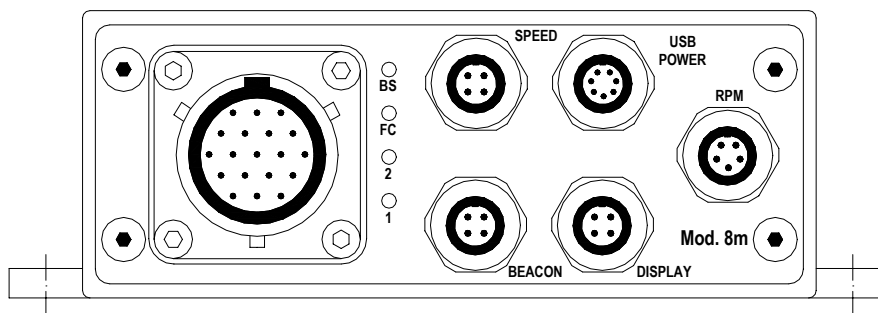


TECHNICAL DOCUMENTATION	18/04/2003	LOGGER	EVO 3 MS: 8 channels
Notes: EVO3 MS 8 channels technical documentation, dimensions and pinout			



## Introduction

The **EVO 3** 8 channels with military connector is a very compact data acquisition system, designed for obtaining maximum functionality and ease of installation and configuration.

The logger records the following parameters:

- 8 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 making maps);

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 an internal memory of 8 Mbyte.

The data logger houses an internal rechargeable battery that allows the usage even where external battery is not available.

The new **Race Studio 2** software, constantly upgraded and freely downloadable from our website ([www.aim-sportline.com](http://www.aim-sportline.com)), is considered one of the most "user-friendly" analysis software in the Motor Sport 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;



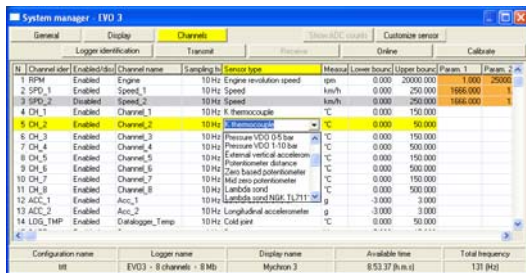
In order to correctly measure the lateral g-force using the internal accelerometer, it is suggested to install the logger with the front panel perpendicular to the vehicle's speed, as shown in this example. (It is reminded that **Race Studio Analysis**, in order to calculate the track map, uses the accelerometer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

## Software

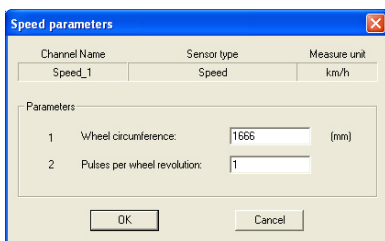
Once the data logger has been installed and the sensors have been plugged in it, in order to acquire consistent and correct information, it is necessary to configure the data logger. For a correct configuration, please use **Race Studio 2**, a software properly developed by Aim to configure its instruments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



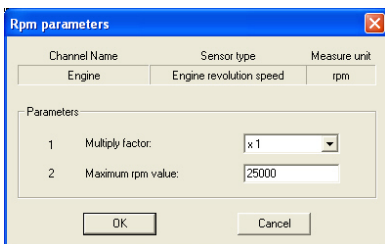
To configure the **speed sensor** it is necessary to click twice in the “Param 1” column and in the row corresponding to the “speed” channel. By double-clicking in this box, it will appear the following screenshot:



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:



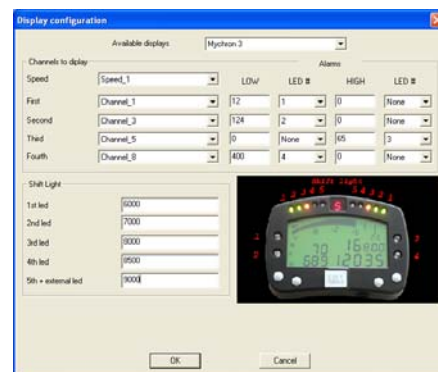
The user is requested to set the two highlighted values:

- *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:

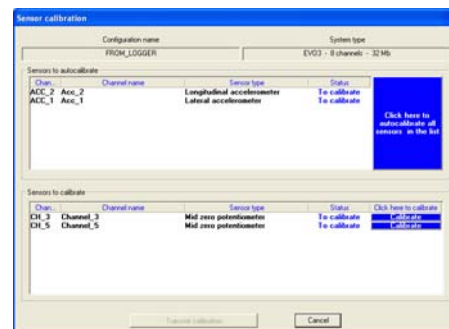


Once selected the correct display, please set the following parameters:

- 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:

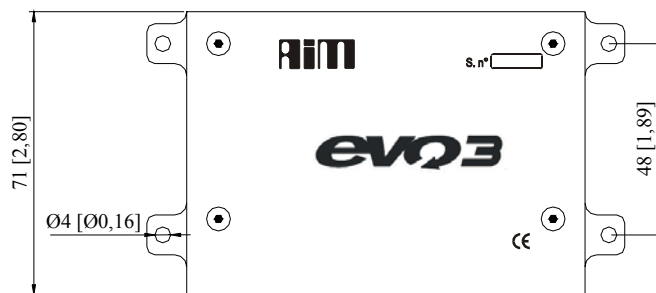
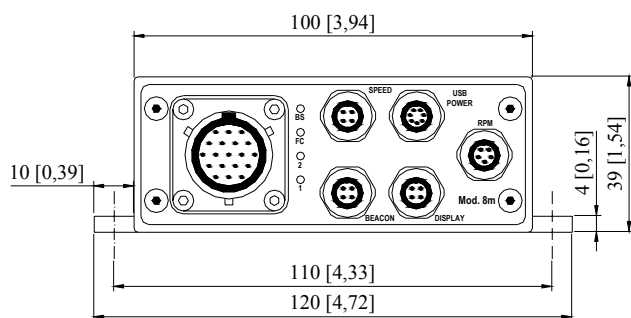


- To calibrate a channel, press “Selected channel calibration” and follow the instructions reported on your PC’s monitor.
- To autocalibrate a channel, please press “Start autocalibration”.

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]

### Connector details (Beacon channel)

Pin	Function	Pin	Function
1	Magnetic/Optic codified lap	3	V battery
2	GND	4	Optic not codified lap

### Connector details (USB/Power channel)

Pin	Function	Pin	Function
1	D+	5	+12 V Charge in
2	D-	6	Power Log in
3	n.c.	7	Vext or Vbat out
4	GND		

### Connector details (Display channel)

Pin	Function	Pin	Function
1	I2C SCL	3	V battery
2	GND	4	I2C SDA

### MS connector details (8 analog inputs)

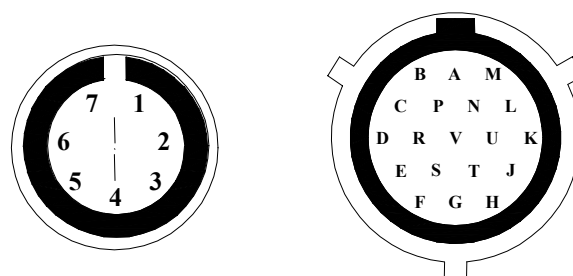
Pin	Function	Pin	Function
A	+ analog input 1	L	+analog input 5
B	-analog input 1 (GND)	M	-analog input 5 (GND)
C	V reference	N	V battery
D	+ analog input 2	S	+analog input 6
E	-analog input 2 (GND)	T	+analog input 7
F	+analog input 3	U	-analog input 6&7
G	-analog input 3 (GND)	V	V battery
H	V reference	P	+analog input 8
J	+analog input 4	R	-analog input 8 (GND)
K	-analog input 4 (GND)		

### Connector details (Speed channel)

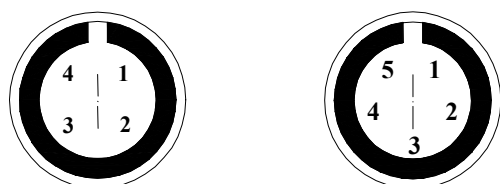
Pin	Function	Pin	Function
1	"Speed 1" signal	3	V battery
2	GND	4	"Speed 2" signal

### Connector details (RPM channel)

Pin	Function	Pin	Function
1	RPM spark plug	4	RPM 150-400V (coil input)
2	GND	5	RPM 8-50V square wave (ECU)
3	V battery		



Female connectors pinout ( external view ): USB/Power connector (left) and 19 pins MS connector (right)



Female connectors pinout ( external view ): 4 and 5 pins

## Specifications

<b>Electrical characteristics</b>	<b>Value</b>
Analog channels	8
Internal biaxial G sensor	$\pm 10$ g
Sampling rate	From 1 to 1000 Hz
Voltage output	4.5 V (for potentiometers)
Internal flash memory	8 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

<b>Mechanical characteristics</b>	<b>Value</b>
Weight	400 g (battery included)
Working temperature	From $-20$ to $+65$ °C
Environmental	IP 65