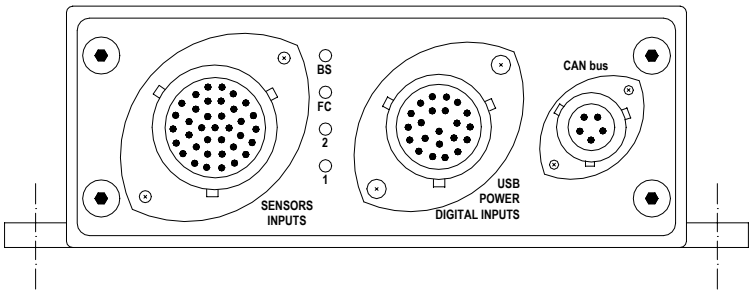
TECHNICAL DOCUMENTATION	18/04/2003	LOGGER	EVO 3 PLUS: 13 channels
Notes: **EVO3 PLUS 13 channels** technical documentation, dimensions and pinout			



Introduction

The **EVO 3** 13 channels with Deutsch connectors is a very compact data acquisition system, designed to meet the necessities of the very high level professional team.

The logger records the following parameters:

- 13 analog signals, all plugged in a single MS connector;
- 2 speed inputs;
- engine's RPM;
- lap times;
- logger battery voltage;
- logger temperature;
- lateral and longitudinal acceleration (for track mapping);

Data is stored in the internal flash memory and is downloaded to a PC through a fast 300 kbyte/second USB port. This data logger is available with 4 different internal memory sizes: 8, 16 and 32 Mbyte.
The data logger houses an internal rechargeable battery that allows the usage even where external battery is not available.
The new software **Race Studio 2**, constantly upgraded and freely downloadable from our website (www.aim-sportline.com), is considered one of the most "user-friendly" analysis software in the Motor Spost environment.

Installation notes

- The **EVO 3** must be electrically isolated from the chassis; if possible, use anti-vibration mountings to install the data logger;
- Firmly fix the data logger to the chassis by using a large piece of Velcro or using 4 screws;
- Select a position where the data logger will not be in contact with water, fuel or oil;
- Make sure that the data logger will not be affected by heat soak;

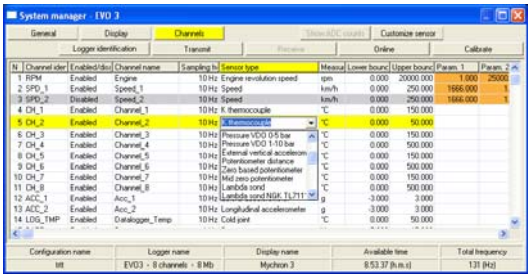
In order to correctly measure the lateral g-force using the internal accelerometer, it is suggested to install the logger with the front panel perpendicular to the vehicle's speed, as shown in this example. (It is reminded that **Race Studio Analysis**, in order to calculate the track map, uses the accelerometer set as "lateral").

Software

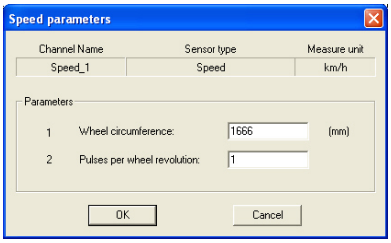
Once the data logger has been installed and the sensors have been plugged in it, in order to acquire consistent and correct information, it is necessary to configure the data logger. For a correct configuration, please use **Race Studio 2**, a software properly developed by Aim to configure its instruments and to analyze stored data.

Sensors configuration

Once reached the "Logger manager" main window, please press "Channels" button to set the sensors you have installed on your vehicle. It will appear the following screenshot.



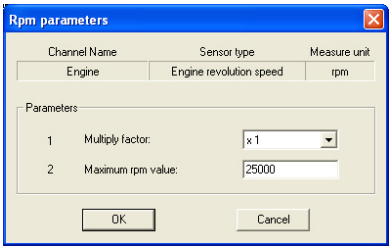
To configure the **speed sensor** it is necessary to click twice in the "Param 1" column and in the row corresponding to the "speed" channel. By double-clicking in this box, it will appear the following screenshot:



The user is requested to set the two highlighted values:

- *Number of pulses on wheel revolution*: please fill this box with the number of magnets installed on the wheel.
- *Wheel circumference*: this option allows the user to set the wheel circumference (in mm or in inches). This value is fundamental to correlate the wheel revolution speed and the kart speed.

To configure the **RPM sensor** it is necessary to click twice in the "Param 1" column and in the row corresponding to the "RPM" channel. By double-clicking in this box, it will appear the following screenshot:



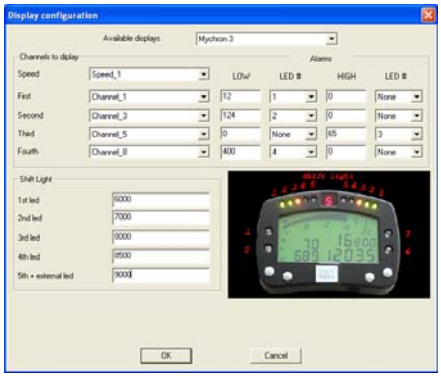
The user is requested to set the two highlighted values:

- *Number of pulses on engine revolution*: please fill this box with the number of pulses per engine revolution;
- *Maximum RPM value*: this option allows the user to set the your engine's maximum RPM value.

Once these values have been set, it is necessary to transmit the configuration to the instrument by pressing the "Transmit" button.

Display selection

In order to select the display connected to your logger, push button "Display": it will appear the following screenshot:

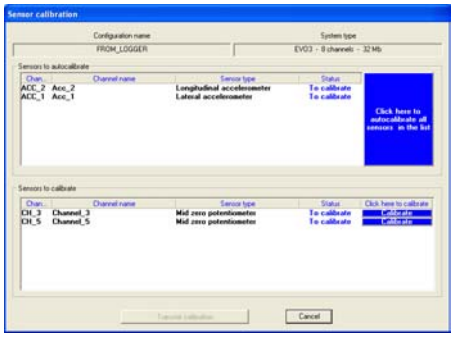


Once selected the correct display, please set the following parameters:

- Shift lights;
- Speed channel;
- Displayed channels and alarms.

Calibration

Potentiometers and the internal accelerometer need to be calibrated. Please press "calibrate" button and it will appear the following screenshot:

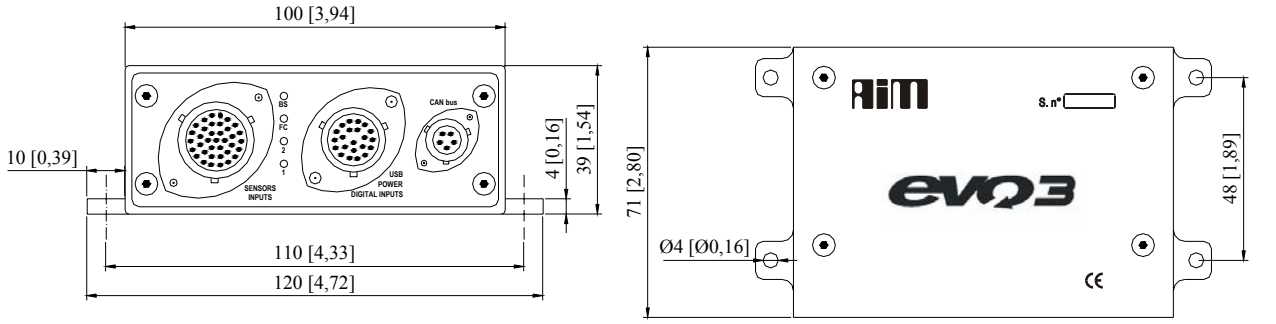


- To calibrate a channel, press "Selected channel calibration" and follow the instructions reported on your PC's monitor.
- To autocalibrate a channel, please press "Start autocalibration".

Once calibrated/autocalibrated a channel, it is absolutely necessary to transmit the new configuration to your data logger by pressing the "Transmit" button.

Thermocouples/Pressure sensors do not need to be calibrated

Dimensions



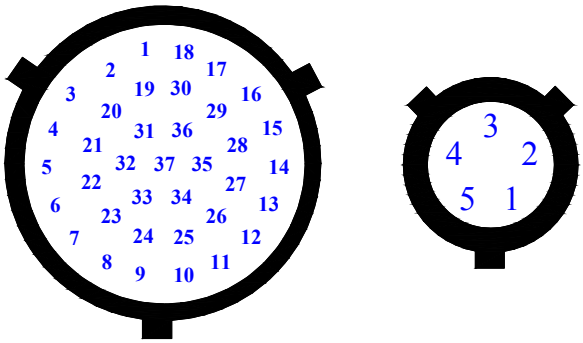
Dimensions in millimetres [inches]

Sensors inputs connector details

Pin	Function	Pin	Function
2	+ analog input 1	29	GND
19	GND	17	+ analog input 11
3	+ analog input 2	36	GND
20	GND	18	+ analog input 12
4	+ analog input 3	1	+ analog input 13
21	GND	30	GND
5	+ analog input 4	7	V reference
32	GND	8	V reference
6	+ analog input 5	9	V reference
22	GND	23	V reference
10	+ analog input 6	24	V reference
25	GND	33	V reference
11	+ analog input 7	13	V battery (output)
34	GND	14	V battery (output)
12	+ analog input 8	27	V battery (output)
26	GND	31	V battery (output)
15	+ analog input 9	35	V battery (output)
28	GND	37	V battery (output)
16	+ analog input 10		

CAN bus connector details

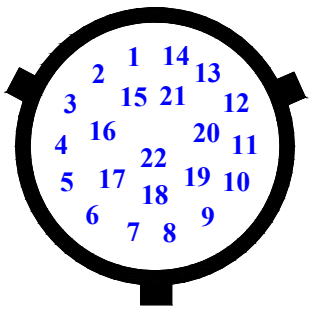
Pin	Function	Pin	Function
1	I2C SCL	4	I2C SDA
2	GND	5	+Vb direct
3	+Vb input		



Deutsch female connectors pinout (external view): 37 pins (left) and 5 pins (right)

USB, Power, digital inputs connector

Pin	Function	
9	V battery (output)	
10	RPM: 8-50V square wave (ECU)	
11	RPM: 150-400V (coil)	RPM
12	RPM spark plug input	
20	GND	
5	Speed 1 input	
6	Speed 2 input	SPEED
17	GND	
19	V battery (output)	
3	Magnetic/optic codified lap	
4	Optic not codified lap	LAP MARKER
16	GND	
22	V battery (output)	
7	D +	
8	D -	USB
18	GND	
1	Vext or Vbat out	
2	+12 V charge in	
15	+12 V charge in	POWER
13	Power log in	
14	GND	
21	GND	



Deutsch female connector pinout (external view): 22 pins

Specifications

Electrical characteristics	Value
Analog channels	13
Internal biaxial G sensor	± 10 g
Sampling rate	From 1 to 1000 Hz
Voltage output	4.5 V (for potentiometers)
Internal flash memory	From 8 to 32 Mbyte
Internal battery	NiMh 650 mAh
External power	From 8 to 15 Vdc
Internal battery charger	Fast charge in 90 minutes
Power consumption	100 mA (sensors excluded)
PC interface	Fast USB 300 kbyte/sec

Mechanical characteristics	Value
Weight	400 g (battery included)
Working temperature	From –20 to +65 °C
Environmental	IP 65