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RACE STUDIO CONFIGURATION USER MANUAL

Release 1.08







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INDEX

INDEX	2
Chapter 1 – Race Studio 2 software	6
1.1 – Compatibility between Race Studio 2 and operative systems	
Chapter 2 - Installing Race Studio 2 and the USB Driver	
2.1 – Preliminary operation.	7
2.2 – Installing Race Studio 2 under Microsoft Windows XP	
2.3 – Troubleshooting	
2.4 – Installing Race Studio 2 under Microsoft Windows Vista	. 13
2.5 – Installing the USB driver: "Run as Administrator" procedure	
2.6 – Troubleshooting	. 17
2.7 – Race Studio 2 visualization problems	. 18
Chapter 3 – System identification	
3.1 – System identification of MyChron3	.22
3.2 – System identification of other loggers.	
Chapter 4 – How to configure MyChron3 kart Plus/Gold/Extreme	24
4.1 – Creating a new configuration	27
4.2 – Channels	
4.3 – System configuration	
4.3.1 – Display language box	
4.3.2 – Speed box	
4.3.3 – Shift Lights box	
4.3.4 – RPM box	
4.3.5 – Channels alarm boxes	
4.3.6 – Lap box	
4.3.7 – Gear sensor box	
4.3.8 – Unit of measure box	. 31
4.4 – Transmitting the configuration	. 32
4.5 – Auto calibration of the accelerometer (Gold/Extreme only)	. 32
4.5 – Auto calibration of the accelerometer (Gold/Extreme only) 4.6 – Gear Calculation	. 32
 4.5 – Auto calibration of the accelerometer (Gold/Extreme only) 4.6 – Gear Calculation	. 32 . 32
 4.5 – Auto calibration of the accelerometer (Gold/Extreme only)	. 32 . 32 33
 4.5 – Auto calibration of the accelerometer (Gold/Extreme only)	. 32 . 32 . 33 . 36
 4.5 – Auto calibration of the accelerometer (Gold/Extreme only)	. 32 . 32 . 33 . 36 . 37
 4.5 – Auto calibration of the accelerometer (Gold/Extreme only)	. 32 . 32 . 33 . 36 . 37 . 38
 4.5 - Auto calibration of the accelerometer (Gold/Extreme only)	. 32 . 32 . 33 . 36 . 37 . 38 . 39
 4.5 - Auto calibration of the accelerometer (Gold/Extreme only)	. 32 . 32 . 33 . 36 . 37 . 38 . 39 . 40
 4.5 - Auto calibration of the accelerometer (Gold/Extreme only)	. 32 . 32 . 33 . 36 . 37 . 38 . 39 . 40 . 40
 4.5 - Auto calibration of the accelerometer (Gold/Extreme only)	. 32 33 . 36 . 37 . 38 . 39 . 40 . 40 . 41
 4.5 - Auto calibration of the accelerometer (Gold/Extreme only)	. 32 33 . 36 . 37 . 38 . 39 . 40 . 40 . 41 . 42
 4.5 - Auto calibration of the accelerometer (Gold/Extreme only)	. 32 . 32 . 33 . 36 . 37 . 38 . 39 . 40 . 40 . 41 . 42 . 42 . 42
 4.5 - Auto calibration of the accelerometer (Gold/Extreme only)	. 32 . 32 . 33 . 36 . 37 . 38 . 39 . 40 . 40 . 41 . 42 . 42 . 42
 4.5 - Auto calibration of the accelerometer (Gold/Extreme only)	. 32 . 32 . 33 . 36 . 37 . 38 . 39 . 40 . 40 . 41 . 42 . 42 . 42 . 42
 4.5 - Auto calibration of the accelerometer (Gold/Extreme only)	. 32 . 32 33 . 36 . 37 . 38 . 39 . 40 . 41 . 42 . 42 . 42 . 42 43
 4.5 - Auto calibration of the accelerometer (Gold/Extreme only)	. 32 33 . 36 . 37 . 38 . 39 . 40 . 41 . 42 . 42 . 42 . 42 . 42 . 42 . 42 . 42
 4.5 - Auto calibration of the accelerometer (Gold/Extreme only)	. 32 33 33 . 36 . 37 . 38 . 39 . 40 . 41 . 42 . 42 . 42 . 42 . 42 . 42 . 42 . 42
 4.5 – Auto calibration of the accelerometer (Gold/Extreme only)	. 32 33 . 36 . 37 . 38 . 39 . 40 . 41 . 42 . 42 . 42 . 42 . 42 . 42 . 42 . 42
 4.5 – Auto calibration of the accelerometer (Gold/Extreme only)	. 32 33 . 36 . 37 . 38 . 39 . 40 . 41 . 42 . 42 . 42 . 42 . 42 . 42 . 42 . 42
 4.5 - Auto calibration of the accelerometer (Gold/Extreme only). 4.6 - Gear Calculation	. 32 33 33 . 36 . 37 . 38 . 39 . 40 . 41 . 42 . 42 . 42 . 42 . 42 . 42 . 42 . 42
 4.5 - Auto calibration of the accelerometer (Gold/Extreme only)	. 32 33 33 . 36 . 37 . 38 . 39 . 40 . 41 . 42 . 42 . 42 . 42 . 42 . 42 . 42 . 42
 4.5 - Auto calibration of the accelerometer (Gold/Extreme only)	. 32 33 36 . 37 . 38 . 39 . 40 . 40 . 40 . 40 . 41 . 42 . 42 . 42 . 42 . 42 . 42 . 42 . 42
 4.5 - Auto calibration of the accelerometer (Gold/Extreme only)	. 32 33 36 . 37 . 38 . 39 . 40 . 40 . 41 . 42 . 42 . 42 . 42 . 42 . 42 . 42 . 42
 4.5 - Auto calibration of the accelerometer (Gold/Extreme only)	. 32 33 36 . 37 . 38 . 39 . 40 . 40 . 41 . 42 . 42 . 42 . 42 . 42 . 42 . 42 . 42
 4.5 - Auto calibration of the accelerometer (Gold/Extreme only) 4.6 - Gear Calculation	. 32 33 33 . 36 . 37 . 38 . 39 . 40 . 40 . 41 . 42 . 42 . 42 . 42 . 42 . 42 . 42 . 42



6.5.6 – Gear sensor box	
6.6.7 – Measure unit box	
6.5.8 – System configuration of MyChron3 XG Log FR2000J	52
6.6 – Transmitting the configuration	53
6.6 – Transmitting the configuration 6.7 – Sensors calibration and auto-calibration	53
6.8 – Gear calculation	
6.9 – Online	53
Chapter 7 – How to configure MXL Strada/Pista/Pro/Pro05	
7.1 – System manager window	
7.1.1 – Select configuration layer	
7.2 – Creating a new configuration	
7.2.1 – MXL Strada/Pista and Pro05 Plug&Play configurations	
7.3 – Channels	
7.3.1 – Speed panels	
7.3.2 – Channels table	
7.4 – Creating a custom sensor	
7.5 – System configuration	
7.5.1 – RPM box	
7.5.2 – Gear sensor box	
7.5.3 – Shift light box	
7.5.4 – Channel for alarm and measure boxes	68
7.5.5 – Speed box	
7.5.6 – Lap box	
7.5.7 – Use GPS Lap timer box	
7.5.8 – Condition enabling checked alarms box	
7.5.9 – Enable static string and welcome message boxes	
7.6 – Configuring the CAN expansions	
7.7 – Transmitting the configuration	
7.8 – Sensors calibration and auto-calibration	
7.9 – Gear calculation	
	75
7.10 – Online	
7.10 – Online Chapter 8 – How to configure DaVid	
7.10 – Online Chapter 8 – How to configure DaVid 8.1 – System manager window	
7.10 – Online Chapter 8 – How to configure DaVid. 8.1 – System manager window 8.1.1 – Select configuration layer	
7.10 – Online Chapter 8 – How to configure DaVid 8.1 – System manager window	
7.10 - Online Chapter 8 - How to configure DaVid 8.1 - System manager window	
7.10 - Online Chapter 8 - How to configure DaVid 8.1 - System manager window	76 78 79 81 82 83
7.10 - Online Chapter 8 - How to configure DaVid 8.1 - System manager window 8.1.1 - Select configuration layer 8.2 - Creating a new configuration 8.3 - Channels 8.3.1 - RPM panel 8.3.2 - Speed panel	76 78 79 81 82 83 83 83
7.10 - Online. Chapter 8 - How to configure DaVid. 8.1 - System manager window 8.1.1 - Select configuration layer 8.2 - Creating a new configuration 8.3 - Channels 8.3.1 - RPM panel. 8.3.2 - Speed panel. 8.3.3 - Gear sensor panel.	76 78 79 81 82 83 83 83 83 83
 7.10 - Online Chapter 8 - How to configure DaVid 8.1 - System manager window 8.1.1 - Select configuration layer 8.2 - Creating a new configuration 8.3 - Channels 8.3.1 - RPM panel 8.3.2 - Speed panel 8.3.3 - Gear sensor panel. 8.3.4 - Reference speed panel 	76 78 79 81 82 83 83 83 83 83 84 84
7.10 - Online Chapter 8 - How to configure DaVid 8.1 - System manager window 8.1.1 - Select configuration layer 8.2 - Creating a new configuration 8.3 - Channels 8.3.1 - RPM panel 8.3.2 - Speed panel 8.3.3 - Gear sensor panel 8.3.4 - Reference speed panel 8.3.5 - Channel table:	76 78 79 81 82 83 83 83 83 84 84 84 84 85
 7.10 - Online Chapter 8 - How to configure DaVid 8.1 - System manager window 8.1.1 - Select configuration layer 8.2 - Creating a new configuration 8.3 - Channels 8.3.1 - RPM panel 8.3.2 - Speed panel 8.3.3 - Gear sensor panel 8.3.4 - Reference speed panel 8.3.5 - Channel table: 8.4 - Creating a custom sensor 	76 78 79 81 82 83 83 83 83 83 84 84 84 85 87
 7.10 - Online Chapter 8 - How to configure DaVid 8.1 - System manager window 8.1.1 - Select configuration layer 8.2 - Creating a new configuration 8.3 - Channels 8.3.1 - RPM panel 8.3.2 - Speed panel 8.3.3 - Gear sensor panel 8.3.4 - Reference speed panel 8.3.5 - Channel table: 8.4 - Creating a custom sensor 8.5 - How to configure DaVid displays 	76 78 79 81 82 83 83 83 83 83 83 84 84 84 85 87 87 87
7.10 - Online Chapter 8 - How to configure DaVid 8.1 - System manager window 8.1.1 - Select configuration layer 8.2 - Creating a new configuration 8.3 - Channels 8.3.1 - RPM panel 8.3.2 - Speed panel 8.3.3 - Gear sensor panel 8.3.4 - Reference speed panel 8.3.5 - Channel table: 8.4 - Creating a custom sensor 8.5 - How to configure DaVid displays 8.6 - How to configure DaVid.	76 78 79 81 82 83 83 83 83 83 83 83 83 83 83 83 83 83
 7.10 - Online Chapter 8 - How to configure DaVid 8.1 - System manager window 8.1.1 - Select configuration layer 8.2 - Creating a new configuration 8.3 - Channels 8.3.1 - RPM panel 8.3.2 - Speed panel 8.3.3 - Gear sensor panel. 8.3.4 - Reference speed panel 8.3.5 - Channel table: 8.4 - Creating a custom sensor 8.5 - How to configure DaVid displays. 8.6 - How to configure DaVid. 8.6.1 - Video Configuration Manager box: 	76 78 79 81 82 83 83 83 83 83 83 83 83 83 83 83 83 83
 7.10 - Online Chapter 8 - How to configure DaVid 8.1 - System manager window 8.1.1 - Select configuration layer 8.2 - Creating a new configuration 8.3 - Channels 8.3.1 - RPM panel 8.3.2 - Speed panel 8.3.3 - Gear sensor panel 8.3.4 - Reference speed panel 8.3.5 - Channel table:. 8.4 - Creating a custom sensor. 8.5 - How to configure DaVid displays. 8.6 - How to configure DaVid 8.6.1 - Video Configuration Manager box: 8.6.2 - Video objects limits 	76 78 79 81 82 83 83 83 83 83 83 83 83 83 84 84 84 85 87 87 87 87 87 89 91
 7.10 - Online. Chapter 8 - How to configure DaVid. 8.1 - System manager window. 8.1.1 - Select configuration layer. 8.2 - Creating a new configuration 8.3 - Channels. 8.3.1 - RPM panel. 8.3.2 - Speed panel. 8.3.3 - Gear sensor panel. 8.3.4 - Reference speed panel. 8.3.5 - Channel table: 8.4 - Creating a custom sensor 8.5 - How to configure DaVid displays 8.6 - How to configure DaVid. 8.6.1 - Video Configuration Manager box: 8.6.2 - Video objects limits. 8.6.3 - Visualization box: 	76 78 79 81 82 83 83 83 83 83 83 83 84 84 84 85 87 87 87 87 87 89 91 92
 7.10 - Online Chapter 8 - How to configure DaVid 8.1 - System manager window 8.1.1 - Select configuration layer 8.2 - Creating a new configuration 8.3 - Channels 8.3.1 - RPM panel 8.3.2 - Speed panel 8.3.3 - Gear sensor panel 8.3.4 - Reference speed panel 8.3.5 - Channel table:. 8.4 - Creating a custom sensor. 8.5 - How to configure DaVid displays. 8.6 - How to configure DaVid 8.6.1 - Video Configuration Manager box: 8.6.2 - Video objects limits 	76 78 79 81 82 83 83 83 83 83 83 83 84 84 84 85 87 87 87 87 87 89 91 92 93
 7.10 - Online. Chapter 8 - How to configure DaVid. 8.1 - System manager window 8.1.1 - Select configuration layer 8.2 - Creating a new configuration 8.3 - Channels 8.3.1 - RPM panel. 8.3.2 - Speed panel. 8.3.3 - Gear sensor panel 8.3.4 - Reference speed panel. 8.3.5 - Channel table: 8.4 - Creating a custom sensor 8.5 - How to configure DaVid displays 8.6 - How to configure DaVid. 8.6.1 - Video Configuration Manager box: 8.6.2 - Video objects limits 8.6.3 - Visualization box: 8.6.4 - TV Standard box: 	76 78 79 81 82 83 83 83 83 84 84 84 85 87 87 87 87 87 87 87 87
 7.10 - Online. Chapter 8 - How to configure DaVid. 8.1 - System manager window 8.1.1 - Select configuration layer. 8.2 - Creating a new configuration 8.3 - Channels 8.3.1 - RPM panel. 8.3.2 - Speed panel. 8.3.3 - Gear sensor panel. 8.3.4 - Reference speed panel. 8.3.5 - Channel table: 8.4 - Creating a custom sensor 8.5 - How to configure DaVid displays 8.6 - How to configuration Manager box: 8.6.2 - Video objects limits. 8.6.3 - Visualization box: 8.6.4 - TV Standard box: 8.6.5 - Possible graphical visualization problems. 	76 78 79 81 82 83 83 83 83 84 84 84 85 87 87 87 87 87 87 87 87
 7.10 - Online Chapter 8 - How to configure DaVid. 8.1 - System manager window 8.1.1 - Select configuration layer 8.2 - Creating a new configuration 8.3 - Channels 8.3.1 - RPM panel 8.3.2 - Speed panel 8.3.3 - Gear sensor panel 8.3.4 - Reference speed panel. 8.3.5 - Channel table: 8.4 - Creating a custom sensor 8.5 - How to configure DaVid displays 8.6 - How to configure DaVid. 8.6.1 - Video Configuration Manager box: 8.6.2 - Video objects limits 8.6.3 - Visualization box: 8.6.4 - TV Standard box: 8.6.5 - Possible graphical visualization problems. 8.6.6 - Sampling frequency. 	76 78 79 81 82 83 83 83 83 84 84 84 85 87 87 87 87 87 87 91 92 93 93 94 94
 7.10 - Online Chapter 8 - How to configure DaVid. 8.1 - System manager window 8.1.1 - Select configuration layer. 8.2 - Creating a new configuration 8.3 - Channels 8.3.1 - RPM panel. 8.3.2 - Speed panel. 8.3.3 - Gear sensor panel 8.3.4 - Reference speed panel. 8.3.5 - Channel table: 8.4 - Creating a custom sensor 8.5 - How to configure DaVid displays 8.6 - How to configuration Manager box: 8.6.2 - Video Objects limits 8.6.3 - Visualization box: 8.6.4 - TV Standard box: 8.6.5 - Possible graphical visualization problems. 8.6.6 - Sampling frequency 8.7 - Transmitting the configuration 	76 78 79 81 82 83 83 83 84 84 84 85 87 87 87 87 87 87 87 87
 7.10 - Online Chapter 8 - How to configure DaVid 8.1 - System manager window 8.1.1 - Select configuration layer 8.2 - Creating a new configuration 8.3 - Channels 8.3.1 - RPM panel 8.3.2 - Speed panel 8.3.3 - Gear sensor panel 8.3.4 - Reference speed panel 8.3.5 - Channel table: 8.4 - Creating a custom sensor 8.5 - How to configure DaVid displays 8.6 - How to configuration Manager box: 8.6.2 - Video objects limits 8.6.3 - Visualization box: 8.6.4 - TV Standard box: 8.6.5 - Possible graphical visualization problems. 8.6.6 - Sampling frequency. 8.7 - Transmitting the configuration 8.9 - Gear calculation 	76 78 79 81 82 83 83 83 83 83 84 84 85 87 87 87 87 87 87 87 91 92 93 93 94 94 94 94 94
 7.10 - Online Chapter 8 - How to configure DaVid 8.1 - System manager window 8.1.1 - Select configuration layer 8.2 - Creating a new configuration 8.3 - Channels 8.3.1 - RPM panel 8.3.2 - Speed panel 8.3.3 - Gear sensor panel 8.3.4 - Reference speed panel 8.3.5 - Channel table: 8.4 - Creating a custom sensor 8.5 - How to configure DaVid displays 8.6 - How to configuration Manager box: 8.6.2 - Video objects limits 8.6.3 - Visualization box: 8.6.4 - TV Standard box: 8.6.5 - Possible graphical visualization problems. 8.6.6 - Sampling frequency. 8.7 - Transmitting the configuration 8.9 - Gear calculation 	76 78 79 81 82 83 83 83 83 83 84 84 85 87 87 87 87 87 87 87 91 92 93 93 94 94 94 94 94
 7.10 - Online Chapter 8 - How to configure DaVid	76 78 79 81 82 83 83 83 84 84 84 84 85 87 87 87 87 87 87 87 87
 7.10 - Online Chapter 8 - How to configure DaVid 8.1 - System manager window 8.1.1 - Select configuration layer 8.2 - Creating a new configuration 8.3 - Channels 8.3.1 - RPM panel 8.3.2 - Speed panel 8.3.3 - Gear sensor panel 8.3.4 - Reference speed panel 8.3.5 - Channel table: 8.4 - Creating a custom sensor 8.5 - How to configure DaVid displays 8.6 - How to configure DaVid 8.6.1 - Video Configuration Manager box: 8.6.2 - Video objects limits 8.6.3 - Visualization box: 8.6.4 - TV Standard box: 8.6.5 - Possible graphical visualization problems. 8.6.6 - Sampling frequency 8.7 - Transmitting the configuration 8.9 - Gear calculation 8.10 - Online Chapter 9 - How to configure EVO3 Pro/Pista 9.1 - System manager window 	76 78 79 81 82 83 83 83 84 84 84 85 87 87 87 87 87 87 87 91 92 93 93 94 94 94 94 94 95 97
 7.10 - Online Chapter 8 - How to configure DaVid	76 78 79 81 82 83 83 83 84 84 84 85 87 87 87 87 87 87 87 91 92 93 93 93 94 94 94 94 94 94 95 97 100



9.3 – Channels	102
9.3.1 – Speed panels	104
9.3.2 – Channel Table	105
9.4 – Creating a custom sensor	108
9.5 – System configuration	
9.5.1 – RPM box	
9.5.2 – Lap box	
9.5.3 – Use GPS lap timer box	
9.5.4 – Gear sensor box	
9.5.5 – Speed reference box	
9.5.6 – Output signal on pin 14 of Deutsch 22 pin connector	
9.6 – How to configure EVO3 Pro/Pista displays	112
9.7 – Configuring CAN expansions	
9.8 – Transmitting the configuration	
9.9 – Sensors calibration and auto-calibration	
9.10 – Gear calculation	
9.11 – Online	112
Chapter 10 – How to configure EVO4	113
10.1 – System manager window	115
10.1.1 – Select configuration layer	
10.2 – Creating a new configuration	
10.3 – Channels	
10.3.1 – Speed panels	
10.3.2 – Channel Table	
10.3.2 – Chainer Table	
10.5 – System configuration	
10.5.1 – RPM box	
10.5.2 – Gear sensor box	
10.5.3 – Lap box	
10.5.4 – Use GPS Lap timer box	
10.5.5 –Reference speed box	
10.5.6 – Output signal on pin 5 of RPM connector	
10.6 – How to configure EVO4 displays	
10.7 – Configuring CAN expansions	128
10.8 – Transmitting the configuration	128
10.9 – Sensors calibration and auto-calibration	128
10.10 – Gear calculation	128
10.11 – Online	
Chapter 11 – How to configure SMC Bridge	
11.1 – System Manager window	
11.1.1 – Select configuration layer	
11.2 – Creating a new configuration	
11.3 – Channels	135
11.4 – System configuration – ECU Bridge	136
11.4.1 – RPM box	
11.4.2 – Gear sensor box	
11.4.3 – Use GPS Lap timer box	
11.4.4 –Reference speed box	137
11.5 System Configuration – RPM Bridge	
11.5.1 – RPM Box	
11.5.2 – Use GPS Lap time box	
11.6 – How to configure ECU Bridge/RPM Bridge displays	
11.7 – Transmitting the configuration	
11.8 – Gear calculation	
11.9 – Online	
Chapter 12 – How to create a custom sensor	
Chapter 13 – How to transmit the configuration	
13.1 – Possible problems while transmitting the configuration	143



Chapter 14 – Sensors calibration and auto-calibration	
14.1 – Sensors calibration procedure (except gear sensor)	
14.2 – Sensors auto calibration procedure	
14.3 – Gear sensor calibration procedure	
Chapter 15 – Gear calculation procedure	
Chapter 16 – How to configure CAN expansions	
Chapter 17 – How to configure AIM displays	
17.1 – How to configure MyChron3 Dash	156
17.1.1 – How to configure MyChron3 Dash for DaVid	156
17.1.2 – How to configure MyChron3 Dash for EVO3 Pro/Pista	158
17.2 – How to configure TG Dash	159
17.2.1 – TG Dash for DaVid	
17.2.2 – TG Dash for EVO3 Pro/Pista and EVO4	160
17.3 – How to configure Formula Steering Wheel	160
Chapter 18 – Online	
Chapter 19 – How to download data	
19.1 – Download data from MyChron3 (all versions) and DaVid	
19.2 – Downloading data from other systems	



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[™] "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 Remote General Computer Name Hardware Advanced	Driver Signing Options
Device Manager The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device. Device Manager	During hardware installation, Windows might detect software the has not passed Windows Logo testing to verify its compatibility w Windows. (<u>fell me why this testing is important</u>) What action do you want Windows to take?
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. Driver Signing Windows Update	 Ignore - Install the software anyway and don't ask for my approval Warn - Prompt me each time to choose an action Block - Never install unsigned driver software
Hardware Profiles Hardware profiles provide a way for you to set up and store different hardware configurations. Hardware Profiles	Administrator option Make this action the system default OK Cancel
OK Cancel Apply	

? X

ght detect software that verify its compatibility with



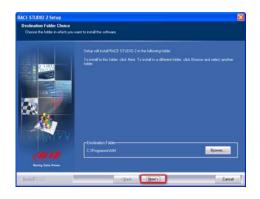
2.2 – Installing Race Studio 2 under Microsoft Windows XP

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.

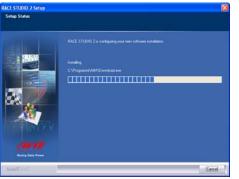


In case of new release of **Race Studio 2** the window on the right appears: enable "New Release of Race Studio 2" checkbox and click on "Next>"

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.

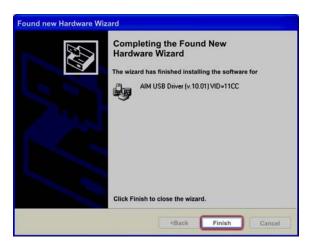






Found new hardware w	lizard
	Welcome to the Found New Hardware Wizard This wizard helps you install software for:
	AlM USB Driver (v.10.01) VID=11CC Connect to Windows Update to search the software for the driver ? O Yes, only now O Yes, now and every time a device is connected O No. not now
	Select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

Found new Hardware W	fizard
	Welcome to the Found New 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.
	· · · · · · · · · · · · · · · · · · ·
	Install the software automatically (Recommended) Install from a list or specific location (Advanced)
	() Install from a list or specific location (Advanced)
	Click next to continue
	< Back Next > Cancel



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

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

Click "Finish".



Click "OK".

 Abl USD / Automatic: Installation
 Jun 8 , 2008

 Found New Har Aware Witz and

 Completing the Found New Hardware Witz and

 The registrat installation installing the schware for.

 And USB Drive (>1001)VID=110C

 New you can plug the USB code in.

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 Cick Presh to close the vised



Click "Finish".

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 manual.

Race Studio 2

Race Studio Configuration icon



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_20	008		
File Modifica Visualizza Preferiti Strumenti	?		N
🔇 Indietro 🔹 🌍 - 🎓 Cerca 🖡	Cartelle		
Indirizzo 🗁 C:\Programmi\AIM\AIM_USB_DRIVER_2	:008		🖌 🄁 Vai
Cartelle	× Nome 🔺	Dimensione	Tipo
AIM AIM_USB_DRIVER_2008 DriverDel CFG CFG CFG COLORS COLORS COLORS DASHBOARD DATA DATABASE DATABASE DATABASE DragAnalyzer DRAGSTER_SUITE DWL ETpred GPSManager GPSManager COLORS	AIM_USB_Inst_200 AIM_USBdrv1U_U1 AIM_USBdrv_2008.	sys 25 KB	Cartella Applicazione File di sistema Informazioni di insta.
E CightAnalyzer	×		
Cggetti: 4		3,99 MB	el computer

Run AIM_USB_Inst_2008.exe file.

AIM-USB Installazione Automatica 8 Gen. 2008
This is a Maintenance Procedure to be used only in presence of TROUBLES.
It seems that the AIM-USB driver is not COMPLETELY installed. Did you try to connect the USB cable ? You can click <exit> if AIM-USB driver works correctly, 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[™] 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[™] 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.

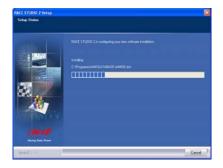
In case of **Race Studio 2** very first installation the window on the right appears. It allows the user to select the software installation folder.

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.



AIM-USB Automatic Installation Jan 8. 2008 -

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

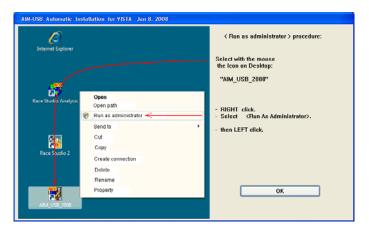
Click on "OK" button, to continue the installation.

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

Race Studio 2

Race Studio 2

Limit Strate Str



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

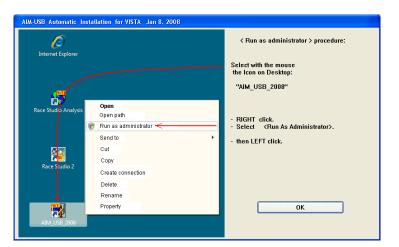
Click on "Finish".





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
	(117)
	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
	AIM-USB Automatic Installation Jan 8, 2008
	(m) 🛃 (m)
	Install AIM-USB driver 10.01/11CC for: Windows VISTA
	Installation completed succesfully.
	Installation of AIM-USB Driver vers. 10.01/11CC Installing files: AIM_USBdrv_2008.inf
Click "Continue".	AlM-USB Driver vers. 10.01/11CC - Installation completed successfully
Click Continue .	
	You can continue with the next step.
	CONGRATULATIONS : INSTALLATION COMPLETED SUCCESSULLY
	Continue
	Conande
	AIM-USB Automatic Installation Jan 8. 2008
	Now you can plug the USB cable in. 📆
	A complete automatic Windows VISTA installation for USB will
	start.
Connect the USB cable to the PC USB	
port.	Device driver installation × Click here for status informations
port	
	(M)
	AIM USB Driver (v.10.01) VID=11CC × Device driver installation completed.
	іі 🗖 » 💊 ок

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



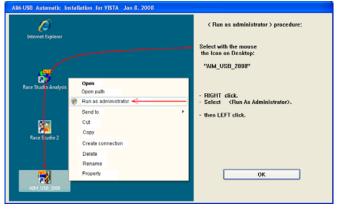
As far as Race Studio Analysis icon is concerned, refer to the proper user manual.



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 to be used only in case of TROUBLES.
It seams that the AIM-USB driver is NOT COMPLETLY installed. Did you try to connect the USB cable ? You can click <exit> if AIM-USB driver works correctly, 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.

an 🔤	item ma	nager								
		Transmit	4			* c	W-Net info	() Set	acquisition s	vstem time
AIM Sportline	2		400			-	100000000000		alarah karakanda	
Currer	t configure		-	_		1.1	1.	1000		11 11
Go to Analysis Der A	don name A.T	Data logger type MXL PISTA	Ecu SUZUKI - OSXR	Vehicle name DEFAULT	Available time 8 44 55 (h.m.s)	Time with GPS 3.57.17 (him.s	Tabl trequency 132 (Hz)	Master frequency 91 (Hz)	41 (Hz)	2
Selo	ct conligut	non Channels	System config	putation CANER	ensions configu	votor				
Download data	m	-			ShiftLa	anta	peed		-	
	AIM senso	r Multiply	factor	/2 •	11950		unnel Velocità	4	•	
AIM system		MAX va	Le 14	• 000	11900	- 6				
manager	ver-rev log Alarm led	None •	Over-rev tire					ap bscuring time	R La	-
AlM system		tions 12	Toole and the	1 and	0 11400	01		iec.)		5
identification	ar sensor	_	Calculated		11300		Li Li	ip segments	141 1	
	None		and with neutra			- //	6	Show lap time		
Online	Channel 5		al: Channel 8	1. 1 A A	11000			Show up time		
	ECU .	Highe	st gear number		SEL /P			Show running	lap time	
AIM system	000	_	6			2/ 0				
calibration	Channe	for alarm	Threshold	1845	32 18	135	HERE	Channel for a	larm 1	hreshold
Custom sensors	ECT		• 90	JEST LI	IP LIB	73		Fuel Level	•	2
manager	Cil_Press		• 2	1	\perp			None	-	
	Battery		• 13.3		-			None	-	
Select Language	portion y		- (the	/	1	1.				
	Link a	alarm to measur	e fieids			1				
		auro	Shortname			Y		Measure	Shor	tname
	ld 1 - alwa	ys displayed	-					d 2 - always displa	ayed	
1	Lambda	-	Law		Enable st	atic string	MOE		· 100	
	ld 3 - page		APR	h week				d 4 - page 1	-	
- Alian	AFR	-	1 144	Welcome to	st		Nore		-	
	id 3 - page		DEAG	Text 1	1			d 4 - page 2	-	-15
aim-sportline.com	Diagn						Nore		-	

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:
1. Plug and Play Monitor on 256MB ATL Radeon X1300PR0
Color quality
Less More Highest (32 bit)
1280 by 1024 pixels
 ✓ Use this device as the primary monitor. ✓ Extend my Windows desktop onto this monitor.
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	(R) Control Center
General Adapter	Monitor	Troubleshoot
play our screen resolution makes scrr motrably, you can increase the D it sizes only, click Cancel and go it setting: ormal size (36 DPI) ormal size (36 DPI) ormal size (36 DPI) rege size (120 DPI) ustom setting mpatibility me programs might not operate p mputer after changing display set er I change display settings: Restart the computer before app Apply the new display settings: Ask me before applying the new me games and other programs m arn more about <u>running programs</u>	PI to compensate. To chan 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".

Display If your screen resolution makes screen items too small to view comfortably, you can increase the DPI to compensate. To change font sizes only, click Cancel and go to the Appearance tab. DPI setting: Normal size (36 DPI) Some programs might not operate properly unless you restart the computer after changing display settings. After I change display settings: Restart the computer before applying the new display settings Apply the new display settings Apply the new display settings Ask me before applying the new display settings	Display If your screen resolution makes screen items too small to view comfortably, you can increase the DPI to compensate. To change font sizes only, click Cancel and go to the Appearance tab. DPI setting: Image: Compatibility Compatibility Image: Compatibility Some programs might not operate properly unless you restart the computer after changing display settings. After I change display settings: Pestart the computer before applying the new display settings Apply the new display settings without restarting	Color Mana	gement	📶 CATALYST(R) Control Center
If your screen resolution makes screen items too small to view comfortably, you can increase the DPI to compensate. To change font sizes only, click Cancel and go to the Appearance tab. DPI setting: Normal size (96 DPI) Compatibility Some programs might not operate properly unless you restart the computer after changing display settings. After I change display settings: Restart the computer before applying the new display settings Apply the new display settings without restarting Ask me before applying the new display settings	If your screen resolution makes screen items too small to view comfortably, you can increase the DPI to compensate. To change font sizes only, click Cancel and go to the Appearance tab. DPI setting: Tompatibility Some programs might not operate properly unless you restart the computer after changing display settings. After I change display settings: After I change display settings: After I change display settings: After I change display settings: Apply the new display settings Apply the new display settings Ask me before applying the new display settings Some games and other programs must be run in 256-color mode.	General	Adapter	Monitor	Troublesho
If your screen resolution makes screen items too small to view comfortably, you can increase the DPI to compensate. To change font sizes only, click Cancel and go to the Appearance tab. DPI setting: Normal size (96 DPI) Compatibility Some programs might not operate properly unless you restart the computer after changing display settings. After I change display settings: After I change display settings: Apply the new display settings Apply the new display settings Ask me before applying the new display settings	If your screen resolution makes screen items too small to view confortably, you can increase the DPI to compensate. To change font sizes only, click Cancel and go to the Appearance tab. DPI setting: Normal size (95 DPI) Compatibility Some programs might not operate properly unless you restart the computer after changing display settings. After I change display settings: After I change display settings: Apply the new display settings Apply the new display settings Ask me before applying the new display settings Some games and other programs must be run in 256-color mode.	- Display			
Some programs might not operate properly unless you restart the computer after changing display settings. After I change display settings: Restart the computer before applying the new display settings Apply the new display settings without restarting Ask me before applying the new display settings	Some programs might not operate properly unless you restart the computer after changing display settings. After I change display settings: Plestart the computer before applying the new display settings Apply the new display settings without restarting Ask me before applying the new display settings Some games and other programs must be run in 256-color mode.	If your screen res comfortably, you o font sizes only, cli DPI setting:	can increase the DPI to ck Cancel and go to th	compensate. To chang	ge
 Apply the new display settings without restarting Ask me before applying the new display settings 	 Apply the new display settings without restarting Ask me before applying the new display settings Some games and other programs must be run in 256-color mode. 	Some programs m computer after ch After I change dis	anging display settings play settings:		
Ask me before applying the new display settings	• Ask me before applying the new display settings Some games and other programs must be run in 256-color mode.	-			
	Some games and other programs must be run in 256-color mode.			-	
		Some games and	other programs must b	e run in 256-color mode.	
				ОК	Cancel A



Yes

No

The window here below appears:

G	eneral	
(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 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 Drag the monitor icons to match the physical arrangement of your monitors. 2 1
Press "OK".	Display: 1. Plug and Play Monitor on 256MB ATI Radeon X1300PR0 Screen resolution Less 1280 by 1024 pixels Use this device as the primary monitor. Extend my Windows desktop onto this monitor. Identify Troubleshoot OK Cancel Apply
Press "Yes". The system reboots.	You must restart your computer before the new settings will take effect. 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

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

MyChron3 logger identification window

CAN-net info window (other systems)



3.1 – System identification of MyChron3

Logger identification
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

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
			<u> </u>	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	eral	Configuration	_	Channels				Custom	ize sensor
		Logger identification	1	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		
		Looser	type	Vehicle name		Available ti	me	Total frequ	Exit
		Logger MYCHRON 3 - K				Available ti 3.05.17 (h.		Total freq. 91 (Hz	Jency

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			×
Speed Wheel circumference (mm) 830 Pulses per wheel revolution	Display language Shift Light Led 1 Led 2 0	Led 3 Led 4	Led 5	Rpm Multiply factor / 1 • Max value 2000 •
Temperature 1 Alarms HIGH Led 1 0 LOW Led 2 0		shift light 5 5 3 2 5 5 1 2 8 12 16 2 70 16 800 8 85 12 3 2	1 0 3 4	Temperature 2 Alarms HIGH Led 3 0 LOW Led 4 0
Measure Units Speed unit km/h Temperature unit *C	Gear sensor None Calculated	Autt	β	Lap Obscuring time (sec.) 8 Number of split times 0
	<u>√ </u> □ĸ	🔹 <u>C</u> an	cel	

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	_

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

4.3.2 – Speed box

Speed 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

-Rpm	
	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							
	LEC)	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 ti	mes -
,	

- **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	em manager								
	General	Configuration	Char	nels					Customize sensor
		Logger identification	Tran	smit	Receive		Online		Calibrate
N	Logger		Vehicle name		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	Cl	one	Import		Export		🔹 Exit
		Logger ty	pe	Vehicle name	• [Availab	le time		Total frequency
		MYCHRON 3 - CAR	1	DEFAULT			2 (h.m.s)		

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.

	Configuration	Cha	nnels					Customize sensor
	Logger identification	Tra	nsmit	Receive		Online	,	Calibrate
Logger		Vehicle name		Obsc t	Split time	Speed	Temp	Created
MYCHRON 3 - CA	AR / BIKE - PLUS	DEFAULT		8	0	km/h	°C	December 14, 2007
MYCHRON 3 - CA	AR - XG	DEFAULT			-	km/h		March 06, 2008
MYCHRON 3 - C	AR - GOLD	DEFAULT		8	0	km/h	°C	March 06, 2008
MYCHRON 3 - B	IKE - GOLD	DEFAULT		8	0	km/h	°C	March 06, 2008
MYCHRON 3 - SM	4 - GOLD	DEFAULT		8	0	km/h	°C	March 06, 2008
MYCHRON 3 - B	IKE - GOLD	READ		8	0	km/h	°C	March 12, 2008
New	Delete		lone Vehicle name	Import		Export		Exit Total frequency
	MYCHRON 3 - CA MYCHRON 3 - CA MYCHRON 3 - C MYCHRON 3 - B MYCHRON 3 - SI	Logger MYCHRON 3 - CAR / BIKE - PLUS MYCHRON 3 - CAR - XG MYCHRON 3 - CAR - GOLD MYCHRON 3 - BIKE - GOLD MYCHRON 3 - SM - GOLD MYCHRON 3 - BIKE - GOLD	MYCHRON 3 - CAR / BIKE - PLUS DEFAULT MYCHRON 3 - CAR - XG DEFAULT MYCHRON 3 - CAR - GOLD DEFAULT MYCHRON 3 - BIKE - GOLD DEFAULT MYCHRON 3 - SM - GOLD DEFAULT	MYCHRON 3 - CAR / BIKE - PLUS DEFAULT MYCHRON 3 - CAR - XS DEFAULT MYCHRON 3 - CAR - GOLD DEFAULT MYCHRON 3 - BIKE - GOLD DEFAULT MYCHRON 3 - SIKE - GOLD DEFAULT MYCHRON 3 - SIKE - GOLD DEFAULT	MYCHRON 3 - CAR / BIKE - PLUS DEFAULT 8 MYCHRON 3 - CAR - XG DEFAULT 8 MYCHRON 3 - CAR - GOLD DEFAULT 8 MYCHRON 3 - BIKE - GOLD DEFAULT 8 MYCHRON 3 - SIKE - GOLD DEFAULT 8 MYCHRON 3 - SIKE - GOLD DEFAULT 8 MYCHRON 3 - SIKE - GOLD DEFAULT 8	MYCHRON 3 - CAR / BIKE - PLUS DEFAULT 8 0 MYCHRON 3 - CAR - XG DEFAULT 8 0 MYCHRON 3 - CAR - GOLD DEFAULT 8 0 MYCHRON 3 - BIKE - GOLD DEFAULT 8 0 MYCHRON 3 - SIKE - GOLD DEFAULT 8 0 MYCHRON 3 - SIKE - GOLD DEFAULT 8 0	MYCHRON 3 - CAR / BIKE - PLUS DEFAULT 8 0 km/h MYCHRON 3 - CAR - XG DEFAULT 8 0 km/h MYCHRON 3 - CAR - GOLD DEFAULT 8 0 km/h MYCHRON 3 - BIKE - GOLD DEFAULT 8 0 km/h MYCHRON 3 - SIKE - GOLD DEFAULT 8 0 km/h MYCHRON 3 - SIKE - GOLD DEFAULT 8 0 km/h	MYCHRON 3 - CAR / BIKE - PLUS DEFAULT 8 0 km/h °C MYCHRON 3 - CAR - XS DEFAULT 8 0 km/h °C MYCHRON 3 - CAR - XS DEFAULT 8 0 km/h °C MYCHRON 3 - CAR - GOLD DEFAULT 8 0 km/h °C MYCHRON 3 - BIKE - GOLD DEFAULT 8 0 km/h °C MYCHRON 3 - SIK - GOLD DEFAULT 8 0 km/h °C

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.



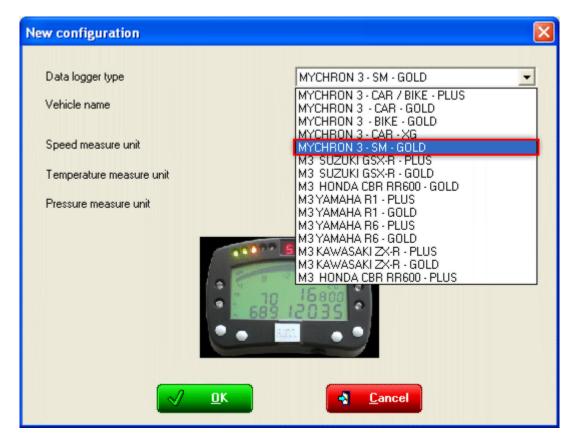
If the bike is completely corresponding to the stock one sold by the manufacturer, selecting the related configuration is enough to transmit it to the logger. In case, on the contrary, additional sensors have been installed, they need to be configured following the procedures here described.

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 Receive		Online	Calibrate		
Channel i	Enabled/d	Channel name	Samplin	Sensor type	Mea	Low scale	High scale	Param. 1	Param. 3
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		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		
				Eacoraraccoloromocor					
LOG_TMP	Enabled	Datalogger_Temp	10 Hz	Cold joint	°C	0	50		
	Enabled Enabled	Datalogger_Temp Battery	10 Hz 1 Hz			0			
LOG_TMP BATT				Cold joint	°C	-	50		
			1 Hz	Cold joint	°C	-	50 15.0	Total freq.	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 / 1
Pulses per wheel revolution 1	Led 1 Led 2 Led 3 Led 4 Led 5 0 0 0 0 0 0	Max value 20000 💌
- Channel 1 Alarm LED Value HIGH 1 ▼ 0 LOW 1 ▼ 0 - Channel 2 Alarm LED Value HIGH 2 ▼ 0 LOW 2 ▼ 0	shirt light 1 2 3 4 5 5 4 3 2 1 5 5 5 4 3 2 1 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Channel 3 Alarm LED Value HTGH 3 0 LOW 3 0 Channel 4 Alarm LED Value HTGH 4 0 LOW 4 0
Measure Units Speed unit km/h 💌 Temperature unit °C 💌	Gear sensor None Potentiometer Highest gear number OK Cancel	Lap Obscuring time (sec.) 8 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 potentiometer¹ is available.
- **"Calculated**": to calculate the engaged gear²; specify whether a neutral sensor is available or not if required.

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

¹ See paragraph 14.3 for further information.

² 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 - Shift Light Led 1 Led 2	Italiano Led 3 Led 4	▼ Led 5	Rpm Multiply factor	-
Pulses per wheel revolution 1 - Shaft rotation speed	0	0 0 Shift light	0	Max value 20000	-
Pulses per revolution 1 Channel 1 Alarm LED Value HIGH 1 0 LOW 1 0 Channel 2 Alarm LED Value HIGH 2 0 LOW 2 0				Channel 3 Alarm LED Value HIGH 3 LOW 3 Channel 4 Alarm HIGH 4 LED Value 0 0 0 0 0 0 0 0 0 0 0 0 0	
- Measure Units Speed unit km/h ▼ Temperature unit ℃ ▼	Gear sensor None Potentiometer	Calculated Highest gear number	ncel	Lap Obscuring time (sec.) 8 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.



System manager											
General		Configuration	Channels							0	Customize sensor
	Log	gger identification	Transmit		Red	eive		Online			Calibrate
N Installation name	e Logger		ECU Manufact	ECU M	1odel	Vehicle name	O	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-M4	18-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	OG FR2000 J	MARELLI	FR200	IO_J	DEFAULT	8	0	km/h	°C	March 06, 2008
5 DEFAULT	M3LOG -	Advanced	PECTEL	T_2/1	T_6	DEFAULT	8	0	km/h	°C	March 11, 2008
6 DEFAULT	M3LOG -	Advanced	MOTEC	M8_Da	ataSet1	DEFAULT	8	0	km/h	°C	March 11, 2008
New		Delete	Clone		Imp			Export			
New Installation na	me	Delete Logger type		Vehicle			ailable			_	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	•

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.³
- 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.

³ 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.



System manager											×
General		Configuration	Channels								Customize sensor
	Log	gger identification	Transmit		Re	ceive		Online			Calibrate
N Installation name	Logger		ECU Manufact		1odel	Vehicle name	0	Split time	Sp	T	Created
GokeySL	M3 XG LC		None	None		ShoLOG2	20	0	mph	٩F	December 16,
2 DEFAULT	M3LOG -	Advanced	MOTEC	M4-M	18-Data5	DEFAULT	8	0	km/h	°C	March 06, 2008
3 DEFAULT	M3 XG LC		AEM		1.19+	DEFAULT	8	0	km/h	°C	March 06, 2008
4 DEFAULT		G FR2000 J	MARELLI	FR200	00_J	DEFAULT	8	0	km/h	°C	March 06, 2008
5 DEFAULT		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	oort		Export			Exit
Installation nam	ie	Logger type		Vehicle	name	A	ailable	e time		Tot	al frequency
GokeySL		M3 XG LOG		ShoL	0G2	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	•	Nacese Online			Calbrate		
Channel id	Enabled/dl.	Channel name	Sampl			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	10 Hz Calculated Gear		*	0	9		
ACC_1	Enabled	Acc_1	10 Hz Lateral accelerometer		0.01	-3.00	3.00			
LOG_TMP	Enabled	Datalogger_Temp	10 Hz	10 Hz Cold joint		*C	0	50		
BATT	Enabled	Battery	1 Hz	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		
									Enit	
Instal	ation name	Logger type		Vehicle	name	Aval	ble time	Tot	al frequency	
C.F	FAULT	M3LOG - Advance	d	DEFA	IT I	1.02.1	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

General		Configuration	Channel	5					Customize sen:	sor
		Logger identification	Transmit	:	Receive		Online		Calibrate	
Channel id E	Enabled/di	Channel name	Sampli	Sensor t	/pe	Mea	Low scale	High scale	Param. 1	^
SPD_1 E	Enabled	Speed_1	10 Hz	Speed		km/h	0.0	250.0	1666.0	
CH_1 E	Enabled	Channel_1	10 Hz	Thermoc	ouple	°C	0	150		
CH_2 E	Enabled	Channel_2	10 Hz	Thermoc	ouple	°C	0	150		
СН_З В	Enabled	Channel_3	10 Hz	Thermoc	ouple	°C	0	150		
CH_4 E	Enabled	Channel_4	10 Hz	Thermoc	ouple	°C	0	1000		
CH_S E	Enabled	Channel_5	10 Hz	Thermoc	ouple	°C	0	50		
CH_6 D	Disabled	Channel_6	10 Hz	Calculate	d Gear	#	0	9		
ACC_1 E	Enabled	Acc_1	10 Hz	Lateral a	ccelerometer	g .01	-3.00	3.00		
LOG_TMP E	Enabled	Datalogger_Temp	10 Hz	Cold join		°C	0	50		
BATT E	Enabled	Battery	1 Hz	Battery		V .1	5.0	15.0		
ECU_1 E	Enabled	AEM_RPM	10 Hz	Engine sp	beed sensor	rpm	0	20000		
ECU_2 E	Enabled	AEM_LOAD	10 Hz	Pressure	sensor	bar	0.00	150.00		
ECU_3 E	Enabled	AEM_TPS	10 Hz	Percenta	ge sensor	% .1	0.0	100.0		
ECU_4 E	Enabled	AEM_AIR_TEMP	10 Hz	Tempera	ture sensor	°C	-30	60		
ECU_S E	Enabled	AEM_WATER_TEMP	10 Hz	Tempera	ture sensor	°C	-30	120		
ECU_6 E	Enabled	AEM_ADCR11	10 Hz	Voltmete	r	V.1	0.0	20.0		
ECU_7 E	Enabled	AEM_ADCR13	10 Hz	Voltmete	r	V.1	0.0	20.0		
ECU_8 E	Enabled	AEM_ADCR14	10 Hz	Voltmete	r	V.1	0.0	20.0		
ECU_9 E	Enabled	AEM_ADCR17	10 Hz	Voltmete	r	V .1	0.0	20.0		
ECU_10 E	Enabled	AEM_ADCR18	10 Hz	Voltmete	r	¥ .1	0.0	20.0		
ECU 11 E	Enabled	AEM_ADCR15	10 Hz	Voltmete	r	V.1	0.0	20.0		
	Enabled	AEM_ADCR16	10 Hz	Voltmete	r	V .1	0.0	20.0		
			10 Hz	Voltmete		V.1	0.0	20.0		

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 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 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 1 2 3 4 5 5 4 3 2 1 1 3 6 6 6 6 9 2 9 6 8 9 12 0 3 5 9 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 Speed unit km/h v Temperature unit *C v	Gear sensor None Potentiometer Calculated Highest gear number 6	Lap Obscuring time (sec.) 8 Number of split times 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 Speed_1 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	71 💌
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.



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

-
e
•
e

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
	Nu	imber 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

ensor		
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	$\overline{\mathbf{X}}$
Speed Chan Wheel_Speed_Sx Wheel circumference 1666 (mm) Pulses per wheel revolution 1	Display language Italiano	Rpm AlM sensor ECU signal Multiply factor 71 MAX value 5000
Display Page 1 - Channels and alarms Field 1 Clutch_Pos LED Value HIGH None 0 LOW None 0 Field 2 Clutch_Pos ✓ LED Value ✓ HIGH None ✓ Value ✓ ✓ Vone ✓ ✓ LOW None ✓	shift light 1 2 3 4 5 5 4 3 2 1 1 2 3 4 5 5 4 3 2 1 1 2 3 4 5 5 4 3 2 1 1 2 3 4 5 5 4 3 2 1 1 2 3 4 5 5 4 3 2 1 3 4 5 5 6 2 5 6 3 2 1 3 4 5 5 6 2 5 6 3 2 1 3 4 5 5 6 2 5 6 3 2 1 3 4 5 5 6 2 5 6 3 2 1 3 4 5 5 6 2 5 6 3 2 1 3 4 5 5 6 2 5 6 3 2 1 3 4 5 5 6 2 5 6 3 2 1 3 4 5 5 6 2 5 6 3 2 1 3 4 5 5 6 2 5 6 3 2 1 3 4 5 5 6 2 5 6 3 2 1 3 4 5 5 6 2 5 6 3 2 1 3 4 5 5 6 2 5 6 3 2 1 3 4 5 5 6 2 5 6 3 2 1 3 4 5 5 6 2 5 6 3 2 1 3 4 5 5 6 2 5 6 3 2 1 3 4 5 5 6 2 5 6 3 2 1 3 4 5 5 6 2 5 6 2 5 6 3 2 1 3 4 5 5 6 2 5 6 2 5 6 3 2 1 3 4 5 5 6 2 5	Display page 2 - Channels and alarms Field 1 Clutch_Pos LED Value HIGH None 0 MIN None 0 Filed 2 Clutch_Pos v LED Value HIGH None 0 LOW None 0
✓ Measure Units Speed unit km/h ♥ Temperature unit ℃ ♥	Gear sensor None Potentiometer ECU Calculated Highest gear number 6 Image: Control of the second seco	Lap Obscuring time (sec.) 8 Number of split times 0

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.



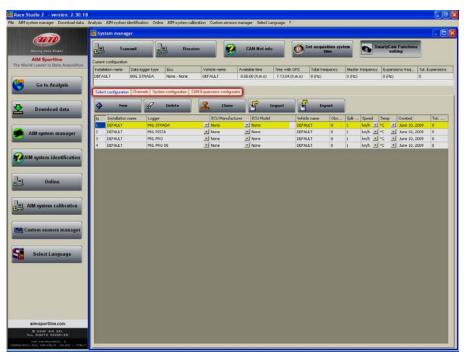
To enter configuration menu click on "AIM system manager" button. A panel showing all systems managed through **Race Studio 2** software appears: double click on "**MXL**" or select it and click on "**√**Go to".



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

 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	(<u>-</u>
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	•
TEAD TEMP	NOT SET	
EXHAUST TEMP	SRA_WTEMP SRA_OILT	
OIL TEMP	SRA_OILT	
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	-

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 j	-	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 MXL STRADA MXL PRO 05	
ECU Model	MXL PR0 MXL PR0 MXL PISTA SUZUKI GSXR K3 · K5 (WIRING 04.554.13)	_
New configuration name	MXL PISTA SUZUKI GSXR 600 2006-2007 (WIRING 04.554.54) MXL PISTA SUZUKI GSXR 750 2006-2007 (WIRING 04.554.54) MXL PISTA SUZUKI GSXR 1000 2005-2006 (WIRING 04.554.54)	
Vehicle name	MXL PISTA SUZUKI GSXR 600 2008 (WIRING 04.554.54) MXL PISTA SUZUKI GSXR 600 2008 (WIRING 04.554.54)	
Speed measure unit	MXL PISTA SUZUKI GSXR 1000 2007-2008 (WIRING 04.554.54) MXL STRADA SUZUKI GSXR K3 · K5 (WIRING 04.554.14) 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) MXL STRADA SUZUKI GSXR 750 2006-2007 (WIRING 04.554.55)	
Pressure measure unit	MXL STRADA SUZUKI GSXR 600 2008 (WIRING 04.554.55) MXL STRADA SUZUKI GSXR 750 2008 (WIRING 04.554.55) MXL STRADA SUZUKI GSXR 1000 2007-2008 (WIRING 04.554.55)	
	MXL PRO 05 SUZUKI GSXR 1000 2007-2008 MXL PRO 05 SUZUKI GSXR 1000 2007-2008 MXL PISTA GSXR Y0SHIMURA	
	MXL PRO 05 GSXR YOSHIMURA MXL STRADA YOSHIMURA ZERO-50	
	MXL PISTA YAMAHA-R1-04-07 MXL PISTA YAMAHA-R6-04-05 MXL PISTA YAMAHA-R6-06-07-08	
	MXL STRADA YAMAHA-R1-04-07 MXL STRADA YAMAHA-R6-04-05	
	MXL STRADA YAMAHA-R6-06-07-08 MXL PISTA KAWASAKI ZX6R_ZX10R MXL STRADA KAWASAKI ZX6R ZX10R	
	MXL PISTA SUBARU 99-07 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.

	ransmit	Receive		CAN-Net in	fo 🚺 🔊 Si	et acquisition sys time	tem	SmartyCam Functio setting	ons
Current configurati	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
Speed_1 Wheel circumfer Pulses per whee		5							
Channel iden		Channel name			Sensor type		Measure unit		High scale
RPM	F Enabled	Engine		10 Hz 🗾 🗄	Engine revolution speed		rpm	0 2	20000
RPM SPD_1	<mark>☞ Enabled</mark> ▼ Enabled	Engine Speed_1		10 Hz 🗾 H 10 Hz 💽 S	Engine revolution speed	•	rpm km/h .1	<mark>0 2</mark> 0.0 2	20000 250.0
RPM SPD_1 CH_1	Enabled Enabled Enabled	Engine Speed_1 Channel_1		10 Hz 💽 1 10 Hz 💽 5 10 Hz 💽 1	Engine revolution speed Speed Mid zero potentiometer	• •	rpm km/h.1 mm.1	0 2 0.0 2 0.0 5	20000 250.0 5.0
RPM SPD_1 CH_1 CH_2	<mark>☞ Enabled</mark> ▼ Enabled	Engine Speed_1 Channel_1 Channel_2		10 Hz 10 Hz	Engine revolution speed	• • •	rpm km/h .1 mm .1 V .1	0 2 0.0 2 0.0 5 0.0 5	20000 250.0
RPM SPD_1 CH_1	Enabled Enabled Enabled Enabled Enabled Enabled	Engine Speed_1 Channel_1		10 Hz I Hz 10 Hz I Hz 10 Hz I Hz 10 Hz I Hz 10 Hz I Hz	Engine revolution speed Speed Mid zero potentiometer Seneric linear 0-5 V	• • •	rpm km/h .1 mm .1 • V .1 • V .1 •	0 2 0.0 2 0.0 5 0.0 5 0.0 5	20000 250.0 5.0 5.0
RPM SPD_1 CH_1 CH_2 CH_3	Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Engine Speed_1 Channel_1 Channel_2 Channel_3		10 Hz Image: square squar	Engine revolution speed Speed Mid zero potentiometer Seneric linear 0-5 V Seneric linear 0-5 V	با با با با	rpm km/h .1 mm .1 V .1 V .1 V .1	0 2 0.0 2 0.0 5 0.0 5 0.0 5 0.0 5	20000 250.0 5.0 5.0 5.0
RPM SPD_1 CH_1 CH_2 CH_3 CH_4	Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Engine Speed_1 Channel_1 Channel_2 Channel_3 Channel_4		10 Hz Image: Second s	Engine revolution speed Speed Vild zero potentiometer Seneric linear 0-5 V Seneric linear 0-5 V Seneric linear 0-5 V	با با با با	rpm rpm km/h .1 .1 W .1 .1 V .1 .1 V .1 .1 V .1 .1 V .1 .1	0 2 0.0 2 0.0 5 0.0 5 0.0 5 0.0 5 0.0 5	20000 250.0 5.0 5.0 5.0 5.0
RPM SPD_1 CH_1 CH_2 CH_3 CH_4 CH_5	Enabled Image: Enabled	Engine Speed_1 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5		10 Hz Image: square s	Engine revolution speed Speed Vid zero potentiometer Seneric linear 0-5 V Seneric linear 0-5 V Seneric linear 0-5 V Seneric linear 0-5 V	• • • • • •	rpm rpm km/h .1 .1 W .1 .1 V .1 .1	0 2 0.0 2 0.0 5 0.0 5 0.0 5 0.0 5 0.0 5	20000 250.0 5.0 5.0 5.0 5.0 5.0 5.0
RPM SPD_1 CH_1 CH_2 CH_3 CH_4 CH_5 CH_6	Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constraint of the state Image: Constate Image: Constraint of the state	Engine Speed_1 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Channel_6		10 Hz Image: square s	Engine revolution speed Speed Vid zero potentiometer Seneric linear 0-5 V Seneric linear 0-5 V Seneric linear 0-5 V Seneric linear 0-5 V	× × × × × ×	rpm with .1 mm .1 Imm .1 V .1 Imm .1	0 2 0.0 2 0.0 5 0.0 5 0.0 5 0.0 5 0.0 5 0.0 5 0.0 5 0.0 5	20000 250.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0
RPM SPD_1 CH_1 CH_2 CH_3 CH_4 CH_5 CH_6 CH_7	Enabled Image: Enabled	Engine Speed_1 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Channel_6 Channel_7		10 Hz F	Engine revolution speed Speed Vild zero potentiometer Generic linear 0-5 V Seneric linear 0-5 V Seneric linear 0-5 V Seneric linear 0-5 V Seneric linear 0-5 V	× × × × × ×	rpm with .1 mm .1 Imm .1 V .1 Imm .1	0 2 0.0 2 0.0 5 0.0 5 0.0 5 0.0 5 0.0 5 0.0 5 0.0 5 0.0 5 0.0 5 0.0 5	20000 250.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0
RPM SPD_1 CH_1 CH_2 CH_3 CH_4 CH_5 CH_6 CH_6 CH_7 CH_8	Enabled Image: Enabled	Engine Speed_1 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Channel_6 Channel_7 Channel_8		10 Hz 1	Engine revolution speed Speed Vid zero potentiometer Seneric linear 0-5 V Seneric linear 0-5 V	× × × × × ×	rpm rpm km/h .1 mm .1 ¥ V .1 ¥ V V .1 ¥ Y V .1 ¥ Y	0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20000 250.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0
RPM SPD_1 CH_1 CH_2 CH_3 CH_5 CH_6 CH_7 CH_8 CALC_GEAR	Finabled Image: Enabled	Engine Speed_1 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Channel_6 Channel_7 Channel_8 Cakulated_Gear		10 Hz 1	Engine revolution speed Speed Mid zero potentiometer Seneric linear 0-5 V Seneric linear 0-5 V	× × × × × ×	rpm km/h .1 mm .1 V .1	0 2 2 0 0 0 2 2 0 0 0 0 2 2 0 0 0 0 2 2 0	20000 250.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 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 S	stem configuration CAN-Expansion conf	igurator
Speed_1		Speed_2	
Wheel circumfe	rence (mm) 16	66 Wheel circumference (mm)	1666
Pulses per whe	el revolution 1	Pulses per wheel revolution	l
Channel ide	Enabled/disabled	Chap lel name	Samplin
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

2] 1	f ransmit	Receive		💫 CA	N-Netin	fo Set ac	quisition sys	tem 🛛 🗨	S m	artyCam Function setting	.s
urrent configura	tion			-	-						
Installation name		ertvpe Ecu	Vehicle name	Availabl	le time	Time with GPS Tota	I frequency	Master freq	LIEDCY	Expansions freq	Tot. Expansions
DEFAULT	MXL PRO	21	DEFAULT		7 (h.m.s)	4.35.05 (h.m.s) 346		346 (Hz)	,,	0 (Hz)	0
					. ,						
Select configur	ation Channel	System configuration CAI	N-Expansions confi	gurator							
Speed 1							- Speed_4				
Wheel circumh	erence (mm)	Wheel circumfe	rence (mm)	666 W	neel circur	ference (mm) 1666		nference (m	m) 10	566	
Pulses per whe	eel revolution	1 Pulses per whe	el revolution 1	Pul	lses per w	neel revolution 1	Pulses per w	heel revolutio	n 1	_	
		·	,			,					
Channel iden	. Enabled/disa	oled Channel name		Sampling I	frequ	Sensor type		Measure uni	t Low	v scale Hi	igh scale 🛛 🔼
RPM	📕 🔲 Disablec	Engine		10 Hz	-	Engine revolution speed		rpm	0	20	0000
SPD_1	🔽 Enabled	Speed_1		10 Hz		Speed		km/h .1	0.0		50.0
SPD_2	🔲 Disabled	Speed_2		10 Hz	-	Speed		km/h .1	0.0		50.0
SPD_3	🔲 Disablec	Speed_3		10 Hz		Speed		km/h .1	0.0		50.0
SPD_4	🔲 Disablec	Speed_4		10 Hz		Speed		km/h .1	0.0		50.0
CH_1	Enabled	Channel_1		10 Hz		Generic linear 0-5 V		V .1	0.0	5.1	
CH_2	Enabled	Channel_2		10 Hz		Distance potentiometer		mm .1	0.0	5.0	
CH_3	Enabled	Channel_3		10 Hz		Generic linear 0-5 V		۷.1	0.0	5.1	
CH_4	Enabled	Channel_4		10 Hz		Generic linear 0-5 V		V .1	0.0	5.0	
CH_5	Enabled	Channel_5		10 Hz		Seneric linear 0-5 V		۷.1	0.0	5.1	
CH_6	Enabled	Channel_6		10 Hz		Seneric linear 0-5 V		V .1	0.0	5.1	
CH_7	Enabled	Channel_7		10 Hz		Seneric linear 0-5 V		V .1	0.0	5.1	
CH_8	Enabled	Channel_8		10 Hz		Seneric linear 0-5 V		V .1	0.0	5.1	
CH_9	Enabled	Channel_9		10 Hz		Generic linear 0-5 V		V.1	0.0	5.	
CH_10	Enabled	Channel_10		10 Hz		Generic linear 0-5 V Generic linear 0-5 V		V.1	0.0	5.1	
CH_11	Enabled	Channel_11		10 Hz				V.1	0.0	5.1	
CH_12 CALC GEAR	Enabled	Channel_12 Calculated Gear		10 Hz 10 Hz		Generic linear 0-5 V Calculated Gear	<u> </u>	V .1 #	0.0	5.1	J
ACC 1	Enabled	LatAcc		10 Hz		Laiculated Gear Lateral accelerometer		# q.01	-3.0		
LOG TMP	Enabled	Datalogger Temp		10 Hz		Lateral acceleronieter		9.01 °C	-5.0	JU 3.1 50	
BATT	Enabled	Battery		10 Hz		Loid Joint Battery		V.1	5.0		5.0
ECU 1	Enabled	BOSCH RPM		10 Hz		Engine speed sensor		rom	0		3000
ECU_2	Enabled	BOSCH SPEED1		10 Hz		Bosch speed sensor		km/h .1	0.0		00.0
ECU_3	Enabled	BOSCH_SPEED2		10 Hz		Speed sensor		km/h	0.0	50	
ECU 4	Enabled	BOSCH OIL PRESS		10 Hz		Pressure sensor		bar .1	0.0	15	
ECU 5	Enabled	BOSCH FUEL PRESS		10 Hz		Pressure sensor		bar .1	0.0	15	
ECU_6	Enabled	BOSCH_ATM_PRESS		10 Hz	-	Pressure sensor		mbar	0	13	30
ECU_7	Enabled	BOSCH_FUEL_TEMP		5 Hz		lemperature sensor		°C	-50	21	.5
	Enabled	BOSCH OIL TEMP		5 Hz		remperature sensor		°C	-50	21	

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 Probe	Gyroscope	Accelerometer
MXL Stra	ada/MXL Pista					
Ch_1	Х	Х	Х	Х		
Ch_2	x	X	X	X		
Ch_3	X	X	X	X		
Ch_4	X	X	X	X	X	Х
Ch_5	Х	Х	Х	X	Х	Х
Ch_6	Х	Х	Х	Х	Х	x
Ch_7	Х	Х	Х	Х	Х	Х
Ch_8*⁴	Х	Х	Х	Х	Х	Х
MXL Pro	1					
Ch_1	Х	Х	Х	Х	Х	х
Ch_2	х	Х	x	Х	Х	x
Ch_3	х	Х	x	Х	Х	x
Ch_4	х	Х	x	Х	Х	x
Ch_5	х	Х	x	Х	Х	x
Ch_6	x	X	X	X	X	X
Ch_7	X	X	X	X	X	X
Ch_8 ⁴	x	Х	X	X	Х	Х
MXL PR	O05					
Ch_1	Х	Х	Х	Х		
Ch_2	x	X	X	X		
Ch_3	X	X	X	X		
Ch_4	X	X	X	X		
Ch_5	Х	Х	X	X		
Ch_6	Х	Х	Х	Х		
Ch_7	х	Х	X	Х	Х	Х
Ch_8	X	Х	Х	Х	Х	Х
Ch_9	х	Х	X	Х	Х	Х
Ch_10	х	Х	X	Х	Х	Х
Ch_11	Х	Х	Х	Х	Х	Х
Ch_12 ⁴	Х	X	X	X		

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

⁴ 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 346 (Hz)	Master freq 346 (Hz)	uency Expansi 0 (Hz)	ions freq Tot. Exp 0	ansions
RO 05 BOSCH inels System configure m) 1666 n 1 Pulse	- MS3 DEFAULT ation CAN-Expansions confi id_2- el circumference (mm)	6.42.17 (h.m.: igurator	s) 4.35.05 (h.m.s)	346 (Hz)	346 (Hz)			unaiona
mels System configura m) 1666 When n 1 Pulse	ition CAN-Expansions confi id_2- el circumference (mm)	igurator				0 (12)		
m) 1666 When n 1 Pulse	el circumference (mm)			Speed_4-				
lisabled Chappel par		Pulses per	cumference (mm) 1666 er wheel revolution 1	_	cumference (m 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	_	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 led Speed_3 ed Channel_1 ed Channel_2 ed Channel_3 ed Channel_4 ed Channel_5 ed Channel_6 ed Channel_6 ed Channel_7 ed Channel_10 ed Channel_11 ed Channel_11 ed Channel_12 ed Calculated_c ed LatAcc 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

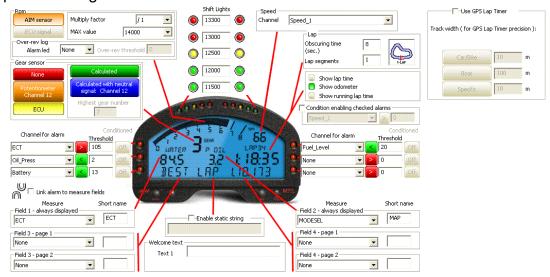


7.4 – Creating a custom sensor

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 Alarm led	None V Over-r	ev threshold		Over-rev log 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.

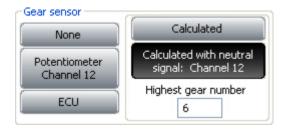
Select "**ECU sensor**" and set RPM max value to sample this value from the ECU, assuming it can transmit it.

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 limiter⁵.

⁵ This setting can be very useful to detect over-revs situation without opening Race Studio Analysis.



7.5.2 – Gear sensor box

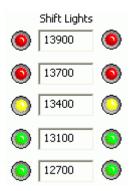


MXL can sample the engaged gear from a gear sensor, from the vehicle ECU or can calculate it with an algorithm based on RPM and speed. Available options are:

- "**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



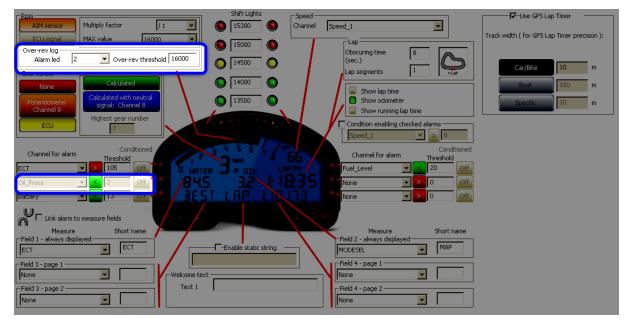
It manages the 10 led placed on top of **MXL**. Led colours: the first two on the left and on the right are green, the central two are orange and the last two are red. To set RPM threshold values fill in the cases. The led switch progressively on and when the engine reaches RPM values set for the top 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 Channel for alarm Thresh	old HIGH LOW Channel for alarm	Threshold
H Channel_1 💽 0	H Channel_1	0
H Channel_3 💽 0	H Channel_3	0
H Channel_5 🔽 🔽	H Channel_5	0
Link alarm to measure fields Measure Short nam		Short name
Field 1 - always displayed Channel_1 CH_1	Field 1 - always displayed Channel_1	СН_1
Field 3 - page 1 Channel_3	Field 3 - page 1	СН_З
Field 3 - page 2 Channel_5	Field 3 - page 2	CH_5

"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 Obscuring time (sec.) Lap segments	Lap Obscuring time 5 (sec.) Lap segments 3
Show lap time	 Show lap time Show odometer
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.

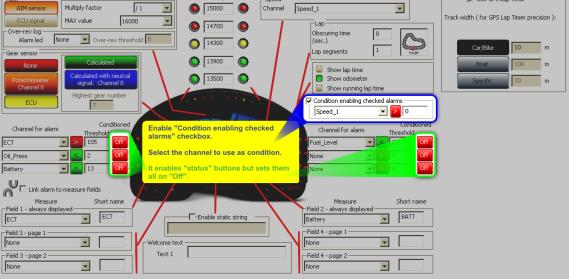
To set channels for alarms follow this procedure:

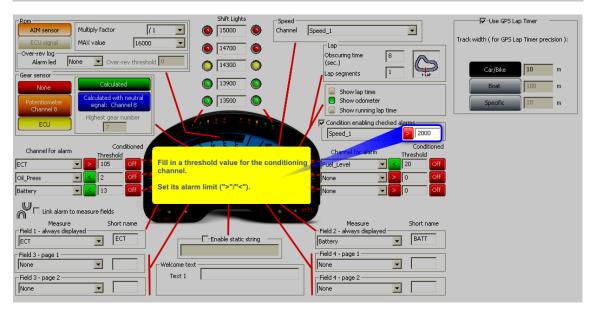
- **1.** set selecting from the drop down menu the channels for alarm to be shown;
- **2.** fill in its threshold value;
- **3.** set the alarm limit (">"/"<");
- **4.** enable "Condition enabling selected alarms" case (this operation enables "status" button but shows them all red and set on "Off");
- 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 (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	
Threshold	nannel fo alarm to sh		
ECT ID5 Off Fill in its	threshdold value	Fuel_Level	
Oil_Press < 2 Off Battery ▼ 13 Off		None ▼ > 0 Off None ▼ > 0 Off	
	limit (">"/"<")	None	
Link alarm to measure fields			
Measure Short name		Measure Short name 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		,

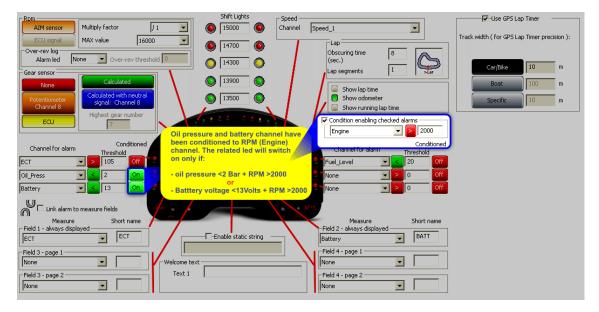






Race Studio Configuration (from 2.30.05 onwards) User manual Release 1.08

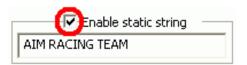
AIM sensor / 1	Shift Lights Speed Speed Channel	Speed 1	Use GPS Lap Timer
ECU signal MAX value 16000			Track width (for GPS Lap Timer precision):
Over-rev log Alarm led None Over-rev threshold		Obscuring time 8 (sec.)	
Gear sensor		Lap segments 1	Car/Bike 10 m
None Calculated	S 13900	Show lap time	Boat 100 m
Potentiometer Channel 8 Calculated with neutral 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 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 Channel for alarm Threshold	
ECT V 105 Off when:		Fuel_Level	
		None V > 0 Off	
	rature >105°C 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
	P

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.



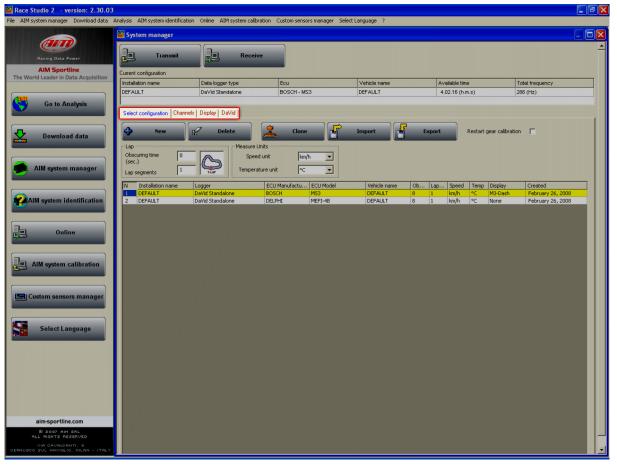
To enter configuration menu press "AIM system manager" button; a panel showing all systems managed through **Race Studio 2** software appears: double click on "**MXL**" or select it and click on " \checkmark Go to".



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	ct configuration Channels	Display DaVid									
¢	New	Delete	Clone	Impo	ort 🛃	Ехро	rt	Res	tart gea	r calibration	
(se	Lap Measure Units Obscuring time (sec.) Lap segments Measure Units Speed unit Imperature 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 (sec.)	8	5
Lap segments	1	AP

- **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.

	er									
Trar	nsmit	Receive								
Current configuration										
Installation name	Da	ata logger type	Ecu	Vehicle name	Avail	able time	Т	otal frequenc	у	
DEFAULT	Da	Vid Standalone	BOSCH - MS3	DEFAULT	4.06	i.35 (h.m.s)	2	81 (Hz)		
Select configuration	Channels Disp	play DaVid				/				
Rpm		Speed_1	Spee	ed_2	Gear sensor					
AIM sensor	E Citi al and				None		Calculated			
All ^M sensor	ECU signal	Enabled		Enabled	None		Calculateu			
Multiply factor	11 -		um) 1666 Whe	el circumference (mm) 1666	ECU					
Multiply Factor	1/1 <u>P</u>	Wheel circumference (n	1m) 1000 Whe	el circumference (mm) 1666		Hi	ghest gear numb	er		
MAX value	4000	Pulses per wheel revolution	n 1 Pulse	es per wheel revolution	Potentiome	ter	6			
	1				Channel	5	, <u> </u>			
-Reference speed										
Chan	Speed_2	-								
				1						_
Channel identifier	Enabled/disab		Samplin	Sensor type	Measure unit		High scale		Param. 2	^
RPM SPD 1	Disabled Enabled	Engine	10 Hz 10 Hz	Engine revolution speed	rpm	0	20000	1.000	16000	
		Speed_1		Speed	km/h .1	0.0	250.0	1666.0		
SPD_2	Enabled	Speed_2	10 Hz	Speed	km/h .1	0.0	250.0	1666.0	1.0	
SPD_2 CH_1	Enabled Enabled	Speed_2 Channel_1	10 Hz 10 Hz	Speed Distance potentiometer	km/h .1 mm .1	0.0 0.0	250.0 5.0			
SPD_2 CH_1 CH_2	Enabled Enabled Enabled	Speed_2 Channel_1 Channel_2	10 Hz 10 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V	km/h .1 mm .1 V .1	0.0 0.0 0.0	250.0 5.0 5.0	1666.0		
SPD_2 CH_1 CH_2 CH_3	Enabled Enabled Enabled Enabled	Speed_2 Channel_1 Channel_2 Channel_3	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V	km/h .1 mm .1 V .1 V .1	0.0 0.0 0.0 0.0	250.0 5.0 5.0 5.0	1666.0		
SPD_2 CH_1 CH_2 CH_3 CH_4	Enabled Enabled Enabled Enabled Enabled	Speed_2 Channel_1 Channel_2 Channel_3 Channel_4	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V	km/h .1 mm .1 V .1 V .1 V .1	0.0 0.0 0.0 0.0 0.0 0.0	250.0 5.0 5.0 5.0 5.0 5.0	1666.0		
SPD_2 CH_1 CH_2 CH_3 CH_4 CH_5	Enabled Enabled Enabled Enabled Enabled Disabled	Speed_2 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Thermocouple	km/h .1 mm .1 V .1 V .1 V .1 ∘⊂	0.0 0.0 0.0 0.0 0.0 0.0	250.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	1666.0		
SPD_2 CH_1 CH_2 CH_3 CH_4 CH_5 CH_6	Enabled Enabled Enabled Enabled Disabled Disabled	Speed_2 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Channel_6	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Thermocouple Calculated Gear	km/h .1 mm .1 V .1 V .1 V .1 × .1 × .1	0.0 0.0 0.0 0.0 0.0 0 0	250.0 5.0 5.0 5.0 5.0 5.0 5 5 6	1666.0		
SPD_2 CH_1 CH_2 CH_3 CH_4 CH_5 CH_6 ACC_1	Enabled Enabled Enabled Enabled Disabled Disabled Enabled	Speed_2 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Channel_6 Acc_1	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer	km/h .1 mm .1 V .1 V .1 V .1 ∘⊂ # g .01	0.0 0.0 0.0 0.0 0.0 0 0 0 -3.00	250.0 5.0 5.0 5.0 5.0 5.0 5 6 3.00	1666.0		
SPD_2 CH_1 CH_2 CH_3 CH_4 CH_5 CH_6 ACC_1 ACC_2	Enabled Enabled Enabled Enabled Disabled Disabled Enabled Enabled Enabled	Speed_2 Channel_1 Channel_2 Channel_3 Channel_3 Channel_4 Channel_5 Channel_6 Acc_1 Acc_2	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer	km/h .1 mm .1 ∀ .1 ∀ .1 ∘⊂ # g .01 g .01	0.0 0.0 0.0 0.0 0.0 0 0 -3.00 -3.00	250.0 5.0 5.0 5.0 5.0 5.0 5 6 3.00 3.00	1666.0		
SPD_2 CH_1 CH_2 CH_3 CH_4 CH_5 CH_6 ACC_1 ACC_2 LOG_TMP	Enabled Enabled Enabled Enabled Disabled Disabled Enabled Enabled Enabled	Speed_2 Channel_1 Channel_2 Channel_3 Channel_5 Channel_6 Acc_1 Datalogger_Temp	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint	km/h .1 mm .1 V .1 V .1 °⊂ # g .01 °⊂	0.0 0.0 0.0 0.0 0.0 0 0 -3.00 0 -3.00	250.0 5.0 5.0 5.0 5.0 5 6 3.00 3.00 50	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	Enabled Enabled Enabled Enabled Disabled Disabled Enabled Enabled Enabled Enabled	Speed_2 Channel_1 Channel_2 Channel_3 Channel_4 Channel_6 Acc_1 Acc_2 Detalogger_Temp Battery	10 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery	km/h .1 mm .1 V .1 V .1 V .1 °⊂ # g .01 g .01 °⊂ V .1	0.0 0.0 0.0 0.0 0 0 -3.00 -3.00 0 5.0	250.0 5.0 5.0 5.0 5.0 5 6 3.00 3.00 50 15.0	1666.0		
SPD_2 CH_1 CH_2 CH_3 CH_4 CH_5 CH_6 ACC_1 ACC_2 LOG_TMP	Enabled Enabled Enabled Enabled Disabled Disabled Enabled Enabled Enabled	Speed_2 Channel_1 Channel_2 Channel_3 Channel_5 Channel_6 Acc_1 Datalogger_Temp	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint	km/h .1 mm .1 V .1 V .1 °⊂ # g .01 °⊂	0.0 0.0 0.0 0.0 0.0 0 0 -3.00 0 -3.00	250.0 5.0 5.0 5.0 5.0 5 6 3.00 3.00 50	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	Enabled Enabled Enabled Enabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled	Speed_2 Channel_1 Channel_2 Channel_3 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_RPM	10 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor	km/h .1 mm .1 ∀ .1 ∀ .1 ♥ .1 •C # g .01 •C ♥ .1 g .01 •C ↓ .1 rpm	0.0 0.0 0.0 0.0 0 0 -3.00 -3.00 0 5.0 0	250.0 5.0 5.0 5.0 5.0 5 6 3.00 3.00 50 15.0 18000	1666.0		
SPD_2 CH_1 CH_2 CH_3 CH_4 CH_5 CH_6 ACC_1 ACC_1 ACC_2 LOG_IMP BATT ECU_1 ECU_1 ECU_2 ECU_3	Enabled Enabled Enabled Enabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Speed_2 Channel_1 Channel_2 Channel_3 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_RPM BOSCH_SPEED1	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 11 Hz 10 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor	km/h .1 mm .1 V .1 V .1 V .1 v .1 e⊂ # g .01 g .01 e⊂ V .1 rpm km/h .1	0.0 0.0 0.0 0.0 0 0 -3.00 -3.00 0 5.0 0 0 0.0	250.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 3.00 3.0	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	Enabled Enabled Enabled Enabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Speed_2 Channel_1 Channel_2 Channel_3 Channel_6 Acc_1 Acc_2 Detalogger_Temp Battery BOSCH_SPEED1 BOSCH_SPEED2	10 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Bosch speed sensor Speed sensor	km/h .1 mm .1 V .1 V .1 V .1 Q .01 G .01 Q .01 V .1 rpm km/h .1 km/h	0.0 0.0 0.0 0.0 0 0 -3.00 -3.00 0 5.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	250.0 5.0 5.0 5.0 5.0 5 6 3.00 3.00 50 15.0 15.0 15.0 15.0 500.0 500.0	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_1 ECU_2 ECU_3 ECU_4 ECU_5	Enabled Enabled Enabled Enabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Speed_2 Channel_1 Channel_2 Channel_3 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_SPEED1 BOSCH_SPEED2 BOSCH_OIL_PRESS	10 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Bosch speed sensor Speed sensor Pressure sensor	km/h .1 mm .1 V .1 V .1 V .1 V .1 Q .01 g .01 g .01 v .1 rpm km/h .1 km/h .1	0.0 0.0 0.0 0.0 0 0 -3.00 -3.00 0 5.0 0 0 0.0 0 0.0 0.0	250.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	1666.0		
SPD_2 CH_1 CH_2 CH_3 CH_4 CH_5 GH_6 ACC_1 ACC_2 LOG_TMP BATT ECU_1 ECU_2 ECU_3 ECU_4	Enabled Enabled Enabled Enabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Speed_2 Channel_1 Channel_2 Channel_3 Channel_5 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_RPM BOSCH_SPEED1 BOSCH_PRED2 BOSCH_PRES5	10 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Speed sensor Pressure sensor Pressure sensor	km/h .1 mm .1 V .1 V .1 V .1 V .1 V .1 V .1 V .1 g .01 g .01 V .1 rpm km/h .1 km/h bar .1 bar .1	0.0 0.0 0.0 0.0 0 0 -3.00 -3.00 0 5.0 0 0 0.0 0.0 0.0 0.0 0.0 0.0 0.	250.0 5.0 5.0 5.0 5 6 3.00 3.00 3.00 50 15.0 18000 500.0 500 15.0 15.0 15.0 15.0 15.0 18000 500 15.0 15.0 18000 500 18000 500 18000 500 18000 500 18000 500 18000 500 18000 500 1800 500 1800 18000 500 18000 18000 500 18000 18000 500 18000 500 18000 500 18000 500 18000 500 18000 500 18000 500 18000 500 18000 500 18000 500 18000 500 18000 500 500 500 500 500 500 500	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_4 ECU_3 ECU_4 ECU_5 ECU_6 ECU_7 ECU_8	Enabled Enabled Enabled Enabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Speed_2 Channel_1 Channel_2 Channel_3 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_SPEED1 BOSCH_SPEED1 BOSCH_SPEED2 BOSCH_UL_PRESS BOSCH_FUEL_PRESS BOSCH_FUEL_SPEESS	10 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Bosch speed sensor Speed sensor Pressure sensor Pressure sensor Pressure sensor	km/h .1 mm .1 V .1 V .1 V .1 V .1 V .1 V .1 V .1 g .01 V .1 rpm km/h .1 km/h bar .1 bar .1 bar .1 mbar C C	0.0 0.0 0.0 0.0 0 0 -3.00 -3.00 0 5.0 0 0 0.0 0 0.0 0.0 0.0 0.0 0.0	250.0 5.0 5.0 5.0 5.0 5 6 3.00 3.00 50 15.0 15.0 15.0 15.0 15.0 15.0 15.0 13.0	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_1 ECU_1 ECU_3 ECU_4 ECU_5 ECU_4 ECU_5 ECU_6 ECU_7	Enabled Enabled Enabled Enabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Speed_2 Channel_1 Channel_2 Channel_3 Channel_6 Acc_1 Acc_2 Detalogger_Temp Battery BOSCH_SPEED1 BOSCH_SPEED2 BOSCH_OIL_PRESS BOSCH_FRESS BOSCH_FUEL_PRESS BOSCH_FUEL_TEMP	10 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Bosch speed sensor Speed sensor Pressure sensor Pressure sensor Pressure sensor Temperature sensor	km/h .1 mm .1 V .1 V .1 V .1 V .1 Q .01 g .01 g .01 g .01 G .01 g .01 S .01 km/h .1 km/h .1 km/h .1 bar .1 bar .1 bar .2 bar .1 bar .1 bar .1 bar .1 bar .1 bar .2 bar .2 ba	0.0 0.0 0.0 0.0 0 0 -3.00 0 5.0 0 0 0.0 0.0 0.0 0.0 0.0 0.0 0.	250.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	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_4 ECU_3 ECU_4 ECU_5 ECU_6 ECU_7 ECU_8	Enabled Enabled Enabled Enabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Speed_2 Channel_1 Channel_2 Channel_3 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_SPEED1 BOSCH_SPEED2 BOSCH_IPRESS BOSCH_IPRESS BOSCH_FUEL_PRESS BOSCH_FUEL_TEMP BOSCH_OIL_TEMP	10 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Speed sensor Pressure sensor Pressure sensor Pressure sensor Temperature sensor Temperature sensor	km/h .1 mm .1 V .1 V .1 V .1 V .1 V .1 V .1 V .1 g .01 V .1 rpm km/h .1 km/h bar .1 bar .1 bar .1 mbar C C	0.0 0.0 0.0 0.0 0 0 -3.00 -3.00 0 5.0 0 0 0.0 0 0.0 0.0 0.0 0.0 0.0	250.0 5.0 5.0 5.0 5 6 3.00 3.00 3.00 15.0 1500 1500 15.0 15.0 15.0 15.0 15.0 15.0 215	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 Enabled Enabled Enabled Disabled Disabled Enabled	Speed_2 Channel_1 Channel_2 Channel_3 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_SPEED1 BOSCH_SPEED2 BOSCH_IPRESS BOSCH_IPLEL_PRESS BOSCH_FUEL_TEMP BOSCH_ENGINE_TEMP BOSCH_ENGINE_TEMP BOSCH_ITMENT_ANG	10 Hz 10 Hz 5 Hz 5 Hz 5 Hz 5 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Bosch speed sensor Pressure sensor Pressure sensor Pressure sensor Temperature sensor Temperature sensor Temperature sensor Temperature sensor Temperature sensor Temperature sensor	km/h .1 mm .1 V .1 Solution Color V .1 Km/h .1 km/h .1 km/h .1 bar .1 bar .1 bar .1 bar .1 v C V .2 V .2	0.0 0.0 0.0 0.0 0 0 -3.00 0 5.0 0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0.0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	250.0 5.0 5.0 5.0 5 6 3.00 3.00 50 15.0 1500 1500 15.0	1666.0		
SPD_2 CH_1 CH_2 CH_3 CH_4 CH_5 CH_6 ACC_1 ACC_2 LOG_TMP BATT ECU_12 ECU_2 ECU_2 ECU_5 ECU_6 ECU_7 ECU_9 ECU_10 ECU_11 ECU_111	Enabled Enabled Enabled Enabled Disabled Disabled Enabled	Speed_2 Channel_1 Channel_2 Channel_3 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_SPEED1 BOSCH_SPEED2 BOSCH_SPEED2 BOSCH_UL_PRESS BOSCH_PUL_TEMP BOSCH_LEL_PRESS BOSCH_TELL_PRESS BOSCH_LTEMP BOSCH_LTEMP BOSCH_LTEMP BOSCH_MIN_TEMP BOSCH_MIN_TEMP BOSCH_HOULTEMP BOSCH_MIN_TEMP BOSCH_MIN_TEMP BOSCH_INGINE_TEMP BOSCH_INGINE_TEMP BOSCH_INGINE_TANG BOSCH_INGINE_TANG	10 Hz 10 Hz 5 Hz 5 Hz 5 Hz 5 Hz 5 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Battery Engine speed sensor Speed sensor Pressure sensor Pressure sensor Pressure sensor Temperature sensor Temperature sensor Temperature sensor Temperature sensor Temperature sensor Temperature sensor Temperature sensor Temperature sensor	km/h .1 mm .1 V .1 d eg	0.0 0.0 0.0 0.0 0 0 -3.00 -3.00 0 0 5.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	250.0 5.0 5.0 5.0 5 6 3.00 3.00 50 15.0	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_12	Enabled Enabled Enabled Enabled Disabled Disabled Enabled	Speed_2 Channel_1 Channel_2 Channel_3 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_SPED1 BOSCH_SPEED1 BOSCH_SPEED2 BOSCH_FUEL_PRESS BOSCH_FUEL_PRESS BOSCH_COIL_TEMP BOSCH_COIL_TEMP BOSCH_COIL_TEMP BOSCH_LOIL_TEMP BOSCH_LAIR_TEMP BOSCH_LIRNT_ANG BOSCH_IGNIL_ANGE	10 Hz 10 Hz 5 Hz 5 Hz 5 Hz 10 Hz 10 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Bosch speed sensor Speed sensor Pressure sensor Pressure sensor Temperature sensor	km/h .1 mm .1 V .2 v .1 v .2 v .1 v .2 v .1 v .2 v .1 v .2 v .1 v .2 v .2 v .1 v .2 v .2 v .1 v .2 v .1 d d d d d v .1 d d d d d d d d d d d d d d d d d d d	0.0 0.0 0.0 0.0 0 0 -3.00 -3.00 -3.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	250.0 5.0 5.0 5.0 5 6 3.00 3.00 50 15.0	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_90 ECU_11 ECU_12 ECU_11 ECU_12	Enabled Enabled Enabled Enabled Disabled Disabled Enab	Speed_2 Channel_1 Channel_2 Channel_3 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_SPEED1 BOSCH_SPEED1 BOSCH_IPRESS BOSCH_FUEL_PRESS BOSCH_FUEL_TEMP BOSCH_GIL_TEMP BOSCH_ITEMP BOSCH_ITEMP BOSCH_ITEMP BOSCH_IRT_TEMP BOSCH_IRTEMP BOSCH_IRTEMP	10 Hz 10 Hz 5 Hz 5 Hz 5 Hz 5 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Bosch speed sensor Pressure sensor Pressure sensor Pressure sensor Pressure sensor Temperature sensor	km/h .1 mm .1 V .1 V .1 V .1 V .1 G .01 G .01 C V .1 Fym km/h .1 km/h bar .1 bar .1 bar .1 bar .1 bar .1 deg C C C C C C K .1 deg % ms .01	0.0 0.0 0.0 0.0 0 0 -3.00 0 5.0 0 0 5.0 0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	250.0 5.0 5.0 5.0 5 6 3.00 3.00 3.00 15.0 15.0 1500 15.0 10.0 10	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_3 ECU_5 ECU_6 ECU_9 ECU_11 ECU_11 ECU_12 ECU_11 ECU_12 ECU_11 ECU_12 ECU_14 ECU_14 ECU_14 ECU_15	Enabled Enabled Enabled Enabled Disabled Disabled Enab	Speed_2 Channel_1 Channel_2 Channel_3 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_SPEED1 BOSCH_SPEED2 BOSCH_PRESS BOSCH_FUEL_PRESS BOSCH_FUEL_TEMP BOSCH_LTEMP BOSCH_ITEMP BOSCH_ITEMP BOSCH_ITEMP BOSCH_ITEMP BOSCH_ITEMP BOSCH_ITEMP BOSCH_ITEMP BOSCH_ITEMP BOSCH_ITEMT_ANG BOSCH_INJ_TM1 BOSCH_INJ_TM1	10 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Battery Engine speed sensor Speed sensor Pressure sensor Pressure sensor Pressure sensor Temperature sensor System clock	km/h .1 mm .1 V .1 V .1 V .1 Q .01 C .2 V .1 Fm km/h .1 km/h bar .1 bar .1 bar .1 bar .1 deg %.1 deg %.1 deg %.1 ms .01	0.0 0.0 0.0 0.0 0 0 -3.00 -3.00 0 5.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	250.0 5.0 5.0 5.0 5 6 3.00 3.00 50 15.0 10.0	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_90 ECU_11 ECU_12 ECU_11 ECU_12	Enabled Enabled Enabled Enabled Disabled Disabled Enab	Speed_2 Channel_1 Channel_2 Channel_3 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_SPEED1 BOSCH_SPEED1 BOSCH_IPRESS BOSCH_FUEL_PRESS BOSCH_FUEL_TEMP BOSCH_GIL_TEMP BOSCH_ITEMP BOSCH_ITEMP BOSCH_ITEMP BOSCH_IRT_TEMP BOSCH_IRTEMP BOSCH_IRTEMP	10 Hz 10 Hz 5 Hz 5 Hz 5 Hz 5 Hz 10 Hz	Speed Distance potentiometer Generic linear 0-5 V Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Bosch speed sensor Pressure sensor Pressure sensor Pressure sensor Pressure sensor Temperature sensor	km/h .1 mm .1 V .1 V .1 V .1 V .1 G .01 G .01 C V .1 Fym km/h .1 km/h bar .1 bar .1 bar .1 bar .1 bar .1 deg C C C C C C K .1 deg % ms .01	0.0 0.0 0.0 0.0 0 0 -3.00 0 5.0 0 0 5.0 0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	250.0 5.0 5.0 5.0 5 6 3.00 3.00 3.00 15.0 15.0 1500 15.0 10.0 10	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 D	Display	Sele
Rpm			Rpi
AIM sensor	ECU signal		
Multiply factor	/ 1	•	Mu
MAX value	4000	•	MA
-Reference speed-			Rel
Chan	BOSCH_SP	PEED1	
Channel identifier	Enabled/disa	. Cł	Cha
RPM	Enabled	En	RPM
SPD_1	Disablea	Sp	SPD
SPD_2	Enabled	Sp	SPD
CH 1	Enabled	CH	CH

Channels Di	splay
ECU signal	
	-
4000	•
1	
BOSCH_SPE	ED1
	-
Enabled/disa	Ch
Disabled	En
Disabled	Sp
Enabled	Sp
	ECU signal 4000 BOSCH_SPE Enabled/disa Disabled

- 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		
Rpm AIM sensor Multiply Factor MAX value		Speed_1 Disabled Wheel or cumference (mm) 10 Puses per wheel revolution 1	566 Wh	Enabled Enabled eef circumference (mm) 1666 ses per wheel revolution 1
Reference speed				
Chan	BOSCH_SPEE	ED1 V		
Channel identifier	Enabled disa	Charinel 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

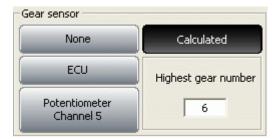
8.3.2 – Speed panel

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 AUTR_SPEED 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:

) (-								
Trar	nsmit	Receive								
irrent configuration										
nstallation name	D	ata logger type	Ecu	Vehicle name	Avai	able time		otal frequenc	y	
DEFAULT	Di	aVid Standalone	BOSCH - MS3	DEFAULT	4.06	6.35 (h.m.s)		81 (Hz)		
Select configuration	Channels Dis	play DaVid								
Rpm		Speed_1	Spee	:d_2	Gear sensor					
AIM sensor	ECU signal	Enabled		Enabled	None		Calculated			
					ECU					
Multiply factor	/ 1	Wheel circumference (mm) 1666 Whe	el circumference (mm) 1666		H	ighest gear num	ber		
MAX value	4000	Pulses per wheel revoluti	ion 1 Pulse	es per wheel revolution 1	Potentiom		6			
Reference speed										
Chan	Speed_2	_								
Channel identifier	Enabled/disab		Samplin	Sensor type	Measure uni		High scale		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	Enabled	Channel_2	10 Hz	Generic linear 0-5 V	V .1	0.0	5.0			
CH_3	Enabled	d 1.0	10 Hz							
CH_3	Enabled	Channel_3	10 Hz	Generic linear 0-5 V	V .1	0.0	5.0			
	Enabled	Channel_3 Channel_4	10 Hz	Generic linear 0-5 V Generic linear 0-5 V	V .1 V .1	0.0	5.0 5.0			
CH_4										
СН_4 СН_5	Enabled	Channel_4	10 Hz	Generic linear 0-5 V	V .1	0.0	5.0			
CH_4 CH_5 CH_6	Enabled Disabled	Channel_4 Channel_5	10 Hz 10 Hz	Generic linear 0-5 V Thermocouple	V .1 °⊂	0.0	5.0 5			
CH_4 CH_5 CH_6 ACC_1	Enabled Disabled Disabled	Channel_4 Channel_5 Channel_6	10 Hz 10 Hz 10 Hz	Generic linear 0-5 V Thermocouple Calculated Gear	V .1 °⊂ # g .01	0.0 0 0	5.0 5 6			
CH_4 CH_5 CH_6 ACC_1 ACC_2	Enabled Disabled Disabled Enabled	Channel_4 Channel_5 Channel_6 Acc_1	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz	Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer	V.1 ℃ #	0.0 0 0 -3.00	5.0 5 6 3.00			
CH_5 CH_5 CH_6 ACC_1 ACC_2 LOG_TMP BATT	Enabled Disabled Disabled Enabled Enabled	Channel_4 Channel_5 Channel_6 Acc_1 Acc_2	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz	Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer	V .1 °⊂ # g .01 g .01	0.0 0 0 -3.00 -3.00	5.0 5 6 3.00 3.00			
CH_4 CH_5 CH_6 ACC_1 ACC_2 LOG_TMP BATT	Enabled Disabled Disabled Enabled Enabled Enabled	Channel_4 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz	Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint	V .1 °⊂ # g .01 g .01 °⊂	0.0 0 -3.00 0 -3.00	5.0 5 6 3.00 3.00 50			
CH_4 CH_5 CH_6 ACC_1 ACC_2 LOG_TMP	Enabled Disabled Disabled Enabled Enabled Enabled Enabled	Channel_4 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 1 Hz	Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery	V .1 °⊂ # g .01 g .01 °⊂ V .1	0.0 0 -3.00 -3.00 0 5.0	5.0 5 6 3.00 3.00 50 15.0			
CH_4 CH_5 CH_6 ACC_1 ACC_2 LOG_TMP BATT ECU_1 ECU_2	Enabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled	Channel_4 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_RPM	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 1 Hz 10 Hz	Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor	V .1 ∘C # g .01 g .01 ∘C V .1 rpm	0.0 0 -3.00 -3.00 0 5.0 0	5.0 5 6 3.00 3.00 50 15.0 18000			
CH_4 CH_5 CH_6 ACC_1 ACC_2 LOG_TMP BATT ECU_1 ECU_2 ECU_3	Enabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled	Channel_4 Channel_5 Channel_6 Acc_1 Acc_2 Dotalogger_Temp Battery BoSCH_RPM BOSCH_SPEED1 BOSCH_SPEED1 BOSCH_SPEED2	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 1 Hz 10 Hz 10 Hz	Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Bosch speed sensor	V .1 °C # g .01 °C V .1 rpm km/h .1	0.0 0 -3.00 -3.00 0 5.0 0 0.0	5.0 5 6 3.00 3.00 50 15.0 18000 500.0			
CH_4 CH_5 CH_6 ACC_1 ACC_2 LOG_TMP BATT ECU_1 ECU_2 ECU_2 ECU_3 ECU_4	Enabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Channel_4 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BoSCH_RPM BOSCH_SPEED1	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz	Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Bosch speed sensor Bosch speed sensor	V .1 °C # g .01 g .01 °C V .1 rpm km/h .1 km/h	0.0 0 -3.00 -3.00 0 5.0 0 0.0 0.0	5.0 5 6 3.00 50 15.0 18000 500.0 500			
CH_4 CH_5 CH_6 ACC_1 ACC_2 LOG_TMP BATT ECU_1 ECU_2 ECU_2 ECU_3 ECU_3 ECU_4 ECU_5	Enabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Channel_4 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_RPM BOSCH_SPEED1 BOSCH_SPEED2 BOSCH_OIL_PRES5	10 Hz 10 Hz	Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Cold joint Battery Engine speed sensor Bosch speed sensor Speed sensor Pressure sensor	V .1 °C # g .01 °C V .1 rpm km/h .1 km/h bar .1	0.0 0 -3.00 -3.00 0 5.0 0 0.0 0.0 0.0	5.0 5 6 3.00 50 15.0 18000 500.0 500 15.0			
CH_4 CH_5 CH_6 ACC_1 ACC_2 LOG_TMP BATT ECU_1 ECU_2 ECU_2 ECU_3 ECU_4 ECU_4 ECU_5 ECU_5 ECU_6	Enabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Channel_4 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_RPM BOSCH_SPEED1 BOSCH_OIL_PRESS BOSCH_OIL_PRESS	10 Hz 10 Hz	Generic Inear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Bosch speed sensor Speed sensor Pressure sensor Pressure sensor	V .1	0.0 0 -3.00 -3.00 0 5.0 0 0.0 0.0 0.0 0.0 0.0	5.0 5 6 3.00 50 15.0 18000 500.0 500 15.0 15.0			
CH_4 CH_5 ACC_1 ACC_2 LOG_TMP BANT ECU_1 ECU_2 ECU_3 ECU_4 ECU_5 ECU_6 ECU_6 ECU_7	Enabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Channel_4 Channel_5 Acc_1 Acc_2 Detalogger_Temp Battery BOSCH_RPM BOSCH_SPEED1 BOSCH_SPEED1 BOSCH_SPEED2 BOSCH_OIL_PRESS BOSCH_OIL_PRESS BOSCH_FUEL_PRESS	10 Hz 10 Hz	Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Bosch speed sensor Speed sensor Pressure sensor Pressure sensor Pressure sensor	V .1 °C # g .01 g .01 °C V .1 rpm km/h .1 km/h bar .1 bar .1 mbar	0.0 0 -3.00 5.0 0 0.0 0.0 0.0 0.0 0.0 0.	5.0 5 6 3.00 50 15.0 18000 500.0 500 15.0 15.0 15.0 130			
CH_4 CH_5 CH_6 ACC_1 ACC_2 LOG_TMP BANT ECU_1 ECU_2 ECU_3 ECU_4 ECU_4 ECU_5 ECU_6 ECU_6 ECU_7 ECU_8	Enabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Channel_4 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_RPM BOSCH_SPEED1 BOSCH_GL_PRES5 BOSCH_GL_PRES5 BOSCH_GL_PRES5 BOSCH_FUEL_TEMP BOSCH_OLL_TEMP	10 Hz 10 Hz 5 Hz	Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Cold joint Battery Engine speed sensor Bosch speed sensor Pressure sensor Pressure sensor Pressure sensor Temperature sensor Temperature sensor	V .1 °C # g .01 g .01 °C V .1 rpm km/h .1 km/h bar .1 bar .1 mbar °C	0.0 0 -3.00 -3.00 0 5.0 0 0.0 0.0 0.0 0.0 0.0	5.0 5 6 3.00 50 15.0 18000 500.0 500.0 500 15.0 15.0 130 215			
CH_4 CH_5 CH_6 ACC_1 ACC_2 DOG_TMP BATT ECU_1 ECU_2 ECU_3 ECU_4 ECU_5 ECU_5 ECU_6 ECU_7 ECU_6 ECU_7 ECU_9	Enabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Channel_4 Channel_5 Channel_6 Acc_1 Acc_2 Detalogger_Temp Battery BoSCH_RPM BOSCH_SPEED1 BOSCH_SPEED1 BOSCH_SPEED1 BOSCH_SPEED2 BOSCH_OIL_PRESS BOSCH_OIL_PRESS BOSCH_FUEL_TEMP BOSCH_FUEL_TEMP BOSCH_FUEL_TEMP	10 Hz 10 Hz 5 Hz 5 Hz	Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Bosch speed sensor Speed sensor Pressure sensor Pressure sensor Pressure sensor Temperature sensor Temperature sensor Temperature sensor	V .1 °C # g .01 g .01 °C V .1 rpm km/h .1 km/h bar .1 mbar °C °C °C °C	0.0 0 -3.00 -3.00 0 5.0 0 0.0 0.0 0.0 0.0 0.0	5.0 5 6 3.00 50 15.0 15.0 5000 5000 500 15.0 15.0			
CH_4 CH_5 CH_6 ACC_1 ACC_2 LOG_TMP BANT ECU_1 ECU_2 ECU_3 ECU_4 ECU_4 ECU_5 ECU_6 ECU_7 ECU_8 ECU_7 ECU_8 ECU_9 ECU_9 ECU_9 ECU_9	Enabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Channel_4 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_SPEED1 BOSCH_SPEED1 BOSCH_SPEED1 BOSCH_OIL_PRESS BOSCH_FUEL_PRESS BOSCH_FUEL_PRESS BOSCH_FUEL_PRESS BOSCH_FUEL_TEMP BOSCH_OIL_TEMP BOSCH_AIR_TEMP	10 Hz 10 Hz 5 Hz 5 Hz 5 Hz 5 Hz	Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Bosch speed sensor Pressure sensor Pressure sensor Pressure sensor Temperature sensor Temperature sensor Temperature sensor Temperature sensor	V .1 °C # g .01 g .01 °C V .1 rpm km/h .1 km/h bar .1 bar .1 bar .1 bar .2 °C °C °C °C °C	0.0 0 -3.00 0 5.0 0 0.0 0.0 0.0 0.0 0.0 0 0.0 0 0.0 0 0 -50 -50 -50	5.0 5 6 3.00 3.00 50 15.0 18000 500.0 500 15.0 15.0 15.0 130 215 215 215 150 150			
CH_4 CH_5 CH_6 ACC_1 ACC_2 LOG_TMP BANT ECU_1 ECU_2 ECU_3 ECU_4 ECU_3 ECU_4 ECU_5 ECU_6 ECU_7 ECU_8 ECU_9 ECU_9 ECU_10 ECU_10 ECU_10 ECU_10 ECU_10 ECU_11 ECU_11 ECU_11 ECU_11 ECU_11 ECU_12 ECU_10 ECU	Enabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Channel_4 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_RPM BOSCH_SPEED1 BOSCH_SPEED1 BOSCH_SPEED2 BOSCH_FUEL_PRESS BOSCH_FUEL_PRESS BOSCH_FUEL_TEMP BOSCH_FUEL_TEMP BOSCH_OIL_TEMP BOSCH_ENGINE_TEMP BOSCH_ENGINE_TEMP BOSCH_ENGINE_TEMP BOSCH_TEMP	10 Hz 10 Hz 5 Hz 5 Hz 5 Hz 5 Hz 5 Hz 10 Hz	Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Bosch speed sensor Bosch speed sensor Pressure sensor Pressure sensor Pressure sensor Temperature sensor Temperature sensor Temperature sensor Temperature sensor Temperature sensor Temperature sensor Temperature sensor Temperature sensor	V .1 *C # g .01 g .01 *C V .1 rpm km/h .1 km/h bar .1 bar .1 bar .1 mbar *C *C *C *C *C *C *C *C *C *C	0.0 0 -3.00 -3.00 0 5.0 0 0 0 0 0 0 0 0 0 0 0 -50 -5	5.0 5 6 3.00 50 15.0 18000 500.0 500 15.0 15.0 15.0 15.0 15.0 215 215 215 150 150 150 100.0			
CH_4 CH_5 CH_6 ACC_1 ACC_2 LOG_IMP BATT ECU_1 ECU_2 ECU_3 ECU_4 ECU_4 ECU_5 ECU_6 ECU_7 ECU_6 ECU_7 ECU_1 ECU_9 ECU_10 ECU_10 ECU_11 ECU_11 ECU_12	Enabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Channel_4 Channel_5 Channel_6 Acc_1 Acc_2 Detalogger_Temp Battery BOSCH_RPM BOSCH_SPEED1 BOSCH_SPEED1 BOSCH_SPEED1 BOSCH_OIL_PRESS BOSCH_OIL_PRESS BOSCH_OIL_PRESS BOSCH_FUEL_TEMP BOSCH_FUEL_TEMP BOSCH_CIL_TEMP BOSCH_CIL_TEMP BOSCH_CINT_ANG	10 Hz 10 Hz 5 Hz 5 Hz 5 Hz 5 Hz 5 Hz 10 Hz	Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Bosch speed sensor Speed sensor Pressure sensor Pressure sensor Pressure sensor Temperature sensor Temperature sensor Temperature sensor Temperature sensor Temperature sensor Temperature sensor Temperature sensor Throttle position sensor	V .1 °C # g .01 g .01 °C V .1 rpm km/h .1 km/h bar .1 mbar °C °C °C °C °C °C °C °C °C °C	0.0 0 -3.00 5.0 0 5.0 0 0.0 0.0 0.0 0.0 0.0 0.0	5.0 5 6 3.00 50 15.0 18000 500 15.			
CH_4 CH_5 CH_6 ACC_1 ACC_2 LOG_TMP BART ECU_1 ECU_2 ECU_3 ECU_4 ECU_4 ECU_5 ECU_6 ECU_7 ECU_8 ECU_7 ECU_8 ECU_1 ECU_10 ECU_11 ECU_12 ECU_13 ECU_14 ECU_15 ECU_16 ECU_17 ECU_17 ECU_17 ECU_17 ECU_17 ECU_17 ECU_17 ECU_17 ECU_18 ECU	Enabled Disabled Disabled Enabled	Channel_4 Channel_5 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_SPEED1 BOSCH_SPEED1 BOSCH_SPEED2 BOSCH_OIL_PRESS BOSCH_FUEL_PRESS BOSCH_FUEL_PRESS BOSCH_FUEL_TEMP BOSCH_OIL_TEMP BOSCH_OIL_TEMP BOSCH_OIL_TEMP BOSCH_CAIR_TEMP BOSCH_TART_ANG BOSCH_IGNIT_ANG BOSCH_IGNIT_ANG	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 1 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 5 Hz 5 Hz 5 Hz 5 Hz 10 Hz 10 Hz	Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Bosch speed sensor Pressure sensor Pressure sensor Pressure sensor Temperature sensor Percentage sensor	V .1 °C # g .01 °C V .1 rpm km/h .1 km/h bar .1 bar .1 bar .1 bar .2 °C °C °C °C °C °C °C °C °C °C	0.0 0 -3.00 0 5.0 0 0.0 0.0 0.0 0.0 0.0 0.0 -50 -50 -50 -50 -50 0.0 -90 0	5.0 5 6 3.00 3.00 50 15.0 18000 500.0 500 15.0 15.0 15.0 130 215 215 215 150 100.0 90 190			
CH_4 CH_5 CH_6 ACC_1 ACC_2 LOG_IMP BATT ECU_1 ECU_2 ECU_4 ECU_2 ECU_4 ECU_5 ECU_4 ECU_5 ECU_6 ECU_7 ECU_8 ECU_7 ECU_8 ECU_10 ECU_10 ECU_11 ECU_112 ECU_112 ECU_12 ECU_13 ECU_14	Enabled Disabled Disabled Enabled	Channel_4 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_PRM BOSCH_PRED1 BOSCH_SPEED1 BOSCH_SPEED2 BOSCH_FUEL_PRESS BOSCH_FUEL_PRESS BOSCH_FUEL_PRESS BOSCH_FUEL_TEMP BOSCH_OIL_TEMP BOSCH_OIL_TEMP BOSCH_OIL_TEMP BOSCH_OIL_TEMP BOSCH_OIL_TEMP BOSCH_OIL_TEMP BOSCH_JIN_TANG BOSCH_JIN_TANG BOSCH_JIN_TM1	10 Hz 10 Hz 5 Hz 5 Hz 5 Hz 5 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz	Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Bosch speed sensor Bosch speed sensor Pressure sensor Pressure sensor Pressure sensor Temperature sensor Temperature sensor Temperature sensor Temperature sensor Throttle position sensor Angle sensor Percentage sensor System dock	V .1 °C # g .01 g .01 °C V .1 rpm km/h .1 km/h bar .1 bar .1 bar .1 mbar °C °C °C °C °C °C °C °C °C °C	0.0 0 -3.00 5.0 0 0.0 0.0 0.0 0.0 0.0 -50 -50 -50 -50 -50 -50 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	5.0 5 6 3.00 50 15.0 18000 500 15.			
CH_4 CH_5 CH_6 ACC_1 ACC_2 LOG_TMP BATT ECU_1 ECU_3 ECU_4 ECU_4 ECU_5 ECU_6 ECU_7 ECU_6 ECU_7 ECU_8 ECU_1 ECU_1 ECU_11 ECU_11 ECU_12 ECU_13 ECU_14 ECU_15 ECU_16 ECU_17 ECU	Enabled Disabled Disabled Enabled	Channel_4 Channel_5 Channel_6 Acc_1 Acc_2 Detalogger_Temp Battery BOSCH_RPM BOSCH_SPEED1 BOSCH_SPEED1 BOSCH_SPEED1 BOSCH_OIL_PRESS BOSCH_OIL_PRESS BOSCH_OIL_PRESS BOSCH_OIL_PRESS BOSCH_OIL_PRESS BOSCH_OIL_PRESS BOSCH_OIL_TEMP BOSCH_FUEL_TEMP BOSCH_FUEL_TEMP BOSCH_FUEL_TEMP BOSCH_FUEL_TEMP BOSCH_FUEL_TEMP BOSCH_FUEL_TEMP BOSCH_FUEL_TEMP BOSCH_FUEL_TEMP BOSCH_FUEL_TEMP BOSCH_FUEL_TEMP BOSCH_FUEL_TEMP BOSCH_FUEL_TEMP	10 Hz 10 Hz 5 Hz 5 Hz 5 Hz 5 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz	Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Bosch speed sensor Speed sensor Pressure sensor Pressure sensor Pressure sensor Temperature sensor Temperature sensor Temperature sensor Temperature sensor Temperature sensor Throttle position sensor Angle sensor Percentage sensor System dock	V .1 °C # g .01 g .01 °C V .1 rpm km/h .1 km/h .1 bar .1 mbar .1 mbar °C °C °C °C °C °C °C °C °C °C	0.0 0 -3.00 5.0 0 5.0 0 0.0 0 0.0 0 0 0 0 0 0 0	5.0 5 6 3.00 50 15.0 18000 500 15.			
CH_4 CH_5 CH_6 ACC_1 ACC_2 LOG_TMP BATT ECU_1 ECU_2 ECU_3 ECU_4 ECU_4 ECU_5 ECU_6 ECU_7 ECU_8 ECU_7 ECU_8 ECU_1 ECU_10 ECU_11 ECU_12 ECU_13 ECU_14 ECU_15 ECU_16 ECU_17 ECU_17 ECU_17 ECU_17 ECU_17 ECU_17 ECU_17 ECU_18 ECU_17 ECU_18 ECU_118 ECU_118 ECU_18 E	Enabled Disabled Disabled Enabled	Channel_4 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_PRM BOSCH_PRED1 BOSCH_SPEED1 BOSCH_SPEED2 BOSCH_FUEL_PRESS BOSCH_FUEL_PRESS BOSCH_FUEL_PRESS BOSCH_FUEL_TEMP BOSCH_OIL_TEMP BOSCH_OIL_TEMP BOSCH_OIL_TEMP BOSCH_OIL_TEMP BOSCH_OIL_TEMP BOSCH_OIL_TEMP BOSCH_JIN_TANG BOSCH_JIN_TANG BOSCH_JIN_TM1	10 Hz 10 Hz 5 Hz 5 Hz 5 Hz 5 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz	Generic linear 0-5 V Thermocouple Calculated Gear Lateral accelerometer Longitudinal accelerometer Cold joint Battery Engine speed sensor Bosch speed sensor Bosch speed sensor Pressure sensor Pressure sensor Pressure sensor Temperature sensor Temperature sensor Temperature sensor Temperature sensor Throttle position sensor Angle sensor Percentage sensor System dock	V .1 °C # g .01 g .01 °C V .1 rpm km/h .1 km/h bar .1 bar .1 bar .1 mbar °C °C °C °C °C °C °C °C °C °C	0.0 0 -3.00 5.0 0 0.0 0.0 0.0 0.0 0.0 -50 -50 -50 -50 -50 -50 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	5.0 5 6 3.00 50 15.0 18000 500 15.			

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	on	Data logger type	Ecu		Vehicle name	0	ilable time	1	Total frequenc		
										у	
DEFAULT		DaVid Standalone	BOSCH - MS3		DEFAULT	4.0	6.35 (h.m.s)		281 (Hz)		
Select configural	ion Channels	Display DaVid									
Rpm		Speed_1		Speed_2		Gear sensor					
AIM sensor	ECU signa	Enabled		Enabled		None		Calculated			
					_				-1		
Multiply factor	/ 1	Wheel circumference	(mm) 1666	Wheel circumfere	nce (mm) 1666	ECU		lighest gear num	ber		
MAX value	4000	Pulses per wheel revolu	ution 1	Pulses per wheel i	evolution 1	Potentiom	eter	6			
THA YOUGO	14000	Puises per writeer revolu		Puises per wheen		Channel	5				
-Reference spea] [
Chan	Speed_2	<u> </u>									
Channel identifie			Samp			Measure uni	it Low scale	High scale	Param. 1	Param. 2	^
RPM	Disabled	Engine	10 Hz	Engine roug	lution speed	rpm	0	20000	1.000	16000	
					iddon speed						
SPD_1	Enabled	Speed_1	10 Hz	Speed	iddon speed	km/h .1	0.0	250.0	1666.0	1.0	
SPD_1 SPD_2	Enabled Enabled	Speed_1 Speed_2	10 Hz 10 Hz	Speed Speed		km/h .1 km/h .1	0.0	250.0	1666.0	1.0	
SPD_1 SPD_2 CH_1	Enabled Enabled Enabled	Speed_1 Speed_2 Channel_1	10 Hz 10 Hz 10 Hz	Speed Speed Distance po	tentiometer	km/h .1 km/h .1 mm .1	0.0 0.0	250.0 5.0	_		
SPD_1 SPD_2 CH_1 CH_2	Enabled Enabled Enabled Enabled	Speed_1 Speed_2 Channel_1 Channel_2	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz	Speed Speed Distance po Generic line	tentiometer ar 0-51	km/h .1 km/h .1 mm .1 V .1	0.0 0.0 0.0	250.0 5.0 5.0	1666.0		
SPD_1 SPD_2 CH_1 CH_2 CH_3	Enabled Enabled Enabled Enabled Enabled	Speed_1 Speed_2 Channel_1 Channel_2 Channel_3	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz	Speed Speed Distance po Generic line Generic line	tentiometer ar 0-5 V av 0-5 V	km/h .1 km/h .1 mm .1 V .1 V .1	0.0 0.0 0.0 0.0	250.0 5.0 5.0 5.0	1666.0		
SPD_1 SPD_2 CH_1 CH_2 CH_3 CH_4	Enabled Enabled Enabled Enabled Enabled Enabled	Speed_1 Speed_2 Channel_1 Channel_2 Channel_3 Channel_4	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz	Speed Speed Distance po Generic line Generic line Generic line	tentiometer ar 0-5 V av 0-5 V ar 0-5 V	km/h .1 km/h .1 mm .1 V .1 V .1 V .1 V .1	0.0 0.0 0.0 0.0 0.0 0.0	250.0 5.0 5.0 5.0 5.0 5.0	1666.0		
SPD_1 SPD_2 CH_1 CH_2 CH_3 CH_3 CH_4 CH_5	Enabled Enabled Enabled Enabled Enabled Enabled Disabled	Speed_1 Speed_2 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz	Speed Speed Distance po Generic line Generic line Generic line Therefocou	tentiometer ar 0-5 V ar 0-5 V ar 0-5 V ole	km/h .1 km/h .1 W .1 V .1 V .1 V .1 ∨ .1 ∘⊂	0.0 0.0 0.0 0.0 0.0 0.0 0.0	250.0 5.0 5.0 5.0 5.0 5.0 5.0	1666.0		
5PD_1 5PD_2 CH_1 CH_2 CH_3 CH_3 CH_4 CH_5 CH_6	Enabled Enabled Enabled Enabled Enabled Enabled Disabled Disabled	Speed_1 Speed_2 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Channel_6	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz	Speed Distance po Generic line Generic line Generic line Therrocou Calculated	tentiometer ar 0-5 V av 0-5 V ar 0-5 V ole Sear	km/h .1 km/h .1 W .1 V .1 V .1 V .1 v .1 ∘C #	0.0 0.0 0.0 0.0 0.0 0 0	250.0 5.0 5.0 5.0 5.0 5 5 6	1666.0		
SPD_1 SPD_2 CH_1 CH_2 CH_3 CH_3 CH_4 CH_5 CH_6 ACC_1	Enabled Enabled Enabled Enabled Enabled Enabled Disabled Disabled Enabled	Speed_1 Speed_2 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Channel_6 Acc_1	10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz 10 Hz	Speed Speed Distance po Generic line Generic line Generic line Thermocou Calculated Lateral acco	tentiometer ar 0-5 ar 0-5 V ar 0-5 V ole Sear Herometer	km/h .1 km/h .1 v .1 v .1 v .1 v .1 v .1 v .1 v .1 v	0.0 0.0 0.0 0.0 0.0 0 0 0 -3.00	250.0 5.0 5.0 5.0 5.0 5 6 3.00	1666.0		
SPD_1 SPD_2 CH_1 CH_2 CH_3 CH_4 CH_5 CH_5 CH_6 ACC_1 ACC_2	Enabled Enabled Enabled Enabled Enabled Disabled Disabled Enabled Enabled Enabled	Speed_1 Speed_2 Channel_1 Channel_3 Channel_4 Channel_5 Channel_6 Acc_1 Acc_2	10 Hz 10 Hz	Speed Speed Distance po Generic line Generic line Generic line Therrocou Calculated Lateral acco Longitudina	tentiometer ar 0-5 V av 0-5 V ar 0-5 V ole Sear	km/h .1 km/h .1 wm .1 V .1 V .1 v .1 ∘C # g .01 g .01	0.0 0.0 0.0 0.0 0.0 0 0 -3.00 -3.00	250.0 5.0 5.0 5.0 5.0 5 6 3.00 3.00	1666.0		
SPD_1 SPD_2 CH_1 CH_2 CH_2 CH_3 CH_4 CH_5 CH_6 ACC_1 ACC_1 LOG_TMP	Enabled Enabled Enabled Enabled Enabled Disabled Disabled Enabled Enabled Enabled Enabled	Speed_1 Speed_2 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp	10 Hz 10 Hz	Speed Speed Distance po Generic line Generic line Generic line Calculated Lateral acct Longitudina Cold joint	tentiometer ar 0-5 ar 0-5 V ar 0-5 V ole Sear Herometer	km/h .1 km/h .1 V .1 V .1 V .1 V .1 ∘⊂ # g .01 g .01 ∘⊂	0.0 0.0 0.0 0.0 0.0 0 0 -3.00 -3.00 0	250.0 5.0 5.0 5.0 5 6 3.00 3.00 50	1666.0		
SPD_1 SPD_2 CH_1 CH_2 CH_3 CH_4 CH_4 CH_5 CH_6 ACC_1 ACC_1 ACC_2 LOG_TMP BATT	Enabled Enabled Enabled Enabled Enabled Disabled Disabled Enabled Enabled Enabled Enabled	Speed_1 Speed_2 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery	10 Hz 10 Hz	Speed Speed Distance po Generic line Generic line Theoretic Calculated Lateral acco Longitudina Cold joint Battery	tenkiometer ar 0-5 V ar 0-5 V Jole Jear Jerometer accelerometer	km/h .1 km/h .1 v .1 v .1 v .1 v .1 g .01 g .01 e <c v .1</c 	0.0 0.0 0.0 0.0 0 0 -3.00 -3.00 0 5.0	250.0 5.0 5.0 5.0 5.0 5 6 3.00 3.00 50 15.0	1666.0		
SPD_1 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	Enabled Enabled Enabled Enabled Enabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled	Speed_1 Speed_2 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_RPM	10 Hz 10 Hz	Speed Distance po Generic line Generic line Generic line Generic beu Calculated Lateral acco Longitudina Cold joint Battery Engine spee	tentiometer ar 0-5 v ar 0-5 v sear Jerometer accelerometer ad sensor	Im/h .1 Im/h .1 Im/h .1 V .1 V .1 V .1 V .1 g .01 g .01 g .01 v C V .1 rpm	0.0 0.0 0.0 0.0 0 0 -3.00 -3.00 0 5.0 0	250.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 3.00 3.0	1666.0		
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	Enabled Enabled Enabled Enabled Enabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled	Speed_1 Speed_2 Channel_1 Channel_2 Channel_3 Channel_5 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_RPM BOSCH_SPEED1	10 Hz 10 Hz	Speed Speed Distance pr Generic line Generic line Generic line Generic line Therprocou Calculated Lateral acco Longitudina Cold joint Battery Engine spee Bosch spee	tentiometer ar 0-5 V ar 0-5 V ar 0-5 V lea Bea Bear Herometer accelerometer accelerometer d sensor d sensor	km/h .1 km/h .1 mm .1 v .1 V .1 v .1 °C # g.01 °C V .1 rpm km/h .1	0.0 0.0 0.0 0.0 0 0 -3.00 -3.00 0 5.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	250.0 5.0 5.0 5.0 5.0 5 6 3.00 3.00 50 15.0 15.0 18000 500.0	1666.0		
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_1 ECU_2 ECU_3	Enabled Enabled Enabled Enabled Enabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Speed_1 Speed_2 Channel_2 Channel_2 Channel_3 Channel_4 Channel_5 Channel_5 Channel_5 Channel_5 Acc_1 Acc_2 Datalogger_Temp Battery BoSCH_SPEED1 BOSCH_SPEED1	10 Hz 10 Hz	Speed Speed Distance po Generic line Generic line Generic line Generic line Generic line Generic line Therrorocou Calculated Lateral accou Congitudina Cold joint Battery Engine spee Speed sens	tentiometer ar 0-5 V ar 0-5 V Jacobs V	km/h .1 km/h .1 mm .1 V .1 V .1 9C # 9.01 °C V .1 rpm km/h .1 km/h .1	0.0 0.0 0.0 0.0 0.0 0 -3.00 -3.00 0 5.0 0 0 0.0 0 0.0 0	250.0 5.0 5.0 5.0 5.0 5 6 3.00 3.00 50 15.0 18000 500.0 500.0	1666.0		
SPD_1 SPD_2 GH_1 CH_2 GH_3 GH_6 ACC_1 ACC_2 LOG_TMP BATT ECU_1 ECU_2 ECU_3 ECU_4	Enabled Enabled Enabled Enabled Enabled Enabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Speed_1 Speed_2 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BoSCH_PRED BOSCH_SPEED1 BOSCH_SPEED2 BOSCH_OIL_PRESS	10 H2 10 H2	Speed Speed Distance pr Generic line Generic line Generic line Calculated Lateral acc Longitudina Cold joint Battery Engine spee Bosch spee Speed sens Pressure se	tentiometer ar 0-5 v ar 0-5 v sear lerometer elerometer ed sensor d sensor or nsor	km/h .1 km/h .1 km/h .1 v .1 v .1 v .1 v .1 v .1 g .01 g .01 g .01 eC v .1 rpm km/h .1 km/h bar .1	0.0 0.0 0.0 0.0 0.0 0 0 -3.00 0 5.0 0 0.0 0 0.0 0 0.0	250.0 5.0 5.0 5.0 5 6 3.00 3.00 50 15.0 18000 500.0 500 15.0	1666.0		
SPD_1 SPD_2 GH_1 GH_2 GH_4 GH_5 GH_6 ACC_1 ACC_1 ACC_1 ECU_1 ECU_2 ECU_2 ECU_4 ECU_4 ECU_4 ECU_5	Enabled Enabled Enabled Enabled Enabled Enabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Speed_1 Speed_2 Channel_1 Channel_2 Channel_3 Channel_5 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BOSCH_RPM BOSCH_SPEED1 BOSCH_SPEED1 BOSCH_SPEED2 BOSCH_FUEL_PRESS BOSCH_FUEL_PRESS	10 Hz 10 Hz	Speed Speed Distance pr Generic line Generic line Generic line Generic line Generic line Generic line Generic line Lateral acct Longitudina Cold joint Battery Engine spee Bosch spee Speed sens Pressure se Pressure se	tentiometer ar 0-5 V ar 0-5 V Jele Bear Jelerometer accelerometer d sensor d sensor or nsor nsor	km/h .1 km/h .1 nm .1 v .1 v .1 oc # g .01 oc v .1 rpm km/h .1 km/h .1 km/h .1 km/h .1	0.0 0.0 0.0 0.0 0.0 0 0 -3.00 -3.00 0 5.0 0 0 0.0 0.0 0.0 0.0 0.0	250.0 5.0 5.0 5.0 5 6 3.00 3.00 50 15.0 18000 500.0 500.0 500.0 15.0 15.0 15.0	1666.0		
SPD_1 SPD_2 GH_1 CH_2 GH_3 GH_6 ACC_1 ACC_2 LOG_TMP BATT ECU_1 ECU_2 ECU_3 ECU_4	Enabled Enabled Enabled Enabled Enabled Enabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Speed_1 Speed_2 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Channel_6 Acc_1 Acc_2 Datalogger_Temp Battery BoSCH_PRED BOSCH_SPEED1 BOSCH_SPEED2 BOSCH_OIL_PRESS	10 H2 10 H2	Speed Speed Distance pr Generic line Generic line Generic line Calculated Lateral acc Longitudina Cold joint Battery Engine spee Bosch spee Speed sens Pressure se	tentiometer ar 0-5 V ar 0-5 V sear Jerometer Jaccelerometer Jaceleromete	km/h .1 km/h .1 km/h .1 v .1 v .1 v .1 v .1 v .1 g .01 g .01 g .01 eC v .1 rpm km/h .1 km/h bar .1	0.0 0.0 0.0 0.0 0.0 0 0 -3.00 0 5.0 0 0.0 0 0.0 0 0.0	250.0 5.0 5.0 5.0 5 6 3.00 3.00 50 15.0 18000 500.0 500 15.0	1666.0		

- **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 Di	splay DaVid	
Available displays	None	-
	None	
	M3-Dash TG-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				
Number Of Video	New Object Delete Object arbon 15 Visualizati Visualizati 15 Visualizati TV Standa C NTSC Accelerometer Lap Time Throttle E	Grid Video Objects On Enlarge ard (USA) © PAL			
8 9 10 8 9 10 7 × 1000 6 1 5 4 3 2	Channel BOSCH_RPM		sure Unit rpm)		
9 10 8 RPM × 1000 7 4		60 150 180 210 km/h	LAP: 000 00:00.00 CH_1000.0 CH_2000.0		



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		δ
		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.

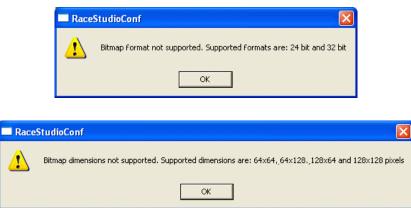
The logo user is working on is highlighted in yellow in video preview window.



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		sudedon	
		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 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 00:00.00	
9 10 8 RPM	0	60 150 ICH 1000 O	
9 10 8 RPM × 1009		LAP: 000 00:00.00 30 150 180 EU 1000.0	
		50 150 CH_1000.0	
		60 150 30 180 0 210 CH_1000.0 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.

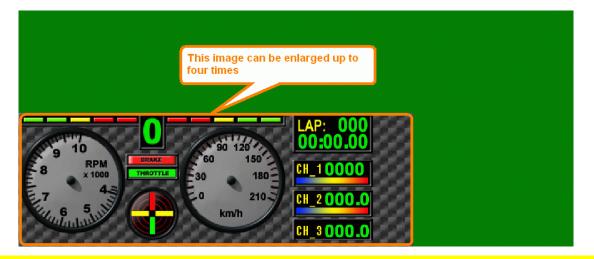
🗖 Race	StudioConf 💦 🔀
1	To many video objects
	ок

8.6.3 – Visualization box:

 Visualization — 	
🔲 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)	O 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.



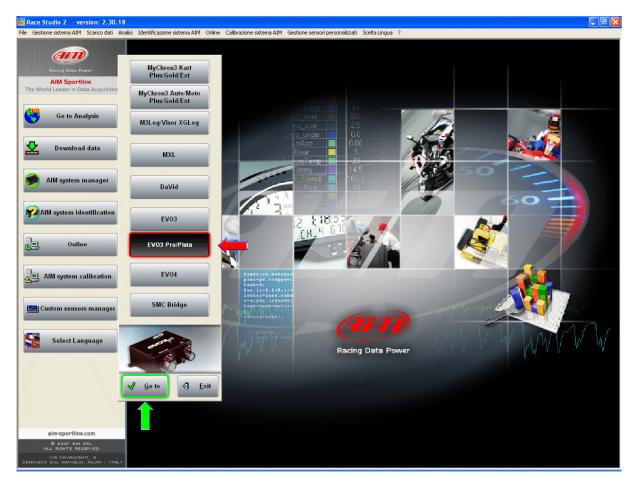
In the title bar – white on a blue background in the figure – you can see the **Race Studio 2** version installed on the PC.

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.

N	Category of Logger	Type of Logger	Expansion Name	Logger ID	ID Date	Firmware	Firmware Date
1	MASTER	EVO3 PRO	Master	12345	16/01/2008	28.07.11	21/12/2007
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 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 12/03/2008 10.59.56	Set acquisition	Acquisition system time 08/12/2002 4.55.26	PC Time 12/03/2008 11.00.25	Set acquisition system time	Acquisition system time Impossible to read time
		Cancel			a 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	5
OIL TEMP	NOT SET	
OIL PRESS	NOT SET	
BRAKE PRESS	NOT SET	(E
THROTTLE_POS	NOT SET	5
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
SEAR	Calculated Gear
WATER TEMP	NOT SET
NEAD TEMP	NOT SET
EXHAUST TEMP	SRA_WTEMP
OIL TEMP	SRA_OILT SRA_AIRT
OIL PRESS	SRA_TCK1
BRAKE PRESS	SRA_TFUEL
THROTTLE_POS	NOT SET
BRAKE POS	NOT SET NOT SET NOT SET NOT SET 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 🗾

FUNCTION	CHANNEL	
ENGINE RPM		
REFERENCE SPEED	SRA_RPM Speed 1	
GEAR		
WATER TEMP	Calculated_Gear	
	NOT SET	
HEAD TEMP	NOT SET	× × × × × × × × × × × × × × × × × × ×
EXHAUST TEMP	NOT SET	
OIL TEMP	NOT SET	
OIL PRESS	NOT SET	<u> </u>
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	

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 DE DE	U Installation name EFAULT EFAULT EFAULT EFAULT	EFAULT EV03 PRO EFAULT EV03 PRO	Logger EFAULT EVO3 PRO EFAULT EVO3 PRO	Astallation name Logger ECU Manufacturer EFAULT EVO3 PRO ✓ MARELLI EFAULT EVO3 PRO ✓ MARELLI EFAULT EVO3 PRO ✓ DALLARA 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 None MARELLI EFAULT EVO3 PRO MARELLI MARELLI MARELLI MARELLI EFAULT EVO3 PRO MARELLI MARELLI MARELLI MARELLI EFAULT EVO3 PRO MARELLI MARELLI <t< td=""><td>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</td><td>EFAULT EVO3 PRO MARELLI DALLARA_F308 DEFAULT EFAULT EVO3 PRO ALLARA VW_16_F51 DEFAULT EFAULT EVO3 PRO None None DEFAULT</td><td>EFAULT EVO3 PRO MARELLI DALLARA_F308 DEFAULT 8 EFAULT EVO3 PRO DALLARA VW_16_F51 DEFAULT 8 EFAULT EVO3 PRO None None DEFAULT 8</td><td>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</td><td>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</td><td>EFAULT EVO3 PRO MARELLI DALLARA_F308 DEFAULT 8 1 km/h < < EFAULT EV03 PRO MARELLI DALLARA_F308 DEFAULT 8 1 km/h <</td> <</t<>	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

New configuration EV03 PRO Data logger type -None ECU Manufacturer -ECU Model None -DEFAULT New configuration name DEFAULT Vehicle name km/h Speed measure unit -°C Temperature measure unit ٠ Pressure measure unit bar -<u>0</u>K -81 <u>Cancel</u>

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.

7		Ъ		CHI N. C		et acquisition sys	tem 두	SmartyCam	Functions	
	ransmit	Receiv	•	CAN-Net in	^{to}	time		setti		
urrent configurati	on									
Installation name	Data logger type	e Ecu	Vehicle name	Available time	Time with GPS	Total frequency	Master freque	ncy Expansio	Expansions freq Tot. Expansion	
DEFAULT	EVO3 PRO	None - None	DEFAULT	14.24.34 (h.m.s)	7.13.37 (h.m.s)	161 (Hz)	161 (Hz)	0 (Hz)	0	
Coloct configurat	ion Channala Cur	ten configuration Dis	play CAN-Expansions	oonfigurator]						
	uoni Channels oys		play CAN-Expansions							
Speed_1		Speed_2		Speed_3		Speed_4				
Wheel circumfe	rence (mm) 166	6 Wheel circumf	erence (mm) 1666	Wheel circur	nference (mm) 166	6 Wheel circu	mference (mm)	1666		
				- 11		_				
Pulses per whee	el revolution 1	Pulses per whe	el revolution	Pulses per w	heel revolution 1	Pulses per v	heel revolution	1		
								1		
	Enabled/disabled	Channel name			Sensor type		Measure unit	Low scale	High scale	
RPM	Disabled	Engine	-		Engine revolution speed		rpm	0	20000	
SPD_1	Enabled	Speed_1	-		Speed		km/h .1	0.0	250.0	
SPD_2	Disabled	Speed_2			Speed		km/h .1	0.0	250.0	
SPD_3	Disabled	Speed_3			Speed		km/h .1	0.0	250.0	
SPD_4	Disabled	Speed_4			Speed		km/h .1	0.0	250.0	
CH_1	Enabled	Channel_1		_	Generic linear 0-5 V			0.0	5.0	
CH_2	Enabled	Channel_2	t	.0 Hz 🗾	Generic linear 0-5 V	-	V.1 🕒	0.0	5.0	
СН_З	Enabled	Channel_3	t	.0 Hz 🗾	Generic linear 0-5 V	-	V.1 🕒	0.0	5.0	
CH_4	🔽 Enabled	Channel_4	t	.0 Hz 🗾	Generic linear 0-5 V	•	V.1	0.0	5.0	
CH_5	🔽 Enabled	Channel_5	1	.0 Hz 🗾	Generic linear 0-5 V	-	V.1	0.0	5.0	
CH_6	Enabled	Channel_6	1	.0 Hz 🗾	Generic linear 0-5 V	-	V.1 💽	0.0	5.0	
CH_7	Enabled	Channel_7	1	.0 Hz 🗾	Generic linear 0-5 V	-	V.1 💽	0.0	5.0	
СН_8	🔽 Enabled	Channel_8	t	.0 Hz 🗾	Generic linear 0-5 V	-	V.1	0.0	5.0	
СН_9	 Enabled 	Channel_9	t	.0 Hz 🗾	Generic linear 0-5 V		V.1	0.0	5.0	
CH_10	🔽 Enabled	Channel_10	t	.0 Hz 💽	Generic linear 0-5 V	-	V.1	0.0	5.0	
CH_11	🔽 Enabled	Channel_11	1	.0 Hz 🗾	Generic linear 0-5 V	•	V.1	0.0	5.0	
CH_12	🔽 Enabled	Channel_12	1	.0 Hz 🗾	Gear potentiometer		#	0	5	
CALC_GEAR	Disabled	Calculated_Gear	1	.0 Hz 🗾	Calculated Gear		#	0	9	
ACC_1	Enabled	Acc_1	1	.0 Hz 🗾	Lateral accelerometer		g .01	-3.00	3.00	
ACC_2	Enabled	Acc_2	t		Longitudinal accelerome		g .01	-3.00	3.00	
-	Enabled	 Datalogger_Temp	1	0 Hz 📕	Cold joint			0	50	
LOG_TMP										

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.

	Transmit	Receive		CAN-Net in	nfo 🔞 S	iet acquisition sys time	tem 🕥	SmartyCam Fo setting	
urrent configur	ation								
Installation nar	ne Data logger type	e Ecu	Vehicle name	Available time	Time with GPS	Total frequency	Master frequer	cy Expansion	s 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 configu	ration Channels Sys	stem configuration Disp	lay CAN-Expansions	configurator					
									1.1
Speed									
Wheel circum	ference (mm) 166	6							
Wheel circum	referice (miny]								
Pulses per wi	neel revolution 1								
1 3202 por 10	j								
	- 11 U.S. 11 1			- h ć	e				Line Landa
	Enabled/disabled	Channel name		5ampling frequ			Measure unit	Low scale	High scale
RPM	Enabled	Engine		l0 Hz	Engine revolution speed		rpm	0	20000
RPM SPD_1	Enabled	Engine Speed		10 Hz 🗾	Engine revolution speed Speed		rpm km/h .1	<mark>0</mark> 0.0	20000 250.0
RPM SPD_1 CH_1	 ✓ Enabled ✓ Enabled ✓ Enabled 	Engine Speed Channel_1		10 Hz 🗾	Engine revolution speed Speed Generic linear 0-5 V	•	rpm km/h.1 ∀.1 ▼	0 0.0 0.0	20000 250.0 5.0
RPM SPD_1 CH_1 CH_2	Enabled Enabled Enabled Enabled Enabled Enabled	Engine Speed Channel_1 Channel_2		10 Hz 🗾	Engine revolution speed Speed Generic linear 0-5 V Generic linear 0-5 V	• •	rpm km/h .1 V .1 • V .1 •	0.0 0.0 0.0 0.0	20000 250.0 5.0 5.0
RPM SPD_1 CH_1 CH_2 CH_3	 ✓ Enabled ✓ Enabled ✓ Enabled 	Engine Speed Channel_1		10 Hz 🗾	Engine revolution speed Speed Generic linear 0-5 V	• •	rpm km/h .1 V .1 • V .1 • V .1 •	0 0.0 0.0 0.0 0.0	20000 250.0 5.0
RPM SPD_1 CH_1 CH_2	Enabled Enabled Enabled Enabled Enabled Enabled	Engine Speed Channel_1 Channel_2		LO Hz LO Hz LO Hz LO Hz LO Hz LO Hz LO Hz LO Hz	Engine revolution speed Speed Generic linear 0-5 V Generic linear 0-5 V	• • •	rpm km/h .1 V .1 • V .1 • V .1 •	0.0 0.0 0.0 0.0	20000 250.0 5.0 5.0
RPM SPD_1 CH_1 CH_2 CH_3	Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Engine Speed Channel_1 Channel_2 Channel_3		LO Hz LO Hz LO HZ L	Engine revolution speed Speed Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V	× × ×	rpm km/h .1 V .1 V .1 V .1 V .1 V .1 V .1	0 0.0 0.0 0.0 0.0	20000 250.0 5.0 5.0 5.0 5.0
RPM SPD_1 CH_1 CH_2 CH_3 CH_4	Finabled Finabled Finabled Finabled Finabled Finabled Finabled Finabled Finabled	Engine Speed Channel_1 Channel_2 Channel_3 Channel_4		10 Hz 10 Hz	Engine revolution speer Speed Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V	×	rpm km/h .1 V .1	0 0.0 0.0 0.0 0.0 0.0	20000 250.0 5.0 5.0 5.0 5.0 5.0 5.0
RPM SPD_1 CH_1 CH_2 CH_3 CH_4 CH_5	Image: Second	Engine Speed Channel_1 Channel_2 Channel_3 Channel_4 Channel_5		10 Hz •	Engine revolution speer Speed Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V	×	rpm km/h .1 V .1	0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	20000 250.0 5.0 5.0 5.0 5.0 5.0 5.0
RPM SPD_1 CH_1 CH_2 CH_3 CH_3 CH_4 CH_5 CH_6	Image: Enabled	Engine Speed Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Channel_6		10 Hz •	Engine revolution speer Speed Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V	×	rpm km/h .1 V .1	0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	20000 250.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0
RPM SPD_1 CH_1 CH_2 CH_3 CH_4 CH_5 CH_6 CH_7	Enabled Image: Enabled	Engine Speed Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Channel_6 Channel_7		10 Hz ×	Engine revolution speer Speed Generic linear 0-5 V Generic linear 0-5 V	×	rpm km/h V	0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	20000 250.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0
RPM SPD_1 CH_1 CH_2 CH_3 CH_4 CH_5 CH_6 CH_7 CH_8	Enabled Image: Enabled	Engine Speed Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Channel_6 Channel_6 Channel_7 Channel_8		10 Hz ×	Engine revolution speer Speed Generic linear 0-5 V Generic linear 0-5 V	× × × × ×	rpm v km/h .1 v V .1 v	0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	20000 250.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0
RPM SPD_1 CH_1 CH_2 CH_3 CH_4 CH_5 CH_6 CH_7 CH_8 CALC_GEAR	Enabled Image: Enabled	Engine Speed Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Channel_6 Channel_7 Channel_8 Calculated_Gear		10 Hz ×	Engine revolution speed Speed Generic linear 0-5 V Generic linear 0-5 V Gear potentiometer Calculated Gear	× × × × ×	rpm v km/h .1 v V .1 v	0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	20000 250.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0
RPM SPD_1 CH_1 CH_2 CH_3 CH_4 CH_5 CH_6 CH_7 CH_8 CALC_GEAR ACC_1	Enabled Image: Enabled<	Engine Speed Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Channel_6 Channel_7 Channel_8 Cchannel_8 Calculated_Gear Acc_1		10 Hz ×	Engine revolution speer Speed Generic linear 0-5 V Generic linear 0-5 V Gear potentiometer Lateral accelerometer	× × × × ×	rpm km/h .1 ▼ V .1 ▼ Ø .1 ▼ Ø .1 ▼	0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0 0 0 -3.00 -3.00	20000 250.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 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 time	tem 🖸	SmartyCam setti	
urrent configurati	on			and the King				a 16 Al - 16	
Installation name	Data logger type	e Ecu	Vehicle name Av	/ailable time	Time with GPS	Total frequency	Master frequ	ency Expansio	ins 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	stem configuration Displa	ay CAN-Expansions con	figurator					
Speed_1				Speed_3					
1996 - T				물건 구가 물건을 받았다.					
Wheel circumfe	rence (mm) 166	6 Wheel circumfere	ence (mm) 1666	Wheel circum	erence (mm) 166	6 Wheel circun	nference (mm) 1666	
Pulses per whe	el revolution 1	Pulses per wheel	revolution 1	Pulses per wh	eel revolution	Pulses per w	heel revolution	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	in in the second se	ngine revolution speed		rpm	0	20000
SPD_1	🔽 Enabled	Speed_1	10 H	iz 🗾 S	peed	•	km/h .1	0.0	250.0
SPD_2	Disabled	Speed_2	10 H	iz 🗾 S	peed	•	km/h .1	0.0	250.0
SPD_3	🔽 Enabled	Speed_3	10 H	iz 🗾 S	peed	•	km/h .1	0.0	250.0
SPD_4	Disabled	Speed_4	10 H	iz 🗾 S	peed	•	km/h .1	0.0	250.0
CH_1	🔽 Enabled	Channel_1	10 H	Iz 🗾 D	istance potentiometer	•	mm .1	• 0.0	5.0
CH_2	🔽 Enabled	Channel_2	10 H	Iz 💌 G	eneric linear 0-5 V	•	V.1	• 0.0	5.0
СН_З	🔽 Enabled	Channel_3	10 H	Iz 🗾 G	eneric linear 0-5 V	-	V.1	• 0.0	5.0
CH_4	🔽 Enabled	Channel_4	10 H	iz 📃 G	eneric linear 0-5 V	•	V.1	• 0.0	5.0
CH_5	🔽 Enabled	Channel_5	10 H	iz 🗾 G	ieneric linear 0-5 V	•	V .1	• 0.0	5.0
CH_6	🔽 Enabled	Channel_6	10 H	iz 🗾 G	eneric linear 0-5 V	•	۷.1	• 0.0	5.0
CH_7	🔽 Enabled	Channel_7	10 H	lz 🗾 G	ieneric linear 0-5 V	*	V.1	• 0.0	5.0
CH_8	🔽 Enabled	Channel_8	10 H	lz 🗾 G	ieneric linear 0-5 V	•		• 0.0	5.0
CH_9	🔽 Enabled	Channel_9	10 H	Iz 🗾 🤅	ieneric linear 0-5 V	•	V.1	• 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	5.0
CALC_GEAR	Disabled	Calculated_Gear	10 H	iz 🗾 C	alculated Gear		#	0	9
ACC_1	🔽 Enabled	Acc_1	10 H	lz 🗾 L	ateral accelerometer		g .01	-3.00	3.00
ACC_2	🔽 Enabled	Acc_2	10 H	lz 🗾 L	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			Spee	ed_3	Speed_4			
Wheel circum	ference (mm) 1666	ce (mm) 1666 Wheel circumference (mm) 1666 Wheel circumference (mm) 166				(mm) 1666		
Pulses per wł	neel revolution 1	Pulses per wheel revolution 1	Pulse	es per wheel revolution 1	Pulses per wheel revolution 1			
Channel ide	. Enabled/disabled C	hannel name	Sampling free	qu Sensor type	Measure ur	it Low scale		
	·	hannel name Joine	Sampling free 10 Hz	qu Sensor type	Measure ur rpm	nit Low scale		
RPM	Enabled Er					hit Low scale 0 0.0		
RPM SPD_1	Enabled Er	Disc	10 Hz		rpm	0		
RPM SPD_1 SPD_2	Image: First Stress Enabled Enabled Stress Image: First Stress Stress Stress Stress Stress	pgine beed_1	10 Hz 10 Hz	Engine revolution speed Speed	rpm 🗾 km/h .1	0.0		
Channel ida RPM SPD_1 SPD_2 SPD_3 SPD_4	Image: Constraint of the second se	Dolect_1 Seed_2	10 Hz 10 Hz 10 Hz	Engine revolution speed Speed Speed	rpm	0 0.0 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									
DEFAULT	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 configur	ation Channels	System configuration Display CAN-Ex	ansions configurate	or l	·				
-Speed_1	ddorr Charmeis	Speed 2		ed 3					
			·	_					
Wheel circumf	erence (mm)	1666 Wheel circumference (mm)	1666 Whe	eel circumi	erence (mm) 1666 Wheel	circun	nference (mm)	1666	
Pulses per wh	eel revolution	1 Pulses per wheel revolution	1 Puls	es per wh	eel revolution 1 Pulses	per w	heel revolution	1	
		·	<u></u>]		·			·	
Channel iden	Enabled/disat	oled Channel name	Sampling fr	equ S	ensor type		Measure unit	Low scale	High scale
RPM	🛛 🔽 Enabled	Engine	10 Hz	<u>با</u>	ngine revolution speed		rpm 💦	0	20000
SPD_1	🔽 Enabled	Speed_1	10 Hz	🗾 S	peed	•	km/h .1	0.0	250.0
SPD_2	🔲 Disabled	Speed_2	10 Hz	🗾 S	peed	-	km/h .1	0.0	250.0
SPD_3	🔽 Enabled	Speed_3	10 Hz	🗾 S	peed		km/h .1	0.0	250.0
SPD_4	Disabled	Speed_4	10 Hz	🗾 S	peed	and a second	km/h .1	0.0	250.0
CH_1	🔽 Enabled	Channel_1	10 Hz	 C	istance potentiometer			0.0	5.0
CH_2	🔽 Enabled	Channel_2	10 Hz	<u> </u>	eneric linear 0-5 V	•	۷.1 💽	0.0	5.0
CH_3	🔽 Enabled	Channel_3	10 Hz		eneric linear 0-5 V			0.0	5.0
CH_4	🔽 Enabled	Channel_4	10 Hz		eneric linear 0-5 V			0.0	5.0
CH_5	🔽 Enabled	Channel_5	10 Hz		eneric linear 0-5 V			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
CH_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	5
CALC_GEAR	Disabled	Calculated_Gear			alculated Gear		#	0	
ACC_1	Enabled	Acc_1	10 Hz		ateral accelerometer		g .01	-3.00	3.00
ACC_2	Enabled	Acc_2	10 Hz		ongitudinal accelerometer		g .01	-3.00	3.00
LOG_TMP	Enabled	Datalogger_Temp	10 Hz		old joint		•⊂ 👱		50
BATT	🕅 Enabled	Battery	1 Hz	B	attery		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 Probe	Gyroscope	Accelerometer
EVO3 Pi	sta					
Ch_1	X	Х	X	Х		
Ch_2	X	X	X	X		
Ch_3	X	X	X	X		
Ch_4	X	X	X	X	X	X
Ch_5	X	X	X	X	X	X
Ch_6	X	X	X	X	X	X
Ch_7	X	X	X	X	X	X
Ch_8 ⁶	Х	X	Х	Х	X	Х
EVO3 Pr	0					
Ch_1	Х	Х	Х	Х		
Ch_2	X	X	X	X		
Ch_3	X	X	X	X		
Ch_4	X	X	X	Х		
Ch_5	X	X	X	X		
Ch_6	Х	X	X	Х		
Ch_7	X	X	X	Х		
Ch_8	Х	X	X	X	Х	Х
Ch_9	Х	X	X	X	Х	Х
Ch_10	Х	X	X	X	Х	Х
Ch_11	Х	Х	X	Х	Х	Х
Ch_12 ⁶	Х	X	X	Х	Х	Х

⁶ 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 configural		Receive							setting	
nstallation name		e Ecu	Vehicle name	Available time	Time with GPS	Total frequency	Master fre	equency	Expansions freq To	t. Expansions
DEFAULT	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	ation Channels Sy	stem configuration Disp	olay CAN-Expansions	configurator						
-Speed_1										
	erence (mm) 166		rence (mm) 1666 el revolution 1	- 11	mference (mm) 166 wheel revolution 1		umference (wheel revolut		666	
Channel ide	Enabled/disabled	Channel name	Sa	mpling frequ	Sensor type		Measure unit	Low s	cale High scale	
RPM	🔽 Enabled	Engine	10	Hz 🗾	Ingine revolution speed		rpm	0	20000	
SPD_1	🔽 Enabled	Speed_1	10	Hz 🗾	Speed	•	km/h .1	0.0	250.0	
SPD_2	Disabled	Speed_2	10		Speed		km/h .1	0.0	250.0	
SPD_3	🔽 Enabled	Speed_3	10		õpeed	-	km/h .1	0.0	250.0	
SPD_4	🔲 Disabled	Speed_4	10		Speed		km/h .1	0.0	250.0	
CH_1	Enabled	Channel_1	10	Hz 🗾	Distance potentiometer	-	mm .1	- 0.0	5.0	
CH_2	🔽 Enabled	Channel_2	10		Generic linear 0-5 V	_	V.1	- 0.0	5.0	
CH_3	🔽 Enabled	Channel_3	10	Hz 🗾	Generic linear 0.5 V	-	V.1	- 0.0	5.0	
CH_4	🔽 Enabled	Channel_4	10		Generic linear 0-5 V	-		- 0.0	5.0	
CH_5	Enabled	Channel_5	10		Generic linear 0-5 V			- 0.0	5.0	
CH_6	Enabled	Channel_6	10		eneric linear 0-5 V	-	V.1	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	Enabled	Channel_12			Sear potentiometer		#	0	5	
CALC_GEAR	Disabled	Calculated_Gear			Calculated Gear		#	0	9	
ACC_1	Enabled	Acc_1	-		ateral accelerometer		g .01	-3.00	3.00	
ACC_2	Enabled	Acc_2			ongitudinal acceleromete	er 🗾	g .01	-3.00	3.00	
	🔽 Enabled	Datalogger_Temp			Iold joint		-	- 0	50	
LOG_TMP BATT	Enabled	Battery	1 1	-Iz 🔹	Batterv		∀.1	5.0	15.0	



9.4 – Creating a custom sensor

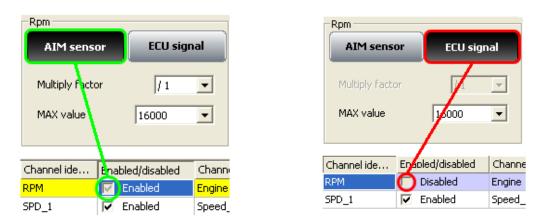
The procedure to create a custom sensor is the same for all AIM loggers. Refer to the related chapter for further information.

9.5 – System configuration

Activate "System Configuration" layer:

Rpm		Gear sensor	[
AIM sensor	ECU signal	None	Calculated	Calculated gears are
Multiply factor	/1 🔻	Potentiometer Channel 12	Calculated with neutral signal: Channel 12	available only when a showing gear display is selected.
MAX value	16000	ECU	Highest gear number 6	
	(sec.) 8	Use GPS Lap Timer Track width (for GPS Lap T	imer precision):	Car/Bike 10 m Boat 100 m Specific 10 m
-Output signal on pin 14 Signal [of the 22 pin connecto .ap (+) (idle status =		✓ This panel in EVO3 Pr window on	o configuration

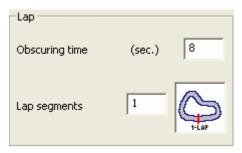
9.5.1 – RPM box



- 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

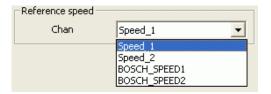


EVO3Pro/Pista can sample the engaged gear from a gear sensor, from the ECU butt can also calculate it using an algorithm based on RPM and speed. Available options are:

- **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	T
	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.

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:

(n)			Set acquisition sustem	
Transmit	Receive	CAN-Net info	time	setting

- **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
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.

Acquisition system time		×	Acquisition system time		
PC Time 12/03/2008 10.59.56	Set acquisition system time	Acquisition system time 08/12/2002 4.55.26	PC Time 12/03/2008 11.00.25	Set acquisition system time	Acquisition system time Impossible to read time
		A <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
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	-
NEAD TEMP	NOT SET	
EXHAUST TEMP	SRA_WTEMP	
OIL TEMP	SRA_OILT 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	-

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, shows the main information concerning the configuration user is working on.

Current configuration										
Installation name	Installation name Data logger type Ecu V		Vehicle name	Vehicle name Available time Time with		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	
DEFAULT	EV04 - 5 charmers	None - None	DEFAULT	19.10.22 (1.8.8)	0.15.21 (n.n.s)	121 (HZ)	121 (HZ)	0(H2)	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	J°[
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.

. .	í ransmit	Receive		CAN-Net	info Set	acquisition sy time	rstem		am Functions etting	
Current configurati	tion									
Installation name	e Data logger type	Ecu	Vehicle name	Available time	Time with GPS T	otal frequency	Master frequ	iency Expa	insions freq T	ot. Expansions
DEFAULT	EVO4 - 5 chann	els None - None	DEFAULT	9.32.39 (h.m.s	s) 4.06.35 (h.m.s) 11	21 (Hz)	121 (Hz)	0 (Hz	:) 0	
Speed1 Wheel circumfe Pulses per when	· · · · · · · · · · · · · · · · · · ·	6 Speed2 6 Wheel circumfer Pulses per whee								
Channel ide	Enabled/disabled	Channel name	S		Sensor type		Measure unit	Low scale	High sca	e
RPM	Enabled	Engine	10) Hz	Engine revolution speed		rpm	0	20000	e
RPM SPD_1	Enabled	Engine Speed1	10 10) Hz 💽	Engine revolution speed Speed	<u>.</u>	rpm km/h .1	0 0.0	20000 250.0	e
RPM SPD_1 SPD_2	 ✓ Enabled ✓ Enabled ✓ Enabled 	Engine Speed1 Speed2	10 10 10) Hz 💽	Engine revolution speed Speed Speed	•	rpm km/h .1 km/h .1	0 0.0 0.0	20000 250.0 250.0	e
RPM SPD_1 SPD_2 CH_1	Enabled Enabled Enabled Enabled Enabled	Engine Speed1 Speed2 Channel_1	10 10 10 10) Hz 🔹	Engine revolution speed Speed Speed Generic linear 0-5 V		rpm km/h .1 km/h .1 V .1	0 0.0 0.0 0.0	20000 250.0 250.0 5.0	e
RPM SPD_1 SPD_2 CH_1 CH_2	Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Engine Speed1 Speed2 Channel_1 Channel_2	10 10 10 10 10 10) Hz Image: Constraint of the second se	Engine revolution speed Speed Speed Generic linear 0-5 V Generic linear 0-5 V	• • •	rpm km/h .1 km/h .1 V .1 V .1	0 0.0 0.0 0.0 0.0	20000 250.0 250.0 5.0 5.0	e
RPM SPD_1 SPD_2 CH_1 CH_2 CH_3	Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	Engine Speed1 Speed2 Channel_1 Channel_2 Channel_3	10 10 10 10 10 10 10 10	0 Hz •	Engine revolution speed Speed Speed Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V	•	rpm km/h .1 km/h .1 V .1 V .1 V .1 V .1	0 0.0 0.0 0.0 0.0 0.0	20000 250.0 250.0 5.0 5.0 5.0	
RPM SPD_1 SPD_2 CH_1 CH_2 CH_3 CH_4	Enabled	Engine Speed1 Speed2 Channel_1 Channel_2 Channel_3 Channel_4	10 10 10 10 10 10 10 10 10 10	D Hz •	Engine revolution speed Speed Speed Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V	•	rpm km/h .1 km/h .1 V .1 V .1 V .1 V .1 V .1 V .1	0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	20000 250.0 250.0 5.0 5.0 5.0 5.0 5.0 5.0	e
RPM SPD_1 SPD_2 CH_1 CH_2 CH_3 CH_4 CH_5	Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image	Engine Speed1 Speed2 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5	10 10 10 10 10 10 10 10 10 10 10 10	0 Hz •	Engine revolution speed Speed Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Gear potentiometer	•	rpm km/h .1 km/h .1 V	0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	20000 250.0 250.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	e
RPM SPD_1 SPD_2 CH_1 CH_2 CH_3 CH_4 CH_5 CALC_GEAR	Image: Constraint of the state of	Engine Speed1 Speed2 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Calculated_Gear	10 10 10 10 10 10 10 10 10 10 10 10 10 1	0 Hz •	Engine revolution speed Speed Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Gear potentiometer Calculated Gear	+ + + + + +	rpm km/h .1 V .1 ▼ V .1 ▼ V .1 ▼ V .1 ▼ V .1 ▼ # #	0 0.0 0.0 0.0 0.0 0.0 0.0 0 0 0	20000 250.0 250.0 5.0 5.0 5.0 5.0 5.0 5.0 9	
RPM SPD_1 SPD_2 CH_1 CH_2 CH_3 CH_4 CH_5 CALC_GEAR ACC_1	Image Image Image Enabled Image Disabled Image Enabled	Engine Speed1 Speed2 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Calculated_Gear Lateral_acc	10 10 10 10 10 10 10 10 10 10 10 10 10 1	0 Hz •	Engine revolution speed Speed Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Gear potentiometer Calculated Gear Lateral accelerometer	• • • •	rpm km/h .1 km/h .1 V .1 ▼ V .1 ▼ V .1 ▼ V .1 ▼ # # g .01	0 0.0 0.0 0.0 0.0 0.0 0.0 0 0 0 0 -3.00	20000 250.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5 9 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 Speed1 Speed1 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Calculated_Gear Lateral_acc Longitudinal_acc	10 10 10 10 10 10 10 10 10 10 10 10 10 1	0Hz	Engine revolution speed Speed Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Gear potentiometer Calculated Gear Lateral accelerometer Longitudinal accelerometer		rpm km/h .1 km/h .1 V .1 ▼ V .1 ▼ V .1 ▼ V .1 ▼ g .01 g .01	0 0.0 0.0 0.0 0.0 0.0 0 0 0 -3.00 -3.00	20000 250.0 5.0 5.0 5.0 5.0 5.0 5 9 3.00 3.00	e
RPM SPD_1 SPD_2 CH_1 CH_2 CH_3 CH_5 CALC_GEAR ACC_1 ACC_2 ACC_3	Image Image Image Enabled	Engine Engine Speed1 Speed2 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Calculated_Gear Lateral_acc Longitudinal_acc Vertical_acc	10 10 10 10 10 10 10 10 10 10 10 10 10 1	0Hz	Engine revolution speed Speed Speed Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Gear potentiometer Calculated Gear Lateral accelerometer Vertical internal accelerometer	v v v v v	rpm km/h .1 km/h .1 V .1 ▼ V .1 ▼ V .1 ▼ # # g .01 g .01 g .01	0 0.0 0.0 0.0 0.0 0.0 0 0 0 -3.00 -3.00 -3.00	20000 250.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5 9 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 Speed1 Speed1 Channel_1 Channel_2 Channel_3 Channel_4 Channel_5 Calculated_Gear Lateral_acc Longitudinal_acc	10 10 10 10 10 10 10 10 10 10 10 10 10 1	0Hz ×	Engine revolution speed Speed Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Generic linear 0-5 V Gear potentiometer Calculated Gear Lateral accelerometer Longitudinal accelerometer	r v v v v v v	rpm km/h .1 km/h .1 V .1 ▼ V .1 ▼ V .1 ▼ V .1 ▼ g .01 g .01	0 0.0 0.0 0.0 0.0 0.0 0 0 0 -3.00 -3.00 -3.00	20000 250.0 5.0 5.0 5.0 5.0 5.0 5 9 3.00 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 circumfer	ence (mm) 166	6 Wheel circumference (mm)	666
Pulses per whee	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
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).



10.3.2 – Channel Table

urrent configuratio	ansmit	Receive	*	CAN-Net i	nfo 🚺 Set acquis	sition sy ime	stem	Sm Sm	artyCam Function setting	s
	on		_							
stallation name	Data logger typ	e Ecu Vehicle	name Ava	ilable time	Fime with GPS Total free	quency	Master fre	quency	Expansions freq	Tot. Expansions
EFAULT	EVO4 - 5 chani	nels None - None DEFAUL	.T 9.3	2.39 (h.m.s)	4.06.35 (h.m.s) 121 (Hz)	1	121 (Hz)		0 (Hz)	0
Select configurat	ion Channels Sy	stem configuration Display CAN	Expansions confi	gurator						
Speed1										
Wheel circumfer	ence (mm) 16	66 Wheel circumference (m	m) 1666							
Pulses per whee	revolution 1	Pulses per wheel revolutio	n 1							
	·····] [
Channel ide	Enabled/disabled	Channel name	Samplin	g frequ S	iensor type		Measure unit	Low so	ale High :	scale
RPM	Enabled	Engine	10 Hz		ngine revolution speed		rpm	0	20000	
SPD_1	 Enabled 	Speed1	10 Hz	•	peed	•	km/h .1	0.0	250.0	
SPD_2	Enabled	Speed2	10 Hz	2	peed	•	km/h .1	0.0	250.0	
CH_1	Enabled	Channel_1	10 Hz	<u> </u>	ieneric linear 0-5 V	-	V.1 🧕	0.0	5.0	
CH_2	🔽 Enabled	Channel_2	10 Hz	<u> </u>	ieneric linear 0-5 V	•	V.1 🔰	10.0	5.0	
сн_з	 Enabled 	Channel_3	10 Hz		ieneric linear 0-5 V			0.0	5.0	
CH_4	Enabled	Channel_4	10 Hz		ieneric linear 0-5 V			0.0	5.0	
CH_5	Enabled	Channel_5	10 Hz		iear potentiometer	*****	#	0	5	
	Disabled	Calculated_Gear	10 Hz		alculated Gear		#	0	9	
ACC_1	Enabled	Lateral_acc	10 Hz		ateral accelerometer		g .01	-3.00	3.00	
ACC_2	Enabled	Longitudinal_acc	10 Hz		ongitudinal accelerometer		g .01	-3.00	3.00	
ACC_3 LOG_TMP	Enabled	Vertical_acc Datalogger_Temp	10 Hz		ertical internal accelerometer old joint		g.01 ℃	-3.00	3.00	
BATT	Enabled	Battery	10 Hz		attery		-c V.1	5.0	15.0	
DATT	M Enabled	ballery	1 112		attery	waaan	Y .1	10.0	15.0	Baaaaaaaaa

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 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_57	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.

Ъ	ransmit	Receive		CAN-Net inf	•	Set acquisition sys time	tem 💽	SmartyCam Func setting	tions
rrent configurat							-		
stallation name EFAULT			Vehicle name DEFAULT	Available time	Time with GPS	Total frequency	Master frequer		eq Tot. Expansions
		els None - None		9.32.39 (h.m.s)	4.06.35 (h.m.s)	121 (Hz)	121 (Hz)	0 (Hz)	0
elect configura	tion Channels Sy	stem configuration Disp	ay CAN-Expansion	s configurator					
Speed1		Speed2							
	rence (mm) 166	6 Wheel circumfer Pulses per whee	ence (mm) 166 I revolution 1	6					
hannel iden	Enabled/disabled	Channel name		Sampling frequ	iensor type		Measure unit	Low scale	High scale
PM	🔽 Enabled	Engine		10 Hz 🗾 E	ingine revolution spee	d	rpm	0	20000
PD_1	🔽 Enabled	Speed1		10 Hz 🗾 S	ipeed		km/h .1	0.0	250.0
PD_2	Enabled	Speed2		10 Hz 🗾 S	ipeed		km/h .1	0.0	250.0
1_1	Enabled	Channel_1			ieneric linear 0-5 V			0.0	5.0
H_2	Enabled	Channel_2			Seneric linear 0-5 V			0.0	5.0
Н_З	Enabled	Channel_3			ieneric linear 0-5 V			0.0	5.0
H_4	Enabled	Channel_4			istance potentiomete	r 💻		0.0	5.0
H_5	M Enabled	Channel_5			iear potentiometer		#	0	5
ALC_GEAR	Disabled	Calculated_Gear			Calculated Gener		#	0	9
CC_1	Enabled	Lateral_acc			ateral accelerometer		g .01	-3.00	3.00
CC_2	Enabled	Longitudinal_acc			orgitudinal accelerom		g .01	-3.00	3.00
CC_3	Enabled	Vertical_acc			ertical internal acceler	rometer 🗾	g .01	-3.00	3.00
DG_TMP	M Enabled	Datalogger_Temp			Cold joint		∘⊂		50
ATT	🔽 Enabled	Battery		1 Hz 🗾 E	lattery		∀.1	5.0	15.0
Channel I	lame	Sensor type	Measure unit						
Channe Parameters	I_4 Dis	tance potentiometer	mm .1						
1	Maximum used trave	of potentiometer	00						

 $^{^7}$ 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 Calculated
Multiply factor	/1 💌	Potentiometer Calculated with Channel 5 Channel 5
MAX value	16000 💌	ECU Highest gear number 6
Lap		
Ohan with a kine	(sec.) 8	Use GPS Lap Timer
Obscuring time	(sec.) 8	Track width (for GPS Lap Timer precision): Car/Bike 10 m
		Boat 100 m
Lap segments	1	Specific 10 m
	1-LAP	Specific 10 m
D-6		
Reference speed		
Chan	Speed2	
- Output signal on pir	n 5 of RPM connector	
Signal	Alarm on channel	
Alarm		
Channel_5	<u> </u>	V 0

10.5.1 – RPM box

Rpm			Rpm		
AIM sense	or ECU sign	al	AIM sense	or ECU sign	ial
Multiply Pacto	or / 1	•	Multiply facto	or y	
MAX value	16000	•	MAX value	1,000	-
Channel ide	Enabled/disabled	Channe	Channel ide	Engoled/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	

- **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

Reference speed	
Chan	Speed1 🔹
L	Speed1 Speed2 GPS Speed BOSCH_SPEED1 BOSCH_SPEED2

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	5 of RPM connector		
Signal	Alarm on channel		•
Alarm Channel_5	_	٧	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".

-Outpu	t signal on pi	n 5 of RPM connector	_
Signal		Alarm on channel	-
Cha	m annel_5	None Lap (-) (idle status = external pull up voltage) Lap (+) (idle status = ground voltage) Shift light Alarm on channel	

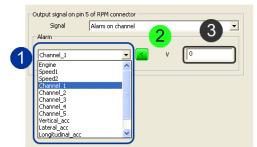
Available options are:

- 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:

Available displays 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

	System manager											- 1
Retirg Exte Preser	Trasmission	e Let	tura	🔗 Informazioni n	ste-CAN				•	sposta Fi Smart	unzioni per lyCam	
AIM Sportline World Leader in Data Acquisition	Configurazione selezionata							8				
a worst construction sectors that	None installazione Tipo		Nome veicolo						za master	Freque		Tot. Espansion
	DEFAULT ECUT	Bridge None - None	DEFAULT	0.00.00 (h.m.s) 7.13.04 (h.m	(4) 0 (H2)		0 (H2)		0 (Hz)		0
Avvia Analisi	Scedi configurazione Ca	nal Configuracione sistema	Vicce									
•	- Nuova	Concello	2 0	lona 🖓	Importe	Esps	rto					
Scarico dati	N None ristalazore	Centralina	Produtto	are ECU Modelo	ECU	Nome veicolo	Buio	Inte	Vel	Temp	Creata	Tot
	1 DEFAULT	ECU Bridge	MOTEC	M800-M		DEFAULT			kmph 🖃		June 09, 2	
Gestione sistema AIM	DEFALLT	ECU Bridge	I None	-1 None		DEFAULT	8	1	imft 🔳		Ame 10, 2	
Calibrazione sistema AIM												
Gestione sensori personalizzati												
Gestione sensori	_											

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.

	i - net info.						
N	Category	Type of Logger	Expansion Name	Logger ID	ID Date	Firmware	Firmware D.
1	MASTER	ECU Bridge	Master	2200167	27/05/2009	45.01.02	07/05/2009
s,	CAN EXPA	SmartyCam		\$5670433	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.

SEAR WATER TEMP HEAD TEMP	none available Speed_1 Calculated_Gear none available none available
HEAD TEMP	Calculated_Gear none available
HEAD TEMP	none available
HEAD TEMP	none available
EXHAUST TEMP	
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	5
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	
BATTERY	NOT SET	5

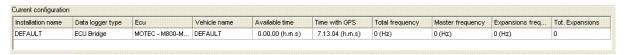
It is necessary to decide which channel to associate with each function. With reference to the images here below, for example, to set SmartyCam water temperature channel click on arrow right of the function and a drop down menu opens showing all available temperature channels. Select the one that will 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 👻
TICAU TEMP	NOT SET
EXHAUST TEMP	SRA_WTEMP
OIL TEMP	SRA_OILT SRA_AIRT
OIL PRESS	SRA_TCK1
BRAKE PRESS	SRA_TFUEL
THROTTLE_POS	NOT SET
BRAKE POS	NOT SET X NOT SET X NOT SET X
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
<mark>√ <u>0</u>K ∏</mark> Disable (Channel 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	۲ ۰	
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.

	ransmit	Receive		CAN-	Net inf	•				SmartyCam F setting		
urrent configurati Installation name	on 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 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	, ,	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	_ 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.

Tra	ansmit), Receive		CAN-Net info			Smarty	Cam Functions setting	
Current configuration	n Data logger type	Ecu	Vehicle name	Available time	Time with GPS	Total frequency	Master frequency	Expansions frequ	Tot. Expansi
DEFAULT	RPM_Bridge		DEFAULT	0.00.00 (h.m.s)	7.13.04 (h.m.s)	0 (Hz)	0 (Hz)	0 (Hz)	0
	on Channels System								igh scale
Channel Mark	Enabled/disabled	Thennel name		Compling from C	annex hann				
		Channel name Engine			ensor type ngine revolution spee	d	Measure unit Lo		ign scale

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

11.4 – System configuration – ECU Bridge

Activate "System configuration" layer

RPM	ECU signal	Gears	sensor None	Calculated
None			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"

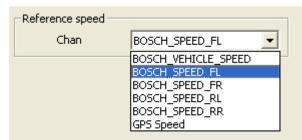
11.4.3 – Use GPS Lap timer box

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 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 Velacle russe DEFAULT	Receive Obsc.t Split.teen 8 0	Online Calibrat Speed Temp Orested Sm/h *C 3uly 28, 2008	
AlM system manager						507
All system identification		c				
Online		Ľ	lyChron	3 loggers		
AIM system calibration						
Select Language	Ties Y	Delete	Orre	Incort	Eport e	
		Logger typ MYCHION 3 - XAI	e Veb	de name Availab FAIQT 1.01.33	le time Total frequenc	
aimsportline.com						
UNE ORVERSERVER, 8 CEMMISCO BUG, MANNELO, MIGHNE - ITALY						
Race Studio 2 version: 2.30.18 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 The World Leader in Data Acquisition	System manager Transmit Current configuration Installation name Data	koggertiger Ecu	leceive	CAN Not info	Set acquisition system inne th GPS Total frequency Ma	SinsityCas Functions Initing
Area Card Aser M Sportine The World Leader in Data Acquisition	System manager Transmit Darent configuration Instalation name Der ALL T Mrd. 1	Roger type Ecu Stradow Am - Priot erreth System configuratio	Vehicle name	CAN Het info Available time 0.0000 (hum.s) 7.73.0 iguanter	Set acquisition system Intel frequency Mo. 40.m.a) 0.012 0.012	SinsityCas Functions Initing
Anne Crea Saver AM Sporting The World Leafer in Data Acquisition Go to Analysis Download data	System manager Transek Transe	logger tyse Bou StRaDA Add - PRO StRaDA Add - PRO really System configuration Congress PRL STRADA	Vehicle name T_CAN DEFAILT In CME Expensions cont COMERCIPACION COMERCIPICON COMERCIPICON COMERCIPICON COMERCIPICON COMERCIPICON	Available time Available time (0000 (hm sc) (000 (hm sc	Set acquision system New York Control of the Second Secon	Constructions Simulations training Simulations Simulations Simulation S
Arene Cross Steel MA Sporting The World Leader in Oals Acquarters Go to Analysis Download data Mill system manager	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 St	Independence in the second sec	Alective Vehicle have T_CAN DEFAILT A CON Expension corr CON Alection CON Alection CON Alection Ale	CAN Net info Available time Or (0.00 (n.m. s) 7 13.0 facture FOOT CAN FOOT CAN FOOT CAN FOOT CAN More H53 Nore	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
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Anne Cana Sance AM Coorting The World Lacker in Data Acquarters Coo to Analysis Download data Coorting AMM system identification Continue Continue Continue 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 St	Independence in the second sec	CAN DEFAULT CAN DEFAULT CON Experimence CAN Experimenc	Availabilit time in Availabilit time in 0.00.00 (m. s) 7130 ignation Free CO1 Hodd Free Street S	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 AM Coorting The World Lacker in Data Acquarters Coo to Analysis Download data Coorting AMM system identification Continue Continue Continue 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 St	Independence in the second sec	CAN DEFAULT CAN DEFAULT CON Experimence CAN Experimenc	Availabilit time in Availabilit time in 0.00.00 (m. s) 7130 ignation Free CO1 Hodd Free Street S	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:

Custo	mize sens	or				
Туре	e of measure × (mV)	-	Curve Error		Compute Curve	Select sensor
▼ 1 ▼ 2	0	0	0.000	0.000		
♥ 2 □ 3	0	0	0.0			
□ 4 □ 5	I I	0	0.0	0.000		
Г Г 6	0	0	0.0	0.000		
□7 □8	0	0	0.0	0.000_		
□ 9 □ 10		0	0.0			Sensor name
□ 11 □ 11	·	0	0.0	0.000		Save sensor
□ 12 □ 13	0	0	0.0	0.000	010	Delete sensor
□ 14 □ 15	0	0	0.0		*x + a2 * x^2 + a3 * x^3 + a4 * x^4	Import sensors
□ 15 □ 16	0	0	0.0	a0 a1	0.0	Export selected sensor
□ 17 □ 18	0	0	0.0	aı a2	0.0	Export all sensor
□ 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	e	Temperature 💌	
	×[mV]	У	Temperature Pressure	
V 1	0	0	Electrical Tension Length	
V 2	0	0	Percentage	
Г 3	0	0	Frequency Speed	
F 4	0	0	Angular Velocity Acceleration	
5	0	0	Angle Mechanical Power	
Γ6	0	0	Lambda Torque	
7	0	0	Volume	
₽8	0	0	Electrical Current Volume Flow	
9	0	0	Time Number	
[10	0	0	Custom	
1 1	0	0	0.0	
1 2	0	0	0.0	

Customize sensor						
Туре	of measur	е	Length	-		
	×[mV]	у	km 💌	Curve Error		
🔽 1	0	0	km m	0.000		
V 2	0	0	mm in	0.000		
Г З	0	0	ft	0.0		
F 4	0	0	mi j cm	0.0		
Γ5	0	0	in	0.0		

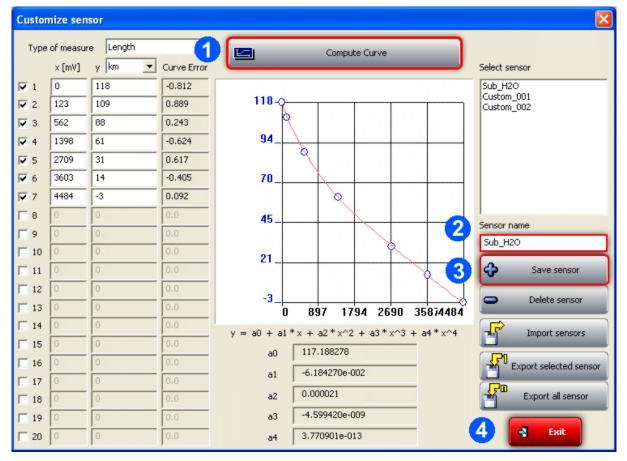


Enable the left cases corresponding to the number of experimental values to be used (up to 20 allowed).

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						
Туре	Type of measure Temperature					
	×[mV] (🥑 km 💌	Errore curva			
🔽 1	0	118	-0.812			
🔽 2	123	109	0.889			
🔽 З	562	88	0.243			
🔽 4	1398	61	-0.624			
🔽 5	2709	31	0.617			
🔽 6	3603	14	-0.405			
7	4484	-3	0.092			
F 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:

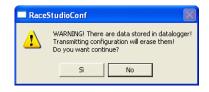
Check that the USB cable is correctly plugged in the PC and in the logger USB port, that the logger is switched on and try again transmitting the configuration.

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.

Sensor calibration			
Configuration name		System typ	e
LOGGER_CONF		EV03 PIST	A
- Sensors to autocalibrate		Clic	k here to autocalibrate all sensors in the list
Chan Channel name	Sensor type	Status	Click here to calibrate
ACC_2 Acc_2 ACC_1 Acc_1	Longitudinal accelerometer Lateral accelerometer	Default value Default value	Calibrate Calibrate
Chan Channel name	Sensor type	Status	Click here to calibrate
CH_8 Channel_8	Gear potentiometer	To calibrate	Calibrate

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.

ensor calibration			Sensor calibration		×
Channel Name Channel_2	Sensor type ⁄lid zero potentiometer	Measure unit mm	Channel Name Channel_1	Sensor type Zero based potentiometer	Measure unit mm
Current valu	Raw data	Measure -100.0		Raw data Current values 8	Measure
HIGH POSITION Get Raw Value	3688	100	HIGH POSITION Get	Raw Value 3688	100
ZERO POSITION Get Raw Value	1344	0	ZERO POSITION Get	Raw Value 0	0
LOW POSITION Get Raw Value		-100			
How to calibrate your sensor: Maintain your sensor in high (or right) reference button. Maintain your sensor in zero (or rest) reference button. Maintain your sensor in low (or left) reference p button. Insert measure values correspondent to above Click < DK> button.	e position and click on <get ra<="" td=""><td>w value> proper i value> proper</td><td>button. 2 Maintain your sensor in zero (r button.</td><td>your sensor or right) reference position and click on <1 or rest) reference position and click on <6 bondent to above indicated reference pos</td><td>iet raw value> proper</td></get>	w value> proper i value> proper	button. 2 Maintain your sensor in zero (r button.	your sensor or right) reference position and click on <1 or rest) reference position and click on <6 bondent to above indicated reference pos	iet 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 LOGGER_CONF _ Sensors to autocalibrate		System typ EVO3 PIST	
		Clic	k here to autocalibrate all sensors in the list
Chan Channel name ACC_2 Acc_2 ACC_1 Acc_1	Sensor type Longitudinal accelerometer Lateral accelerometer	Status Default value Default value	Click here to calibrate Calibrate Calibrate
Sensors to calibrate	Sensor type	Status	Click here to calibrate
CH_2 Channel_2 CH_3 Channel_3 CH_8 Channel_8	Zero based potentiometer Mid zero potentiometer Gear potentiometer	Calibrated Calibrated To calibrate	Calibrate Calibrate Calibrate
	Transmit calibration	Cancel	

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 sensors in the list
Chan Channel name ACC_2 Acc_2 ACC_1 Acc_1	Sensor type Longitudinal accelerometer Lateral accelerometer	Status Default value Default value	Click here to calibrate Calibrate Calibrate
	Sensor type	Status	Click here to calibrate
Chan Channel name	Sensor type Gear potentiometer	Status To calibrate	Click here to calibrate 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".

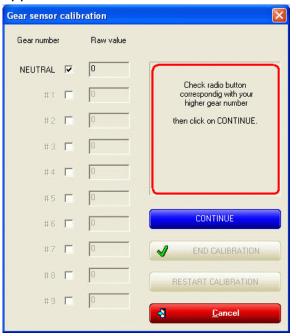
🔲 Race	StudioConf 🛛 🛛 🔀				
2	Gear configuration of datalogger is different from that of RaceStudio.				
	Do you want to update datalogger?				
Ľ	Si No				



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

	Information and a second statements and an a second statement of the second		
Configuratio	n name	System type	
LOGGER	CONF	EV03 PISTA	
Sensors to autocalibrate			ere to autocalibrate all ensors in the list
Chan Channel name ACC_2 Acc_2 ACC_1 Acc_1	e Sensor type Longitudinal accelerometer Lateral accelerometer	Status (Default value Default value	Click here to calibrate Calibrate Calibrate
1911.			
Sensors to calibrate Chan Channel name CH_8 Channel_8	e Sensor type Gear potentiometer	Status (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 " </ End calibration" button is enabled: press it.

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

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

ensor cali	ibration			
	Configuration name		System ty	pe
	LOGGER_CONF		EV03 PIS	TA
- Sensors to	autocalibrate		Civ	ck here to autocalibrate all sensors in the list
Chan ACC_2 ACC_1	Acc_2	Sensor type Longitudinal accelerometer Lateral accelerometer	Status Default value Default value	Click here to calibrate Calibrate Calibrate
Sensors to		Sensor type	Status	Click here to calibrate
CH_8	Channel_8	Gear potentiometer	Calibrated	Calibrate
		Transmit calibration		



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.

Transmit	Receive					
urrent configuration						
nstallation name	Data logger type	Ecu	Vehicle name	Available time		Total frequency
DEFAULT	DaVid Standalone	BOSCH - MS3	DEFAULT	3.54.05 (h.m.s	5)	296 (Hz)
	Delete Measure Units		mport Expo	rt Restart g	ear calibration]
Lap Obscuring time 8 (sec.) Lap segments 1	Measure Units Speed unit Temperature U	unit °C V]
Lap Obscuring time 8 (sec.) 1 Lap segments 1 N Installation name	Measure Units Speed unit Temperature U	Init C V	Vehicle name Ob	s Lap Speed	Temp Display	Created
Lap Obscuring time 8 (sec.) Lap segments 1	Measure Units Speed unit Temperature U	unit °C V				Created April 23, 2010 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		X
Select the expansion type		
Charnels Expansion	David (Slave expansion)	LCU-ONE (CAN + analog output)
LOU-ONE CAN (CAN only)	TCHUB (4 themocouple expension)	
Name of expansion configurati	on (6 characters max.)	
Serial number of the expansion	Get seri	al number from a connected
3 🛃		

- 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	

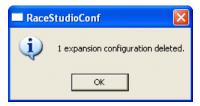
Each expansion is optional to the logger and is supplied with the related user manual. Refer to those user manuals for further information concerning each expansions configuration.



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

D	Delete espansion 🔀					
	⊠ ≣	<u>5</u> e	elect 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	n
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	•
	None M3-Dash	
	TG-dash 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	13-Dash 👻	
- Speed-	Displayed speed	Shift Lights Led 1 Led 2 Led 3 Led 4 Led 5	Display messages Language
Speed	_1		Italiano 🔽
Display	Page 1 - Channels and ala	shift light	Display page 2 - Channels and alarms
Field 1	Channel_1	✓ 12345 54321 F	ield 1 Channel_1 💌
	LED Value		LED Value
HIGH	None 🗸 0		HIGH None 🔽 0
LOW	None 🔽 0	1 3 4 8 12 16 20 3	LOW None 🗸 0
		" <u>20 b800</u>	
Field 2	Channel_1	2 9 666 12036 9 4 F	iled 2 Channel_1 💙
	LED Value		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 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			
	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 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	•	
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.

Shirt Lights Led 1 Led 2 Led 3 Led 4 Led 5 0 0 0 0 0 0	
SHIFT LIGHT 1 2 3 4 5 5 4 3 2 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Display Page 1 - Channels and alarms Display page 2 - Channels and alarms Field 2 Channel_2 LED Value HIGH None LOW None 0 LOW
2 9 70 8500 4	Field 1 Channel_1 Field 1 Channel_3 LED Value LED Value HIGH None 0 HIGH None 0 LOW None 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			

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 Displayed speed BOSCH_SPEED1	LAGUNA SECA 1:07,72 MENUI I MEM IVIEW

The only settable channel is the speed.

Speed channel	
Displayed speed	
Speed_1	•
Speed_1 Speed_2 BOSCH_SPEED1 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.



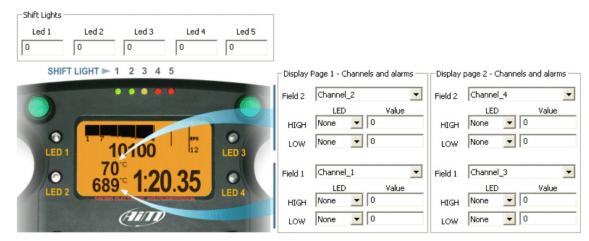
17.2.2 – TG Dash for EVO3 Pro/Pista and EVO4

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	▼ Value
Field 1 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.



(GANIND)	📓 System manager	10.40									- E1
Racing Data Roser	Transmit	Recei	iva 😥	CAN-Net info	60 Se	t acquisition sys	tem	5	martyC.	an Functions etting	
AIM Sportline World Leader in Data Acquisition	Current configuration				-			_			
1		TRADA AM - PROT_CAN	Vehicle name N DEFAULT	Available time Time wit 0.00.00 (h.m.s) 7.13.04		Total frequency 0 (Hz)	0 (Hz)	r frequency	Expe 0 (Hz	nsions freq	Tot Expansio 0
Go to Analysis	Columnation of the section of Channel	nels System configuration D	AN Furnesions configure	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
	1 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	1					
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	MXL PISTA		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		13,705
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	∘⊂	27		1
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.

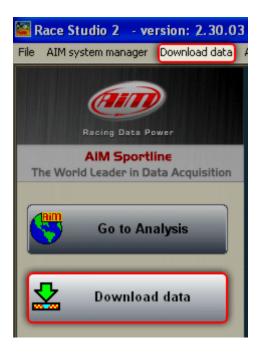




Chapter 19 – How to download data

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 progres	s	
			11 %
Browse C:\Programm	ni\AIM\DATA\NEW.DRK		
Name (necessary):	NEW		
Track:	None	-	Add / Modify
Vehicle:	None	-	Add / Modify
Driver:	None	-	Add / Modify
Championship:	None	.	Add / Modify
Test type:	Generic testing		•
Test comments:			
		A Sava	Cancel
	rowse C:VProgram Name (necessary) Track: Vehicle: Driver: Championship: Test type:	ear logger memory after saving data trowse C:\Programm\AIM\DATA\NEW/DRK Name (necessary) NEW Track: None Vehicle: None Driver: None Championship: None Test type: Generic testing	towee CVProgrammVAIMVDATAVNEW/DRK Name (necessary): NEW Track: None V Vehicle: None V Driver: None V Championship: None V Test type: Generic testing

		Operation in progress		
_	lear logger memory after s	aving data i\AIM\DATA\NEW.DRK		11 %
	Browse C:\Programm	INAIMIDATAINEW.DHK		
m∕ test	Name (necessary):	NEW		
2	Track:	None		Add / Modify
3	Vehicle:	None	•	Add / Modify
•	Driver:	None	•	Add / Modify
₽	Championship:	None	•	Add / Modify
E	Test type:	Generic testing		-
3	Test comments:			
			Save	Cancel

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

Dow	nload - MYCHRON3		
		Operation in progress	
			100%
	ilear logger memory after savi	ng data	
E	Browse C:\Programmi\/	AIM\DATA\NEW.DRK	
my test	Name (necessary):	NEW	
6	Track:	None	Add / Modify
3	Vehicle:	None	Add / Modify
	Driver:	None	Add / Modify
2	Championship:	None	Add / Modify
	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:				 	 ~	6	Þ	•	
Recent Desktop My Documents Computer My Network Places	Recent My Document Outperformed Dyd-Rw WIN_XP(WIN_XP(WIN_XP(My Document AlM Dat Work (W:) Shared Doc My Document My Network	Drive (D:) C:) Files A ndivise icuments eents							
1/2	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 Documents Desktop	C BIKE FORMULE KARTING				
My Documents					
My Computer					
My Network Places	File name:	NEW.DRK		•	Save
	Save as type:	File DRK (.drk)		-	Cancel

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



Saving the file with some specific characteristics.

Dow	nload - MYCHRON3		
		Operation in progress	
			100%
	lear logger memory after savi		
E	Browse C:\Programmi\	AIM\DATA\NEW.DRK	
m≻ 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;
- 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;
- 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.

RaceStu	ıdioConf	
٩	Test NEW already exists. Click YES to modify the name in NEW_001. 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>						
	· · · · · · · · · · · · · · · · · · ·	<u>, 1</u>							
⊠ ≣	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 T 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 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.

🗁 Choose folder	C:\Program Files\AIM\DATA\
-----------------	----------------------------

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	X
Choose DRK folder	
Ahead AIM AIM_USB_RIVER_2008 CFG CFG CFGEV3 COLORS CONTACT_US DASHBOARD PATA	~
Folder: DATA	ancel

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:

S)		Cho DRK					Records to	AIM\DATA\ cle> <day><m< th=""><th>onth><year (="" th="" y<=""><th>/yy)>.drk</th><th></th><th></th><th></th><th></th><th></th><th>_</th></year></th></m<></day>	onth> <year (="" th="" y<=""><th>/yy)>.drk</th><th></th><th></th><th></th><th></th><th></th><th>_</th></year>	/yy)>.drk						_
1			s	elec	ct all			Desele	ct all	н	de runs	marked as "Hid	den"	ß	Options	
V	Sel.	0	i	ŀ	łi	Driver	_	Vehicle	Date of F	tun	Laps	Starting T	DR.,	DRK file name		
	1	1		F	7 1	None	-	None	Februar	/ 18, 2008	1	08:01:33	2	NoneNone180220	008_003.drk	
	7	1		1 5	7 1	None		None	Februar	/ 17, 2008	1	18: 20: 12	1	NoneNone170220	008_003.drk)
	V	1	•	1 6	7 1	None		None	Februar	17, 2008	1	15: 45: 45	1	NoneNone170220	008_003.drk	
		1.	i.	1 5	-	None		None	Februar	/ 17, 2008	1	13: 43: 27	1	NoneNone170220	008_003.drk	
						Non Non	ieNo ieNo	ne1702 ne1702	2008_00 2008_00 2008_00 2008_00)3.drk)3.drk)				
						-	-			-			_		_	

To define the characteristics press "DRK file name" button and the window here below appears.

DRK File Name		
Choose name items Driver Vehicle Year Month Day LoggerType Test Number Year (yy) Custom Text Hour Minutes Seconds	Add to name	Name of DRK file <driver><vehicle><day><month><year (="")="" yyyy="">.drk for example 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 m	arked as "Hidden" 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.



👱 Do	wnloa	id 2.2	2.08	8 - 1	MXL PISTA							
	C:\Pr											
S	<pre>Conver > <v< pre=""></v<></pre>											
	Select all											
N	Sel.	D	Hi	D	river							
1		01		: N	one							
2	M	01	Г	S N	one							
3	✓	Will no	t be o	lowi	nloaded							
4		01	1	S N	one							

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.

Deptions	🖉 Options 🔀
Methods to group runs in .DRK file	Methods to group runs in .DRK file 1. One .DRK file for each run 2. One .DRK file for runs with same date 3. One .DRK file for all runs Option of showing runs Option of showing runs Check this box if you want runs automatically set as "hidden" after downloading.
V OK.	OK 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	wnla	ad	2.	22.	08	- MXL PISTA								
	C	Thoo	se f	olde	er	C:\Programm	i\AIM\DATA\							
Ś	D	RK F	ile	Nam	ne	<pre> </pre>	ehicle> <day><mo< th=""><th>onth><year (="" th="" yy<=""><th>/y)>.drk</th><th></th><th></th><th></th><th></th><th>-</th></year></th></mo<></day>	onth> <year (="" th="" yy<=""><th>/y)>.drk</th><th></th><th></th><th></th><th></th><th>-</th></year>	/y)>.drk					-
200														-
₩i≣			Se	lect	all		Deseler	t all	H H	de runs i	marked as "Hid	den"	Options	
N	Sel.	D.		Hi.		Driver	Vehicle	Date of R	JD	Laps	Starting T	DR	DRK file name	
1	1		269		1000	None	None		18, 2008		08: 01: 33	2	NoneNone18022008_003.drk	T
2	V	10	i) /	~	l	None	None	February	17, 2008	1	18: 20: 12	1	NoneNone17022008_003.drk	TTT
3		10		V	l	None	None	February	17, 2008	1	15: 45: 45	1	NoneNone17022008_003.drk	T
4		10		V	t	None	None	February	17, 2008	1	13: 43: 27	1	NoneNone17022008_003.drk	Т
-				4	/									
							Downloading d	ata			28	%		
s.	Cle	ar d	ata	logg	jer i	memory	2 Donwload si	elected runs,	2	Do	wnload selecte	а	Cancel	