccouple   | rpm<br>km/h .1<br>km/h .1<br>v .1<br>v .1<br>v .1<br>v .1<br>v .1  | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0   | 20000<br>250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0                  | 1.000<br>1666.0<br>1666.0 | 16000<br>1.0 |   |
| RPM<br>SPD_1<br>SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_3<br>CH_4<br>CH_5<br>CH_6  | Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled   | Engine<br>Speed_1<br>Speed_2<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_5<br>Channel_6  | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz   | Engine revolution speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Therprocouple<br>Generic later 0-5 V   | rpm<br>km/h .1<br>km/h .1<br>V .1<br>V .1<br>V .1<br>V .1<br>*C  | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0  | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5<br>6                        | 1.000<br>1666.0<br>1666.0 | 16000<br>1.0 |   |
| RPM<br>SPD_1<br>SPD_2<br>CH_1<br>CH_2<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1   | Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled   | Engine<br>Speed_1<br>Speed_2<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Acc_1  | 10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz<br>10 Hz   | Engine revolution speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-54<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Therefoccupie<br>Calculated Gear<br>Lateral accelerometer   | rpm<br>km/h .1<br>km/h .1<br>mm .1<br>∀ .1<br>∀ .1<br>∀ .1<br>♥ .1<br>•⊂<br>#<br>g .01   | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0<br>0<br>0<br>0<br>0   | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5<br>6<br>4<br>3.00           | 1.000<br>1666.0<br>1666.0 | 16000<br>1.0 |   |
| RPM<br>SPD_1<br>SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2  | Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled   | Engine<br>Speed_1<br>Speed_2<br>Channel_4<br>Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Acc_1<br>Acc_2   | 10 Hz<br>10 Hz  | Engine revolution speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-54<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Theratocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer   | rpm<br>km/h .1<br>km/h .1<br>mm .1<br>V .1<br>V .1<br>V .1<br>v .1<br>°C<br>#<br>g .01<br>g .01  | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0<br>-3.00<br>-3.00   | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5<br>6<br>6<br>3.00<br>3.00          | 1.000<br>1666.0<br>1666.0 | 16000<br>1.0 |   |
| RPM<br>SPD_1<br>SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_1<br>ACC_2<br>LOG_TMP  | Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled   | Engine           Speed_1           Speed_2           Channel_1           Channel_3           Channel_4           Channel_5           Channel_6           Acc_1           Acc_2           Datalogger_Temp  | 10 Hz<br>10 Hz  | Engine revolution speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-54<br>Generic linear 0-54<br>Generic linear 0-54<br>Generic linear 0-54<br>Therafoccupie<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint  | rpm<br>km/h .1<br>km/h .1<br>mm .1<br>V .1<br>V .1<br>V .1<br>v .1<br>∘C<br>#<br>g .01<br>g .01<br>∘C  | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0<br>-3.00<br>0<br>0  | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0             | 1.000<br>1666.0<br>1666.0 | 16000<br>1.0 |   |
| RPM           SPD_1           SPD_2           CH_1           CH_2           CH_3           CH_4           CH_5           CH_6           ACC_1           ACC_2           LOG_IMP           BATT   | Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled   | Engine<br>Speed_1<br>Speed_2<br>Channel_4<br>Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Acc_1<br>Acc_2   | 10 Hz<br>10 Hz  | Engine revolution speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-54<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Theratocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer   | rpm<br>km/h .1<br>km/h .1<br>mm .1<br>V .1<br>V .1<br>V .1<br>v .1<br>°C<br>#<br>g .01<br>g .01  | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0<br>-3.00<br>-3.00   | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5<br>6<br>6<br>3.00<br>3.00          | 1.000<br>1666.0<br>1666.0 | 16000<br>1.0 |   |
| RPM<br>SPD_1<br>SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT<br>ECU_1  | Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled  | Engine<br>Speed_1<br>Speed_2<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Acc_1<br>Acc_2<br>Datalogger_Temp<br>Battery  | 10 Hz<br>10 Hz   | Engine revolution speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-54<br>Generic linear 0-54<br>Generic linear 0-5 V<br>Thereforcouple<br>Soliculate Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery  | rpm<br>km/h .1<br>km/h .1<br>v .1<br>v .1<br>v .1<br>v .1<br>g .01<br>g .01<br>g .01<br>eC<br>v .1   | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>-3.00<br>-3.00<br>0<br>0<br>5.0   | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5<br>6<br>3.00<br>3.00<br>3.00<br>50<br>50<br>15.0 | 1.000<br>1666.0<br>1666.0 | 16000<br>1.0 |   |
| RPM           SPD_1           SPD_2           CH_1           CH_2           CH_3           CH_4           CH_5           CH_6           ACC_1           ACC_2           LOG_TMP           BATT           ECU_1           ECU_2   | Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Disabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled  | Engine<br>Speed_1<br>Speed_2<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Acc_1<br>Acc_2<br>Datalogger_Temp<br>Battery<br>BoSCH_RPM   | 10 Hz<br>10 Hz  | Engine revolution speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-54<br>Generic linear 0-54<br>Generic linear 0-5 V<br>Thermocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor   | rpm<br>km/h .1<br>km/h .1<br>∀ .1<br>∀ .1<br>∀ .1<br>♥ .1<br>♥ .1<br>9 .01<br>9 .01<br>°C<br>¥<br>U .1<br>rpm  | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>-3.00<br>-3.00<br>0<br>5.0<br>0  | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>3.00<br>3.0            | 1.000<br>1666.0<br>1666.0 | 16000<br>1.0 |   |
| RPM<br>SPD_1<br>SPD_2<br>CH_1<br>CH_2<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT<br>ECU_1<br>ECU_1<br>ECU_2<br>ECU_4   | Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled                      | Engine<br>Speed_1<br>Speed_2<br>Channel_1<br>Channel_2<br>Channel_4<br>Channel_5<br>Channel_6<br>Acc_1<br>Acc_2<br>Datalogger_Temp<br>Battery<br>BOSCH_RPM<br>BOSCH_SPEED1<br>BOSCH_SPEED2<br>BOSCH_OIL_PRESS   | 10 Hz<br>10 Hz                   | Engine revolution speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-54<br>Generic linear 0-54<br>Generic linear 0-5 V<br>Therefoccupie<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Speed sensor<br>Speed sensor<br>Pressure sensor                                 | rpm<br>kn/h .1<br>kn/h .1<br>W .1<br>V .1<br>V .1<br>V .1<br>C #<br>g .01<br>g .01<br>°C<br>V .1<br>rpm<br>kn/h .1<br>kn/h .1<br>kn/h bar .1   | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>-3.00<br>0<br>-3.00<br>0<br>5.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0.  | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>3.00<br>3.0            | 1.000<br>1666.0<br>1666.0 | 16000<br>1.0 |   |
| RPM<br>SPD_1<br>SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_IMP<br>BATT<br>ECU_2<br>ECU_2<br>ECU_3<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>ECU_4<br>EC | Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled | Engine<br>Speed_1<br>Speed_2<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Acc_1<br>Acc_2<br>Datalogger_Temp<br>Battery<br>BOSCH_SPED1<br>BOSCH_SPEED1<br>BOSCH_SPEED1<br>BOSCH_SPEED2<br>BOSCH_FUEL_PRESS<br>BOSCH_FUEL_PRESS | 10 Hz<br>10 Hz | Engine revolution speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-54<br>Generic linear 0-54<br>Generic linear 0-5 V<br>Therrocouple<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Speed sensor<br>Pressure sensor<br>Pressure sensor | rpm<br>km/h .1<br>mm .1<br>V .1<br>V .1<br>V .1<br>V .1<br>v .1<br>g .01<br>g .01<br>oc<br>#<br>g .01<br>oc<br>V .1<br>http://www.non-<br>km/h .1<br>km/h .1<br>km/h .1<br>bar .1                            | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>-3.00<br>-3.00<br>0<br>5.0<br>0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0 | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>3.00<br>3.0     | 1.000<br>1666.0<br>1666.0 | 16000<br>1.0 |   |
| RPM<br>SPD_1<br>SPD_2<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>ACC_1<br>ACC_2<br>LOG_TMP<br>BATT<br>ECU_1<br>ECU_2<br>ECU_3  | Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Disabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled<br>Enabled                      | Engine<br>Speed_1<br>Speed_2<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_6<br>Acc_1<br>Acc_2<br>Datalogger_Temp<br>Battery<br>BOSCH_RPM<br>BOSCH_SPEED1<br>BOSCH_SPEED2<br>BOSCH_OIL_PRESS   | 10 Hz<br>10 Hz                   | Engine revolution speed<br>Speed<br>Distance potentiometer<br>Generic linear 0-54<br>Generic linear 0-54<br>Generic linear 0-5 V<br>Therefoccupie<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer<br>Cold joint<br>Battery<br>Engine speed sensor<br>Bosch speed sensor<br>Speed sensor<br>Speed sensor<br>Pressure sensor                                 | rpm<br>km/h .1<br>mm .1<br>∀ .1<br>∀ .1<br>∀ .1<br>∀ .1<br>♥ .1<br>9 .01<br>9 .01<br>9 .01<br>9 .01<br>°C<br>¥ .1<br>rpm<br>km/h .1<br>km/h .1<br>km/h .1<br>km/h .1<br>************************************ | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>-3.00<br>0<br>-3.00<br>0<br>5.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0<br>0.0<br>0.  | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>3.00<br>3.0            | 1.000<br>1666.0<br>1666.0 | 16000<br>1.0 |   |

- **Measure unit**: shows the selected unit of measure for each channel; it is possible to change it with a double click on the cell.
- **High/low scale**: shows high/low scale values of the sensor and allows to change them double clicking on the cell.



## 8.4 – Creating a custom sensor

The procedure to create a custom sensor is the same for all AIM loggers. Refer to chapter 12 or further information.

# 8.5 – How to configure DaVid displays

Video recording with data acquisition system **DaVid** can be connected with two kinds of display: **TG-Dash** and **MyChron3 Dash**. To configure them (optional to the logger) activate the related layer (circled here below):

| Select configuration Channels Disp | lay DaVid          |  |
|------------------------------------|--------------------|--|
| Available displays 🚺               | None 💌             |  |
|                                    | lone<br>12 Deck    |  |
|                                    | 13-Dash<br>'G-dash |  |
|                                    |                    |  |
|                                    |                    |  |

The first time the layer shows up empty. Activate the drop down menu and select the proper display. Refer to chapter 17 for further information.

# 8.6 - How to configure DaVid

Activate "DaVid" layer.

| 🖀 System manager                           |                                      |                  |                      |                 |                 |
|--|--------------------------------------|------------------|----------------------|-----------------|-----------------|
| Current configuration                      | Receive                              |                  |                      |                 |                 |
| Installation name                          | Data logger type                     | Ecu              | Vehicle name         | Available time  | Total frequency |
| DEFAULT                                    | DaVid Standalone                     | BOSCH - MS3      | DEFAULT              | 4.06.35 (h.m.s) | 281 (Hz)        |
| Select configuration Channels              | Display DaVid                        | on               | _                    |                 |                 |
| Background Car                             | rbon 🔽 TV Standa                     | ✓ Enlarge<br>ard |                      |                 |                 |
| Number Of Video Engine Speed Shift Light A | ccelerometer   Lap Time   Throttle B |                  | Il Sensors           |                 |                 |
| 6 9 10<br>7 ×1000<br>6 1<br>7 4 3 2        |                                      |                  | sure Unit            |                 |                 |
|  |                                      |                  | LAP: 000             | 8               |                 |
| 9 10<br>8 RPM<br>× 1000<br>7 4.            |                                      | 60 150<br>180    | 00:00.00<br>H_1000.0 |                 |                 |
| Charles Shill                              |                                      | km/h             | H_3 000.0            |                 |                 |



in the figure below video objects preview is highlighted.





### 8.6.1 – Video Configuration Manager box:



Press "Logos Setup" button and the window here below appears.

| Logos Setup |     | ٥                   |
|-------------|-----|---------------------|
|             | -9  | Add Logo            |
|             |     | 🗢 Delete Logo       |
|             |     | Set Logo Dimensions |
|             |     |                     |
|             | - [ | ✓ Close             |

- Using +/- buttons it is possible to resize the logos shown on the video.
- If there are logos shown on the video it is possible to remove them pressing "Delete Logo" button. If there are no logos "Delete Logo" button is disabled (like in the figure above) and pressing "Add Logo" button the window here below appears.



This window allows to both import and remove bitmap logos.

- Pressing "Import Logo Bitmap" button windows explorer opens and it will be possible to upload logo bitmaps.
- Pressing "Delete Bitmap Logo" button it is possible to delete bitmap logo.

The system allows to import up to 25 bitmaps and in case there are no available logos "Delete bitmap logo" button is disabled.

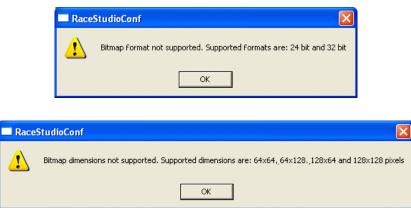
The logo user is working on is highlighted in yellow in video preview window.



The system supports the following logos:

- Format: bitmap 24 bit and bitmap 32 bit
- **Dimensions**: 64x64; 64x128; 128x128;128x64

In case format or dimensions of the Logo Bitmap to import are not supported, the system shows one of the following messages.



#### New Object / Delete object:

|  | Display David  |   |  |
|--|--|---|--|
| Video Cont. Manager  |  | sultation   |  |
|  |  | Diaw Gid 🖓 Video Objects On   |  |
| And in case of the local division in which the local division in which the local division is not the local division of the local division in the local div | Contraction of the local division of the loc | 5 💽 Erdage  |  |
| Background Cat   |  | /Standaid<br>FNTSCIUSA) ⊂ PAL   |  |
| Number DI Video  |  | Throtte linke   Al Sensors   Al Sensors   Al Sensors  |  |
| righter speed sherbyter Ac   | the second second  | and the second se |  |
|  | Channel  | Upper Bound Measure Unit  |  |
|  | Acc.1  | • 1 (a)   |  |
|  | Channel  | Upper Bound Measure Unit  |  |
|  | Acc_2  | · 1 (0)   |  |
|  |  |   |  |
|  |  |   |  |
|  |  |   |  |
| a 10   | 0  | LAP: 000<br>00:00.00  |  |
| 9 10<br>8 RPM  | 0  | 60 150 ICH 1000 O   |  |
| 9 10<br>8 RPM<br>× 1009  |  | LAP: 000<br>00:00.00<br>30 150<br>180 <b>EU 1000.0</b>  |  |
|  |  | 50 150 CH_1000.0  |  |
|  |  | 60 150<br>30 180<br>0 210<br>CH_1000.0<br>CH_2000.0   |  |
|  |  | 50 150 CH_1000.0  |  |

Video objects preview window can be modified adding or removing objects.

To **add** an object:

- press "New object";
- use the slider red circled in the figure above, to select that object layout;
- configure the parameters that appear beside the slider;
- a new video object appears in the bottom part of the window; it is possible to displace it using the mouse; pay attention not to over impose more video objects;
- each new object adds a layer to the central part of the layer. In the figure above is highlighted "Accelerometer" layer.

To **delete** an object select the layer corresponding to the object to delete and press "Delete object" layer.

To **modify** an object select its layer, use the slider to select its layout and modify the related fields.



### 8.6.2 – Video objects limits

The number of objects that can be visualized depends on the type of objects.

For all objects whose video refreshing frequency is 50Hz (typically RPM and speed, these with the pointer) the max. allowed number of objects is two.

Some objects – like the accelerometer, Lap Time box, etc. – are considered as one only object but are made up of more active parts. Accelerometer, for example, has two active parts that shows lateral and longitudinal acceleration.

Lap Time box – shown here below – is considered as one only object but is made up of six active parts.



- Lap Number (1)
- Lap Time (2)
- Split Number (3)
- Split Time (4)
- Best lap number (5)
- Best lap time (6)

The total number of objects and active parts that can be shown is 16.

This information is written in "Video Configuration Manager" box shown here below and is labelled as "Number of video obj." (red circled).



In case the maximum allowed number of objects is overcome, the related digit turns into red.

It is possible to create up to 22 video objects in the same configuration before the warning message shown here below appears.



It is anyway necessary that the number of object/active parts included in a configuration is not higher than 16. If higher, the system shows again this message and does not transmit the configuration.

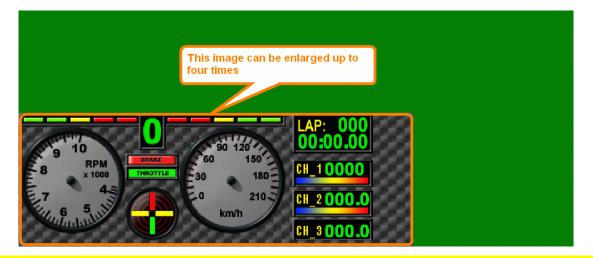
| 🗖 Race | StudioConf 💦 🔀        |
|--------|-----------------------|
| 1      | To many video objects |
|        | ок                    |

### 8.6.3 – Visualization box:

| <ul> <li>Visualization —</li> </ul> |                    |
|-------------------------------------|--------------------|
| 🔲 Draw Grid                         | 🔽 Video Objects On |
| 1.5 💌                               | Enlarge            |

This box modifies objects preview window shown here below.

- "Draw Grid": shows a grid in the preview window to help positioning the objects.
- "Video Objects On": enabled or disabled shows or hides the video objects preview.
- **"Zoom"**: sets the dimensions of the video objects preview. Available options are: from 1 (real dimensions) to 4.



Warning: these functionalities only influence the layout of the configuration shown by Race Studio 2 and not that of the real Video.



#### 8.6.4 – TV Standard box:

| TV Standard |       |  |
|-------------|-------|--|
| • NTSC(USA) | C PAL |  |

This box allows sets the video TV standard.

To know the TV standard of the camera connected to the Video system refer to that object user manual.

In general, anyway, NTSC television standard is mainly used in the USA while PAL television standard is mainly used in Europe.

#### 8.6.5 – Possible graphical visualization problems.

The PC monitor may show the grey scale non homogeneous (exactly like in the figure below).



A possible solution to this problem is working on the video board properties, "OpenGL" settings.

- Close Race Studio 2 and follow this path: "Start / Settings/ Control Panel / Display / Settings / Advanced".
- Video board properties panel appears. Its layout depends on the type of board.
- Open GL settings can be on a dedicated layer, in 3D layer of that panel on PC that do not have a specific "OpenGL" layer or on a layer labelled with the name of the video board pressing graphic settings button.
- It is necessary to increase 3D quality in "OpenGL" settings. This operation can sometimes solve the problem.

It is also suggested to check if video board driver is the last available from the manufacturer. If not, pls. update it.



### 8.6.6 – Sampling frequency

With reference to system manager window – Channel layer – it is reminded that from that window it is possible to set each channel sampling frequency.

As far as RPM and shown speed channels it is suggested to set them on 50 Hz because this is the refreshing frequency of the image on the video.

## 8.7 – Transmitting the configuration

The procedure to transmit the configuration to the logger is the same for all AIM loggers. Refer to chapter 13 for further information.

### 8.8 – Sensors calibration and auto-calibration

When the configuration has been transmitted it is necessary to perform calibration procedure, to say auto-calibrate accelerometer, gyroscope and distance potentiometer and calibrate the gear sensor, the mid zero potentiometer and the zero based potentiometer installed on the vehicle.

See chapter 14 for further information.

Warning: if potentiometers, gyroscope and accelerometers have not been correctly calibrated it is not possible to sample correct data, nor the engaged gear nor create the track map. It is recommended to pay particular attention to sensors calibration/auto-calibration procedures.

### 8.9 – Gear calculation

Refer to chapter 15 for further information.

### 8.10 – Online

Online function is very useful to check the logger proper working. Refer to chapter 18 for further information.



# **Chapter 9 – How to configure EVO3 Pro/Pista**

To correctly configure **EVO3 Pro/Pista** (from here onward **EVO3**), use a PC and **Race Studio 2** software. This logger can only be configured via software.

Before starting the configuration, install **Race Studio 2** and the USB driver as explained in chapter 2.

Run the software, clicking on **Race Studio 2** icon and the window here below appears.



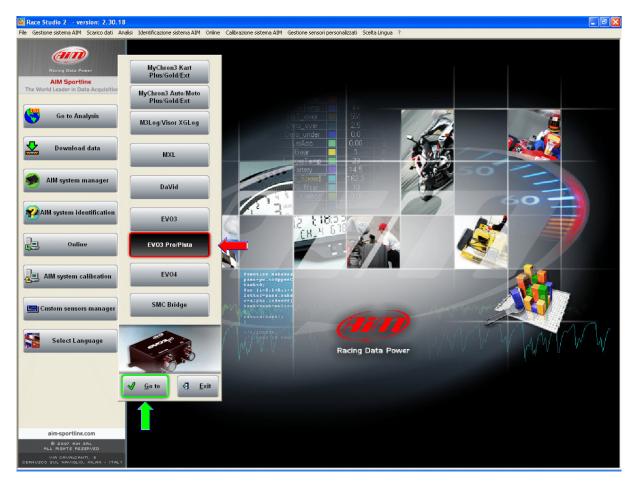
In the title bar – white on a blue background in the figure – you can see the **Race Studio 2** version installed on the PC.

Immediately under there is the menu bar, shown in a more intuitive way on the left thanks to the graphic buttons: Go to Analysis (this button runs Race Studio Analysis software), Data download, AIM system manager, AIM system identification, Online, AIM system calibration, Custom sensors management, Select language.

From this window it is possible to perform all needed operations to manage all AIM systems.



To enter configuration menu press "AIM system manager" button; a panel showing all systems managed through **Race Studio 2** software appears: double click on "**EVO3**" or select it and click on " $\checkmark$ Go to".



Race Studio 2 system manager window appears.



# 9.1 – System manager window



Using the keyboard and the layers, circled in the figure, it is possible to perform all operations necessary to manage an AIM system.

The top keyboard, shown here below, is made up of five buttons:



- **Transmit**: transmits a configuration to the logger and is active with any layer; it needs the logger to be switched on and connected to the PC.
- **Receive**: reads and saves the configuration of the logger and is active only in "Select Configuration" layer.
- CAN-Net Info: identifies the CAN network connected to the PC, that means the logger and its peripherals. Pressing it a waiting window appears and – when the connection has been established – "CAN-Net info" window, shown here below, appears. It shows all the CAN Network components. In the example below the CAN network includes an EVO3 Pro Master and four expansions: DaVid, LCU-ONE, GPS and MemoryKey.

| Z         CAN EXPANSION         David         47111881         18/01/2008         22.03         09/11/2007           3         CAN EXPANSION         LCU-ONE         LC         111111         13/12/2007         25.09         19/11/2007           4         CAN EXPANSION         GPS         902499         14/01/2008         35.13         17/12/2007 | V | Category of Logger | Type of Logger | Expansion Name | Logger ID | ID Date    | Firmware | Firmware Date |
|---|---|--------------------|----------------|----------------|-----------|------------|----------|---------------|
| 3         CAN EXPANSION         LCU-ONE         LC         111111         13/12/2007         25.09         19/11/2007           4         CAN EXPANSION         GP5         902499         14/01/2008         35.13         17/12/2007  | 1 | MASTER             | EVO3 PRO       | Master         | 12345     | 16/01/2008 | 28.07.11 | 21/12/2007    |
| 4 CAN EXPANSION GP5 902499 14/01/2008 35.13 17/12/2007  | 2 | CAN EXPANSION      | DaVid          |                | 47111881  | 18/01/2008 | 22.03    | 09/11/2007    |
|   | 3 | CAN EXPANSION      | LCU-ONE        | LC             | 111111    | 13/12/2007 | 25.09    | 19/11/2007    |
| 5         CAN EXPANSION         MEMORY KEY         7613105         17/12/2007         37.05         18/12/2007  | 4 | CAN EXPANSION      | GPS            |                | 902499    | 14/01/2008 | 35.13    | 17/12/2007    |
|   | 5 | CAN EXPANSION      | MEMORY KEY     |                | 7613105   | 17/12/2007 | 37.05    | 18/12/2007    |
|   |   |                    |                |                |           |            |          |               |



• Set acquisition system time: makes the logger time matching the PC one. Pressing it "Acquisition system time" window, below on the left, appears with PC clock on the left and EVO3 one on the right. Pressing the central button, PC and EVO3 will have the same time. This operation does not modify data sampled by the logger nor influence its peripherals. In case the window on the right appears it means that PC-logger connection is wrong. Check it and try again.

| PC Time<br>12/03/2008<br>10.59.56 | Set acquisition | Acquisition system time<br>08/12/2002<br>4.55.26 | PC Time<br>12/03/2008<br>11.00.25 | Set acquisition<br>system time | Acquisition system time<br>Impossible to read<br>time |
|-----------------------------------|-----------------|--|-----------------------------------|--------------------------------|---|
|                                   |                 | Cancel   |                                   |                                | <b>a</b> ncel   |

• SmartyCam functions settings: allows to set SmartyCam channels. Pressing it the related panel appears. With reference to the images here below, each function available options depends on the fact whether the all network is connected to the vehicle ECU or not. This means that if there is no ECU all functions not managed directly by SmartyCam are shown as "none available" and cannot be set while in case an ECU is available all function supported by that ECU are shown as "Not set" and can be set.

| FUNCTION        | CHANNEL                 |
|-----------------|-------------------------|
| ENGINE RPM      | none available          |
| REFERENCE SPEED | Speed_1                 |
| SEAR            | Calculated_Gear         |
| WATER TEMP      | none available          |
| HEAD TEMP       | none available          |
| EXHAUST TEMP    | none available          |
| DIL TEMP        | none available          |
| OIL PRESS       | none available          |
| BRAKE PRESS     | none available          |
| THROTTLE_POS    | none available          |
| BRAKE POS       | none available          |
| CLUTCH POS      | none available          |
| STEER POS       | none available          |
| .AMBDA          | none available          |
| ATERAL ACCEL    | none available          |
| ONG ACCEL       | none available          |
| FUEL LEVEL      | none available          |
| BATTERY         | NOT SET                 |
|                 |                         |
|                 | Disable Channel Filters |

| FUNCTION        | CHANNEL         |  |
|-----------------|-----------------|--|
| ENGINE RPM      | SRA_RPM         |  |
| REFERENCE SPEED | Speed_1         |  |
| GEAR            | Calculated_Gear |  |
| WATER TEMP      | NOT SET         |  |
| HEAD TEMP       | NOT SET         |  |
| EXHAUST TEMP    | NOT SET         |  |
| OIL TEMP        | NOT SET         |  |
| OIL PRESS       | NOT SET         |  |
| BRAKE PRESS     | NOT SET         |  |
| THROTTLE_POS    | NOT SET         |  |
| BRAKE POS       | NOT SET         |  |
| CLUTCH POS      | NOT SET         |  |
| STEER POS       | none available  |  |
| LAMBDA          | NOT SET         |  |
| LATERAL ACCEL   | none available  |  |
| LONG ACCEL      | none available  |  |
| FUEL LEVEL      | NOT SET         |  |
| BATTERY         | NOT SET         |  |
|                 |                 |  |

In case an ECU is available it is necessary to decide which channel to associate with each function. With reference to the images here below, for example, to set SmartyCam water temperature channel click on arrow right of the function and a drop down menu opens showing all available temperature channels. Select the one that will be shown on SmartyCam video and press OK. In case the channel is not shown enable "Disable channel filters" checkbox and all available channels will be shown no matter if they are temperature channels or not.



| FUNCTION        |   | CHANNEL              |        |
|-----------------|---|----------------------|--------|
| NGINE RPM       |   | SRA_RPM              |        |
| REFERENCE SPEED |   | Speed_1              |        |
| EAR             |   | Calculated Gear      |        |
| WATER TEMP      |   | NOT SET              | •      |
| TEAU TEMP       | _ | NOT SET              |        |
| EXHAUST TEMP    |   | SRA_WTEMP            |        |
| OIL TEMP        |   | SRA_OILT<br>SRA_AIRT |        |
| OIL PRESS       |   | SRA_TCK1             |        |
| BRAKE PRESS     |   | SRA_TFUEL            |        |
| THROTTLE_POS    |   | NOT SET              |        |
| BRAKE POS       |   | NOT SET              | •<br>• |
| CLUTCH POS      |   | NOT SET              | -      |
| STEER POS       |   | none available       |        |
| LAMBDA          |   | NOT SET              | -      |
| LATERAL ACCEL   |   | none available       |        |
| ONG ACCEL       |   | none available       |        |
| FUEL LEVEL      |   | NOT SET              | -      |
| BATTERY         |   | NOT SET              |        |

| FUNCTION        | CHANNEL         |                                 |
|-----------------|-----------------|---------------------------------|
| ENGINE RPM      | SRA_RPM         |                                 |
| REFERENCE SPEED | Speed_1         |                                 |
| GEAR            | Calculated_Gear |                                 |
| WATER TEMP      | NOT SET         | •                               |
| HEAD TEMP       | NOT SET         |                                 |
| EXHAUST TEMP    | NOT SET         | -                               |
| OIL TEMP        | NOT SET         | -                               |
| OIL PRESS       | NOT SET         | -                               |
| BRAKE PRESS     | NOT SET         | -                               |
| THROTTLE_POS    | NOT SET         | -                               |
| BRAKE POS       | NOT SET         | •<br>•<br>•<br>•<br>•<br>•<br>• |
| CLUTCH POS      | NOT SET         | -                               |
| STEER POS       | none available  |                                 |
| LAMBDA          | NOT SET         | -                               |
| LATERAL ACCEL   | none available  |                                 |
| LONG ACCEL      | none available  |                                 |
| FUEL LEVEL      | NOT SET         |                                 |
| BATTERY         | NOT SET         | •                               |

**Current Configuration Table**, immediately under the keyboard, shows the main information concerning the configuration user is working on.

| Current configuration |                  |             |              |                  |                 |                 |                  |                 |                 |
|-----------------------|------------------|-------------|--------------|------------------|-----------------|-----------------|------------------|-----------------|-----------------|
| Installation name     | Data logger type | Ecu         | Vehicle name | Available time   | Time with GPS   | Total frequency | Master frequency | Expansions freq | Tot. Expansions |
| DEFAULT               | EVO3 PRO         | None - None | DEFAULT      | 11.29.05 (h.m.s) | 6.24.31 (h.m.s) | 202 (Hz)        | 171 (Hz)         | 31 (Hz)         | 1               |
|                       |                  |             |              |                  |                 |                 |                  |                 |                 |

Again, under this table are five layers:

Scegli configurazione Canali Configurazione sistema Visore Configuratore espansioni via CAN

- Select configuration: allows the user to select the configuration to work on; it is always active.
- **Channels**: allows to set EVO3 channels. It is active only if there are configurations in "Select configuration" layer.
- **System configuration**: allows to set or modify EVO3 configuration. It is active only if there are configurations in "Select configuration" layer.
- **Display**: allows to set the configuration of EVO3 display. It is active only if there are configurations in "select configuration" layer. Refer to the related chapter for further information concerning AIM displays.
- CAN-expansions configurator: allows to configure the expansions connected to EVO3, DaVid Slave included. It is active only if there are configurations in "Select configuration" layer; if not, it doesn't even appear. Refer to chapter 16 for further information. Note: if the expansion is a DaVid Slave refer to paragraph 8.6 (David master) for further information.



### 9.1.1 – Select configuration layer

"Select configuration" layer – shown here below – is made of:

|                   |  |   |  |   | ator   |  |  |  |   |  |  |   |  |
|-------------------|--|---|--|---|--|--|--|--|---|--|--|---|--|
| New               | Delete   | 2   | Clone  |   | Import   |  | Ехро   | rt   |   |  |  |   |  |
| installation name | Logger   |   | ECU Manufacturer   |   | ECU Model  |  | Vehicle name   | Obs  | Split   | Speed  | Temp   | Created   | Tot  |
| EFAULT            | EVO3 PRO   | -   | MARELLI  | -   | DALLARA_F308   | •  | DEFAULT  | 8  | 1   | km/h 🔳   | °⊂   | May 04, 2009  | 0  |
| EFAULT            | EVO3 PRO   | -   | MARELLI  | -   | DALLARA_F308   | •  | DEFAULT  | 8  | 1   | km/h 💻   | °C 💽   | May 08, 2009  | 0  |
| EFAULT            | EVO3 PRO   | -   | DALLARA  | -   | VW_16_FSI  |  | DEFAULT  | 8  | 1   | km/h 🗾   | °C 💌   | May 11, 2009  | 0  |
| EFAULT            | EVO3 PRO   | -   | None   | -   | None   |  | DEFAULT  | 8  | 1   | km/h 💌   | °C 💌   | June 16, 2009   | 0  |
| EFAULT            | EVO3 PISTA   | -   | None   | •   | None   |  | DEFAULT  | 8  | 1   | km/h 💌   | °C 💌   | June 16, 2009   | 0  |
| DE<br>DE<br>DE    | U<br>Installation name<br>EFAULT<br>EFAULT<br>EFAULT<br>EFAULT | EFAULT         EV03 PRO           EFAULT         EV03 PRO | Logger           EFAULT         EVO3 PRO           EFAULT         EVO3 PRO | Astallation name Logger ECU Manufacturer<br>EFAULT EVO3 PRO ✓ MARELLI<br>EFAULT EVO3 PRO ✓ MARELLI<br>EFAULT EVO3 PRO ✓ DALLARA<br>EFAULT EVO3 PRO ✓ None | EFAULT         EVO3 PRO         X         MARELLI         Y           EFAULT         EVO3 PRO         X         MARELLI         Y           EFAULT         EVO3 PRO         X         MARELLI         Y           EFAULT         EVO3 PRO         X         DALLARA         Y           EFAULT         EVO3 PRO         X         None         Y | EFAULT         EVO3 PRO         MARELLI         MARELLI         DALLARA_F308         EFAULT           EFAULT         EVO3 PRO         MARELLI         DALLARA_F308         EFAULT         EVO3 PRO         MARELLI         DALLARA_F308         EFAULT         EVO3 PRO         MARELLI         MALLARA_F308         EFAULT         EVO3 PRO         MARELLI         MARELLI         MALLARA_F308         EFAULT         EVO3 PRO         MARELI         MARELI         MARELI         MARELIA         MARELIA< | EFAULT     EVO3 PRO     MARELLI     DALLARA_F308     I       EFAULT     EVO3 PRO     MARELLI     DALLARA_F308     I       EFAULT     EVO3 PRO     MARELLI     DALLARA_F308     I       EFAULT     EVO3 PRO     MARELLI     VW_16_F51       EFAULT     EVO3 PRO     None     None | EFAULT     EVO3 PRO     MARELLI     DALLARA_F308     DEFAULT       EFAULT     EVO3 PRO     ALLARA     VW_16_F51     DEFAULT       EFAULT     EVO3 PRO     None     None     DEFAULT | EFAULT     EVO3 PRO     MARELLI     DALLARA_F308     DEFAULT     8       EFAULT     EVO3 PRO     DALLARA     VW_16_F51     DEFAULT     8       EFAULT     EVO3 PRO     None     None     DEFAULT     8 | EFAULT     EVO3 PRO     MARELLI     DALLARA_F308     DEFAULT     8     1       EFAULT     EVO3 PRO     MARELLI     DALLARA_F308     DEFAULT     8     1       EFAULT     EVO3 PRO     MARELLI     DALLARA_F308     DEFAULT     8     1       EFAULT     EVO3 PRO     DALLARA_M     VW_16_F51     DEFAULT     8     1       EFAULT     EVO3 PRO     None     None     DEFAULT     8     1 | EFAULT         EVO3 PRO         MARELLI         DALLARA_F308         DEFAULT         8         1         km/h         X           EFAULT         EVO3 PRO         MARELLI         DALLARA_F308         DEFAULT         8         1         km/h         X           EFAULT         EVO3 PRO         MARELLI         DALLARA_F308         DEFAULT         8         1         km/h         X           EFAULT         EVO3 PRO         MARELLI         DALLARA_F308         DEFAULT         8         1         km/h         X           EFAULT         EVO3 PRO         MARELLI         DALLARA_F308         DEFAULT         8         1         km/h         X           EFAULT         EVO3 PRO         MARELLI         None         None         DEFAULT         8         1         km/h         X | EFAULT     EVO3 PRO     MARELLI     DALLARA_F308     DEFAULT     8     1     km/h     <     <       EFAULT     EV03 PRO     MARELLI     DALLARA_F308     DEFAULT     8     1     km/h     < | EFAULT         EVO3 PRO         MARELLI         DALLARA_F308         DEFAULT         8         1         km/h         °C         May 04, 2009           EFAULT         EVO3 PRO         MARELLI         DALLARA_F308         DEFAULT         8         1         km/h         °C         May 04, 2009           EFAULT         EVO3 PRO         MARELLI         DALLARA_F308         DEFAULT         8         1         km/h         °C         May 04, 2009           EFAULT         EVO3 PRO         MARELLI         VW_16_FSI         DEFAULT         8         1         km/h         °C         May 08, 2009           EFAULT         EVO3 PRO         DALLARA         VW_16_FSI         DEFAULT         8         1         km/h         °C         May 08, 2009           EFAULT         EVO3 PRO         DALLARA         VW_16_FSI         DEFAULT         8         1         km/h         °C         May 08, 2009 |

On top is the keyboard made up of five buttons.

- New: creates a new configuration;
- **Delete**: deletes a configuration;
- **Clone**: clones a configuration;
- **Import**: imports a configuration from a file;

**Export**: exports a configuration to a file.

**Central** is the available configurations database. To work on one of them click on any of its cell and the entire row is selected (highlighted in yellow).

In case of first configuration central table shows up empty.



# 9.2 – Creating a new configuration

| Data logger type         | EV03 PR0 |  |
|--------------------------|----------|--|
| ECU Manufacturer         | None     |  |
| ECU Model                | None     |  |
| New configuration name   | DEFAULT  |  |
| Vehicle name             | DEFAULT  |  |
| Speed measure unit       | km/h     |  |
| Temperature measure unit | °C       |  |
| Pressure measure unit    | bar      |  |
|                          |          |  |

Pressing "New" button in "Select Configuration" layer this window appears:

Some parameters need to be set:

- **Data logger type**: select the logger to be configured.
- ECU Manufacturer: select the Manufacturer of the ECU installed on the vehicle if supported or none.
- **ECU Model**: select the ECU model.
- New configuration name: fill in the new configuration name.
- Vehicle name: fill in the vehicle name.
- Speeds unit of measure: choose between km/h and mph.
- Temperatures unit of measure: choose between °C and °F.
- Pressures unit of measure: choose between Bar and PSI.

Press "OK" to save (or "Cancel" to quit without saving).

The system comes back to system manager window.



# 9.3 – Channels

## Activate "Channels" layer.

|   | ransmit          | Receive               |              | CAN-Ne          | info                           | s 🚳           | et acquisition sy<br>time               | stem          | Su Su        | artyCam Func<br>setting | tions      |
|---|------------------|-----------------------|--------------|-----------------|--------------------------------|---------------|---|---------------|--------------|-------------------------|------------|
| urrent configurati                              |                  |                       |              |                 |                                |               |   |               |              |                         |            |
| Installation name                               | Data logger type |                       | Vehicle name | Available time  | Time w                         |               | Total frequency                         | Master fre    | quency       | Expansions fre          |            |
| DEFAULT   | EVO3 PRO         | None - None           | DEFAULT      | 14.24.34 (h.m   | .s) 7.13.3                     | 7 (h.m.s)     | 161 (Hz)                                | 161 (Hz)      |              | 0 (Hz)                  | 0          |
| Select configural<br>Speed_1<br>Wheel circumfer | _                | tem configuration Dis |              | Speed_3         | cumference                     | (mm) 166      | Speed_4-                                | umference (   |              | 666                     |            |
| Pulses per whee                                 |                  | Pulses per whe        |              |                 | r wheel revolu                 |               | _                                       | wheel revolut |              |                         |            |
| Channel iden                                    | Enabled/disabled | Channel name          |              | Sampling frequ. | . Sensor typ                   | e             |   | Measure ur    | nit Lov      | v scale                 | High scale |
| RPM   | 🥅 Disabled       | Engine                |              | 10 Hz           | Engine revo                    | olution speed | l i i i i i i i i i i i i i i i i i i i | rpm           | 0            |                         | 20000      |
| SPD_1   | 🔽 Enabled        | Speed_1               |              | 10 Hz 🔄         | <ul> <li>Speed</li> </ul>      |               |   | 🚽 km/h .1     | 0.0          |                         | 250.0      |
| SPD_2   | Disabled         | Speed_2               |              | 10 Hz 👱         | <ul> <li>Speed</li> </ul>      |               |   | 🚽 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                        |               | <u>_</u>                                | 🚽 km/h .1     | 0.0          |                         | 250.0      |
| CH_1  | 🔽 Enabled        | Channel_1             |              | 10 Hz           | 📶 Generic line                 | ar 0-5 V      |   | • V .1        | <b></b> 0.0  |                         | 5.0        |
| CH_2  | 🔽 Enabled        | Channel_2             |              | 10 Hz 🔄         | 🚽 Generic line                 | ar 0-5 V      |   | • V .1        | <b></b> 0.0  |                         | 5.0        |
| CH_3  | 🔽 Enabled        | Channel_3             |              | 10 Hz 📄         | 📶 Generic line                 | ar 0-5 V      |   | • V .1        | <b></b> 0.0  |                         | 5.0        |
| CH_4  | 🔽 Enabled        | Channel_4             |              | 10 Hz 📄         | 📶 Generic line                 | ar 0-5 V      |   | • V .1        | <b></b> 0.0  |                         | 5.0        |
| CH_5  | 🔽 Enabled        | Channel_5             |              | 10 Hz           | 🚽 Generic line                 | ar 0-5 V      |   | • V .1        | <b>•</b> 0.0 |                         | 5.0        |
| СН_6  | 🔽 Enabled        | Channel_6             |              | 10 Hz           | 🚽 Generic line                 | ar 0-5 V      |   | • V .1        | <b>•</b> 0.0 |                         | 5.0        |
| CH_7  | 🔽 Enabled        | Channel_7             |              | 10 Hz           | 🚽 Generic line                 | ar 0-5 V      |   | • V .1        | <b>_</b> 0.0 |                         | 5.0        |
| СН_8  | 🔽 Enabled        | Channel_8             |              | 10 Hz           | 🚽 Generic line                 | ar 0-5 V      |   | • V .1        | <b>•</b> 0.0 |                         | 5.0        |
| СН_9  | 🔽 Enabled        | Channel_9             |              | 10 Hz           | 🚽 Generic line                 | ar 0-5 V      |   | • V .1        | <b>_</b> 0.0 |                         | 5.0        |
| CH_10   | 🔽 Enabled        | Channel_10            |              | 10 Hz           | 🚽 Generic line                 | ar 0-5 V      |   | V .1          | <b>_</b> 0.0 |                         | 5.0        |
| CH_11   | 🔽 Enabled        | Channel_11            |              | 10 Hz           | 🚽 Generic line                 | ar 0-5 V      |   | V .1          | <b>_</b> 0.0 |                         | 5.0        |
| CH_12   | 🔽 Enabled        | Channel_12            |              | 10 Hz           | 🚽 Gear poten                   | tiometer      |   | #             | 0            |                         | 5          |
| CALC_GEAR                                       | 🔽 Disabled       | Calculated_Gear       |              | 10 Hz           | - Calculated                   | Gear          |   | #             | 0            |                         | 9          |
| ACC_1   | 🔽 Enabled        | Acc_1                 |              | 10 Hz           | 🚽 Lateral acc                  | elerometer    |   | g .01         | -3.          | 00                      | 3.00       |
| ACC_2   | 🔽 Enabled        | Acc_2                 |              | 10 Hz           | 🚽 Longitudina                  | l accelerome  | ter 🔄                                   | g .01         | -3.          | 00                      | 3.00       |
|   | 🔽 Enabled        | Datalogger_Temp       |              | 10 Hz           | <ul> <li>Cold joint</li> </ul> |               |   | °C            | - 0          |                         | 50         |
| LOG_TMP   | IM Ellapien      | Datalogger_remp       |              | 10112           |                                |               |   | ~             |              |                         | 00         |

This layer allows to set all channels sampled by the logger and its layout depends on **EVO3** version.



### In case of an EVO3 Pista configuration this window appears.

| 1  |  | a_  |   |  |   | Set acquisition sys        |   | SmartyCam Fur   | nationa   |
|--|--|---|---|--|---|----------------------------|---|---|---|
|  | Transmit   | Receive   |   | CAN-Net i  | nfo 💿 S   | time                       |   | setting   | nctions   |
| urrent configura   | ation  |   |   |  |   |                            |   |   |   |
| Installation nam   | e Data logger type   | e Ecu   | Vehicle name  | Available time   | Time with GPS   | Total frequency            | Master frequer  | cy Expansions   | freq Tot. Expansions  |
| DEFAULT  | EVO3 PISTA   | None - None   | DEFAULT   | 8.48.56 (h.m.s)  | 3.58.06 (h.m.s)   | 131 (Hz)                   | 131 (Hz)  | 0 (Hz)  | 0   |
|  |  |   |   |  |   |                            |   |   |   |
| Select configur  | ation Channels Sw  | stem configuration   Displ  | lav Í CAN-Expansions  | configurator )   |   |                            |   |   |   |
|  |  |   |   |  |   |                            |   |   | 1   |
| Speed  |  |   |   |  |   |                            |   |   |   |
| Wheel circumf  | erence (mm) 166  | 6   |   |  |   |                            |   |   |   |
|  |  |   |   |  |   |                            |   |   |   |
| Pulses per wh  | eel revolution 1   |   |   |  |   |                            |   |   |   |
|  |  |   |   |  |   |                            |   |   |   |
|  |  |   |   |  |   |                            |   |   |   |
| Channel iden   | , Enabled/disabled   | Channel name  |   | Sampling frequ   | Sensor type   |                            | Measure unit  | Low scale   | High scale  |
| -  | Enabled/disabled   | Channel name<br>Engine  |   |  | Sensor type<br>Engine revolution spee   | d                          | Measure unit  | Low scale   | High scale  |
|  |  |   | 1   | 0 Hz   |   |                            |   |   |   |
| RPM  | 🔽 Enabled  | Engine  | 1<br>1  | 0 Hz •   | Engine revolution spee  |                            | rpm<br>km/h.1   | 0   | 20000   |
| RPM<br>SPD_1   | Enabled  | Engine<br>Speed   | 1   | 0 Hz 🔹   | Engine revolution speed<br>Speed  |                            | rpm<br>km/h .1<br>V .1  | <mark>0</mark><br>0.0   | 20000<br>250.0  |
| RPM<br>SPD_1<br>CH_1<br>CH_2   | Enabled<br>Enabled   | Engine<br>Speed<br>Channel_1  | 1<br>1<br>1<br>1  | 0 Hz   | Engine revolution speed<br>Speed<br>Generic linear 0-5 V  | •<br>•                     | rpm<br>  km/h .1<br>  V .1<br>  V .1  | <mark>8</mark><br>0.0<br>0.0  | 20000<br>250.0<br>5.0   |
| RPM<br>SPD_1<br>CH_1<br>CH_2   | Enabled       Enabled       Enabled       Enabled       Enabled       Enabled  | Engine<br>Speed<br>Channel_1<br>Channel_2   | 1<br>1<br>1<br>1<br>1<br>1  | 0 Hz<br>0 Hz<br>0 Hz<br>0 Hz<br>0 Hz<br>0 Hz<br>10 Hz     | Engine revolution speed<br>Speed<br>Generic linear 0-5 V<br>Generic linear 0-5 V  | ×<br>×<br>×                | rpm<br>  km/h .1<br>  V .1 •<br>  V .1 •<br>  V .1 •  | 0<br>0.0<br>0.0<br>0.0  | 20000<br>250.0<br>5.0<br>5.0  |
| RPM<br>SPD_1<br>CH_1<br>CH_2<br>CH_3   | Enabled       Enabled       Enabled       Enabled       Enabled       Enabled       Enabled  | Engine<br>Speed<br>Channel_1<br>Channel_2<br>Channel_3  | 1<br>1<br>1<br>1<br>1<br>1<br>1<br>1  | 0 Hz<br>0 Hz<br>0 Hz<br>0 Hz<br>0 Hz<br>0 Hz<br>0 Hz<br>10 Hz<br>1 | Engine revolution spee<br>Speed<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V   | ×<br>×<br>×                | rpm<br>km/h .1<br>V .1<br>V .1<br>V .1<br>V .1<br>V .1<br>V .1  | 0<br>0.0<br>0.0<br>0.0<br>0.0   | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0                                    |
| RPM<br>SPD_1<br>CH_1<br>CH_2<br>CH_3<br>CH_4   | Image: Enabled   | Engine<br>Speed<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4   | 1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1 | 0 Hz ▼<br>0 Hz ▼<br>0 Hz ▼<br>0 Hz ▼<br>0 Hz ▼<br>0 Hz ▼<br>0 Hz ▼   | Engine revolution spee<br>Speed<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V   | ×                          | rpm<br>km/h .1<br>V .1 V<br>V .1 V<br>V .1 V<br>V .1 V<br>V .1 V  | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0  | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0                      |
| RPM<br>SPD_1<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5   | Enabled  | Engine<br>Speed<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_5  | 1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1 | 0 Hz ▼<br>0 Hz ▼   | Engine revolution spee<br>Speed<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V   | ×                          | rpm           km/h         .1           V         .1  | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0                                  | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0               |
| RPM<br>SPD_1<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6                                       | Image: Second  | Engine<br>Speed<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_5<br>Channel_6   | ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן | 0 Hz     *  | Engine revolution spee<br>Speed<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V   | ×                          | rpm           km/h         .1           V         .1  | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0                           | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0 |
| RPM<br>SPD_1<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>CH_6<br>CH_7                       | Image: Second state         Image: Second state           Image: Second state         Image: Second state <td>Engine<br/>Speed<br/>Channel_1<br/>Channel_2<br/>Channel_3<br/>Channel_4<br/>Channel_5<br/>Channel_6<br/>Channel_7</td> <td>ן<br/>ן<br/>ן<br/>ן<br/>ן<br/>ן<br/>ן<br/>ן<br/>ן<br/>ן<br/>ן<br/>ן<br/>ן<br/>ן<br/>ן<br/>ן<br/>ן<br/>ן<br/>ן</td> <td>0 Hz         ×           0 Hz         ×</td> <td>Engine revolution spee<br/>Speed<br/>Generic linear 0-5 V<br/>Generic linear 0-5 V</td> <td>×</td> <td>rpm           km/h         1           V         1           V         1           V         1           V         1           V         1           V         1           V         1           V         1           V         1           V         1           V         1</td> <td>0<br/>0.0<br/>0.0<br/>0.0<br/>0.0<br/>0.0<br/>0.0<br/>0.0<br/>0.0</td> <td>20000<br/>250.0<br/>5.0<br/>5.0<br/>5.0<br/>5.0<br/>5.0<br/>5.0<br/>5.0<br/>5.0</td> | Engine<br>Speed<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Channel_7  | ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן<br>ן | 0 Hz         ×  | Engine revolution spee<br>Speed<br>Generic linear 0-5 V<br>Generic linear 0-5 V   | ×                          | rpm           km/h         1           V         1           V         1           V         1           V         1           V         1           V         1           V         1           V         1           V         1           V         1           V         1  | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0                           | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0        |
| RPM<br>SPD_1<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>CH_6<br>CH_7<br>CH_8<br>CALC_GEAR  | ✓         Enabled  | Engine<br>Speed<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Channel_7<br>Channel_8                             | 1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1 | 0 Hz         ×  | Engine revolution spee<br>Speed<br>Generic linear 0-5 V<br>Generic linear 0-5 V   | v<br>v<br>v<br>v<br>v      | rpm           km/h .1           V .1         v           V         V | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0               | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0 |
| RPM<br>SPD_1<br>CH_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>CH_7<br>CH_8<br>CALC_GEAR<br>ACC_1 | Image: Second state       Image: Secon   | Engine<br>Speed<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Channel_7<br>Channel_8<br>Channel_8<br>Channel_8   | ۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱ | 0 Hz         ×   | Engine revolution spee<br>Speed<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Gear potentiometer<br>Calculated Gear                          | ×<br>×<br>×<br>×<br>×<br>× | rpm           km/h .1           V .1         v           Ø .01         V   | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0               | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0 |
| RPM<br>SPD_1<br>CH_2<br>CH_3<br>CH_4<br>CH_5<br>CH_6<br>CH_7<br>CH_8<br>CALC_GEAR                  | Image: Second state       Image: Secon   | Engine<br>Speed<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_5<br>Channel_6<br>Channel_7<br>Channel_8<br>Calculated_Gear<br>Acc_1 | ۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱<br>۱ | 0 Hz         ×   | Engine revolution spee<br>Speed<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Gear potentiometer<br>Calculated Gear<br>Lateral accelerometer | ×<br>×<br>×<br>×<br>×<br>× | rpm           km/h .1           V .1         v           V         V | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0<br>-3.00<br>-3.00 | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0 |

#### In case of an EVO3 Pro configuration this window appears.

| System man         | ager              |                         |                                       |                 |                        |                             |                 |                   |                         |
|--------------------|-------------------|-------------------------|---------------------------------------|-----------------|------------------------|-----------------------------|-----------------|-------------------|-------------------------|
| ja T               | ransmit           | Receive                 |                                       | CAN-Net inf     | • 🚺 🚳 S                | et acquisition syst<br>time | tem 🕥           | SmartyCam<br>sett |                         |
| urrent configurati | on                |                         |                                       | ostila (h. k    |                        | DNA LL. R. LARK             |                 |                   |                         |
| Installation name  | Data logger type  | Ecu                     | Vehicle name Av                       | ailable time    | Time with GPS          | Total frequency             | Master frequ    | ency Expansi      | ons freq Tot. Expansion |
| DEFAULT            | EVO3 PRO          | None - None             | DEFAULT 12                            | 2.49.02 (h.m.s) | 6.48.11 (h.m.s)        | 181 (Hz)                    | 181 (Hz)        | 0 (Hz)            | 0                       |
|                    |                   |                         |                                       |                 |                        |                             |                 |                   |                         |
| Select configura   | tion Channels Sys | tem configuration Displ | ay CAN-Expansions con                 | figurator       |                        |                             |                 |                   |                         |
| Speed_1            |                   |                         |                                       | Speed_3         |                        |                             |                 |                   |                         |
|                    |                   |                         | · · · · · · · · · · · · · · · · · · · | 121 7 1         |                        |                             |                 |                   |                         |
| Wheel circumfe     | rence (mm) 166    | 6 Wheel circumfer       | ence (mm) 1666                        | Wheel circum    | erence (mm) 166        | 6 Wheel circun              | nference (mn    | 1) 1666           |                         |
| Pulses per whe     | el revolution     | Pulses per whee         | revolution 1                          | Pulses per wh   | eel revolution         | Pulses per w                | heel revolution | 1                 |                         |
|                    | . 1               |                         | 1                                     |                 | 1                      |                             |                 | 1                 |                         |
| Channel iden       | Enabled/disabled  | Channel name            | Sam                                   | pling frequ S   | ensor type             |                             | Measure unit    | Low scale         | High scale              |
| RPM                | Enabled           | Engine                  | 10 H                                  |                 | ngine revolution speed |                             | rpm             | 0                 | 20000                   |
| SPD_1              | 🔽 Enabled         | Speed_1                 | 10 H                                  | z 🗾 S           | peed                   | •                           | km/h .1         | 0.0               | 250.0                   |
| SPD_2              | Disabled          | Speed_2                 | 10 H                                  | z 🗾 S           | peed                   | •                           | km/h .1         | 0.0               | 250.0                   |
| SPD_3              | 🔽 Enabled         | Speed_3                 | 10 H                                  | z 🗾 5           | peed                   | •                           | km/h .1         | 0.0               | 250.0                   |
| SPD_4              | Disabled          | Speed_4                 | 10 H                                  | z 🗾 5           | peed                   | •                           | km/h .1         | 0.0               | 250.0                   |
| CH_1               | 🔽 Enabled         | Channel_1               | 10 H                                  | z 🗾 D           | istance potentiometer  | •                           | mm .1           | • 0.0             | 5.0                     |
| CH_2               | 🔽 Enabled         | Channel_2               | 10 H                                  | z 💌 G           | eneric linear 0-5 V    | •                           | V.1             | • 0.0             | 5.0                     |
| СН_З               | Finabled          | Channel_3               | 10 H                                  | z 🗾 G           | eneric linear 0-5 V    | -                           | V.1             | • 0.0             | 5.0                     |
| CH_4               | 🔽 Enabled         | Channel_4               | 10 H                                  | z 🗾 G           | eneric linear 0-5 V    | •                           | V.1             | • 0.0             | 5.0                     |
| CH_5               | 🔽 Enabled         | Channel_5               | 10 H                                  | z 🗾 🤅           | ieneric linear 0-5 V   | -                           | V.1             | • 0.0             | 5.0                     |
| CH_6               | 🔽 Enabled         | Channel_6               | 10 H                                  | z 🗾 🤅           | ieneric linear 0-5 V   | -                           | ۷.1             | • 0.0             | 5.0                     |
| CH_7               | 🔽 Enabled         | Channel_7               | 10 H                                  | z 🗾 🤅           | ieneric linear 0-5 V   | *                           | V.1             | • 0.0             | 5.0                     |
| CH_8               | 🔽 Enabled         | Channel_8               | 10 H                                  | z 🗾 🤅           | ieneric linear 0-5 V   | •                           |                 | • 0.0             | 5.0                     |
| СН_9               | Enabled           | Channel_9               | 10 H                                  |                 | eneric linear 0-5 V    |                             |                 | • 0.0             | 5.0                     |
| CH_10              | Enabled           | Channel_10              | 10 H                                  |                 | eneric linear 0-5 V    |                             |                 | • 0.0             | 5.0                     |
| CH_11              | Enabled           | Channel_11              | 10 H                                  |                 | eneric linear 0-5 V    | •                           | ۷.1             | • 0.0             | 5.0                     |
| CH_12              | 🔽 Enabled         | Channel_12              | 10 H                                  |                 | ear potentiometer      |                             | #               | 0                 | 5                       |
| CALC_GEAR          | Disabled          | Calculated_Gear         | 10 H                                  |                 | alculated Gear         |                             | #               | 0                 | 9                       |
| ACC_1              | Enabled           | Acc_1                   | 10 H                                  |                 | ateral accelerometer   |                             | g .01           | -3.00             | 3.00                    |
| ACC_2              | Enabled           | Acc_2                   | 10 H                                  |                 | ongitudinal accelerome | ter 🗾                       | g .01           | -3.00             | 3.00                    |
| LOG_TMP            | 🔽 Enabled         | Datalogger_Temp         | 10 H                                  |                 | old joint              |                             |                 | • 0               | 50                      |
| BATT               | Enabled           | Battery                 | 1 Hz                                  | * B             | attery                 |                             | V .1            | 5.0               | 15.0                    |



### 9.3.1 – Speed panels

On top of Channels layer can be from one to four panels (depending on **EVO3** version) labelled "Speed". It is possible to enable/disable them through the channel table below. To enable a Speed channel just enable the checkbox in the corresponding row of channel table. The figure below shows two Speed channels enabled and two of them disabled: so are the related panels.

| Speed_1  |   | Speed_2                     |                         | -Speed_3                           |  |            |                           |                 |
|--|---|-----------------------------|-------------------------|------------------------------------|--|------------|---------------------------|-----------------|
| Wheel circur   | mference (mm) 1666  | Wheel circumference (mm)    | ) 1666                  | Wheel circum                       | ference (mm) 1666  | Wheel circ | sumference (r             | nm) 1666        |
| Pulses per w   | heel revolution   | Pulses per wheel revolution | 1                       | Pulses per wł                      | eel revolution   | Pulses pe  | r wheel revoluti          | on 1            |
|  |   |                             |                         |                                    |  |            |                           |                 |
| Channel ida  | Enabled/disabled C  | hannel name                 | Sampli                  | ig frequ Se                        | nsor type  | _          | Measure unit              | Low scale       |
|  |   | ihannel name<br>Ingine      | Samplin<br>10 Hz        |                                    | nsor type<br>ping revolution speed                                   |            | Measure unit<br>rpm       | Low scale       |
| RPM  | Enabled E   |                             |                         |                                    | ine revolution speed   |            |                           | Low scale       |
| RPM<br>SPD_1   | <mark>⊠ Enabled E</mark><br>I⊽ Enabled S  | Daiae                       | 10 Hz                   | En En                              | pine revolution speed<br>eed   |            | rpm                       | 0               |
| RPM<br>SPD_1<br>SPD_2  | Enabled     Enabled     S     For the second | noise<br>peed_1             | 10 Hz<br>10 Hz          | ד <mark>בווי בוויי בוויי</mark> בח | <mark>pine revolution speed seed seed seed seed seed seed see</mark> |            | rpm<br>km/h .1            | 0               |
| Channel ide,<br>RPM<br>SPD_1<br>SPD_2<br>SPD_2<br>SPD_3<br>SPD_4 | Image: Problem     Enabled     Enabled       Image: Problem     Image: Problem     Image: Problem       Image: Problem     Image: Problem     Image: Problem  | hoine<br>peed_1<br>peed_2   | 10 Hz<br>10 Hz<br>10 Hz | ⊻ En<br>✓ Sp<br>✓ Sp<br>✓ Sp       | <mark>pine revolution speed seed seed seed seed seed seed see</mark> |            | rpm<br>km/h .1<br>km/h .1 | 0<br>0.0<br>0.0 |

When a panel is enabled it is necessary to set its parameters.

| Speed_1                       |
|-------------------------------|
| Wheel circumference (mm) 1666 |
| Pulses per wheel revolution 1 |

Fill in:

- wheel circumference of the vehicle;
- number of pulses for wheel revolution (that corresponds to the number of magnets installed on the wheel).



# 9.3.2 – Channel Table

| urrent configura                                    | ation           |   | <u></u>              |                 |  |                                  |                 |             |                         |
|---|-----------------|---|----------------------|-----------------|--|----------------------------------|-----------------|-------------|-------------------------|
| Installation name Data logger type Ecu Vehicle name |                 |   | ne Available         | time            | Time with GPS Total freq                   | me with GPS Total frequency Mast |                 | cy Expansio | ns freq Tot. Expansions |
| DEFAULT   | EV03 PRO        | None - None DEFAULT                     | 12.49.02             | (h.m.s)         | 6.48.11 (h.m.s) 181 (Hz)                   |                                  | 181 (Hz)        | 0 (Hz)      | 0                       |
| Select configur                                     | ation Channels  | System configuration   Display   CAN-Ex | pansions configurate | or              |  |                                  |                 |             |                         |
| Speed_1   |                 |   | Spee                 | ed_3            | т 5р                                       | eed_4                            |                 | -           |                         |
| Wheel circumf                                       | erence (mm)     | 1666 Wheel circumference (mm)           | 1666 Whe             | -<br>al circumf |  |                                  | ference (mm)    | 1666        |                         |
| wheel circuini                                      | erence (mm)     | wheer uncum erence (mm)                 |                      |                 |  |                                  |                 |             |                         |
| Pulses per wh                                       | eel revolution  | Pulses per wheel revolution             | 1 Pulse              | es per wh       | eel revolution 1 Pul                       | ses per w                        | neel revolution | 1           |                         |
|   |                 | J L                                     |                      |                 |  |                                  |                 | I           |                         |
|   | Enabled/disable |   | Sampling fr          |                 |  |                                  | Measure unit    | Low scale   | High scale              |
| RPM   | Enabled         | Engine                                  | 10 Hz                |                 | ngine revolution speed                     |                                  | rpm             | 0           | 20000                   |
| SPD_1   | Enabled         | Speed_1                                 | 10 Hz                | 🗾 Sp            |  |                                  | km/h .1         | 0.0         | 250.0                   |
| SPD_2   | Disabled        | Speed_2                                 | 10 Hz                | • Sp            |  |                                  | km/h .1         | 0.0         | 250.0                   |
| SPD_3   | Enabled         | Speed_3                                 | 10 Hz                | Sp Sp           |  |                                  | km/h .1         | 0.0         | 250.0                   |
| SPD_4   | Disabled        | Speed_4                                 | 10 Hz                | <u> </u>        |  |                                  |                 | 0.0         | 250.0                   |
| CH_1  | Enabled         | Channel_1<br>Channel 2                  | 10 Hz                |                 | stance potentiometer                       |                                  |                 | 0.0         | 5.0                     |
| CH_2  | P.0.0           | -                                       | 10 Hz                |                 | eneric linear 0-5 V                        |                                  |                 | 0.0         |                         |
| CH_3  | Enabled         | Channel_3                               | 10 Hz                |                 | eneric linear 0-5 V<br>eneric linear 0-5 V |                                  |                 | 0.0         | 5.0                     |
| CH_4<br>CH_5  | Enabled         | Channel_4<br>Channel_5                  | 10 Hz<br>10 Hz       | - 6444          | eneric linear 0-5 V<br>eneric linear 0-5 V |                                  |                 | 0.0<br>0.0  | 5.0                     |
| CH_6  | Enabled         | Channel_6                               | 10 Hz                |                 | eneric linear 0-5 V                        |                                  |                 | 0.0         | 5.0                     |
| CH_7  | Enabled         | Channel_7                               | 10 Hz                |                 | eneric linear 0-5 V                        |                                  |                 | 0.0         | 5.0                     |
| сн_8  | Enabled         | Channel_8                               | 10 Hz                |                 | eneric linear 0-5 V                        |                                  |                 | 0.0         | 5.0                     |
| CH_9  | Enabled         | Channel 9                               | 10 Hz                |                 | eneric linear 0-5 V                        |                                  |                 | 0.0         | 5.0                     |
| CH_10   | Enabled         | Channel_10                              | 10 Hz                |                 | eneric linear 0-5 V                        |                                  |                 | 0.0         | 5.0                     |
| CH_11   | Enabled         | Channel 11                              | 10 Hz                |                 | eneric linear 0-5 V                        |                                  |                 | 0.0         | 5.0                     |
| CH_12   | Enabled         | Channel 12                              | 10 Hz                |                 | ear potentiometer                          |                                  | #               | 0.0         | 5                       |
| CALC_GEAR   | Disabled        | Calculated_Gear                         | 10 Hz                |                 | alculated Gear                             |                                  | #               | 0           | 9                       |
| ACC_1   | Enabled         | Acc 1                                   | 10 Hz                |                 | iteral accelerometer                       | -                                |                 | -3.00       | 3.00                    |
| ACC_2   | Enabled         | Acc_2                                   | 10 Hz                | and             | ngitudinal accelerometer                   |                                  | g .01           | -3.00       | 3.00                    |
| LOG_TMP   | Enabled         | Datalogger_Temp                         | 10 Hz                |                 | old joint                                  |                                  | °C 💌            |             | 50                      |
|   | Enabled         | Battery                                 | 1 Hz                 |                 | ,  |                                  | V .1            | 5.0         | 15.0                    |

It shows all logger channels with the related characteristics

- **Channel identifier**: shows the channel label. Channels labelled "ECU\_X" are the ones received from the ECU.
- Enabled/disabled: shows channel status (enabled or disabled). The status can be modified double clicking on the cell except for RPM, Speed and CH\_12; RPM and CH\_12 needs to be set through "System Configuration" panel, while Speed one is to be set as explained before.
- Channel name: names the channel.
- **Sampling frequency**: sets each channel sampling frequency. This last one influences the total available time, highlighted by a box in the figure below, because the memory fills up faster.
- **Sensor type**: shows the type of sensor installed on that channel; it is selected through the drop down menu that appears clicking on the cell. See the following page for further information.
- **Measure unit**: shows the unit of measure selected for each channel; to change it double click on the cell.
- Low/High scale: shows high/low scale values of the sensor and allows to change it double clicking on the cell.



|                    | Temperatures | Pressures | Potentiometers | Lambda<br>Probe | Gyroscope | Accelerometer |
|--------------------|--------------|-----------|----------------|-----------------|-----------|---------------|
| EVO3 Pi            | sta          |           |                |                 |           |               |
| Ch_1               | Х            | Х         | Х              | Х               |           |               |
| Ch_2               | X            | Х         | x              | Х               |           |               |
| Ch_3               | X            | X         | x              | Х               |           |               |
| Ch_4               | x            | X         | X              | X               | X         | X             |
| Ch_5               | X            | X         | X              | Х               | X         | X             |
| Ch_6               | X            | X         | X              | Х               | X         | X             |
| Ch_7               | X            | Х         | Х              | Х               | Х         | Х             |
| Ch_8 <sup>6</sup>  | X            | Х         | Х              | Х               | Х         | Х             |
| EVO3 P             | ro           |           |                |                 |           |               |
| Ch_1               | X            | Х         | Х              | Х               |           |               |
| Ch_2               | X            | X         | X              | X               |           |               |
| Ch_3               | X            | X         | X              | Х               |           |               |
| Ch_4               | X            | Х         | X              | Х               |           |               |
| Ch_5               | X            | X         | X              | X               |           |               |
| Ch_6               | X            | Х         | X              | Х               |           |               |
| Ch_7               | X            | X         | Х              | X               |           |               |
| Ch_8               | X            | Х         | X              | Х               | Х         | Х             |
| Ch_9               | X            | Х         | X              | Х               | Х         | X             |
| Ch_10              | X            | Х         | X              | Х               | X         | X             |
| Ch_11              | X            | X         | X              | Х               | X         | Х             |
| Ch_12 <sup>6</sup> | X            | X         | Х              | X               | X         | X             |

<sup>&</sup>lt;sup>6</sup> Channels CH\_8 (**EVO3 Pista**) and CH\_12 (**EVO3 Pro**) are gear channels and if system configuration layer (paragraph 9.5) sets them on "Potentiometer CH\_8" (**EVO3 Pista**), "Potentiometer CH\_12" (**EVO3 Pro**) or on "Calculated + Neutral Signal" channel CH\_8 or CH\_12 sets on calculated gear and it is only possible to set Channel name, Sampling frequency and High/Low scale. If not they work as shown in the table above but need to be enabled.



Setting some sensors on some channels that support them, a configuration panel appears bottom left of Channels layer. The figure here below shows distance potentiometer configuration panel.

| urrent configurat | ion              |                            |                     |                |                           |              |                   |            |                 |     |
|-------------------|------------------|----------------------------|---------------------|----------------|---------------------------|--------------|-------------------|------------|-----------------|-----|
|                   |                  | Vehicle name               | Available time      | Time with GPS  | Total frequency           | Master free  |                   |            | Tot. Expansions |     |
| EFAULT            | EVO3 PRO         | None - None                | DEFAULT             | 12.49.02 (h.m. | s) 6.48.11 (h.m.s)        | 181 (Hz)     | 181 (Hz)          | 0(         | (Hz) 0          |     |
| Select configura  | tion Channels Sv | stem configuration   Displ | av I CAN-Expansions | configurator ) |                           |              |                   |            |                 |     |
| Speed_1           |                  |                            |                     |                |                           | General A    |                   |            |                 |     |
| . –               |                  |                            |                     | _    ` -       |                           | Speed_4 -    |                   |            | _               |     |
| Wheel circumfe    | rence (mm) 166   | 56 Wheel circumfer         | ence (mm) 1666      | Wheel circ     | umference (mm) 166        | 6 Wheel circ | umference (m      | nm)   1666 |                 |     |
| Pulses per whe    | el revolution 1  | Pulses per whee            | revolution 1        | - Pulses per   | wheel revolution 1        | Pulses per   | wheel revolutio   | n 1        |                 |     |
|                   | ,                |                            | ,                   |                | ,,                        |              |                   | ,          |                 |     |
| Channel ide       | Enabled/disabled | Channel name               | Sa                  | mpling frequ   | Sensor type               |              | Measure unit      | Low scale  | High scale      | e [ |
| RPM               | 🔽 Enabled        | Engine                     | 10                  | Hz 🗾           | Engine revolution speed   |              | rpm               | 0          | 20000           |     |
| SPD_1             | 🔽 Enabled        | Speed_1                    | 10                  | Hz 🗾           | Speed                     | <b>•</b>     | km/h .1           | 0.0        | 250.0           |     |
| SPD_2             | Disabled         | Speed_2                    | 10                  | Hz 🗾           | Speed                     | -            | km/h .1           | 0.0        | 250.0           |     |
| SPD_3             | 🔽 Enabled        | Speed_3                    | 10                  |                | 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 👱           | Distance potentiometer    |              |                   | 0.0        | 5.0             |     |
| CH_2              | Enabled          | Channel_2                  | 10                  | Hz 🗾           | Generic linear 0-5 V      | <b>_</b>     | V.1 🔄             | 0.0        | 5.0             |     |
| CH_3              | Enabled          | Channel_3                  | 10                  |                | Generic linear 0-5 V      | -            | ۲.1               | 0.0        | 5.0             |     |
| CH_4              | Enabled          | Channel_4                  | 10                  | Hz 🗾           | Generic linear 0-5 V      | -            | ۲.1               | 0.0        | 5.0             |     |
| CH_5              | Enabled          | Channel_5                  | 10                  |                | Generic linear 0-5 V      |              |                   | 0.0        | 5.0             |     |
| CH_6              | Enabled          | Channel_6                  |                     |                | Generic linear 0-5 V      |              |                   | 0.0        | 5.0             |     |
| CH_7              | Enabled          | Channel_7                  | 10                  |                | Generic linear 0-5 V      |              |                   | 0.0        | 5.0             |     |
| CH_8              | Enabled          | Channel_8                  |                     |                | Generic linear 0-5 V      |              |                   | 0.0        | 5.0             |     |
| CH_9              | Enabled          | Channel_9                  |                     |                | Generic linear 0-5 V      |              |                   | 0.0        | 5.0             |     |
| CH_10             | Enabled          | Channel_10                 |                     |                | Generic linear 0-5 V      |              |                   | 0.0        | 5.0             |     |
| CH_11             | Enabled          | Channel_11                 |                     |                | Generic linear 0-5 V      | -            |                   | 0.0        | 5.0             |     |
| CH_12             | M Enabled        | Channel_12                 |                     |                | Gear potentiometer        |              | #                 | 0          | 5               |     |
| CALC_GEAR         | Disabled         | Calculated_Gear            | /                   |                | Calculated Gear           |              | #                 | 0          | 9               |     |
| ACC_1             | Enabled          | Acc_1                      |                     |                | Lateral accelerometer     |              | g .01             | -3.00      | 3.00            |     |
|                   | Enabled          | Acc_2                      |                     |                | Longitudinal acceleromete | r 🔽          | g .01             | -3.00      | 3.00            |     |
| ACC_2<br>LOG TMP  | 🔽 Enabled        | Datalogger_Temp            | 10                  |                | Cold joint<br>Batterv     |              | °⊂ <u></u><br>∀.1 | 0<br>5.0   | 50              |     |



## 9.4 – Creating a custom sensor

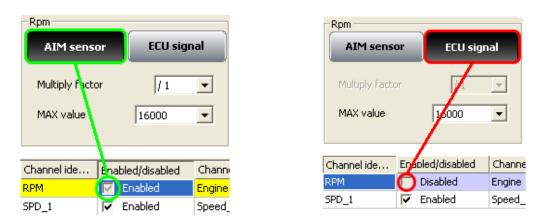
The procedure to create a custom sensor is the same for all AIM loggers. Refer to the related chapter for further information.

# 9.5 – System configuration

Activate "System Configuration" layer:

| Rpm                                   |  | Gear sensor                                      |  |   |
|---------------------------------------|--|--|--|---|
| AIM sensor                            | ECU signal   | None   | Calculated                                 | Calculated gears are  |
| Multiply factor                       | /1 -   | Potentiometer<br>Channel 12                      | Calculated with neutral signal: Channel 12 | available only when a<br>showing gear display is<br>selected. |
| MAX value                             | 16000 🔽  | ECU  | Highest gear number 6                      |   |
| Lap<br>Obscuring time<br>Lap segments | (sec.) 6   | Use GPS Lap Timer<br>Track width ( for GPS Lap T | imer precision ):                          | Car/Bike 10 m<br>Boat 100 m<br>Specific 10 m                  |
|                                       | 4 of the 22 pin connecto<br>Lap ( + ) (idle status = |  | ✓ This panel<br>in EVO3 Pr<br>window on    | o configuration   |

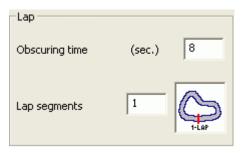
### 9.5.1 – RPM box



- Select "AIM Sensor" to sample this information from an RPM sensor installed on the vehicle. Set Multiply factor and RPM Max value. RPM row in the central table of channels layer enables.
- Select "ECU signal" and set RPM Max value to sample this information from the vehicle ECU. RPM row in the central table of channel layer disables.



### 9.5.2 – Lap box



- **Obscuring time**: is a time period during which the optical receiver installed on the vehicle, after having recorded a lap signal, is "blind" and does not record signals. This function is useful to manage split times on tracks where more optical receivers are installed: set obscuring time on a low value (min accepted value is 3 seconds) to record splits and on a value lower than best lap time and higher than the time elapsed between last split and start/finish line (max accepted value is 255 seconds) not to record splits.
- Lap segments: is the number of segments the track is divided in and corresponds to the number of transmitters there installed.

#### 9.5.3 – Use GPS lap timer box

| ✓ Use GPS Lap Timer                          |               |
|--|---------------|
| Track width ( for GPS Lap Timer precision ): | Car/Bike 10 m |
|  | Boat 100 m    |
|  | Specific 10 m |
|  |               |

It allows to use GPS lap timer in spite of the track beacon equipment. It is necessary to enable the corresponding checkbox and set the track width. Available options are:

- Car/Bike and Boat whose measures are set by default and
- specific that allows to set a specific track width.



### 9.5.4 – Gear sensor box

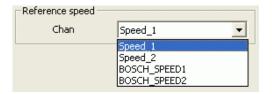


**EVO3Pro/Pista** can sample the engaged gear from a gear sensor, from the ECU butt can also calculate it using an algorithm based on RPM and speed. Available options are:

- **None**: there is no gear sensor on the vehicle (or not to see the engaged gear): this option is disabled on the display. Row labelled CH\_8/12 (depending on the logger) on central table of channel layer can be enabled with configurable sensor.
- **Potentiometer Channel 8/12**: there is a gear potentiometer installed on channel 8/12; row labelled CH\_8/12 (depending on the system) in the central table of channels layer is enabled and set on gear potentiometer.
- ECU: this information is sampled from the ECU (assuming it can transmit it); row labelled CH\_8/12 (depending on the system) in the central table of channels layer is disabled and can be enabled with configurable sensor.
- **Calculated**: to calculate the engaged gear with an algorithm based on RPM and speed; fill in "Highest gear number". Row labelled CH\_8/12 (depending on the system) in the central table of channels layer can be enabled with configurable sensor.
- **Calculated + neutral signal**: Channel 8/12 (depending on the system): there is a neutral sensor that can be used to both see neutral gear and calculate the engaged gear. Fill in "Highest gear number". The central table of channel layer shows row labelled CH\_8/12 enabled and set on calculated gear.

Note: "Calculated" and "Calculated + neutral signal: Channel 8/12" options are available only if EVO3 Pro/Pista is connected to a display that can show the engaged gear like MyChron3 Dash or Formula Steering Wheel. Refer to chapter 15 for further information on gear calculation.

#### 9.5.5 – Speed reference box



It is possible to select the reference speed used for gear calculation and for some Race Studio Analysis calculation. Available option are the loggers speed(s) (depending on how many have been enabled) and ECU speed(s). In the figure above the logger has two enabled speeds and is connected to a Bosch ECU that transmits two speed channels.



### 9.5.6 – Output signal on pin 14 of Deutsch 22 pin connector

This function allows **EVO3 Pro** to send a signal to an external device, typically a display or an ECU. This output signal is connected to pin 14 of Deutsch 22 pin connector of **EVO3 Pro** and has the following characteristics:

- **Voltage**: Depends on the external pull-up voltage
- **Output duration**: about 0,8 seconds [for Lap (-) and Lap (+)only]
- **Type**: can be type "Lap" or type "Alarm".
- Available options are:
- **None**: signal disabled.
- Lap (-) (idle status = external pull up voltage): when EVO3 Pro receives a lap signal, the signal emitted decreases from pull-up voltage (idle status) to 0V (lap) for about 0,8 seconds.
- Lap (+) (idle status = ground voltage): when EVO3 Pro receives a lap signal, the signal emitted grows from 0V (idle status) to pull-up (lap) voltage for around 0,8 seconds.
- **Shift lights**: when RPM are over threshold value, the signal emitted grows from 0V (OFF status) to pull-up voltage (ON status) for the time the threshold value is overcome. This function can be useful to switch on an additional alarm led for over-rev or gear shift indication.



## 9.6 – How to configure EVO3 Pro/Pista displays

**EVO3** available displays are: **MyChron3 Dash**, **TG-Dash** and **Formula Steering Wheel**. To configure the display (optional to the logger) activate the related layer:

| Select configuration Channels Sy | stem configuration Display                                   | CAN-Expansions configurator |
|----------------------------------|--|-----------------------------|
| Available displays               | None<br>None<br>M3-Dash<br>TG-dash<br>Formula Steering Wheel |                             |
|                                  |  |                             |

The first time the layer shows up empty. Select the proper display through the drop down menu. Refer to chapter 17 for further information.

## 9.7 – Configuring CAN expansions

**EVO3 Pro/Pista**, can be connected to numerous expansions that communicate with it through the CAN bus. See chapter 16 for further information.

**Note**: in case the expansion is a DaVid Slave refer to paragraph 8.6 (**DaVid** master) for information concerning its configuration.

## 9.8 – Transmitting the configuration

The procedure to transmit the configuration to the logger is the same for all AIM loggers. Refer to chapter 13 for further information.

### 9.9 – Sensors calibration and auto-calibration

When the configuration has been transmitted it is necessary to perform calibration procedure: auto-calibrate accelerometer, gyroscope and distance potentiometer and calibrate gear sensor, mid zero and zero based potentiometer.

See chapter 14 for further information.

Warning: if potentiometers, gyroscope and accelerometers have not been correctly calibrated it is not possible to sample correct data, nor the engaged gear nor create the track map. It is recommended to pay particular attention to sensors calibration/auto-calibration procedures.

## 9.10 – Gear calculation

Refer to chapter 15 for further information.

### 9.11 – Online

Online function is very useful to check the logger proper working. Refer to chapter 18 for further information.



# **Chapter 10 – How to configure EVO4**

To correctly configure **EVO4**, use a PC and **Race Studio 2** software. This logger can only be configured via software.

Before starting the configuration, install **Race Studio 2** and the USB driver as explained in chapter 2.

Run the software, clicking on **Race Studio 2** icon and the window here below appears.



In the title bar – white on a blue background in the figure – you can see the **Race Studio 2** version installed on the PC.

Immediately under there is the menu bar, shown in a more intuitive way on the left thanks to the graphic buttons: Go to Analysis (this button runs Race Studio Analysis software), Data download, AIM system manager, AIM system identification, Online, AIM system calibration, Custom sensors management, Select language.

From this window it is possible to perform all needed operations to manage all AIM systems.



To enter configuration menu press "AIM system manager" button; a panel showing all systems managed through **Race Studio 2** software appears: double click on "**EVO4**" or select it and click on " $\checkmark$ Go to".



Race Studio 2 system manager window appears.



## 10.1 – System manager window



Using the keyboard and the layers, highlighted in the figure, it is possible to perform all operations necessary to manage an AIM system.

The top keyboard, shown here below, is made up of five buttons:



- **Transmit**: transmits a configuration to the logger and is active with any layer; it needs the logger to be switched on and connected to the PC.
- **Receive**: reads and saves the configuration of the logger and is active only in "Select Configuration" layer.
- CAN-Net Info: identifies the CAN network connected to the PC, that means the logger and its peripherals. Pressing it a waiting window appears and – when the connection has been established - "CAN-Net info" window, shown here below, appears. It shows all the CAN Network components. In the example below the CAN network includes an EVO4 Master and four expansions: DaVid, LCU-ONE, GPS and MemoryKey.

| N | Category of Logger | Type of Logger | Expansion Name | Logger ID | ID Date    | Firmware | Firmware Date |
|---|--------------------|----------------|----------------|-----------|------------|----------|---------------|
| 1 | MASTER             | EVO4           | Master         | 12345     | 06/09/2008 | 43.01.06 | 08/09/2008    |
| 2 | CAN EXPANSION      | DaVid          |                | 47111881  | 18/01/2008 | 22.03    | 09/11/2007    |
| 3 | CAN EXPANSION      | LCU-ONE        | LC             | 111111    | 13/12/2007 | 25.09    | 19/11/2007    |
| ŧ | CAN EXPANSION      | GPS            |                | 902499    | 14/01/2008 | 35.13    | 17/12/2007    |
| 5 | CAN EXPANSION      | MEMORY KEY     |                | 7613105   | 17/12/2007 | 37.05    | 18/12/2007    |
|   |                    |                |                |           |            |          |               |
|   |                    |                |                |           |            |          |               |



• Set acquisition system time: makes the logger time matching the PC one. Pressing it "Acquisition system time" window, below on the left, appears with PC clock on the left and EVO3 one on the right. Pressing the central button, PC and EVO3 will have the same time. This operation does not modify data sampled by the logger nor influence its peripherals. In case the window on the right appears it means that PC-logger connection is wrong. Check it and try again.

| Acquisition system time           |                                | Σ  | Acquisition system time           |                                |   |
|-----------------------------------|--------------------------------|--|-----------------------------------|--------------------------------|---|
| PC Time<br>12/03/2008<br>10.59.56 | Set acquisition<br>system time | Acquisition system time<br>08/12/2002<br>4.55.26 | PC Time<br>12/03/2008<br>11.00.25 | Set acquisition<br>system time | Acquisition system time<br>Impossible to read<br>time |
|                                   |                                | A <u>C</u> ancel                                 | ]                                 |                                | <b>A</b> Cancel                                       |

• SmartyCam functions settings: allows to set SmartyCam channels. Pressing it the related panel appears. With reference to the images here below, each function available options depends on the fact whether the all network is connected to the vehicle ECU or not. This means that if there is no ECU all functions not managed directly by SmartyCam are shown as "none available" and cannot be set while in case an ECU is available all function supported by that ECU are shown as "Not set" and can be set.

| FUNCTION        | CHANNEL         |
|-----------------|-----------------|
| ENGINE RPM      | none available  |
| REFERENCE SPEED | Speed_1         |
| GEAR            | Calculated_Gear |
| WATER TEMP      | none available  |
| HEAD TEMP       | none available  |
| EXHAUST TEMP    | none available  |
| OIL TEMP        | none available  |
| OIL PRESS       | none available  |
| BRAKE PRESS     | none available  |
| THROTTLE_POS    | none available  |
| BRAKE POS       | none available  |
| CLUTCH POS      | none available  |
| STEER POS       | none available  |
| LAMBDA          | none available  |
| LATERAL ACCEL   | none available  |
| LONG ACCEL      | none available  |
| FUEL LEVEL      | none available  |
| BATTERY         | NOT SET         |
|                 |                 |

| FUNCTION        | CHANNEL         |   |
|-----------------|-----------------|---|
| ENGINE RPM      | SRA_RPM         |   |
| REFERENCE SPEED | Speed_1         |   |
| GEAR            | Calculated_Gear |   |
| WATER TEMP      | NOT SET         |   |
| HEAD TEMP       | NOT SET         |   |
| exhaust temp    | NOT SET         |   |
| OIL TEMP        | NOT SET         |   |
| OIL PRESS       | NOT SET         | × |
| BRAKE PRESS     | NOT SET         |   |
| THROTTLE_POS    | NOT SET         |   |
| BRAKE POS       | NOT SET         |   |
| CLUTCH POS      | NOT SET         |   |
| STEER POS       | none available  |   |
| LAMBDA          | NOT SET         | × |
| LATERAL ACCEL   | none available  |   |
| LONG ACCEL      | none available  |   |
| FUEL LEVEL      | NOT SET         |   |
| BATTERY         | NOT SET         |   |
|                 |                 |   |



In case an ECU is available it is necessary to decide which channel to associate with each function. With reference to the images here below, for example, to set SmartyCam water temperature channel click on arrow right of the function and a drop down menu opens showing all available temperature channels. Select the one that will be shown on SmartyCam video and press OK. In case the channel is not shown enable "Disable channel filters" checkbox and all available channels will be shown no matter if they are temperature channels or not.

| FUNCTION        | CHANNEL               |        |
|-----------------|-----------------------|--------|
| ENGINE RPM      | SRA_RPM               |        |
| REFERENCE SPEED | Speed_1               |        |
| GEAR            | Calculated Gear       |        |
| WATER TEMP      | NOT SET               | -      |
| NEAU TEMP       | NOT SET               |        |
| EXHAUST TEMP    | SRA_WTEMP<br>SRA_OILT |        |
| OIL TEMP        | SRA_OILT<br>SRA_AIRT  |        |
| OIL PRESS       | SRA_TCK1              |        |
| BRAKE PRESS     | SRA TFUEL             | -      |
| THROTTLE_POS    | NOT SET               |        |
| BRAKE POS       | NOT SET               | •<br>• |
| CLUTCH POS      | NOT SET               | -      |
| STEER POS       | none available        |        |
| LAMBDA          | NOT SET               | •      |
| LATERAL ACCEL   | none available        |        |
| LONG ACCEL      | none available        |        |
| FUEL LEVEL      | NOT SET               | -      |
| BATTERY         | NOT SET               |        |
|                 |                       |        |

| FUNCTION        | CHANNEL         |
|-----------------|-----------------|
| ENGINE RPM      | none available  |
| REFERENCE SPEED | Speed_1         |
| SEAR            | Calculated_Gear |
| WATER TEMP      | none available  |
| HEAD TEMP       | none available  |
| EXHAUST TEMP    | none available  |
| OIL TEMP        | none available  |
| OIL PRESS       | none available  |
| BRAKE PRESS     | none available  |
| THROTTLE_POS    | none available  |
| BRAKE POS       | none available  |
| CLUTCH POS      | none available  |
| STEER POS       | none available  |
| .AMBDA          | none available  |
| ATERAL ACCEL    | none available  |
| ONG ACCEL       | none available  |
| FUEL LEVEL      | none available  |
| BATTERY         | NOT SET         |
|                 |                 |

**Current Configuration Table**, immediately under the keyboard, shows the main information concerning the configuration user is working on.

| Current configuration |                   |             |              |                  |                 |                 |                  |                 |                 |
|-----------------------|-------------------|-------------|--------------|------------------|-----------------|-----------------|------------------|-----------------|-----------------|
| Installation name     | Data logger type  | Ecu         | Vehicle name | Available time   | Time with GPS   | Total frequency | Master frequency | Expansions freq | Tot. Expansions |
| DEFAULT               | EVO4 - 5 channels | None - None | DEFAULT      | 19.10.22 (h.m.s) | 8.15.21 (h.m.s) | 121 (Hz)        | 121 (Hz)         | 0 (Hz)          | 1               |
|                       |                   |             |              |                  |                 |                 |                  |                 |                 |

Again, under this table are five layers:

Select configuration Channels System configuration Display CAN-Expansions configurator

- Select configuration: allows the user to select the configuration to work on; it is always active.
- **Channels**: allows to set EVO4 channels. It is active only if there are configurations in "Select configuration" layer.
- **System configuration**: allows to set or modify EVO4 configuration. It is active only if there are configurations in "Select configuration" layer.
- **Display**: allows to set the configuration of EVO4 display. It is active only if there are configurations in "select configuration" layer. Refer to the related chapter for further information concerning AIM displays.
- CAN-expansions configurator: allows to configure the expansions connected to EVO4, DaVid Slave video system included. It is active only if there are configurations in "Select configuration" layer; if not, it doesn't even appear. Refer to the related chapter for further information. Note: if the connected expansion is a DaVid Slave Expansion refer to paragraph 8.6 (DaVid master).



### 10.1.1 – Select configuration layer

"Select configuration" layer – shown here below – is made of:

| Select | t configuration Chann | nels System configuration Display | CAN-Expansions con | figura | ator      |              |     |       |        |      |   |                  |     |
|--------|-----------------------|-----------------------------------|--------------------|--------|-----------|--------------|-----|-------|--------|------|---|------------------|-----|
| 4      | New                   | 🖌 Delete 🔒                        | a, Clone           |        | Import    | Ехро         | rt  |       |        |      |   |                  |     |
| N      | Installation name     | Logger                            | ECU Manufacturer   |        | ECU Model | Vehicle name | Obs | Split | Speed  | Temp |   | Created          | Tot |
| 1      | DEFAULT               | EVO4 - 5 channels                 | MARELLI            | -      | SRA 🗾     | DEFAULT      | 8   | 1     | km/h   | l °⊂ | - | October 09, 2008 | 0   |
| 2      | LOGGER_CONF           | EVO4 - 5 channels                 | None               | -      | None      | READ         | 8   | 6     | km/h 💽 | •⊂   | - | November 13,     | 0   |
| 3      | LOGGER_CONF           | EVO4 - 5 channels                 | None               | -      | None      | READ         | 8   | 6     | km/h 🕒 | •⊂   | - | November 17,     | 0   |
| 4      | DEFAULT               | EVO4 - 5 channels                 | None               | -      | None      | DEFAULT      | 8   | 1     | km/h 🔄 | 1 °C | - | June 10, 2009    | 0   |

#### On top is the keyboard made up of five buttons.

- **New**: creates a new configuration;
- **Delete**: deletes a configuration;
- **Clone**: clones a configuration;
- **Import**: imports a configuration from a file;
- **Export**: exports a configuration to a file.

**Central** is the available configurations database. To work on one of them click on any of its cell and the entire row is selected (highlighted in yellow).

In case of first configuration central table shows up empty.



# 10.2 – Creating a new configuration

| New configuration        |                   |   |
|--------------------------|-------------------|---|
| Data logger type         | EV04 - 5 channels |   |
| ECU Manufacturer         | None              |   |
| ECU Model                | None              |   |
| New configuration name   | DEFAULT           | _ |
| Vehicle name             | DEFAULT           |   |
| Speed measure unit       | km/h              |   |
| Temperature measure unit | <b>D</b> *        |   |
| Pressure measure unit    | bar               |   |
|                          |                   |   |

Pressing "New" button in "Select Configuration" layer this window appears:

Some parameters need to be set:

- **Data logger type**: select the logger to be configured.
- ECU Manufacturer: select the Manufacturer of the ECU installed on the vehicle if supported or none.
- **ECU Model**: select the ECU model.
- New configuration name: fill in the new configuration name.
- Vehicle name: fill in the vehicle name.
- Speeds unit of measure: choose between km/h and mph.
- Temperatures unit of measure: choose between °C and °F.
- **Pressures unit of measure**: choose between Bar and PSI.

Press "OK" to save (or "Cancel" to quit without saving). The system comes back to system manager window.



# 10.3 – Channels

#### Activate "Channels" layer.

| <b>.</b> .   | ransmit  | Receive  |   | CAN-Net  | info Set   | acquisition sy<br>time               | rstem  |  | am Functions<br>atting  |                |
|--|--|--|---|--|--|--------------------------------------|--|--|---|----------------|
| Current configurati  | tion   |  |   |  |  |                                      |  |  |   |                |
| Installation name  | e Data logger type   | Ecu  | Vehicle name  | Available time   | Time with GPS 1  | fotal frequency                      | Master frequ   | ency Expan   | nsions freq T   | ot. Expansions |
| DEFAULT  | EVO4 - 5 channe  | els None - None  | DEFAULT   | 9.32.39 (h.m.s   | s) 4.06.35 (h.m.s) 1   | 21 (Hz)                              | 121 (Hz)   | 0 (Hz)   | ) 0   |                |
| Speed1<br>Wheel circumfe<br>Pulses per whee  |  | 5peed2<br>Wheel circumfe<br>Pulses per whee  |   |  |  |                                      |  |  |   |                |
|  |  |  |   |  |  |                                      |  |  |   |                |
| Channel ide  | Enabled/disabled   | Channel name   |   |  | Sensor type  |                                      |  | Low scale  | High scal   | e              |
| RPM  | Frabled  | Engine   | 10  | ) Hz   | Engine revolution speed  |                                      | rpm  | 0  | 20000   | e              |
| RPM<br>SPD_1   | Enabled  | Engine<br>Speed1   | 10<br>10  | ) Hz 💽   | Engine revolution speed<br>Speed   |                                      | rpm<br>km/h .1   | 0<br>0.0   | 20000<br>250.0  | e              |
| RPM<br>SPD_1<br>SPD_2  | <ul> <li>✓ Enabled</li> <li>✓ Enabled</li> <li>✓ Enabled</li> </ul>  | Engine<br>Speed1<br>Speed2   | 10<br>10<br>10  | ) Hz 💽   | Engine revolution speed<br>Speed<br>Speed  | •                                    | rpm<br>km/h .1<br>km/h .1  | 0<br>0.0<br>0.0  | 20000<br>250.0<br>250.0   | e              |
| RPM<br>SPD_1<br>SPD_2<br>CH_1  | Enabled     Enabled     Enabled     Enabled     Enabled     Enabled  | Engine<br>Speed1<br>Speed2<br>Channel_1  | 10<br>10<br>10<br>10  | ) Hz I   | Engine revolution speed<br>Speed<br>Speed<br>Generic linear 0-5 V  |                                      | rpm<br>km/h .1<br>km/h .1<br>V .1  | 0<br>0.0<br>0.0<br>0.0   | 20000<br>250.0<br>250.0<br>5.0  | e              |
| RPM<br>SPD_1<br>SPD_2<br>CH_1<br>CH_2  | Enabled       Enabled       Enabled       Enabled       Enabled       Enabled       Enabled  | Engine<br>Speed1<br>Speed2<br>Channel_1<br>Channel_2   | 10<br>10<br>10<br>10<br>10<br>10  | Hz         Image: Constraint of the second seco | Engine revolution speed<br>Speed<br>Speed<br>Generic linear 0-5 V<br>Generic linear 0-5 V  | •<br>•<br>•                          | rpm<br>km/h .1<br>km/h .1<br>V .1<br>V .1  | 0<br>0.0<br>0.0<br>0.0<br>0.0  | 20000<br>250.0<br>250.0<br>5.0<br>5.0   | e              |
| RPM<br>SPD_1<br>SPD_2<br>CH_1<br>CH_2<br>CH_3  | Enabled       Enabled       Enabled       Enabled       Enabled       Enabled       Enabled       Enabled       Enabled  | Engine<br>Speed1<br>Speed2<br>Channel_1<br>Channel_2<br>Channel_3  | 10<br>10<br>10<br>10<br>10<br>10<br>10  | Hz         •           0 Hz         •   | Engine revolution speed<br>Speed<br>Speed<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V  | •                                    | rpm<br>km/h .1<br>km/h .1<br>V .1<br>V .1<br>V .1<br>V .1  | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0   | 20000<br>250.0<br>250.0<br>5.0<br>5.0<br>5.0  | e              |
| RPM           SPD_1           SPD_2           CH_1           CH_2           CH_3           CH_4  | Enabled  | Engine<br>Speed1<br>Speed2<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4   | 10<br>10<br>10<br>10<br>10<br>10<br>10<br>10                                    | Hz         •  | Engine revolution speed<br>Speed<br>Speed<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V  | ,<br>,<br>,<br>,<br>,                | rpm           km/h .1           km/h .1           V .1           V .1           V .1           V .1           V .1   | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0                                    | 20000<br>250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0                   | e              |
| RPM           SPD_1           SPD_2           CH_1           CH_2           CH_3           CH_4           CH_5   | Enabled           Image: Enabled  | Engine<br>Speed1<br>Speed2<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_5  | 10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10                              | Hz         •   | Engine revolution speed<br>Speed<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Gear potentiometer   | •<br>•<br>•<br>•                     | rpm<br>km/h .1<br>km/h .1<br>V | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0                             | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0              | e              |
| RPM           SPD_1           SPD_2           CH_1           CH_2           CH_3           CH_4           CH_5           CALC_GEAR   | Enabled           Image: Enabled  | Engine Speed1<br>Speed2<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_5<br>Calculated_Gear  | 10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10      | 0Hz         •  | Engine revolution speed<br>Speed<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Gear potentionmeter<br>Calculated Gear   | * * *<br>* *<br>*                    | rpm km/h .1<br>km/h .1<br>V .1 V .1<br>V .1 V .1<br>V .1 V .1<br>V .1 V .1<br>#  | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0                        | 20000<br>250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>9              | e              |
| RPM           SPD_1           SPD_2           CH_1           CH_2           CH_3           CH_4           CH_5           CALC_GEAR           ACC_1                                 | Image: Constraint of the state of | Engine<br>Speed1<br>Speed2<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_5<br>Calculated_Gear<br>Lateral_acc                                  | 10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10      | Hz         •           0Hz         •   | Engine revolution speed<br>Speed<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Gear potentiometer<br>Calculated Gear<br>Lateral accelerometer   | •<br>•<br>•<br>•                     | rpm km/h .1<br>km/h .1<br>V .1 ▼<br>V .1 ▼<br>V .1 ▼<br>V .1 ▼<br>#<br>#<br>g .01  | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0<br>0<br>-3.00            | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5<br>9<br>3.00                 | e              |
| RPM           SPD_1           SPD_2           CH_1           CH_2           CH_4           CH_5           CALC_GEAR           ACC_1           ACC_2                                | Enabled           Image: Enabled   | Engine<br>Speed1<br>Speed2<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_5<br>Calculated_Gear<br>Lateral_acc<br>Longitudinal_acc              | 10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>1 | )Hz   | Engine revolution speed<br>Speed<br>Speed<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Gear potentiometer<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer      | +<br>+<br>+<br>+<br>+<br>+<br>+<br>+ | rpm km/h .1<br>km/h .1<br>V .1 ▼<br>V .1 ▼<br>V .1 ▼<br>V .1 ▼<br>g .01<br>g .01   | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0<br>-3.00<br>-3.00          | 2000<br>250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5<br>9<br>3.00<br>3.00        | e              |
| RPM           SPD_1           SPD_2           CH_1           CH_2           CH_3           CH_4           CH_5           CALC_GEAR           ACC_1           ACC_2           ACC_3 | Image           Image         Enabled  | Engine Speed1<br>Speed2<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_5<br>Calculated_Gear<br>Lateral_acc<br>Longitudinal_acc<br>Vertical_acc | 10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>1 | )Hz   | Engine revolution speed<br>Speed<br>Speed<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Gear potentiometer<br>Calculated Gear<br>Lateral accelerometer<br>Vertical internal accelerometer | v<br>v<br>v                          | rpm km/h .1<br>km/h .1<br>V .1 ▼<br>V .1 ▼<br>V .1 ▼<br>#<br>#<br>g .01<br>g .01<br>g .01  | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0<br>-3.00<br>-3.00<br>-3.00 | 20000<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5<br>9<br>3.00<br>3.00<br>3.00 | e              |
| RPM           SPD_1           SPD_2           CH_1           CH_2           CH_3           CH_4           CH_5           CALC_GEAR           ACC_1           ACC_2                 | Enabled           Image: Enabled   | Engine<br>Speed1<br>Speed2<br>Channel_1<br>Channel_2<br>Channel_3<br>Channel_4<br>Channel_5<br>Calculated_Gear<br>Lateral_acc<br>Longitudinal_acc              | 10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>1 | )Hz         ×  | Engine revolution speed<br>Speed<br>Speed<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Generic linear 0-5 V<br>Gear potentiometer<br>Calculated Gear<br>Lateral accelerometer<br>Longitudinal accelerometer      |                                      | rpm<br>km/h .1<br>km/h .1<br>V .1 ▼<br>V .1 ▼<br>V .1 ▼<br>#<br>#<br>g .01<br>g .01<br>°⊂ ▼  | 0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0<br>0<br>0<br>-3.00<br>-3.00<br>-3.00 | 20000<br>250.0<br>250.0<br>5.0<br>5.0<br>5.0<br>5.0<br>5<br>9<br>3.00<br>3.00       | e              |

#### 10.3.1 – Speed panels

On top of Channels layer are Speed panels. They can be enabled/disabled through the channel table below. To enable a Speed channel enable the checkbox in the corresponding row of channel table. Below figure shows one Speed channel enabled and one disabled.

| Select configurati  | on Channels Sys  | tem configuration Display CAN-Expans | ions configurator |  |  |  |  |  |  |
|---|------------------|--------------------------------------|-------------------|--|--|--|--|--|--|
| -Speed1   |                  | opeed2                               |                   |  |  |  |  |  |  |
| Wheel circumference (mm) 1666 Wheel circumference (mm) 1666 |                  |                                      |                   |  |  |  |  |  |  |
| Pulses per wheel revolution 1 Pulses per wheel revolution 1 |                  |                                      |                   |  |  |  |  |  |  |
| Channel Men   | Enabled/disabled | Channel name                         | Sampling frequ    |  |  |  |  |  |  |
| RPM   | 🔽 Enabled        | Engine                               | 10 Hz 🗾           |  |  |  |  |  |  |
| SPD_1 👋   | 🔽 Enabled        | Sec.ed1                              | 10 Hz 🗾           |  |  |  |  |  |  |
| SPD_2   | 🔲 Disabled 🚄     | Speed2                               | 10 Hz 🗾           |  |  |  |  |  |  |
| CH_1  | 🔽 Enabled        | Channel_1                            | 10 Hz 📃           |  |  |  |  |  |  |

When a panel is enabled it is necessary to set its parameters.

| Speed1                        |   |
|-------------------------------|---|
| Wheel circumference (mm) 1666 | ĺ |
| Pulses per wheel revolution 1 | ľ |

Fill in:

- wheel circumference of the vehicle;
- number of pulses for wheel revolution (that corresponds to the number of magnets installed on the wheel).



## 10.3.2 – Channel Table

| 2                | Transmit         | Receive                         | <b>*</b>          | CAN-Net        | info Set  | acquisition sy<br>time | stem           | Sm Sm   | artyCam Functions<br>setting |                 |
|------------------|------------------|---------------------------------|-------------------|----------------|---|------------------------|----------------|---------|------------------------------|-----------------|
| urrent configura | ation            |                                 |                   |                |   |                        |                |         |                              |                 |
| nstallation nam  | e Data logger ty | pe Ecu                          | Vehicle name      | Available time | Fime with GPS T                                     | otal frequency         | Master fre     | equency | Expansions freq              | Tot. Expansion: |
| DEFAULT          | EVO4 - 5 char    | inels None - None               | DEFAULT           | 9.32.39 (h.m.: | s) 4.06.35 (h.m.s) 12                               | 21 (Hz)                | 121 (Hz)       |         | 0 (Hz)                       | 0               |
|                  |                  |                                 |                   | <b></b>        |   |                        |                |         |                              |                 |
| Select configur  | ation Channels S | ystem configuration Disp        | ay CAN-Expansions | configurator   |   |                        |                |         |                              |                 |
| Speed1           |                  |                                 |                   |                |   |                        |                |         |                              |                 |
|                  |                  |                                 |                   | _              |   |                        |                |         |                              |                 |
| Wheel circumf    | erence (mm) 10   | 566 Wheel circumfer             | ence (mm) 1666    |                |   |                        |                |         |                              |                 |
| Pulses per wh    | eel revolution 1 | Pulses per whee                 | revolution 1      | -              |   |                        |                |         |                              |                 |
|                  |                  | ] [                             |                   |                |   |                        |                |         |                              |                 |
| Channel ide      | Enabled/disabled | Channel name                    | Sa                | ampling frequ  | Sensor type   |                        | Measure unit   | Low so  | ale High s                   | cale            |
| RPM              | 🕅 Enabled        | Engine                          | 10                | ) Hz 💌         | Engine revolution speed                             |                        | rpm            | 0       | 20000                        |                 |
| SPD_1            | 🔽 Enabled        | Speed1                          |                   |                | Speed   |                        | km/h .1        | 0.0     | 250.0                        |                 |
| 5PD_2            | 🔽 Enabled        | Speed2                          | 10                | )Hz 🗾          | Speed   | •                      | km/h .1        | 0.0     | 250.0                        |                 |
| CH_1             | Enabled          | Channel_1                       |                   |                | Generic linear 0-5 V                                |                        |                | 0.0     | 5.0                          |                 |
| CH_2             | Frabled          | Channel_2                       |                   |                | Generic linear 0-5 V                                |                        |                | 10.0    | 5.0                          |                 |
| СН_3             | Enabled          | Channel_3                       |                   | ******         | Generic linear 0-5 V                                |                        |                | • 0.0   | 5.0                          |                 |
| CH_4             | Enabled          | Channel_4                       |                   |                | Generic linear 0-5 V                                |                        |                | 2 0.0   | 5.0                          |                 |
| CH_5             | Enabled          | Channel_5                       |                   |                | Gear potentiometer                                  |                        | #              | 0       | 5                            |                 |
| CALC_GEAR        | Disabled         | Calculated_Gear                 |                   |                | Calculated Gear                                     |                        | #              | 0       | 9                            |                 |
| ACC_1<br>ACC_2   | Enabled          | Lateral_acc<br>Longitudinal_acc |                   |                | Lateral accelerometer<br>Longitudinal accelerometer |                        | g .01<br>g .01 | -3.00   | 3.00                         |                 |
| ACC_2<br>ACC_3   | Enabled          | Vertical_acc                    |                   |                | Vertical internal accelerometer                     |                        | g .01<br>g .01 | -3.00   | 3.00                         |                 |
| LOG_TMP          | Enabled          | Datalogger_Temp                 |                   |                | Cold joint  |                        |                | • 0     | 50                           |                 |
| BATT             | Enabled          | Battery                         | 1                 |                | Battery   |                        | V.1            | 5.0     | 15.0                         |                 |
|                  |                  |                                 |                   |                |   |                        |                |         |                              |                 |

It shows all logger channels with the related characteristics

- **Channel identifier**: shows the channel label. Channels labelled "ECU\_X" are the ones received from the ECU.
- **Enabled/disabled**: shows channel status (enabled or disabled). The status can be modified double clicking on the cell except for RPM, Speed and CH\_5; RPM and CH\_5 needs to be set through "System Configuration" panel, while Speed one is to be set as explained before.
- Channel name: names the channel.
- **Sampling frequency**: sets each channel sampling frequency. This last one influences the total available time, highlighted by a box in the figure below, because the memory fills up faster.
- **Sensor type**: shows the type of sensor installed on that channel; it is selected through the drop down menu that appears clicking on the cell. See the following page for further information.
- **Measure unit**: shows the unit of measure selected for each channel; to change it double click on the cell.
- Low/High scale: shows high/low scale values of the sensor and allows to change it double clicking on the cell.



|                   | Temperatures | Pressures | Potentiometers | Lambda<br>Probe | Gyroscope | Accelerometer |
|-------------------|--------------|-----------|----------------|-----------------|-----------|---------------|
| EVO3 P            | ista         |           |                |                 |           |               |
| Ch_1              | Х            | Х         | Х              | Х               |           |               |
| Ch_2              | Х            | Х         | Х              | Х               |           |               |
| Ch_3              | Х            | Х         | Х              | Х               |           |               |
| Ch_4              | Х            | Х         | Х              | Х               | Х         | Х             |
| Ch_5 <sup>7</sup> | Х            | Х         | Х              | Х               | Х         | Х             |

Setting some sensors on some channels that support them, a configuration panel appears bottom left of Channels layer. The figure below shows distance potentiometer configuration panel.

|                      |                  | Receive                 |                                 | CAN-Net inf     | •                        | et acquisition sys<br>time  | tem                        | SmartyCam Functio<br>setting  | ns                   |
|----------------------|------------------|-------------------------|---------------------------------|-----------------|--------------------------|-----------------------------|----------------------------|-------------------------------|----------------------|
| rrent configurat     |                  | e Ecu                   | Vehicle name                    | Available time  | Time with GPS            | Tatal frames and            |                            |                               | Tet Conservations    |
| stallation name      |                  | els None - None         | DEFAULT                         | 9.32.39 (h.m.s) | 4.06.35 (h.m.s)          | Total frequency<br>121 (Hz) | Master frequer<br>121 (Hz) | CY Expansions freq.<br>0 (Hz) | Tot. Expansions<br>0 |
| elect configura      | tion Channels Sy | stem configuration Disp | lay CAN-Expansion               | s configurator  |                          |                             |                            |                               |                      |
| Speed1               |                  | Speed2                  |                                 |                 |                          |                             |                            |                               |                      |
|                      | erence (mm) 166  |                         | ence (mm) 166<br>I revolution 1 | 6               |                          |                             |                            |                               |                      |
| hannel iden          | Enabled/disabled | Channel name            |                                 | Sampling frequ  | iensor type              |                             | Measure unit               | Low scale                     | High scale           |
| RPM                  | 🔽 Enabled        | Engine                  |                                 | 10 Hz 🗾 E       | ingine revolution spee   | d                           | rpm                        | 0 2                           | 20000                |
| PD_1                 | Enabled          | Speed1                  |                                 |                 | peed                     |                             | km/h .1                    | 0.0 2                         | 250.0                |
| PD_2                 | Enabled          | Speed2                  |                                 | 10 Hz 🗾 S       | peed                     |                             | km/h .1                    |                               | 250.0                |
| H_1                  | Enabled          | Channel_1               |                                 |                 | ieneric linear 0-5 V     |                             |                            |                               | 5.0                  |
| H_2                  | Enabled          | Channel_2               |                                 |                 | ieneric linear 0-5 V     |                             |                            |                               | 5.0                  |
| Н_З                  | Enabled          | Channel_3               |                                 |                 | ieneric linear 0-5 V     |                             | -                          |                               | 5.0                  |
| H_4                  | Enabled          | Channel_4               |                                 |                 | istance potentiometer    | r 💻                         | _                          |                               | 5.0                  |
| н_5                  | 🔽 Enabled        | Channel_5               |                                 |                 | iear potentiometer       |                             | #                          | 0 5                           |                      |
| ALC_GEAR             | Disabled         | Calculated_Gear         |                                 |                 | alculated Gear           |                             | #                          | 0 9                           |                      |
| CC_1                 | Enabled          | Lateral_acc             |                                 |                 | ateral accelerometer     |                             | g .01                      |                               | 3.00                 |
| CC_2                 | Enabled          | Longitudinal_acc        |                                 |                 | ongitudinal accelerom    |                             | g .01                      |                               | 3.00                 |
| CC_3                 | Enabled          | Vertical_acc            |                                 |                 | ertical internal acceler | rometer 👱                   | g .01                      |                               | 3.00                 |
| OG_TMP               | Enabled          | Datalogger_Temp         |                                 |                 | old joint                |                             | ∘⊂ _                       |                               | 50                   |
| ATT                  | 🔽 Enabled        | Battery                 |                                 | 1 Hz 🗾 E        | attery                   |                             | ∀.1                        | 5.0 1                         | .5.0                 |
|                      |                  |                         |                                 |                 |                          |                             |                            |                               |                      |
| Channel I            |                  | Sensor type             | Measure unit                    |                 |                          |                             |                            |                               |                      |
| Channe<br>Parameters | A_4   Dis        | l of potentiometer      | 00 mm .1                        |                 |                          |                             |                            |                               |                      |

 $<sup>^7</sup>$  Channel CH\_5 is the gear channel and if system configuration layer (paragraph 10.5) sets it on "Potentiometer CH\_5" row labelled CH\_5 sets on Gear Potentiometer. If it is set on "Calculated + Neutral Signal" channel CH\_5 sets on. In all the other cases it works as shown in the table above. When the setting is "Calculated gear" CH\_5 needs to be enabled and then it works as shown in the table above.



## **10.4 – Creating a custom sensor**

The procedure to create a custom sensor is the same for all AIM loggers. Refer to chapter 12 for further information.

## 10.5 – System configuration

Activate "System Configuration" layer:

| Rpm                   |                      | Gear sensor   |
|-----------------------|----------------------|---|
| AIM sensor            | ECU signal           | None  |
| Multiply factor       | /1 💌                 | Potentiometer<br>Channel 5<br>Channel 5                                   |
| MAX value             | 16000 💌              | ECU Highest gear number 6   |
| Lap                   |                      |   |
| Obscuring time        | (sec.) 8             | ✓ Use GPS Lap Timer Track width ( for GPS Lap Timer precision ): Car/Bike |
| Lap segments          | 1 Lap                | Boat 100 m<br>Specific 10 m   |
| Reference speed       |                      |   |
| Chan                  | Speed2               |   |
| -Output signal on pin | n 5 of RPM connector |   |
| Signal                | Alarm on channel     | <b></b>   |
| Alarm<br>Channel_5    |                      | v o   |
|                       |                      |   |

#### 10.5.1 – RPM box

| Rpm            |                  |        | Rpm            |                  |        |
|----------------|------------------|--------|----------------|------------------|--------|
| AIM sense      | or ECU sign      | al     | AIM sense      | pr ECU sign      | nal    |
| Multiply Pacto | or / 1           | •      | Multiply facto | r J              | -      |
| MAX value      | 16000            | •      | MAX value      | 1,000            | -      |
| 1              |                  |        |                |                  |        |
|                |                  |        |                |                  |        |
| Channel ide    | Enabled/disabled | Channe | Channel ide    | Englied/disabled | Channe |
| RPM 4          | Enabled          | Engine | RPM            | Disabled         | Engine |
| SPD_1          | 🔽 Enabled        | Speed_ | SPD_1          | Enabled          | Speed_ |

- Select "AIM Sensor" to sample this information from an RPM sensor installed on the vehicle. Set Multiply factor and RPM Max value. RPM row in the central table of channels layer enables.
- Select "ECU signal" and set RPM Max value to sample this information from the vehicle ECU. RPM row in the central table of channel layer disables.



#### 10.5.2 – Gear sensor box



**EVO4** can sample the engaged gear from a gear sensor or from the ECU. It can also calculate it using an algorithm based on RPM and speed. Available options are:

- **None**: there is no gear sensor on the vehicle (or not to see the engaged gear): this option is disabled on the display. Row labelled CH\_5 in central table of channel layer can be enabled with configurable sensor.
- **Potentiometer Channel 5**: there is a gear potentiometer installed on channel 5; row labelled CH\_5 in the central table of channels layer is enabled and set on gear potentiometer.
- ECU: this information is sampled from the ECU (assuming it can transmit it); row labelled CH\_5 in the central table of channels layer is disabled and can be enabled with configurable sensor.
- **Calculated**: to calculate the engaged gear with an algorithm based on RPM and speed; fill in "Highest gear number". Row labelled CH\_5 in the central table of channels layer can be enabled with configurable sensor. Refer to chapter 15 for further information.
- **Calculated + neutral signal**: Channel 5: there is a neutral sensor that can be used to both see neutral gear and calculate the engaged gear. Fill in "Highest gear number". The central table of channel layer shows row labelled CH\_5 enabled and set on calculated gear. See the related chapter for further information.

#### 10.5.3 – Lap box

| Lap            |        |           |
|----------------|--------|-----------|
| Obscuring time | (sec.) | 8         |
| Lap segments   | 1      | Lap 1-Lap |

- **Obscuring time**: it is a time period during which the optical receiver installed on the vehicle, after having recorded a lap signal, is "blind": it does not record signals. This function is useful to manage split times on tracks where more optical receivers are installed: set obscuring time on a low value (min accepted value is 3 seconds) to record splits and set it on a value lower than best lap time and higher than the time elapsed between last split and start/finish line (max accepted value is 255 seconds) not to record splits.
- Lap segments: is the number of segments the track is divided in and corresponds to the number of transmitters installed there.



### 10.5.4 – Use GPS Lap timer box

| Use GPS Lap Timer                            |          |     |   |
|--|----------|-----|---|
| Track width ( for GPS Lap Timer precision ): | Car/Bike | 10  | m |
|  | Boat     | 100 | m |
|  | Specific | 10  | m |
|  |          |     |   |

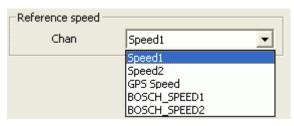
**EVO4** can sample lap time also through the integrated GPS. This function needs to be enabled through the proper checkbox as shown in the figure below.

| Use GPS Lap Timer                            |          |     |   |
|--|----------|-----|---|
| Track width ( for GPS Lap Timer precision ): | Car/Bike | 10  | m |
| (  | Boat     | 100 | m |
|  | Specific | 10  | m |

It allows to use GPS lap timer in spite of the track beacon equipment. It is necessary to enable the corresponding checkbox and set the track width. Available options are:

- Car/Bike and Boat whose measures are set by default and
- specific that allows to set a specific track width.

#### 10.5.5 – Reference speed box



It is possible to select the reference speed used for gear calculation and for some Race Studio Analysis calculation. Available option are the logger speed(s) (depending on how many have been enabled), GPS Speed and ECU speed(s). In the figure above the logger has two enabled speeds and is connected to a Bosch ECU that transmits two speed channels.



### 10.5.6 – Output signal on pin 5 of RPM connector

| Output signal on pin 5 of RPM connector |          |   |   |  |  |  |  |  |
|---|----------|---|---|--|--|--|--|--|
| Signal Alarm on channel                 |          |   |   |  |  |  |  |  |
| Alarm<br>Channel_5                      | <b>_</b> | v | 0 |  |  |  |  |  |

This function allows **EVO4** to send a signal to an external device, typically a display or an ECU. This output signal is connected to pin 5 of RPM connector of **EVO4** and has the following characteristics:

- Voltage: Depends on the external pull-up voltage
- Output duration: about 0,8 seconds [for Lap (-) and Lap (+)only]
- **Type**: can be type "Lap" or type "Alarm".

| -Output | : signal on pir | n 5 of RPM connector  |   |
|---------|-----------------|---|---|
|         | Signal          | Alarm on channel  | - |
| Alarm   | n<br>nnel_5     | None<br>Lap ( - ) (idle status = external pull up voltage)<br>Lap ( + ) (idle status = ground voltage)<br>Shift light<br>Alarm on channel |   |

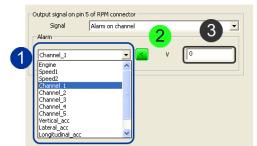
Available options are:

- None: signal disabled.
- Lap (-) (idle status = external pull up voltage): when EVO3 Pro receives a lap signal, the signal emitted decreases from pull-up voltage (idle status) to 0V (lap) for about 0,8 seconds.
- Lap (+) (idle status = ground voltage): when EVO3 Pro receives a lap signal, the signal emitted grows from 0V (idle status) to pull-up (lap) voltage for around 0,8 seconds.
- Shift lights: when RPM are over threshold value, the signal emitted grows from 0V (OFF status) to pull-up voltage (ON status) for the time period the threshold value is overcome. This function can be useful to switch on an alarm led on the display. Fill in the proper case highlighted in the figure below.

| —Output sigr | al on pin 5 | of RPM connector — |     |   |
|--------------|-------------|--------------------|-----|---|
| Sign         | al          | Shift light        |     | • |
| Alarm        |             |                    |     |   |
|              | High thre   | eshold             | rpm | 0 |
|              |             |                    |     |   |



• Alarm on channel: starts up an alarm when a fixed threshold value is reached. With reference to the image below on the left, to enable this option select the channel where to set the alarm on (1), set it as max/min alarm clicking the central button (2) and fill in its threshold value (3). The image on the right shows the alarm set: an alarm switches on when Engine (1) RPM is higher (2) than 8000 (3).







## **10.6 – How to configure EVO4 displays**

**EVO4** available displays are: **MyChron3 Dash**, **TG-Dash** and **Formula Steering Wheel**. To configure the display (optional to the logger) activate the related layer:

| Select configuration Channels Sy | ystem configuration Display CAN-Expansions configurator |
|----------------------------------|---|
| Available displays               | None None M3-Dash TG-dash Formula Steering Wheel        |
|                                  |   |

The first time the layer shows up empty. Select the proper display through the drop down menu. Refer to chapter 17 for further information.

# 10.7 – Configuring CAN expansions

**EVO4**, can be connected to numerous expansions that communicate with it through the CAN bus. See chapter 16 for further information.

**Note**: in case the expansion is a DaVid Slave refer to paragraph 8.6 (**DaVid** master) for information concerning its configuration.

## **10.8 – Transmitting the configuration**

The procedure to transmit the configuration to the logger is the same for all AIM loggers. Refer to chapter 16 for further information.

## 10.9 – Sensors calibration and auto-calibration

When the configuration has been transmitted it is necessary to perform calibration procedure, auto-calibrate accelerometer, gyroscope and distance potentiometer and calibrate gear sensor, mid zero and zero based potentiometer. See the related chapter for further information.

**Warning**: if potentiometers, gyroscope and accelerometers have not been correctly calibrated it is not possible to sample correct data, nor the engaged gear nor create the track map. Pay attention to sensors calibration/auto-calibration procedures.

### **10.10 – Gear calculation**

For **EVO4** to calculate Gear it is just sufficient to enter the track and start running. It is strongly suggested to engage all gears, keep each gear engaged for at least 5/6 seconds and drive in a smooth way (avoiding sudden accelerations or wheels blocks during brakes). The system will calculate the engaged gear and it will appear on the proper field of the display.

### 10.11 – Online

Online function is very useful to check the logger proper working. Refer to chapter 18 for further information.



# **Chapter 11 – How to configure SMC Bridge**

To correctly configure **SMC Bridge** (**ECU Bridge** and **RPM Bridge**), use a PC and **Race Studio 2** software. These devices can only be configured via software.

Before starting the configuration, install **Race Studio 2** and the USB driver as explained in chapter 2.

Run the software, clicking on **Race Studio 2** icon and the window here below appears.



In the title bar – white on blue background in the figure – you can see the **Race Studio 2** version installed on the PC. Immediately under is the menu bar, shown in a more intuitive way on the left thanks to the graphic buttons: Go to analysis (this button runs Race Studio Analysis software), Data download, AIM system manager, AIM system identification, Online, AIM system calibration, Custom sensors management, Select language.

From this window it is possible to perform all needed operations to manage all AIM systems.



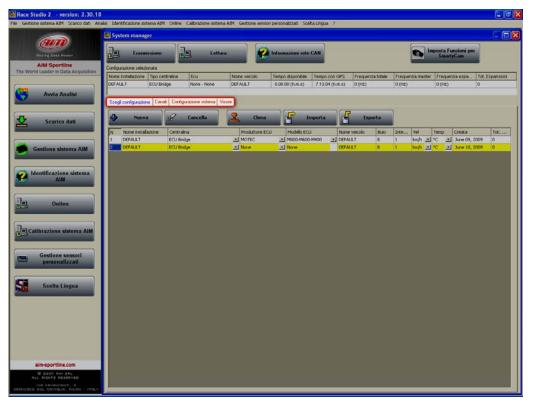
To enter configuration menu press "AIM system manager button; a panel showing all systems managed through **Race Studio 2** software appears: double click on "**SMC Bridge**" or select it and click " $\checkmark$ Go to".



Race Studio 2 system manager window appears.



# 11.1 – System Manager window



Using the keyboard and the layers, highlighted in the figure, it is possible to perform all operations necessary to manage an AIM system.

The top keyboard, shown here below, is made up of four buttons.

| Transmit | Receive | CAN-Net info |  |
|----------|---------|--------------|--|
|          |         |              |  |

- **Transmit**: transmits a configuration to the logger and is active with any layer; it needs the logger to be switched on and connected to the PC.
- **Receive**: reads and saves the configuration of the logger and is active only in "select configuration" layer.
- CAN-Net info: identifies the CAN network connected to the PC, that means the logger and its peripherals. Pressing it a waiting window appears and – when once the connection established – "CAN-Net info" window appears. In the example below the CAN network includes an ECU Bridge Master and SmartyCam slave version as expansion.

| N | Category | Type of Logger | Expansion Name | Logger ID | ID Date    | Firmware | Firmware D., |
|---|----------|----------------|----------------|-----------|------------|----------|--------------|
|   | MASTER   | ECU Bridge     | Master         | 2200167   | 27/05/2009 | 45.01.02 | 07/05/2009   |
|   | CAN EXPA | SmartyCam      |                | \$5678433 | 20/03/2009 | 47.04.00 | 28/05/2009   |
|   |          |                |                |           |            |          |              |
|   |          |                |                |           |            |          |              |
|   |          |                |                |           |            |          |              |
|   |          |                |                |           |            |          |              |
|   |          |                |                |           |            |          |              |
|   |          |                |                |           |            |          |              |
|   |          |                |                |           |            |          |              |
|   |          |                |                |           |            |          |              |
|   |          |                |                |           |            |          |              |
|   |          |                |                |           |            |          |              |



 SmartyCam functions settings: allows to set SmartyCam channels and is only useful for ECU Bridge. Pressing it the related panel appears. It shows all function supported by the Engine Control Unit ECU Bridge is connected as "Not set" and they can be set.

| UNCTION         | CHANNEL         |
|-----------------|-----------------|
| ENGINE RPM      | none available  |
| REFERENCE SPEED | Speed_1         |
| SEAR            | Calculated_Gear |
| WATER TEMP      | none available  |
| HEAD TEMP       | none available  |
| EXHAUST TEMP    | none available  |
| DIL TEMP        | none available  |
| OIL PRESS       | none available  |
| BRAKE PRESS     | none available  |
| THROTTLE_POS    | none available  |
| BRAKE POS       | none available  |
| CLUTCH POS      | none available  |
| STEER POS       | none available  |
| AMBDA           | none available  |
| ATERAL ACCEL    | none available  |
| ONG ACCEL       | none available  |
| FUEL LEVEL      | none available  |
| BATTERY         | NOT SET         |
| BATTERY         | NOT SET         |
|                 |                 |

| FUNCTION        | CHANNEL         |   |
|-----------------|-----------------|---|
| ENGINE RPM      | SRA_RPM         |   |
| REFERENCE SPEED | Speed_1         |   |
| GEAR            | Calculated_Gear |   |
| WATER TEMP      | NOT SET         |   |
| HEAD TEMP       | NOT SET         | 8 |
| exhaust temp    | NOT SET         |   |
| OIL TEMP        | NOT SET         |   |
| OIL PRESS       | NOT SET         |   |
| BRAKE PRESS     | NOT SET         | 1 |
| THROTTLE_POS    | NOT SET         |   |
| BRAKE POS       | NOT SET         |   |
| CLUTCH POS      | NOT SET         | 1 |
| STEER POS       | none available  |   |
| LAMBDA          | NOT SET         |   |
| LATERAL ACCEL   | none available  |   |
| LONG ACCEL      | none available  |   |
| FUEL LEVEL      | NOT SET         | 9 |
| BATTERY         | NOT SET         | 1 |
|                 |                 |   |

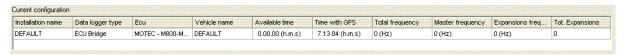
It is necessary to decide which channel to associate with each function. With reference to the images here below, for example, to set SmartyCam water temperature channel click on arrow right of the function and a drop down menu opens showing all available temperature channels. Select the one that will be shown on **SmartyCam** video and press OK. In case the channel is not shown it is possible to enable "Disable channel filters" checkbox and all available channels will be shown no matter if they are temperature channels or not.

| Set Functions To Channels      | ×                                   |
|--------------------------------|-------------------------------------|
| FUNCTION                       | CHANNEL                             |
| ENGINE RPM                     | SRA_RPM                             |
| REFERENCE SPEED                | Speed_1                             |
| GEAR                           | Calculated Gear                     |
| WATER TEMP                     | NOT SET                             |
| TEAD TEMP                      | NOT SET                             |
| EXHAUST TEMP                   | SRA_WTEMP                           |
| OIL TEMP                       | SRA_OILT<br>SRA_AIRT                |
| OIL PRESS                      | SRA_AKT                             |
| BRAKE PRESS                    | SRATFUEL                            |
| THROTTLE POS                   | NOT SET                             |
| BRAKE POS                      | NOT SET  NOT SET  NOT SET   NOT SET |
| CLUTCH POS                     | NOT SET                             |
| STEER POS                      | none available                      |
| LAMBDA                         | NOT SET                             |
| LATERAL ACCEL                  | none available                      |
| LONG ACCEL                     | none available                      |
| FUEL LEVEL                     | NOT SET                             |
| BATTERY                        | NOT SET                             |
|                                |                                     |
| <u>√ <u>O</u>K ∏ Disable O</u> | hannel Filters                      |

| FUNCTION        | CHANNEL                 |
|-----------------|-------------------------|
| ENGINE RPM      | none available          |
| REFERENCE SPEED | Speed_1                 |
| GEAR            | Calculated_Gear         |
| WATER TEMP      | none available          |
| HEAD TEMP       | none available          |
| EXHAUST TEMP    | none available          |
| OIL TEMP        | none available          |
| OIL PRESS       | none available          |
| BRAKE PRESS     | none available          |
| THROTTLE_POS    | none available          |
| BRAKE POS       | none available          |
| CLUTCH POS      | none available          |
| STEER POS       | none available          |
| LAMBDA          | none available          |
| LATERAL ACCEL   | none available          |
| LONG ACCEL      | none available          |
| FUEL LEVEL      | none available          |
| BATTERY         | NOT SET                 |
|                 |                         |
|                 |                         |
| 🗸 ок 🔽          | Disable Channel Filters |



**Current Configuration Table**, immediately under the keyboard, shows the main information concerning the configuration user is working on.



Again, under this table are four layers:



- Select configuration: allows the user to select the configuration to work on; it is always active.
- **Channels**: sets **ECU Bridge/RPM** channels. It is active only if there are configurations in "Select configuration" layer.
- System configuration: to set ECU Bridge/RPM Bridge configuration. It is active only if there are configurations in "Select configuration" layer.
- **Display**: allows to set the configuration of **ECU Bridge/RPM Bridge** display. It is active only if there are configurations in "Select configuration" layer. Refer to the related chapter for further information concerning AIM displays.

#### 11.1.1 – Select configuration layer

"Select configuration" layer - shown here below - is made of:

| Select |                   | els System configuration Display | Clone            | Import    | Export         |          |  |               |     |
|--------|-------------------|----------------------------------|------------------|-----------|----------------|----------|--|---------------|-----|
| N      | Installation name | Logger                           | ECU Manufacturer | ECU Model | Vehicle name O | bs Split | Speed Temp   | Created       | Tot |
| 1      | DEFAULT           | ECU Bridge 💽                     | None 🗾           | None      | DEFAULT 8      | 1        | km/h 💌 °⊂ 💽  | June 22, 2009 | 0   |
| 2      | DEFAULT           | ECU Bridge                       | BOSCH 🔄          | MS4 🗾     | DEFAULT 8      | 1        | km/h <mark>.                                   </mark> | June 22, 2009 | 0   |
|        |                   |                                  |                  |           |                |          |  |               | _   |

On top is the keyboard made up of five buttons.

- New: creates a new configuration;
- **Delete**: deletes a configuration
- **Clone**: clones a configuration
- **Import**: imports a configuration from a file;
- **Export**: exports a configuration to a file.

**Central** is the available configurations database. To work on one of them click on any of its cell and the entire row is selected (highlighted in yellow).

In case of first configuration central table shows up empty.



# **11.2 – Creating a new configuration**

| Data logger type         | ECU Bridge |  |
|--------------------------|------------|--|
| ECU Manufacturer         | None       |  |
| ECU Model                | None       |  |
| New configuration name   | DEFAULT    |  |
| Vehicle name             | DEFAULT    |  |
| Speed measure unit       | km/h       |  |
| Temperature measure unit | °C         |  |
| Pressure measure unit    | bar        |  |
|                          |            |  |

Pressing "New" button in "Select configuration" layer this window appears:

Some parameters need to be set:

- Data logger type: select the proper Bridge.
- ECU Manufacturer: select the Manufacturer of the ECU installed on the vehicle if supported or none. RPM Bridge has this parameter set on "Not supported".
- **ECU Model**: select the ECU model. RPM Bridge has this parameter set on "Not supported".
- New configuration name: fill in the new configuration name.
- Vehicle name: fill in the vehicle name.
- **Speeds unit of measure**: choose between km/h and mph.
- Temperatures unit of measure: choose between °C and °F.
- Pressures unit of measure: choose between Bar and PSI.

Press "OK" to save (or "Cancel" to quit without saving). The system comes back to system manager window.



# 11.3 – Channels

Activate channels layer. The layer layout depends on the Bridge and on the ECU connected to the interface Module (ECU Bridge only). The image here below shows an **ECU bridge** connected to a Bosch MS4 ECU.

| Transmit Receive CAN-Net info           |                        |                         |              |                            |            |                      |                 |             |       |             |                  |         |
|---|------------------------|-------------------------|--------------|----------------------------|------------|----------------------|-----------------|-------------|-------|-------------|------------------|---------|
| urrent configurati<br>Installation name | on<br>Data logger type | Ecu                     | Vehicle name | Available ti               |            | Time with GPS        | Total frequency | Master free |       | y Expansion | s freq Tot. Expa |         |
| DEFAULT                                 | ECU Bridge             | BOSCH - MS4             | DEFAULT      | Available ti<br>0.00.00 /ł |            | 7.13.04 (h.m.s)      | 0 (Hz)          | 0 (Hz)      | quenc | 0 (Hz)      | n n              | Insions |
|   | ECO Bridge             | BOOGHT MOT              | DEFADET      | 0.00.00 ()                 |            | 1110.04 ((1.11.3)    | 0 ((12)         | 0 (112)     |       | 0(12)       |                  |         |
|   |                        | stem configuration Disp | lay          |                            |            |                      |                 |             |       |             |                  | _       |
|   | Enabled/disabled       | Channel name            |              | Sampling fre               | ·          | iensor type          |                 | Measure un  | _     | Low scale   | High scale       |         |
| CALC_GEAR                               | 🦵 Disabled             | Calculated_Gear         |              | No_Mem                     |            | alculated Gear       |                 | #           |       | 0           | 9                |         |
| ECU_1                                   | 🕅 Enabled              | BOSCH_RPM               |              | No_Mem                     |            | ingine speed sensor  |                 | rpm         |       | 0           | 18000            |         |
| ECU_2                                   | Enabled                | BOSCH_VEHICLE_SPE       | ED           | No_Mem                     |            | ipeed sensor         |                 | km/h .1     |       | 0.0         | 500.0            |         |
| ECU_3                                   | Enabled                | BOSCH_TPS               |              | No_Mem                     |            | ercentage sensor     |                 | %           | -     |             | 500              |         |
| ECU_4                                   | Enabled                | BOSCH_IGNIT_ANG         |              | No_Mem                     | _          | ingle sensor         |                 | deg .01     | -     |             | 15.00            |         |
| ECU_5                                   | Enabled                | BOSCH_ENGINE_TEMP       | ,<br>,       | No_Mem                     | _          | emperature sensor    |                 | °C          | -     |             | 15               |         |
| ECU_6                                   | Enabled                | BOSCH_OIL_TEMP          |              | No_Mem                     | _          | emperature sensor    |                 | °C          | -     |             | 130              |         |
| ECU_7                                   | Enabled                | BOSCH_FUEL_TEMP         |              | No_Mem                     | _          | emperature sensor    |                 | °C          | •     |             | 215              |         |
| ECU_8                                   | Enabled                | BOSCH_AIR_TEMP          |              | No_Mem                     | _          | emperature sensor    |                 | °C          | -     |             | 215              |         |
| ECU_9                                   | M Enabled              | BOSCH_GEAR              |              | No_Mem                     | _          | iear sensor          |                 | #           |       | -50         | 150              |         |
| ECU_10                                  | Enabled                | BOSCH_GEAR_OIL_P        |              | No_Mem                     |            | oltmeter             |                 | ∀.1         | _     | -50.0       | 150.0            |         |
| ECU_11                                  | Enabled                | BOSCH_FUEL_PRESS        |              | No_Mem                     |            | ressure sensor       |                 | bar .1      |       |             | 100.0            |         |
| ECU_12                                  | Enabled                | BOSCH_WATER_PRES        | is           | No_Mem                     |            | ressure sensor       |                 | bar .1      | _     | -90.0       | 90.0             |         |
| ECU_13                                  | Enabled                | BOSCH_ATM_PRESS         |              | No_Mem                     |            | ressure sensor       |                 | mbar        |       |             | 190              |         |
| ECU_14                                  | Enabled                | BOSCH_OIL_PRESS         |              | No_Mem                     |            | ressure sensor       |                 | bar .1      |       |             | 210.0            |         |
| ECU_15                                  | Enabled                | BOSCH_LAMBDA1           |              | No_Mem                     |            | ambda sensor         |                 | # .001      |       | 0.000       | 210.000          |         |
| ECU_16                                  | Enabled                | BOSCH_LAMBDA2           |              | No_Mem                     |            | ambda sensor         |                 | # .001      |       | 0.000       | 16.000           |         |
| ECU_17                                  | Enabled                | BOSCH_AFR1              |              | No_Mem                     | _          | ambda sensor         |                 | A/F .1      |       |             | 16.0             |         |
| ECU_18                                  | Enabled                | BOSCH_AFR2              |              | No_Mem                     | _          | ambda sensor         |                 | A/F .1      |       |             | 2.0              |         |
| ECU_19                                  | Enabled                | BOSCH_INJ_TM1           |              | No_Mem                     | _          | iystem clock         |                 | ms .01      |       |             | 2.00             |         |
| ECU_20                                  | Enabled                | BOSCH_INJ_TM2           |              | No_Mem                     | _          | iystem clock         |                 | ms .01      |       |             | 500.00           |         |
| ECU_21                                  | Enabled                | BOSCH_FUEL_USED         |              | No_Mem                     | _          | 'olumetric sensor    |                 | 1.1         |       |             | 500.0            |         |
| ECU_22                                  | Enabled                | BOSCH_ACC_X             |              | No_Mem                     |            | ateral accelerometer |                 | g .01       |       | 0.00        | 500.00           |         |
| ECU_23                                  | Enabled                | BOSCH_ACC_Y             |              | No_Mem                     |            | ateral accelerometer |                 | g .01       |       | 0.00        | 500.00           |         |
| ECU_24                                  | Enabled                | BOSCH_ACC_Z             |              | No_Mem                     |            | ateral accelerometer |                 | g .01       |       | 0.00        | 500.00           |         |
| ECU_25                                  | Enabled                | BOSCH_BRAKE_PR          |              | No_Mem                     |            | ressure sensor       |                 | bar .1      |       |             | 500.0            |         |
| ECU_26                                  | Enabled                | BOSCH_BRAKE_PF          |              | No_Mem                     |            | ressure sensor       |                 | bar .1      |       |             | 500.0            |         |
| ECU_27                                  | Enabled                | BOSCH_EXAUST_GAS        |              | No_Mem                     | _          | emperature sensor    |                 | °⊂          |       |             | 500              |         |
| ECU_28                                  | Enabled                | BOSCH_SPEED_FL          |              | No_Mem                     | _          | peed sensor          |                 | km/h .1     |       | 0.0         | 500.0            |         |
| ECU_29                                  | Enabled                | BOSCH_SPEED_FR          |              | No_Mem                     | _          | ipeed sensor         |                 | km/h .1     |       | 0.0         | 500.0            |         |
| ECU_30                                  | Enabled                | BOSCH_SPEED_RL          |              | No_Mem                     | _          | peed sensor          |                 | km/h .1     |       | 0.0         | 500.0            |         |
| ECU_31                                  | Enabled                | BOSCH_SPEED_RR          |              | No_Mem                     | <b>_</b> 9 | ipeed sensor         |                 | km/h .1     | 1     | 0.0         | 500.0            |         |

It shows all logger channels with the related characteristics

- **Channel identifier**: shows the channel label. Channels labelled "ECU\_X" are the ones received from the ECU.
- **Enabled/disabled**: shows channel status (enabled or disabled). The status can be modified double clicking on the cell except for RPM and Gear. This last one needs to be set through "System Configuration" panel.
- **Channel name**: allows to name the channel.
- **Sampling frequency**: allows to set each channel sampling frequency. This last one influences the total available time, highlighted in the below figure, because the memory fills up faster.
- Sensor type: shows the type of sensor installed on that channel.
- **Measure unit**: shows the unit of measure selected for each channel; to change it double click on the cell.
- Low/High scale: shows high/low scale values of the sensor and allows to change it double clicking on the cell.



"RPM Bridge" channel layer is shown here below.

| System manaş          | insmit                | <b>)</b> Receive |              | CAN-Net info     |                        |                 | Smarty           | Cam Functions<br>setting |             |
|-----------------------|-----------------------|------------------|--------------|------------------|------------------------|-----------------|------------------|--------------------------|-------------|
| Current configuration | n<br>Data logger type | Ecu              | Vehicle name | Available time   | Time with GPS          | Total frequency | Master frequency | Expansions frequ         | Tot. Expans |
| DEFAULT               | RPM_Bridge            |                  | DEFAULT      | 0.00.00 (h.m.s)  | 7.13.04 (h.m.s)        | 0 (Hz)          | 0 (Hz)           | 0 (Hz)                   | 0           |
|                       | n Channels System     | Channel name     |              | Sampling frequ S | ensor type             |                 | Measure unit Li  | ow scale                 | igh scale   |
|                       | î                     | Engine           |              |                  | ingine revolution spee | d .             | rpm 0            |                          | oooo        |
|                       |                       |                  |              |                  |                        |                 |                  |                          |             |

It is only possible to set "Channel Name", "Low scale" and "High scale".

# 11.4 – System configuration – ECU Bridge

Activate "System configuration" layer

| Select configuration Char | nnels System configuration | Gear s | ensor |                       |
|---------------------------|----------------------------|--------|-------|-----------------------|
| None                      | ECU signal                 |        | None  | Calculated            |
|                           |                            |        | ECU   | Highest gear number 6 |
| RPM max                   | 20000 💌                    |        |       |                       |
|                           |                            |        |       |                       |
| Use GPS Lap Timer         |                            |        |       |                       |
| Track width:              | Car/Bike                   | 10     | m     |                       |
|                           | Boat                       | 100    | m     |                       |
|                           | Specific                   | 10     | m     |                       |
| Reference speed           |                            |        |       |                       |
| Chan G                    | PS Speed 🛛 👻               |        |       |                       |



| Rpm       |            |
|-----------|------------|
| None      | ECU signal |
| MAX value | 4000 💌     |

It is set on "ECU signal" by default: fill in RPM Max value.



### 11.4.2 – Gear sensor box



Available options are:

- None: not to see the engaged gear.
- ECU: this information is sampled from the ECU.
- **Calculated**: to calculate the engaged gear with an algorithm based on RPM and speed; fill in "Highest gear number"

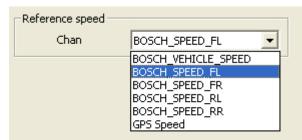
#### 11.4.3 – Use GPS Lap timer box

| Use GPS Lap Timer                            |          |     |   | Use GPS Lap Timer                            |          |     |   |
|--|----------|-----|---|--|----------|-----|---|
| Track width ( for GPS Lap Timer precision ): | Car/Bike | 10  | m | Track width ( for GPS Lap Timer precision ): | Car/Bike | 10  | m |
|  | Boat     | 100 | m |  | Boat     | 100 | m |
|  | Specific | 10  | m |  | Specific | 10  | m |
|  |          |     |   |  |          |     |   |

**ECU Bridge** can sample lap time also through the GPS integrated in **SmartyCam**. This function needs to be enabled through the proper checkbox as shown in the figure below. Available options are:

- Car/Bike and Boat whose measures are set by default and
- specific that allows to set a specific track width.

#### 11.4.4 –Reference speed box



It is possible to select the reference speed used for gear calculation and for some Race Studio Analysis calculation. Available option are the speeds the ECU transmits and GPS Speed if enabled. In the figure above ECU Bosch MS4 transmits: vehicle speed, front left wheel speed (FL), front right wheel speed (FR), rear left wheel speed (RL), rear right (RR) wheel speed.



# **11.5 System Configuration – RPM Bridge**

Active "System Configuration" layer. This window appears

| Selection        | onfiguration Channels System configuration | Display |
|------------------|--|---------|
|                  | PM factor / 1 💌                            |         |
|                  |  |         |
|                  | Ise GPS Lap Timer                          |         |
| Tra              | ck width: Car/Bike                         | 10 m    |
|                  | Boat                                       | 100 m   |
|                  | Specific                                   | 10 m    |
| Refer            | ence speed<br>Chan GPS Speed               |         |
| 11.5.1 – RPM Box |  |         |
|                  | RPM  |         |
|                  | RPM factor                                 |         |
|                  |  |         |

Select the RPM factor from the drop down menu and fill in RPM Max value.

### 11.5.2 – Use GPS Lap time box

| Use GPS Lap Timer |          |       | Use GPS Lap Timer |          |       |
|-------------------|----------|-------|-------------------|----------|-------|
| Track width:      | Car/Bike | 10 m  | Track width:      | Car/Bike | 10 m  |
|                   | Boat     | 100 m |                   | Boat     | 100 m |
|                   | Specific | 10 m  |                   | Specific | 10 m  |

**SMC Bridge** can sample lap time through the GPS integrated in **SmartyCam**. This function needs to be enabled through the proper checkbox as shown in the figure below. Available options are:

- Car/Bike and Boat whose measures are set by default and
- specific that allows to set a specific track width.



## **11.6 – How to configure ECU Bridge/RPM Bridge displays**

**ECU Bridge** and **RPM Bridge** can be connected to three displays (optional): **MyChron3 Dash**, **TG-Dash** and **Formula Steering wheel**. Activate the related layer (highlighted here below):

| Select configuration Channels Sy | stem configuration Display |
|----------------------------------|----------------------------|
| Available displays               | None                       |
|                                  | None                       |
|                                  | M3-Dash                    |
|                                  | TG-dash                    |
|                                  | Formula Steering Wheel     |
|                                  |                            |

The first time the layer shows up empty. Select the proper display through the drop down menu. Refer to chapter 17 for further information.

## **11.7 – Transmitting the configuration**

The procedure to transmit the configuration is the same for all AIM instruments. Refer to chapter 13 for further information.

## 11.8 – Gear calculation

For **ECU Bridge** to calculate Gear it is just sufficient to enter the track and start running. It is strongly suggested to engage all gears, keep each gear engaged for at least 5/6 seconds and drive in a smooth way (avoiding sudden accelerations or wheels blocks during brakes). The system will calculate the engaged gear and it will appear on the proper field of the display.

## 11.9 – Online

Online function is very useful to check the logger proper working. Refer to chapter 18 for further information.



# Chapter 12 – How to create a custom sensor

This function allows to configure a "custom" sensor setting the proper curve: it is very useful when the used sensor (pressure, temperature or other) is not included in the available sensors list.

Please note: "Custom sensors" option is intended for expert users only.

Press "Custom sensors manager" button in the menu bar or in the vertical keyboard. The button is also in system manager window for MyChron3 loggers as shown here below.

| File AIM system manager. Download data A   | nalysis : AIPt system identific   | ation Online AIM system  | n calbration Custom se   | nsors manager Select Language  | 7  |   |
|--|---|--|--|--|--|---|
| Exerce Cris Power AIM Sportline The World Leader In Data Acquisition   |   |  |  |  |  |   |
| Go to Analysis   | System manager  | Configuration  | Channels   |  | Customers  |   |
| Dewnload data  | N Looper  | Logger identification  | Transmit<br>Velacle russe<br>DEFAULT   | Receive<br>Obsc.t Split.teen<br>8 0  | Online Calibrat<br>Speed Temp Orested<br>Sm/h *C 3uly 28, 2008   |   |
| AlM system manager   |   |  |  |  |  | 507   |
| AlM system identification  |   | c  |  |  |  |   |
| Online   |   | Ľ  | lyChron  | 3 loggers  |  |   |
| AIM system calibration   |   |  |  |  |  |   |
| Select Language  | Ties Y  | Delete   | Orre   | Incort   | Eport e  |   |
|  |   | Logger typ<br>MYCHION 3 - XAI  | e Veb  | de name Availab<br>FAIQT 1.01.33   | le time Total frequenc   |   |
|  |   |  |  |  |  |   |
| aimsportline.com   |   |  |  |  |  |   |
| UNE ORVERSERVER, 8<br>CEMMISCO SUL MANIDUS, HILMAN - ITALY   |   |  |  |  |  |   |
| Race Studio 2 version: 2.30.18<br>File A2M system manager Download data A  | owings AIM system identific   |  |  |  |  |   |
|  |   | abon online AlPI system  | n calbraban Custom se  | nsors manager Select Language  | 3  |   |
| Rasing Data Reser  | System manager  | )[=  |  | CAN Her info   | ?  | SmartyCase Functions  |
| Aim Sportline<br>The World Leader in Data Acquisition  | System manager<br>Transmit<br>Current configuration<br>Installation name Data   | koggertiger Ecu  | leceive  | CAN Not info   | Set acquisition system<br>inne<br>th GPS Total frequency Ma  | SinsityCas Functions<br>Initing   |
| Area Card Aser<br>M Sportine<br>The World Leader in Data Acquisition   | System manager<br>Transmit<br>Darent configuration<br>Instalation name<br>Der ALL T Mrd. 1  | Roger type Ecu<br>Stradow Am - Priot<br>erreth System configuratio   | Vehicle name   | CAN Het info<br>Available time<br>0.0000 (hum.s) 7.73.0<br>iguator   | Set acquisition system     Intel frequency     Mo.     40.m.a)     0.012     0.012   | SinsityCas Functions<br>Initing   |
| Anne Crea Saver<br>AM Sporting<br>The World Leafer in Data Acquisition<br>Go to Analysis<br>Download data  | System manager     Transek     Transe | logger tyse Bou<br>StRaDA Add - PRO<br>StRaDA Add - PRO<br>really System configuration<br>Congress<br>PRL STRADA   | Vehicle name<br>T_CAN DEFAILT<br>In CME Expensions cont<br>ECUMENT   | Available time<br>Available time<br>(0000 (hm sc)<br>(000 (hm sc   | Set acquision system<br>New York Control of the Second Secon | Constructions     Simulations training     Simulations     Simulations     Simulation     S |
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| Anne Crea Saver<br>AM Sporting<br>The World Leafer in Data Acquisition<br>Go to Analysis<br>Download data  | System manager     Transmit      Transm | Independence in the second sec | Receive<br>T_CAN DEFAULT<br>N CAN Expansions con<br>CAN Expansions con<br>CAN A<br>CAN A<br>CAN<br>CAN<br>CAN<br>CAN<br>CAN<br>CAN<br>CAN<br>CA  | Available time into<br>Available time into<br>0.00.00 (nm.s) 7.13.0<br>0.00.00 (nm.s)<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igualtic<br>igual   | bet acquisition system     bet acquisition system     bet of the second system     control of the second system     vertice name     vert        | Source/Case Functions           Source/Case Functions           Start Teamony           Speed           Term           Term <t< td=""></t<>  |
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| Anna Casa Anna<br>Anna Casa Anna<br>Casa Anna<br>Anna<br>Anna<br>Anna Anna<br>Anna<br>Anna<br>Ann  | System manager     Transmit      Transmit      Const configuration      Statistics name     Deta     Const configuration      Tester configuration      New      Statisticion name      Const configuration      New      Statisticion name      Const configuration      New      Statisticion name      Const configuration      Statisticion name      Statisticion name      Const configuration      Statisticion name      Statis      Statisticion name      Statisticion name      Statisticion  | Independence in the second sec | CAN DEFAULT<br>CAN DEFAULT<br>CON Experimence<br>CAN Experimenc | Availabilitie time<br>Availabilitie time<br>to 0.00.0 (m. s)<br>17.13<br>Signator<br>Form<br>COUPLOS<br>Nore<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator | Set acquisition system           Box         Topert           0/02         Total resumery         Min           0/02         0/02         0/02           Vehick name         0/02         0/02           Vehick name         0         0/02           Vehick name         0         0/02           Vehick name         0         0           Cell Alar         0         0   | Construction     C |
| Anne Cana Sance<br>AM Coorting<br>The World Lacker in Data Acquarters<br>Coo to Analysis<br>Download data<br>Coorting<br>AMM system identification<br>Continue<br>Continue<br>Continue<br>Continue   | System manager     Transmit      Transmit      Const configuration      Statistics name     Deta     Const configuration      Tester configuration      New      Statisticion name      Const configuration      New      Statisticion name      Const configuration      New      Statisticion name      Const configuration      Statisticion name      Statisticion name      Const configuration      Statisticion name      Statis      Statisticion name      Statisticion name      Statisticion  | Independence in the second sec | CAN DEFAULT<br>CAN DEFAULT<br>CON Experimence<br>CAN Experimenc | Availabilitie time<br>Availabilitie time<br>to 0.00.0 (m. s)<br>17.13<br>Signator<br>Form<br>COUPLOS<br>Nore<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator | Set acquisition system           Box         Topert           0/02         Total resumery         Min           0/02         0/02         0/02           Vehick name         0/02         0/02           Vehick name         0         0/02           Vehick name         0         0/02           Vehick name         0         0           Cell Alar         0         0   | Construction     C |
| Anne Cana Sance<br>AM Coorting<br>The World Lacker in Data Acquarters<br>Coo to Analysis<br>Download data<br>Coorting<br>AMM system identification<br>Continue<br>Continue<br>Continue<br>Continue   | System manager     Transmit      Transmit      Const configuration      Statistics name     Deta     Const configuration      Tester configuration      New      Statisticion name      Const configuration      New      Statisticion name      Const configuration      New      Statisticion name      Const configuration      Statisticion name      Statisticion name      Const configuration      Statisticion name      Statis      Statisticion name      Statisticion name      Statisticion  | Independence in the second sec | CAN DEFAULT<br>CAN DEFAULT<br>CON Experimence<br>CAN Experimenc | Availabilitie time<br>Availabilitie time<br>to 0.00.0 (m. s)<br>17.13<br>Signator<br>Form<br>COUPLOS<br>Nore<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator<br>Signator | Set acquisition system           Box         Topert           0/02         Total resumery         Min           0/02         0/02         0/02           Vehick name         0/02         0/02           Vehick name         0         0/02           Vehick name         0         0/02           Vehick name         0         0           Cell Alar         0         0   | Construction     C |



#### This window appears:

| Custor               | nize senso          | pr     |             |                   |                                      |                        |
|----------------------|---------------------|--------|-------------|-------------------|--------------------------------------|------------------------|
| Туре                 | of measure<br>×[mV] |        | Curve Error |                   | Compute Curve                        | Select sensor          |
| ▼ 1<br>▼ 2           | L                   | 0<br>0 | 0.000       | 0.000-            |                                      |                        |
| ⊟ 3<br> ⊟ 4          | I                   | 0      | 0.0         | 0.000             |                                      |                        |
| [ 5<br>[ 6           |                     | 0      | 0.0         | 0.000             |                                      |                        |
| □7<br>□8             |                     | 0      | 0.0         | 0.000_            |                                      |                        |
| □ 9<br>□ 10          |                     | 0      | 0.0         | 0.000_            |                                      | Sensor name            |
| □ 11<br>□ 12         |                     | 0      | 0.0         |                   |                                      | Save sensor            |
| □ 13<br>□ 14         |                     | 0      | 0.0         | 0.000<br>0.00)(   |                                      | Delete sensor          |
| ☐ 15<br>☐ 16         |                     | 0      | 0.0         | y = a0 + a1<br>a0 | *x + a2*x^2 + a3*x^3 + a4*x^4<br>0.0 | Import sensors         |
| □ 17<br>□ 17<br>□ 18 | 0                   | 0      | 0.0         | a1<br>a2          | 0.0                                  | Export selected sensor |
| <b>□</b> 19          | 0                   | 0      | 0.0         | a3                | 0.0                                  | Exit                   |
| 20                   | 0                   | 0      | 0.0         | a4                | 0.0                                  |                        |

It allows to create/delete a custom sensor and import/export a sensor (or all sensors). **To create a custom sensor**:

Click on the drop down menu corresponding to "Measure type" case and select the category the sensor belongs to.

| Select the unit of measure corresponding to |
|---|
| the sensor to be created.                   |

| Туре        | of measur | re | Temperature 💌                     |  |
|-------------|-----------|----|-----------------------------------|--|
|             | ×[mV]     | У  | Temperature<br>Pressure           |  |
| 🔽 1         | 0         | 0  | Electrical Tension<br>Length      |  |
| <b>V</b> 2  | 0         | 0  | Percentage                        |  |
| Г 3         | 0         | 0  | Frequency<br>Speed                |  |
| <b>F</b> 4  | 0         | 0  | Angular Velocity<br>Acceleration  |  |
| <b>5</b>    | 0         | 0  | Angle<br>Mechanical Power         |  |
| <b>F</b> 6  | 0         | 0  | Lambda                            |  |
| <b>7</b>    | 0         | 0  | Torque<br>Volume                  |  |
| Γ8          | 0         | 0  | Electrical Current<br>Volume Flow |  |
| <b>9</b>    | 0         | 0  | Time<br>Number                    |  |
| <b>[</b> 10 | 0         | 0  | Custom                            |  |
| <b>1</b> 1  | 0         | 0  | 0.0                               |  |
| <b>1</b> 12 | 0         | 0  | 0.0                               |  |

| Customize sensor |           |   |            |             |  |  |
|------------------|-----------|---|------------|-------------|--|--|
| Туре             | of measur | e | Length     | -           |  |  |
|                  | ×[mV]     | У | km 💌       | Curve Error |  |  |
| 🔽 1              | 0         | 0 | km<br>m    | 0.000       |  |  |
| <b>V</b> 2       | 0         | 0 | mm<br>in   | 0.000       |  |  |
| Г З              | 0         | 0 | ft         | 0.0         |  |  |
| <b>F</b> 4       | 0         | 0 | mi j<br>cm | 0.0         |  |  |
| Γ5               | 0         | 0 | in         | 0.0         |  |  |

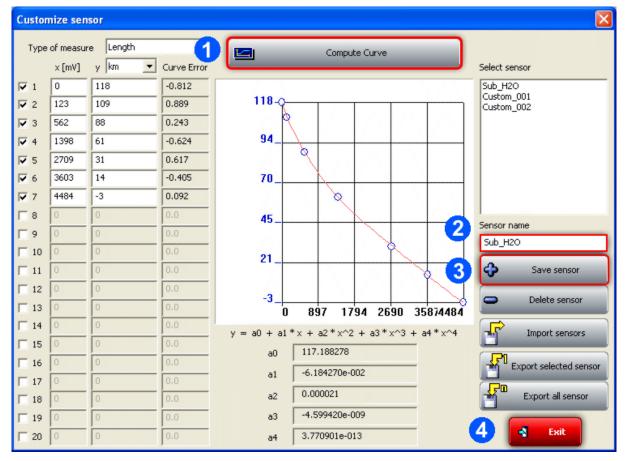


Enable the left cases corresponding to the number of experimental values to be used (up to 20 allowed).

Fill in the values corresponding to the sensor to be created in the two left columns.

- x[mV]: sensor output voltage in mV (X axle of the calibration curve);
- y: values of the selected measure concerning the output voltage – the values are interpolated using a polynomial (Y axle);
- Curve error: this column is useful to verify that the curve computed by the software is consistent with the experimental values.

| Customize sensor            |         |        |              |
|-----------------------------|---------|--------|--------------|
| Type of measure Temperature |         |        |              |
|                             | ×[mV] ( | 🥑 km 💌 | Errore curva |
| <b>▼</b> 1                  | 0       | 118    | -0.812       |
| 🔽 2                         | 123     | 109    | 0.889        |
| 🔽 З                         | 562     | 88     | 0.243        |
| <b>▼</b> 4                  | 1398    | 61     | -0.624       |
| 🔽 5                         | 2709    | 31     | 0.617        |
| 🔽 6                         | 3603    | 14     | -0.405       |
| 7                           | 4484    | -3     | 0.092        |
| <b>F</b> 8                  | 0       | 0      | 0.0          |



After inserting the experimental values:

- click "Compute curve" (1);
- fill in "Sensor name" box (2);
- click "Save sensor" (3);
- click "Exit" (4);
- set the new sensor on the desired channel in channels window.



# Chapter 13 – How to transmit the configuration

To transmit the configuration the logger has to be switched on and connected to the PC USB port through the proper cable. Press "Transmit" button in system manager window and the system automatically will transmit the configuration to the logger.

Warning: when the configuration has been transmitted to the logger it is not saved in the software configurations database. This means that - to have a copy of it in the database - users need to read and save it. To do so press "Receive" button in "System manager" window: the configuration appears as last row in the central part of the window and is highlighted in yellow.

## **13.1 – Possible problems while transmitting the configuration**

While transmitting the configuration various error messages can appear:

Check that the USB cable is correctly plugged in the PC and in the logger USB port, that the logger is switched on and try again transmitting the configuration.

| The system informs the user that the configuration     |
|--|
| he is trying to transmit has a different gear setting. |
| Press "Yes" only if you wish to change gear setting.   |

The system informs the user that the logger has data stored in its memory and they will be deleted if the configuration is transmitted. Press "Yes" only if you wish to delete the logger memory.









## Chapter 14 – Sensors calibration and auto-calibration

When the configuration has been transmitted it is necessary to perform calibration procedure, to say auto-calibrate accelerometer, gyroscope and distance potentiometer and calibrate the gear sensor, the mid zero potentiometer and the zero based potentiometer installed on the vehicle.

Warning: if potentiometers, gyroscope and accelerometers have not been correctly calibrated it is not possible to sample correct data, nor the engaged gear nor create the track map. It is recommended to pay particular attention to sensors calibration/auto-calibration procedures.

To enter calibration/auto calibration window press "AIM system calibration" button on the left keyboard or on **Race Studio 2** menu bar.

| ensor calibration   |  |  |   |
|---|--|--|---|
| Configuration nam   | ie   | System ty                                | pe  |
| LOGGER_CONF   |  | EV03 PIS                                 | TA  |
| - Sensors to autocalibrate                                  |  | Cliv                                     | ck here to autocalibrate all sensors in the list  |
| Chan Channel name<br>ACC_2 Acc_2<br>ACC_1 Acc_1             | Sensor type<br>Longitudinal accelerometer<br>Lateral accelerometer | Status<br>Default value<br>Default value | Click here to calibrate<br>Calibrate<br>Calibrate |
|   |  |  |   |
| Sensors to calibrate  | Sensor tune  | Stature                                  | Click here to calibrate                           |
| Sensors to calibrate<br>Chan Channel name<br>CH_8 Channel_8 | Sensor type<br>Gear potentiometer                                  | Status<br>To calibrate                   | Click here to calibrate<br>Calibrate              |
| Chan Channel name   |  |  |   |

# Warning: to correctly perform the described procedures keep the vehicle as horizontal as possible (in case of a Bike leave it on the prop stand).



### **14.1 – Sensors calibration procedure (except gear sensor)**

Press "calibrate" button corresponding to the channel to be calibrated and follow the instructions that appear on the PC monitor. The figures here below show, on the left a mid zero potentiometer and on the right a zero based potentiometer calibration panel.

| Channel Name  | and the second  |                                     |   |   | ×                    |
|---|---|-------------------------------------|---|---|----------------------|
| Channel_2 Mi  | Sensor type<br>id zero potentiometer  | Measure unit<br>mm                  | Channel Name<br>Channel_1                                     | Sensor type<br>Zero based potentiometer   | Measure unit<br>mm   |
| Current value:  | Raw data  | Measure<br>-100.0                   |   | Raw data Current values 8   | Measure              |
| HIGH POSITION Get Raw Value   | 3688  | 100                                 | HIGH POSITION Get Ra  | w Value 3688  | 100                  |
| ZERO POSITION Get Raw Value   | 1344  | 0                                   | ZERO POSITION Get Rat   | w Value 0   | 0                    |
| LOW POSITION Get Raw Value  |   | -100                                |   |   |                      |
| How to calibrate your sensor:     Maintain your sensor in high (or right) reference<br>button.     Maintain your sensor in zero (or rest) reference p<br>button.     Maintain your sensor in low (or left) reference p<br>button.     Maintain your sensor in low (or left) reference po<br>button.     Insert measure values correspondent to above<br>Click <ok> button.</ok> | position and click on <get ra<br="">psition and click on <get rav<="" td=""><td>aw ∨alue&gt; proper<br/>v ∨alue&gt; proper</td><td>button.<br/>2 - Maintain your sensor in zero (or re<br/>button.</td><td>ght) reference position and click on <g<br>est) reference position and click on <gr<br>dent to above indicated reference posit</gr<br></g<br></td><td>et raw value&gt; proper</td></get></get> | aw ∨alue> proper<br>v ∨alue> proper | button.<br>2 - Maintain your sensor in zero (or re<br>button. | ght) reference position and click on <g<br>est) reference position and click on <gr<br>dent to above indicated reference posit</gr<br></g<br> | et raw value> proper |

When the sensors have been calibrated their status in "Sensor calibration" window turns into "Calibrated" in red and " $\checkmark$  Transmit calibration" button is enabled. Press it to transmit the calibration.

| Sensor calibration                                 |  |   |  |
|--|--|---|--|
| Configuration name                                 |  | System type<br>EV03 PISTA                   |  |
| - Sensors to autocalibrate                         |  |   | e to autocalibrate all<br>isors in the list    |
| Chan Channel name<br>ACC_2 Acc_2<br>ACC_1 Acc_1    | Sensor type<br>Longitudinal accelerometer<br>Lateral accelerometer       | Status Ci<br>Default value<br>Default value | ck here to calibrate<br>Calibrate<br>Calibrate |
| Sensors to calibrate                               | Sensor type  | Status Cli                                  | ck here to calibrate                           |
| CH_2 Channel_2<br>CH_3 Channel_3<br>CH_8 Channel_8 | Zero based potentiometer<br>Mid zero potentiometer<br>Gear potentiometer | Calibrated<br>Calibrated<br>To calibrate    | Calibrate<br>Calibrate<br>Calibrate            |
|  |  |   |  |
|  | Transmit calibration   | A <u>C</u> ancel                            |  |

This procedure is fundamental to sample correct data.



### 14.2 – Sensors auto calibration procedure

Press "Click here to auto-calibrate all sensors in the list" to auto-calibrate accelerometer, gyroscope or distance potentiometer.

| sor calibration                                 |  |  |   |
|---|--|--|---|
| Configuration n                                 | ame  | System ty                                | pe  |
| LOGGER_CO                                       | NF   | EV03 PIS                                 | TA  |
| ensors to autocalibrate                         |  | Cir                                      | ck here to autocalibrate all<br>sensors in the list |
| Chan Channel name<br>ACC_2 Acc_2<br>ACC_1 Acc_1 | Sensor type<br>Longitudinal accelerometer<br>Lateral accelerometer | Status<br>Default value<br>Default value | Click here to calibrate<br>Calibrate<br>Calibrate   |
|   |  |  |   |
|   | Sensor type  | Status                                   | Click here to calibrate                             |
| Chan Channel name                               | Sensor type<br>Gear potentiometer                                  | Status<br>To calibrate                   | Click here to calibrate<br>Calibrate                |
| Chan Channel name                               |  |  |   |
|   |  |  |   |

Sensors calibration status in "Sensor calibration" window turns into "Calibrated", in red and " $\checkmark$ Transmit calibration" button, bottom left, is enabled: press it to transmit the calibration.

This procedure is fundamental to sample correct data.

#### 14.3 – Gear sensor calibration procedure

To calibrate the gear sensor it is necessary that the related panel in "System configuration" window is set on "Potentiometer" as shown here below.



In case during the transmission of the configuration the panel here below appears click on "Yes".

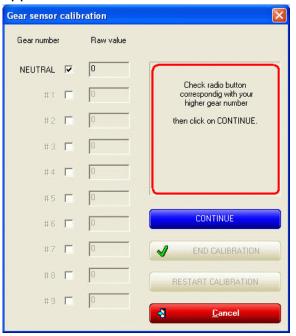
| RaceStudioConf                    |  |  |  |  |  |
|-----------------------------------|--|--|--|--|--|
| 2                                 | Gear configuration of datalogger is different from that of RaceStudio. |  |  |  |  |
| Do you want to update datalogger? |  |  |  |  |  |
| Sì No                             |  |  |  |  |  |



then press "AIM system calibration" button in the menu bar or in the left vertical keyboard: this window appears:

|   | Information and a second statements of a second statement of the second statements of the second statement of the |  |   |
|---|---|--|---|
| Configuratio  | n name  | System type                                |   |
| LOGGER  | CONF  | EV03 PISTA                                 |   |
| Sensors to autocalibrate                              |   |  | ere to autocalibrate all<br>ensors in the list    |
| Chan Channel name<br>ACC_2 Acc_2<br>ACC_1 Acc_1       | e Sensor type<br>Longitudinal accelerometer<br>Lateral accelerometer  | Status (<br>Default value<br>Default value | Click here to calibrate<br>Calibrate<br>Calibrate |
| 1911.   |   |  |   |
| Sensors to calibrate Chan Channel name CH_8 Channel_8 | e Sensor type<br>Gear potentiometer   | Status (<br>To calibrate                   | Click here to calibrate                           |

Press "Calibrate" button corresponding to the gear potentiometer. The window here below appears:



Follow the instructions that appear on the right part of the window (enable the checkbox corresponding to the highest gear number; press "Continue", engage neutral gear, press "Continue"; engage the first gear, press "Continue" and repeat until the highest gear has been engaged).



When the procedure is over " find calibration" button is enabled: press it.

| Gear sensor | calil | pration   |                          |
|-------------|-------|-----------|--------------------------|
| Gear number |       | Raw value |                          |
| NEUTRAL     | •     | 204       |                          |
| #1          | •     | 442       | Click on END CALIBRATION |
| #2          | •     | 574       |                          |
| #3          | •     | 805       |                          |
| # 4         | •     | 976       |                          |
| #5          | •     | 1133      |                          |
| #6          | •     | 1241      | CONTINUE                 |
| #7          | Γ     | 0         | Mend Calibration         |
| #8          | Г     | 0         | RESTART CALIBRATION      |
| #9          | Γ     | 0         | Cancel                   |

The system comes back to sensor calibration window. Gear potentiometer status turns into "Calibrated" in red and "✓ Transmit Calibration" button is enabled: press it.

| Sensor calibration             |  |                |   |
|--------------------------------|--|----------------|---|
| Conf                           | iguration name                         | Sy             | stem type   |
| LO                             | GGER_CONF                              | EVI            | D3 PISTA  |
| Sensors to autocalibrate       |  |                |   |
|                                |  |                | Click here to autocalibrate all sensors in the list |
| Chan Channe                    |  | or type Status |   |
| ACC_2 Acc_2<br>ACC 1 Acc 1     | Longitudinal acce<br>Lateral accelerom |                |   |
| Sensors to calibrate           |  | or type Status |   |
| Chan Channel<br>CH_8 Channel_8 | el name Senso<br>Gear potentiomete     |                |   |
|                                |  |                |   |



# **Chapter 15 – Gear calculation procedure**

Gear calculation procedure is to be set via software:

- set "Calculated" option in system calibration window;
- specify if a neutral sensor is available;
- fill in highest gear number;
- transmit the configuration to the logger.

| Gear sensor   |                                  |
|---------------|----------------------------------|
| None          | Calculated 🔽 with neutral signal |
| Potentiometer | Highest gear number 6            |

**Note: DaVid**, the Data Video Recorder, needs that "Restart gear calibration" checkbox in "Select Configuration" layer is enabled, as shown here below.

| System manager                     | Receive                     |                            |  |                 |   |
|------------------------------------|-----------------------------|----------------------------|--|-----------------|---|
| Current configuration              |                             |                            |  |                 |   |
| Installation name                  | Data logger type            | Ecu                        | Vehicle name                               | Available time  | Total frequency   |
| DEFAULT                            | DaVid Standalone            | BOSCH - MS3                | DEFAULT                                    | 3.54.05 (h.m.s) | 296 (Hz)  |
| Lap<br>Obscuring time 8            | Measure Units<br>Speed unit | km/h 💌                     |  |                 |   |
| (sec.)<br>Lap segments             | Temperature un              |                            |  |                 |   |
| Lap segments 1 N Installation name | Logger                      | ECU Manufacturer ECU Model | Vehicle name Obs                           |                 | isplay Created  |
| Lap segments                       | Logger<br>DaVid Standalone  |                            | Vehicle name Obs<br>DEFAULT 8<br>DEFAULT 8 | 1 km/h °C TG    | isplay Created<br>S-dash April 23, 2010<br>one April 27, 2010 |

When the gear sensor is set and the configuration has been transmitted, calculation procedure is to be performed through the logger keyboard and is made up of three steps: start, learning lap and calculation.

The correct procedure requires you to strictly follow these instructions.

Gear calibration proceeding is made using two inputs: RPM and speed. These two channels should be correctly configured and the related sensors installation should be faultless.

In case the logger has more than one speed input, gear calibration proceeding will take as reference speed the one shown on the display. It is suggested to take as reference the speed of the driving wheel. Gear calculation proceeding can be made also on not driving wheel, but in this case it is necessary to pay more attention not to have the wheels sliding or blocked during learning lap.



#### Start (via keyboard)

To start this function or to reset previous values and re-start gear calculation proceeding (except for DaVid that needs a restart via software):

- press [MENU/<<] button until the display shows: GEAR CALIBRATION;
- press [MEM/OK] button: the display shows: calculated gear:
- press [MEM/OK] button and fill in the highest gear number using [<<] and [>>] buttons;
- confirm pressing [MEM/OK] button;
- quit the menu pressing [QUIT/VIEW] button.

As a confirmation of the activation the display shows "running GEAR CAL": calibration procedure is correctly started.

#### Learning lap

After gear calibration proceeding activation, a track lap needs to be run. During this learning lap, follow carefully these instructions.

- Engage all gears.
- Keep each gear engaged for at least 5/6 seconds.
- Drive in a smooth way (avoiding sudden accelerations or wheels blocks during brakes); let the engine keep RPM gradually and keep brakes as long as possible too in line with track characteristics and traffic situation. If using a reference speed coming from a not driving wheel, pay particular attention to driving style, reducing sliding between driving wheels and not driving ones.
- Go to the pit lane alter the learning lap and switch the engine off.

Warning: totally avoid "revs" while the vehicle is moving; avoid running through the pit lane with friction engaged. If needed, it is possible to press the accelerator before switching the engine off but when the vehicle is completely stopped.

#### Gear Calculation

After engine switch off gear calculation proceeding starts automatically. During this period LED AL1 blinks. After a few seconds (duration of the calculation depends on learning lap length) LED AL1 switches off and the display does no more show: "running GEAR CAL".

All AIM systems allow gear calculation proceeding working also if engine switch off is needed. In this case just re-switch the system on and calculation proceeding re-starts automatically with recorded values. Calculation proceeding takes more time and blinking led will be LED AL2 and, after, LED AL1.

**Warning**: do not move the vehicle and do not switch the engine on during gear calculation. Moving the vehicle the logger could record values that would make it misdoing the calculation.



#### **Final suggestions**

Gear calculation proceeding is only possible thanks to the measurement of the angular speed of the driving shaft and of the driving wheel. When the friction is completely engaged between the two speeds there is a ratio mechanically defined by the engaged gear. If the friction slides this ratio is no more determinable. If reference speed comes from a not driving wheel the sliding between driving wheel and not driving one due to accelerations and brakes implies an error in the gear computation. This is why it is strongly recommend to drive as smoothly as possible during learning lap.



# **Chapter 16 – How to configure CAN expansions**

AIM loggers can be connected to different expansions that, communicating with him through the CAN bus, supply him with a lot of additional information without engaging any analog channel of the logger. To select the expansion to configure, enable "CAN expansions configurator" layer, shown here below.



In case of first expansions configuration or of very first configuration the layer shows up empty. To select the expansion to configure press "Add Expansion" button and the panel shown here below appears.

Please note: the products shown in the panel can change as soon as new products will be launched.



Select the expansion to configure pressing the button placed under each one.

It is suggested to perform all expansions configuration with all of them (except for DaVid) switched on and connected to the logger.



For all CAN expansions, **except for DaVid**, the fields placed under the keyboard enables, as shown below.

| Add expansion configuration     |                                |  |
|---------------------------------|--------------------------------|--|
| Select the expansion type       |                                |  |
| Charnels Expansion              | David (Slave expansion.)       | LOU-ONE<br>LOU-ONE<br>LOU-ONE (CAN only or CAN + analog<br>output) |
| LOU-ONE CAN (CAN only)          | TCHER (4 themcouple expansion) |  |
| Name of expansion configuration | on ( 6 characters max. )       |  |
|                                 |                                |  |
| Serial number of the expansion  | Get seri                       | al number from a connected<br>expansion                            |
| 3 🛃                             | QK Cancel                      |  |

- Fill in the expansion name (1).
- Press "Get serial number from a connected expansion" (2) and the system uploads the expansion univocal serial number.
- press "OK" (3).

The system loads the configuration layer of the added expansion and it appears in "CAN expansions configurator" layer. This operation is to be repeated for each CAN expansions to be added. The image below shows "CAN expansions configurator" layer with three activated expansions (red circled): the video system, a Lambda Controller CAN (LCU-ONE CAN) and a TC Hub.

| Select configuration Channels System configuration | CAN-Expansions configurator |
|--|-----------------------------|
| Add Expansion Del. Expansion                       | n                           |
| DaVid LCC - LCU-ONE CAN TCH - TC HUB               |                             |

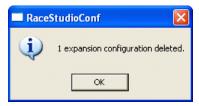
Each expansion is optional to the logger and is supplied with the related user manual. Refer to those user manuals for further information concerning each expansions configuration.



To delete an expansion from the logger configuration press "Del. expansion" button. This window appears:

| Mii Se |                            |             |  |
|--------|----------------------------|-------------|--|
|        | lect all Deselect all      |             |  |
| N Del  | Exp. configuration name    | Exp. Type   |  |
| 1      | DaVid                      | DaVid       |  |
| 2 🗖    | LCC                        | LCU-ONE CAN |  |
| 3 🗖    | тсн                        | TC HUB      |  |
|        | Delete selected expansions | ▲ Cancel    |  |

Enable the checkbox of the expansion to delete and press "Delete selected expansions" button. The system shows a confirmation message...



...and the related layer is deleted from "CAN expansions configurator" layer.

The images below show "CAN Expansions Configurator" layer with three expansions (DaVid, LCU-ONE CAN and TC Hub) on top and the same layer with LCU-ONE expansion deleted on bottom: the related layer disappeared.

| Select configuration Channels System configuration | CAN-Expansions configurator |  |  |  |
|--|-----------------------------|--|--|--|
| Add Expansion Del. Expansion                       |                             |  |  |  |
| DaVid LCC - LCU-ONE CAN TCH - TC HUB               |                             |  |  |  |
|  |                             |  |  |  |
| Select configuration Channels System configuration | CAN-Expansions configurator |  |  |  |
| Add Expansion Del. Expansion                       |                             |  |  |  |
| DaVid TCH - TC HUB                                 |                             |  |  |  |



Among CAN expansion that can be connected to AIM loggers is also a Video system, DaVid Slave Expansion, connected with up to two cameras. For further information on these objects refer to DaVid User Manual.

When the video system has been correctly installed and connected to AIM logger it will be necessary to load it as expansion using the panel shown before and its configuration window, shown here below, appears.



It allows to show all parameters of the video system. It is the same used to configure **DaVid** master and works exactly at the same way. Refer to paragraph 8.6 for further information.



# Chapter 17 – How to configure AIM displays

Those AIM loggers without an integrated display, like **EVO3** and **EVO4** can be connected to optional visors like **MyChron3 Dash**, **TG Dash** and **Formula Steering Wheel**. To configure the one connected activate the related layer:

| Select configuration Channels Sy | stem configuration Display        | CAN-Expansions configurator |
|----------------------------------|-----------------------------------|-----------------------------|
| Available displays               |                                   | •                           |
|                                  | None<br>M3-Dash                   |                             |
|                                  | TG-dash<br>Formula Steering Wheel |                             |
|                                  |                                   |                             |
|                                  |                                   |                             |
|                                  |                                   |                             |

The first time the layer shows up empty.

### 17.1 – How to configure MyChron3 Dash

MyChron3 Dash display is available for DaVid, for EVO3 Pro/Pista and for EVO4.

#### 17.1.1 – How to configure MyChron3 Dash for DaVid

Select M3-Dash display and its configuration window appears.

|         | Available displays M         | Dash 👻   |                                      |
|---------|------------------------------|--|--------------------------------------|
| Speed   | Displayed speed              | Shift Lights<br>Led 1 Led 2 Led 3 Led 4 Led 5  | Display messages<br>Language         |
| Speed_  | _1                           |  | Italiano 💌                           |
| Display | Page 1 - Channels and alarms | Shift light  | Display page 2 - Channels and alarms |
| Field 1 | Channel_1                    | 1 2 3 4 5 5 4 3 2 1 F  | Field 1 Channel_1                    |
|         | LED Value                    |  | LED Value                            |
| HIGH    | None 🗸 0                     |  | HIGH None V 0                        |
| LOW     | None 🗸 0                     | <b>1 3 1 1 1 1 1 1 1 1 1 1</b> | LOW None 🗸 0                         |
|         |                              |  |                                      |
| Field 2 | Channel_1                    | 2 3 599 12025 0 4 5  | Filed 2 Channel_1 💌                  |
|         | LED Value                    | 11 000 10000   | LED Value                            |
| HIGH    | None 🖌 0                     |  | HIGH None 🖌 0                        |
| LOW     | None 🖌 0                     |  | LOW None 🔽 0                         |

Speed Channel box:

| Speed                   |   |
|-------------------------|---|
| Displayed speed         |   |
| Speed_1                 | - |
| Speed 1                 |   |
| Speed_2<br>BOSCH_SPEED1 |   |
| BOSCH_SPEED2            |   |

This drop down menu allows to select the speed shown by the display.

In the example above **DaVid** is connected to a Bosch ECU that transmits two speed channels which are additional to the logger ones, both enabled.



#### Display Pages 1 e 2 – Channels and alarms

| Display Page 1 - Channels and alarms |           |  |
|--------------------------------------|-----------|--|
| Field 1                              | Channel_1 |  |
|                                      | LEDValue  |  |
| HIGH                                 | None 💌 0  |  |
| LOW                                  | None 💌 0  |  |
| Field 2                              | Channel_1 |  |
|                                      | _LEDValue |  |
| HIGH                                 | None 💌 0  |  |
| LOW                                  | None 💌 0  |  |

These boxes allow to set the displayed channels linking them to one of the four alarm led placed sideways of the display.

- select the channel to show from the drop down menu;
- set High/Low alarm selecting the led to link them to;
- fill in the threshold value.

#### Shift Lights box

| Shift Light |       |       |       |       |
|-------------|-------|-------|-------|-------|
| Led 1       | Led 2 | Led 3 | Led 4 | Led 5 |
| 0           | 0     | 0     | 0     | 0     |

It manages the 10 led placed on top of the logger display.

Led colours: the first two on the left and on the right are green, the central two are orange and the last four are red. To set RPM threshold values fill in the cases. The led switch progressively on and when the engine reaches RPM value set for led 5 all led start blinking, warning the pilot to shift gear.

If a case is set on "0" the corresponding led is disabled.

#### Display messages box

| Display messages |          |  |
|------------------|----------|--|
|                  | Language |  |
| Italiano         | <b>•</b> |  |
| English          |          |  |
| Italiano         |          |  |
| Deutsch          |          |  |
| Francais         |          |  |
| Slovensko        |          |  |
| Español          |          |  |

This drop down menu allows the user to select the display language.



#### 17.1.2 – How to configure MyChron3 Dash for EVO3 Pro/Pista

Selecting **M3-Dash** this configuration window appears.

| Lights         Led 1         Led 2         Led 3         Led 4         Led 5           0         0         0         0         0         0         0 |   |
|--|---|
| SHIFT LIGHT  | Display Page 1 - Channels and alarms Display page 2 - Channels and alarms |
| 1 2 3 4 5 5 4 3 2 1  | Field 2 Channel_2 Field 2 Channel_4                                       |
| 0000 3 000   | LED Value LED Value   |
|  | HIGH None V 0 HIGH None V 0   |
|  | LOW None 🔽 0 LOW None 🔽 0   |
| חר א 8500  |   |
| ² 🥯 <u>~ 68'9 1:20.35 </u> 4   | Field 1 Channel_1 Field 1 Channel_3                                       |
|  | LED Value LED Value   |
|  | HIGH None V 0 HIGH None V 0   |
|  | LOW None 🔽 0  |

Display Page 1 and 2 – Channels and alarm

| Display Page 1 - Channels and alarms |           |       |  |
|--------------------------------------|-----------|-------|--|
| Field 2                              | Channel_2 |       |  |
|                                      | LED       | Value |  |
| HIGH                                 | None 💌 0  |       |  |
| LOW                                  | None 🔻 0  |       |  |
| Field 1                              | Channel_1 | •     |  |
|                                      | LED       | Value |  |
| HIGH                                 | None 🗾 0  |       |  |
| LOW                                  | None 🔽 0  |       |  |

These boxes allow to set the displayed channels linking them to one of the four alarm led placed sideways of the display.

- select the channel to show from the drop down menu;
- set High/Low alarm selecting the led to link them to;
- fill in the threshold value.

#### Shift Light box

| Shift Lights - |       |       |       |       |
|----------------|-------|-------|-------|-------|
| Led 1          | Led 2 | Led 3 | Led 4 | Led 5 |
| 0              | 0     | 0     | 0     | 0     |

It manages the 10 led placed on top of the logger display.

Led colours: the first two on the left and on the right are green, the central two are orange and the last four are red. To set RPM threshold values fill in the cases. The led switch progressively on and when the engine reaches RPM value set for led 5 all led start blinking, warning the pilot to shift gear.

If a case is set on "0" the corresponding led is disabled.



## 17.2 – How to configure TG Dash

TG Dash is available for David and for EVO3 Pro/Pista and for EVO4.

#### 17.2.1 – TG Dash for DaVid

Select TG-Dash display and this window appears.

| Select configuration Channels Display Da         | Wid   |
|--|---|
| Available displays TG-dash                       | •   |
| Speed channel<br>Displayed speed<br>BOSCH_SPEED1 | LAGUNA SECA<br>1:07,72<br>MENUI I MEM IVIEW |

The only settable channel is the speed.

| Speed channel                                      |
|--|
| Displayed speed                                    |
| Speed_1  |
| Speed_1<br>Speed_2<br>BOSCH_SPEED1<br>BOSCH_SPEED2 |

In the example below **DaVid** is connected to a Bosch ECU, that transmits two speed channels; it is thereby possible to show one of **David** speeds or one of the ECU ones.

**Note**: TG-Dash is mainly configurable via keyboard; refer to its user manual for further information.



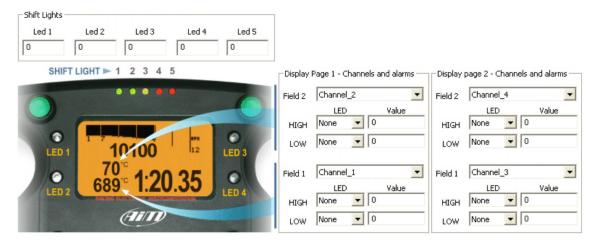
#### 17.2.2 – TG Dash for EVO3 Pro/Pista and EVO4

Selecting **TG-dash** display the related window appears It needs no via software configuration. Just select the display from the drop down menu.



## 17.3 – How to configure Formula Steering Wheel

**Formula Steering wheel** display is only available for **EVO3 Pro/Pista** and **EVO4**. Selecting **"Formula Steering Wheel**" this window appears:



Display Pages 1and 2 – Channels and alarm Boxes

| Display         | Page 1 - Channels a | and alarms        |
|-----------------|---------------------|-------------------|
| Field 2         | Channel_2           | •                 |
|                 | LED                 | Value             |
| HIGH            | None 🔽 0            |                   |
| LOW             | None 🔽 0            |                   |
|                 |                     |                   |
| Field 1         | Channel_1           | -                 |
| Field 1         | LED                 | <b>▼</b><br>Value |
| Field 1<br>HIGH |                     | Value             |

These boxes allow to set the displayed channels connecting them to one of the four alarm led placed laterally on the display.

To set them:

- select the channel to show from the drop down menu;
- set it as High/Low alarm selecting the led to link it to
- fill in threshold value case.



#### Shift Light box

| Shift Lights – |       |       |       |       |
|----------------|-------|-------|-------|-------|
| Led 1          | Led 2 | Led 3 | Led 4 | Led 5 |
| 0              | 0     | 0     | 0     | 0     |

Sets the 10 led placed on top of the logger display. Led colours: the first two on the left and on the right are green, the central two are orange and the last four are red. The led switch progressively on and when the engine reaches RPM value fixed for led 5 all led start blinking, warning the pilot to shift gear.

If one case is set on "0" the corresponding led is disabled.



# **Chapter 18 – Online**

When the calibration is over and the configuration has been transmitted to the logger, it is suggested to enter "Online" pressing the corresponding button on the menu bar, on the left vertical keyboard to verify that all works properly. In MyChron3 loggers online button is also in system manager window as shown here below.



| (GUID)   | 📓 System manager                      | 10.40                           |                             |  |          |                           |        |             |               |                        | - E1              |
|--|---------------------------------------|---------------------------------|-----------------------------|--|----------|---------------------------|--------|-------------|---------------|------------------------|-------------------|
| Racing Data Roser  | Tranund                               | Recei                           | iva 😥                       | CAN-Net info                                       | 60 Se    | t acquisition sys         | tem    | 5           | martyC.       | an Functions<br>etting |                   |
| AIM Sportline<br>World Leader in Data Acquisition  | Current configuration                 |                                 |                             |  | -        |                           |        | _           |               |                        |                   |
| 1  |                                       | TRADA AM - PROT_CAN             | Vehicle name<br>N DEFAULT   | Available time Time wit<br>0.00.00 (h.m.s) 7.13.04 |          | Total frequency<br>0 (Hz) | 0 (Hz) | r frequency | Expe<br>0 (Hz | nsions freq            | Tot Expansio<br>0 |
| Go to Analysis   | Columnation of the section of Channel | nels   System configuration   D | AN Furnishing configuration | and I  |          |                           |        |             |               |                        |                   |
|  | A New                                 | Delete                          | Clone                       | mport.   | 1        | Export                    | 1      |             |               |                        |                   |
| Download data  | N Installation name                   | Logger                          | ECU Manufacti               |  | Vehicle  | name Obs                  | Solt   | Speed       | Temp          | Created                | Tot               |
|  | DEFAULT                               | Mil STRADA                      | - AIM                       |  | - DEFALL |                           | 1      | km/h _      |               | · June 10, 2           |                   |
| AlM system manager   | 2 DEFAULT                             | MOL PISTA                       | • None                      |  | DEFALL   |                           | 1      | imth 💌      |               | · June 10, 2           |                   |
| - All Cylindri Hanager   | 3 DEFAULT                             | MAL PRO                         | - None                      | • None   | DEFAUL   | T 8                       | 1      | km/h .      |               | · June 10, 2           |                   |
|  | 4 DEFAULT                             | MOL PRO 05                      | E BOSCH                     |  | DEFALL   | 1 8                       | 1      | km/th -     | PC .          | June 10, 2             | 009 8             |
| Construction of the Constr | 5 DEFAULT                             | MOL STRADA                      | None None                   | - None   | DEFALL   | т 8                       | 1      | km/h 💌      | 190 .         | • June 11, 2           | 009 0             |
| AIM system identification  | 6 DEFAULT                             | MUL PISTA SUZUKI GSI            | K SUZUKI                    | GSVR_K5_K6   | DEFAUL   | T 8                       | 1      | im/h =      | °C .          | • June 12, 2           | 009 0             |
| ). Online  |                                       |                                 |                             |  |          |                           |        |             |               |                        |                   |
|  |                                       |                                 |                             |  |          |                           |        |             |               |                        |                   |
|  |                                       |                                 |                             |  |          |                           |        |             |               |                        |                   |
| AIM system calibration   |                                       |                                 | 6                           | )ther syste  | ems      | ì                         |        |             |               |                        |                   |
| AIM system calibration   |                                       |                                 |                             | Other syste  | ems      | )                         |        |             |               |                        |                   |
| AIM system calibration   |                                       |                                 |                             | Other syste  | ems      | )                         |        |             |               |                        |                   |
| AIM system calibration   |                                       |                                 |                             | Other syste  | ems      | )                         |        |             |               |                        |                   |
| AIM system calibration   |                                       |                                 |                             | )ther syste  | ems      | )                         |        |             |               |                        |                   |
| AIM system calibration   |                                       |                                 |                             | Other syste  | ems      | )                         |        |             |               |                        |                   |
| AIM system calibration   |                                       |                                 | •                           | )ther syste  | ems      | )                         |        |             |               |                        |                   |
| AIM system calibration   |                                       |                                 |                             | )ther syste  | ems      | )                         |        |             |               |                        |                   |
| AIM system calibration   |                                       |                                 |                             | )ther syste  | ems      | )                         |        |             |               |                        |                   |
| AIM system calibration   |                                       |                                 |                             | Other syste  | ems      | )                         |        |             |               |                        |                   |
| AIM system calibration   |                                       |                                 |                             | Other syste  | ems      | )                         |        |             |               |                        |                   |



This function allows to check that all works properly. Ensure that the logger is switched on and well connected to the Pc.

| Logger | type:     |                | Firmware version:       | Total fre | quency: |   | -                         |
|--------|-----------|----------------|-------------------------|-----------|---------|---|---------------------------|
| MXL P  | ISTA      |                | 14.86.0                 | 296 (Hz   | :)      |   | Show ADC counts           |
| N      | Channel i | Channel name   | Sensor type             | Meas      | Measure | ~ | Show mV                   |
| 1      | RPM       | Engine         | Engine revolution speed | rpm       | 0       |   |                           |
| 2      | SPD_1     | Speed_1        | Speed                   | km/h .1   | 0.0     |   | Battery                   |
| 3      | CH_1      | Channel_1      | Generic linear 0-5 V    | V.1       | 0.2     |   |                           |
| 4      | CH_2      | Channel_2      | Generic linear 0-5 V    | V.1       | 2.6     |   | 13.705                    |
| 5      | CH_3      | Channel_3      | Generic linear 0-5 V    | V .1      | 0.0     |   |                           |
| 6      | CH_4      | Channel_4      | Generic linear 0-5 V    | V .1      | -0.0    |   | Memory                    |
| 7      | CH_5      | Channel_5      | Generic linear 0-5 V    | V.1       | 0.0     |   | 1%                        |
| 8      | CH_6      | Channel_6      | Generic linear 0-5 V    | V .1      | 0.0     |   | Logger is storing data    |
| 9      | CH_7      | Channel_7      | Generic linear 0-5 V    | V.1       | 0.0     |   |                           |
| 10     | CH_8      | Channel_8      | Generic linear 0-5 V    | V .1      | 0.0     |   | Lap marker                |
| 11     | CALC_GEAR | Calculated_Gea | Calculated Gear         | #         | 0       |   | 0.00.000                  |
| 12     | ACC_1     | LatAcc         | Lateral accelerometer   | g .01     | -0.75   |   | Waiting., - Last lap nr.0 |
| 13     | LOG_TMP   | Datalogger_Tem | Cold joint              | °C        | 27      |   | I rating r case april to  |
| 14     | BATT      | Battery        | Battery                 | V.1       | 13.7    |   | Logger-PC link            |
| 15     | ECU_1     | BOSCH_RPM      | Engine speed sensor     | rpm       | 4096    |   | Communication line: OK    |
| 16     | ECU_2     | BOSCH_SPEED1   | Bosch speed sensor      | km/h .1   | 64.0    |   |                           |
| 17     | ECU_3     | BOSCH_SPEED2   | Speed sensor            | km/h      | ERR.    |   |                           |
| 18     | ECU_4     | BOSCH_OIL_PRES | Pressure sensor         | bar .1    | ERR.    |   | Configuration status      |
| 19     | ECU_5     | BOSCH_FUEL_PRE | Pressure sensor         | bar .1    | ERR.    |   | Configuration is OK       |
| 20     | ECU_6     | BOSCH_ATM_PRES | Pressure sensor         | mbar      | ERR.    |   |                           |
| 21     | ECU_7     | BOSCH_FUEL_TEM | Temperature sensor      | °C        | ERR.    |   |                           |
| 22     | ECU_8     | BOSCH_OIL_TEMP | Temperature sensor      | °C        | ERR.    |   |                           |
| 23     | ECU_9     | BOSCH_ENGINE_T | Temperature sensor      | °C        | ERR.    |   | Exit                      |
| 24     | ECU 10    | BOSCH ATR TEMP | Temperature sensor      | <u>ەر</u> | FRR     | ~ |                           |

#### On top:

- Logger type: the type of logger connected to the PC.
- Firmware version: firmware version installed on that logger.
- Total frequency: sum of all channels sampling frequency.

#### Central: channels table

#### On the right:

- Show ADC counts and show mV: buttons mainly used by AIM staff.
- Battery: shows battery voltage; in some loggers beside this case there is another one labelled V Ref. that shows V Ref value.
- Memory: shows memory status (logger is storing data or logger isn't storing data).
- Lap marker: checks transmitter/receiver channels. Place the transmitter in front of the receiver to test this function.
- Logger-PC link: shows the status of the USB connection.
- Configuration status: shows the configuration status.
- Exit: quits online window.

**Note**: if this message appears check that the logger is switched on, the cable is correctly plugged in the PC and in the Logger USB port; then try again.





# Chapter 19 – How to download data

Once a test session is over it is possible to download data sampled by the logger. The software procedure is slightly different for the different loggers. On the contrary, the mechanical procedure is the same:

- connect the USB cable to the logger and to the PC USB port;
- switch the logger on;
- press "Download data" on the menu bar or on the left vertical keyboard.





## **19.1 – Download data from MyChron3 (all versions) and DaVid**

Pressing download buttons the related window appears.

Warning: default setting is clear logger memory after saving data.

It is possible to disable that checkbox. The figures here below show the two options:

|            |                            | Operation in progress  | 3         |        |
|------------|----------------------------|--|-----------|--------|
|            |                            |  |           | 11 %   |
| 1.0        | lear logger memory after s | and and a second se |           |        |
| _          |                            |  |           |        |
|            | Browse C:\Program          | ni\AIM\DATA\NEW.DRK  |           |        |
| m≻<br>test | Name (necessary):          | NEW  |           |        |
| 2          | Track:                     | None   | Add / M   | lodify |
| x          | Vehicle:                   | None   | Add / M   | lodify |
| •          | Driver:                    | None   | Add / M   | lodify |
| 2          | Championship:              | None   | ▼ Add / M | lodify |
|            | Test type:                 | Generic testing  |           | •      |
| 4          | Test comments:             |  |           |        |
|            |                            |  |           |        |
|            |                            |  |           |        |
|            |                            |  | Save Ca   | incel  |

| O-multin in annual |                             |                  |      |              |  |  |  |  |  |
|--------------------|-----------------------------|------------------|------|--------------|--|--|--|--|--|
|                    | Operation in progress       |                  |      |              |  |  |  |  |  |
|                    |                             |                  |      | 11 %         |  |  |  |  |  |
| ПС                 | ilear logger memory after s | aving data       |      |              |  |  |  |  |  |
| E                  | Browse C:\Programm          | AIM\DATA\NEW.DRK |      |              |  |  |  |  |  |
| -                  |                             |                  |      |              |  |  |  |  |  |
| m≻<br>test         | Name (necessary):           | NEW              |      |              |  |  |  |  |  |
|                    | Track:                      | None             |      | Add / Modify |  |  |  |  |  |
| _                  |                             |                  |      |              |  |  |  |  |  |
| 3                  | Vehicle:                    | None             | -    | Add / Modify |  |  |  |  |  |
| ٠                  | Driver:                     | None             | -    | Add / Modify |  |  |  |  |  |
| Ţ                  | Championship:               | None             |      | Add / Modify |  |  |  |  |  |
|                    |                             |                  |      |              |  |  |  |  |  |
| E                  | Test type:                  | Generic testing  |      | -            |  |  |  |  |  |
| 2                  | Test comments:              |                  |      |              |  |  |  |  |  |
|                    |                             |                  |      |              |  |  |  |  |  |
|                    |                             |                  |      |              |  |  |  |  |  |
|                    |                             |                  |      |              |  |  |  |  |  |
|                    |                             |                  | Save | Cancel       |  |  |  |  |  |

On top of the window there is a waiting bar that shows download progression in percentage.

| Dow        | Download - MYCHRON3            |                  |              |  |  |  |  |  |  |  |
|------------|--------------------------------|------------------|--------------|--|--|--|--|--|--|--|
|            | Operation in progress          |                  |              |  |  |  |  |  |  |  |
|            | 100%                           |                  |              |  |  |  |  |  |  |  |
| ΠC         | ilear logger memory after savi | ng data          |              |  |  |  |  |  |  |  |
| E          | Browse C:\Programmi\           | AIM\DATA\NEW.DRK |              |  |  |  |  |  |  |  |
| m≻<br>test | Name (necessary):              | NEW              |              |  |  |  |  |  |  |  |
| 6          | Track:                         | None             | Add / Modify |  |  |  |  |  |  |  |
| 3          | Vehicle:                       | None             | Add / Modify |  |  |  |  |  |  |  |
|            | Driver:                        | None             | Add / Modify |  |  |  |  |  |  |  |
| 2          | Championship:                  | None             | Add / Modify |  |  |  |  |  |  |  |
| E          | Test type:                     | Generic testing  | •            |  |  |  |  |  |  |  |
| 2          | Test comments:                 |                  |              |  |  |  |  |  |  |  |
|            |                                |                  |              |  |  |  |  |  |  |  |
|            |                                |                  |              |  |  |  |  |  |  |  |
|            |                                | Save             | Cancel       |  |  |  |  |  |  |  |

When download is completed " Save" button – bottom right – enables.



Pressing it without specifying anything the file is saved as "NEW.DRK" in this folder: "X:\Program files\AIM\DATA" (where X is the hard disk where **Race Studio 2** has been installed).

| Save As   |  |   |  |   |     |        | ? 🗙    |
|---|--|---|--|---|-----|--------|--------|
| Save in:  |  |   |  | ~ | G 💋 | •111 🥙 |        |
| Recent<br>Desktop<br>My Documents<br>Computer<br>My Network<br>Places | Recent<br>Desktop<br>Computer<br>DVD-RW<br>WIN_ZPC<br>MIN_ZPC<br>AIM<br>Computer<br>WIN_ZPC<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>Computer<br>AIM<br>AIM<br>Computer<br>AIM<br>AIM<br>Computer<br>AIM<br>AIM<br>AIM<br>Computer<br>AIM<br>AIM<br>Computer<br>AIM<br>AIM<br>AIM<br>Computer<br>AIM<br>AIM<br>AIM<br>AIM<br>AIM<br>AIM<br>AIM<br>AIM | Drive (D:)<br>C:)<br>Files<br>A<br>ndivise<br>scumentš<br>rents |  |   |     |        |        |
|   | File name:   | NEW.DRK   |  |   |     | ~      | Save   |
|   | Save as type:  | AIM - Race Studio 2 (*.drk)                                     |  |   |     | ~      | Cancel |

It is also possible to save the file with some specific characteristics and in a desired folder following the procedure here explained.

#### Saving the file in a specific folder

- Press "Browse".
- "Save as" window appears.
- Browse it and select the desired folder.

| Save As  |               |                  |   |          | ? 🗙    |
|--|---------------|------------------|---|----------|--------|
| Save in:   | DATA          |                  | • | + 🗈 💣 🎟- |        |
| My Recent<br>Documents<br>Desktop<br>My Documents<br>My Computer | C BIKE        |                  |   |          |        |
| My Network   | File name:    | NEW.DRK          |   | •        | Save   |
| Places   | Save as type: | File DRK (.drk.) |   | •        | Cancel |

- fill in File name case.
- press "Save".



#### Saving the file with some specific characteristics.

| Dow                   | Download - MYCHRON3           |                  |              |  |  |  |  |  |  |
|-----------------------|-------------------------------|------------------|--------------|--|--|--|--|--|--|
| Operation in progress |                               |                  |              |  |  |  |  |  |  |
|                       | 100%                          |                  |              |  |  |  |  |  |  |
|                       | lear logger memory after savi |                  |              |  |  |  |  |  |  |
| E                     | Browse C:\Programmi\A         | AIM\DATA\NEW.DRK |              |  |  |  |  |  |  |
| m≻<br>test            | Name (necessary):             | NEW              |              |  |  |  |  |  |  |
| 2                     | Track:                        | None             | Add / Modify |  |  |  |  |  |  |
| 3                     | Vehicle:                      | None             | Add / Modify |  |  |  |  |  |  |
|                       | Driver:                       | None             | Add / Modify |  |  |  |  |  |  |
| 2                     | Championship:                 | None             | Add / Modify |  |  |  |  |  |  |
| E                     | Test type:                    | Generic testing  | •            |  |  |  |  |  |  |
| 2                     | Test comments:                |                  |              |  |  |  |  |  |  |
|                       |                               |                  |              |  |  |  |  |  |  |
|                       |                               |                  |              |  |  |  |  |  |  |
|                       |                               | Save             | Cancel       |  |  |  |  |  |  |

Select the desired characteristics through the drop down menus placed beside the different characteristics: Track, Vehicle, Driver, Championship or Test type.

#### To add new characteristics:

• press lateral "Add/Modify" button and the window here below appears;



• fill in a new name in the top right case of the window;





- "<< Add value to database" button enables;</li>
- press it and the new characteristic are inserted in the database;
- press "✓OK" button to save the new characteristic (or "Cancel" to quit without saving);
- the system comes back to the previous window;
- this new characteristic is now selectable from the drop down menu.

#### To modify or delete a characteristic

• press "Add/Modify" button and the window here below appears;



- select the characteristic to be deleted/modified
- "<< Modify database value" and "<<Delete database value" buttons enable;</li>
- press the desired one;
- modify the characteristics if this is the selected option;
- press "✓OK" button to save changes (or "Cancel" to quit without saving);
- the system comes back to the previous window.

When all characteristics have been inserted press "✓ Save".



The system asks if the logger memory has to be deleted or not. Press the desired button.



During data download the system can show different warning messages:



The system informs the user that downloaded data have not been saved. Press "No" to save data before quitting.

| RaceStudioConf |  |  |  |  |  |
|----------------|--|--|--|--|--|
| ٩              | Test NEW already exists.<br>Click YES to modify the name in NEW_001.<br>Click NO to set new name manually. |  |  |  |  |
|                | Sì No  |  |  |  |  |

The system warns that that file name already exists and gives two options:

- using a progressive nomenclature: press "Yes"
- filling in a new name manually: press "NO" and follow the procedure explained before.



## **19.2 – Downloading data from other systems**

Pressing "Download data" button the related window, shown here below, appears.

| 👱 Do       | wnload 2.22.08 - MXL PIS              | ТА   |                                       |          |                 |         |                  |                |             |
|------------|---------------------------------------|--|---------------------------------------|----------|-----------------|---------|------------------|----------------|-------------|
|            | Choose folder C:\Pro                  | gram Files\AIM\DATA\                             |                                       |          |                 |         |                  |                |             |
| 1          | DRK file Name                         | r> <vehicle><day><month></month></day></vehicle> | > <year (="" )="" yyyy="">.drk</year> |          |                 |         |                  |                |             |
|            | · · · · · · · · · · · · · · · · · · · |  |                                       |          |                 |         |                  |                |             |
| <b>⊠</b> ≣ | Select all                            | Deselect all                                     | Hid                                   | e runs m | narked as "Hidd | len"    | Ø                | Options        |             |
| Ň          | Sel. D Hi Driver                      | Vehicle  | Date of Run                           | Laps     | Starting T      | DR      | DRK file name    |                | • •••       |
| 1          | 🔽 🗄 🔿 f 🔽 🖞 None                      | None   | February 18, 2008                     | 1        | 08: 01: 33      | 2       | 18022008_001.drk |                | Т           |
| 2          | 🔽 : 🔿 î 🗖 : None                      | None   | February 17, 2008                     | 1        | 18: 20: 12      | 1       | 17022008_001.drk |                | T<br>T<br>T |
| 3          | 🗹 : 🔿 i 🗖 : None                      | None   | February 17, 2008                     | 1        | 15: 45: 45      | 1       | 17022008_001.drk |                | Т           |
| 4          | 🔽 : 🔿 t 🥅 : None                      | None   | February 17, 2008                     | 1        | 13: 43: 27      | 1       | 17022008_001.drk |                | Т           |
|            |                                       |  |                                       |          |                 |         |                  |                |             |
|            |                                       | Operation status                                 |                                       |          |                 |         |                  |                | _           |
| -          |                                       | 1  |                                       |          | 0%              | · · · · |                  |                |             |
| ď          | Clear datalogger memory               | Download selecte<br>then clear men               |                                       | Dov      | vnload selected | ł       | 4                | <u>C</u> ancel |             |

Data download from MXL and EVO3 Pro/Pista requires an inverted procedure compared to MyChron3 and DaVid one.

While before data were characterised after download, now it is necessary to before characterise the data and after download them.

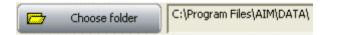
Starting download procedure the system shows - in the central table - data stored in the logger memory.

This window allows to select which data to download, if showing or hiding and how to group them.



#### Choose folder button

This button allows the user to select the file destination folder.



As shown here above, the system has a default destination folder, that is on the hard disk where **Race Studio 2** is installed (in this case hard disk "C"). To save the data elsewhere press "Choose folder" button. "Choose folder" window appears:

| Choose Folder   |        |
|---|--------|
| Choose DRK folder   |        |
| Ahead<br>AIM<br>AIM_USB_RIVER_2008<br>CFG<br>CFG<br>CFGEV3<br>COLORS<br>CONTACT_US<br>DASHBOARD<br>NATA | ~      |
| Folder: DATA  | Cancel |

Browse it to select the destination folder or create a new one pressing "New folder" button.



#### DRK File name button

This button allows to save data with a custom name.

| (S) | DRK file Name | <pre><driver><vehicle><day><month><year (="" )="" yyyy="">.drk</year></month></day></vehicle></driver></pre> |
|-----|---------------|--|
|-----|---------------|--|

As shown in the figure above, the default name has some specific characteristics that have to be defined.

In case user does not select these characteristics they are automatically set on "None", as shown here below:

| Select all     Descrict all     Des  | S)          |      |   | ose<br>File |      |            |                   |                      | AIM\DATA\<br>cle> <day><mi< th=""><th>lonth&gt;<ye< th=""><th>ar ( yyy</th><th>y)&gt;.drk</th><th></th><th></th><th></th><th></th><th></th><th></th></ye<></th></mi<></day> | lonth> <ye< th=""><th>ar ( yyy</th><th>y)&gt;.drk</th><th></th><th></th><th></th><th></th><th></th><th></th></ye<> | ar ( yyy     | y)>.drk        |           |                |      |                |             |   |
|--|-------------|------|---|-------------|------|------------|-------------------|----------------------|---|--|--------------|----------------|-----------|----------------|------|----------------|-------------|---|
| V         Image: Source of the source of | <b>2</b> 11 |      |   | s           | elei | t all      |                   |                      | Deseler   | ct all   |              | E H            | le runs i | marked as "Hid | den" | ß              | Options     |   |
| Provide         Provide         Petruary 17, 2008         1         18: 20: 12         Nonetkone17022008_003.dk           V  |             | Sel. | T | o           | H    | łi         | Driver            | _                    | Vehicle   | Da   | ite of Ru    | n              | Laps      | Starting T     | DR., | DRK file name  | ~           | - |
| Provide         Petruary 17, 2008 1         15:45:45 1         Nonetwore17022008_003.dk           Provide         Petruary 17, 2008 1         13:43:27 1         Nonetwore17022008_003.dk           DRK         File name         Nonetwore18022008_003.drk         Nonetwore17022008_003.drk           NoneNone17022008_003.drk         NoneNone17022008_003.drk         NoneNone17022008_003.drk   |             | 1    | 1 |             | 11   | 7 1        | None              | 1                    | None  | Fe   | ebruary      | 18, 2008       | 1         | 08:01:33       | 2    | NoneNone180220 | 008_003.drk |   |
| DRK file name         NoneNone18022008_003.drk         NoneNone17022008_003.drk           NoneNone17022008_003.drk         NoneNone17022008_003.drk  |             | V    | 1 | •           | 1 1  | -          | None              |                      | None  | Fe   | bruary       | 17, 2008       | 1         | 18: 20: 12     | 1    | NoneNone170220 | 008_003.drk |   |
| DRK file name<br>NoneNone18022008_003.drk<br>NoneNone17022008_003.drk<br>NoneNone17022008_003.drk  |             |      | 1 | •           | 11   | -          | None              |                      | None  | Fe   | bruary       | 17, 2008       | 1         | 15: 45: 45     | 1    | NoneNone170220 | 008_003.drk |   |
| NoneNone18022008_003.drk<br>NoneNone17022008_003.drk<br>NoneNone17022008_003.drk   |             |      | 1 | 0           | 15   | <b>7</b> 1 | None              |                      | None  | Fe   | bruary       | 17, 2008       | 1         | 13: 43: 27     | 1    | NoneNone170220 | 008_003.drk |   |
|  |             |      |   |             |      |            | Non<br>Non<br>Non | ieNo<br>ieNo<br>ieNo | ne1802:<br>ne1702:<br>ne1702:   | 2008<br>2008   | _00:<br>_00: | 3.drk<br>3.drk |           | )              |      |                |             |   |

To define the characteristics press "DRK file name" button and the window here below appears.

| DRK File Name   |             |  |
|---|-------------|--|
| Choose name items<br>Driver<br>Vehicle<br>Year<br>Month<br>Day<br>LoggerType<br>Test Number<br>Year ( yy )<br>Custom Text<br>Hour<br>Minutes<br>Seconds | Add to name | Name of DRK file<br><driver><vehicle><day><month><year (="" )="" yyyy="">.drk<br/>for example<br/>MIKESUPERCAR03032008</year></month></day></vehicle></driver> |
| Custom text   |             | <mark>_√ <u>0</u>Kancel</mark>   |

To fill in each field:

- select it from "Choose name items" case;
- place the pointer in the point where to insert the item;
- press "Add to name";

To insert a custom text in the name, insert it in the related case;

- select the custom text from the left list;
- place the pointer in the point where to insert the new item;
- press "Add to name";

When all name characteristics have been defined press " $\checkmark$ OK" (or "Cancel" to quit without saving) and the new name is saved.



#### Central keyboard

| Select all |  | Deselect all | Hide runs marked as "Hidden" | ß | Options |  |
|------------|--|--------------|------------------------------|---|---------|--|
|------------|--|--------------|------------------------------|---|---------|--|

These buttons allow to decide which data to download.

- Pressing "Select all" button all runs stored in the logger memory are downloaded.
- Pressing "Deselect all" no run is downloaded.
- To download only some runs: select them manually in the central table. As shown here below, placing the mouse pointer near to each run the system automatically shows the actual setting of that run. Just change it as needed.



| A Download 2.22.08 - MXL PISTA |                         |         |                  |     |    |  |  |  |  |  |
|--------------------------------|-------------------------|---------|------------------|-----|----|--|--|--|--|--|
|                                | Choose folder           |         |                  |     |    |  |  |  |  |  |
| S                              | DRK file Name CDriver>< |         |                  |     |    |  |  |  |  |  |
|                                |                         | Sel     | ect all          |     |    |  |  |  |  |  |
| N                              | Sel.                    | D       | Hi Driver        |     |    |  |  |  |  |  |
| 1                              | V 3                     | 01      | <b>V</b> :       | Nor | ne |  |  |  |  |  |
| 2                              |                         | 01      | <mark>ا ا</mark> | Nor | ne |  |  |  |  |  |
| 3<br>4                         |                         | Will no | t be do          |     |    |  |  |  |  |  |
| 4                              | M 3                     | 01      | 1 3              | Nor | ne |  |  |  |  |  |

Pressing "**Option**" button it is possible to decide how to group runs, if showing them or setting them as hidden after download. The figures below show the two options.

| 🖉 Options   | 🕫 Options                          |
|---|------------------------------------|
| Methods to group runs in .DRK file         I. One .DRK file for each run         Image: State of the sta | Methods to group runs in .DRK file |
| <mark>⊗∕ OK E</mark> ancel  | Cancel                             |

In case the choice is to set run as hidden after download it is possible to show them in a second time pressing "**Show run marked as hidden**" button on the central keyboard of download window.



#### **Bottom keyboard**



Bottom buttons manage data download and memory deletion of the logger.

- "Clear data logger memory": deletes the logger memory without downloading data.
- "Download selected runs, then clear memory": downloads selected runs and then deletes the logger memory.
- "Download selected": downloads selected runs and does not clear logger memory.

**Note**: each time an operation involving memory deletion is performed the system asks for confirmation showing the related window.



# "DO NOT clear memory": quits data download without performing it nor deleting the logger memory.

When data download is set and data characteristics defined, press the desired download button. Download waiting bar starts showing the download progression and at the end the software comes back to **Race Studio 2** main window.

| 🚨 Do        | ownload 2.22.08 -   | MXL PISTA        |                                     |                                     |          |                 |      |                          | $\mathbf{X}$     |
|-------------|---------------------|------------------|-------------------------------------|-------------------------------------|----------|-----------------|------|--------------------------|------------------|
|             | Choose folder       | C:\Programmi\AIM | 1\DATA\                             |                                     |          |                 |      |                          |                  |
| S           | DRK File Name       | <pre></pre>      | > <day><month></month></day>        | <year (="" )="" yyyy="">.drk</year> |          |                 |      |                          |                  |
|             |                     |                  |                                     |                                     |          |                 |      |                          |                  |
| <b>W</b> ii | Select all          |                  | Deselect all                        | Hd                                  | e runs n | narked as "Hidd | ien" | Options                  |                  |
| N           | Sel. D Hi D         | Driver V         | ehicle                              | Date of Run                         | Laps     | Starting T      | DR   | DRK file name            |                  |
| 1           | V C / V IN          | Jone N           | one                                 | February 18, 2008                   |          |                 | 2    | NoneNone18022008_003.drk | T<br>T<br>T<br>T |
| 2           | V OIV LN            | Jone N           | one                                 | February 17, 2008                   | 1        | 18: 20: 12      | 1    | NoneNone17022008_003.drk | T                |
| 3           | V                   | Jone N           | ione                                | February 17, 2008                   | 1        | 15: 45: 45      | 1    | NoneNone17022008_003.drk | T                |
| 4           | V 1 6 1 V LN        | Jone N           | one                                 | February 17, 2008                   | 1        | 13: 43: 27      | 1    | NoneNone17022008_003.drk | T                |
| -           | <i>.</i>            | /                |                                     |                                     |          |                 |      |                          |                  |
|             |                     |                  | ownloading data                     |                                     |          |                 |      |                          |                  |
| -           |                     | 1                |                                     |                                     |          | 28 9            | 70   | (                        |                  |
| ď           | Clear datalogger me | emory            | Donwload selected<br>then clear mem |                                     | Dov      | vnload gelecter | ł    | Cancel                   |                  |