

**EFI Europe**

**Euro 1 ECU**



## INTRODUCTION

AIM has developed special applications for many of the most popular ECUs: by special applications we mean user-friendly systems which allow to easily connect your ECU to our high tech data loggers: user needs only to install harness between the **logger** and the ECU.

Once connected, the logger displays (and/or records, depending on the logger and on the ECU data stream and configuration) values like RPM, engine load, throttle position (TPS), air and water temperatures, battery voltage, speed, gear, lambda value (air/fuel ratio) analog channels...

All AIM loggers include – free of charge – **Race Studio 2** software, a powerful tool to configure the system and analyze recorded data on your PC.

**Warning: once the ECU is connected to the logger, it is necessary to set it in the logger configuration in Race Studio 2 software.  
Select Manufacturer “Efi” Model “Euro\_1”.  
Refer to Race Studio Configuration user manual for further information concerning the loggers configuration.**

## INDEX

<b>Chapter 1 – Technical communication notes</b> .....	<b>3</b>
1.1 – Hardware check.....	3
1.2 – Firmware check .....	3
1.3 – Software setup.....	4
<b>Chapter 2 – CAN communication Setup</b> .....	<b>6</b>
<b>Chapter 3 – Connection with AIM loggers</b> .....	<b>7</b>
<b>Chapter 4 – EFI Euro 1 communication protocol</b> .....	<b>7</b>

## Chapter 1 – Technical communication notes

EFI Euro 1 ECU can communicate with AIM loggers through the CAN bus. This communication can be wrong due to different reasons related to ECU hardware, firmware or software.

### 1.1 – Hardware check

EFI CAN line works normally with two only wires: CAN High (corresponding to AIM CAN +) and CAN low (corresponding to AIM CAN-). Generally AIM loggers do not need to ground CAN line. To check if hardware is ok:

- ensure that a 120 Ohm “line-end resistor” is installed between CAN+ and CAN -; use a multimeter; disconnect AIM logger from the ECU and make this check on both sides (ECU and logger);
- check if the amplitude of each bit is 2V (or at least 1.8V); using a scope ground the probe on CAN- while measuring CAN+. Please ensure that no filtering feature is enabled on the scope: this because of high baud rate of this line.

### 1.2 – Firmware check

EFI Euro 1 ECU has a CAN line to export data to a data logger.

**Warning: EFI Euro 1 ECU communication with AIM loggers depends on the ECU firmware version. No all versions are compatible with AIM loggers. Refer to the following table to know if your ECU needs a firmware upgrading.**

EFI MODEL	EFI FIRMWARE VERSION	COMPATIBILITY WITH AIM LOGGERS	WHAT TO DO
EURO 1	200	Never	ECU Firmup needed.
EURO 1	300	Up to 379	ECU Firmup needed.
EURO 1	300	From 380 onwards	Nothing, it works.
EURO 1	400	Always	Software setup needed.

In case Firmup is needed contact an EFI dealer.

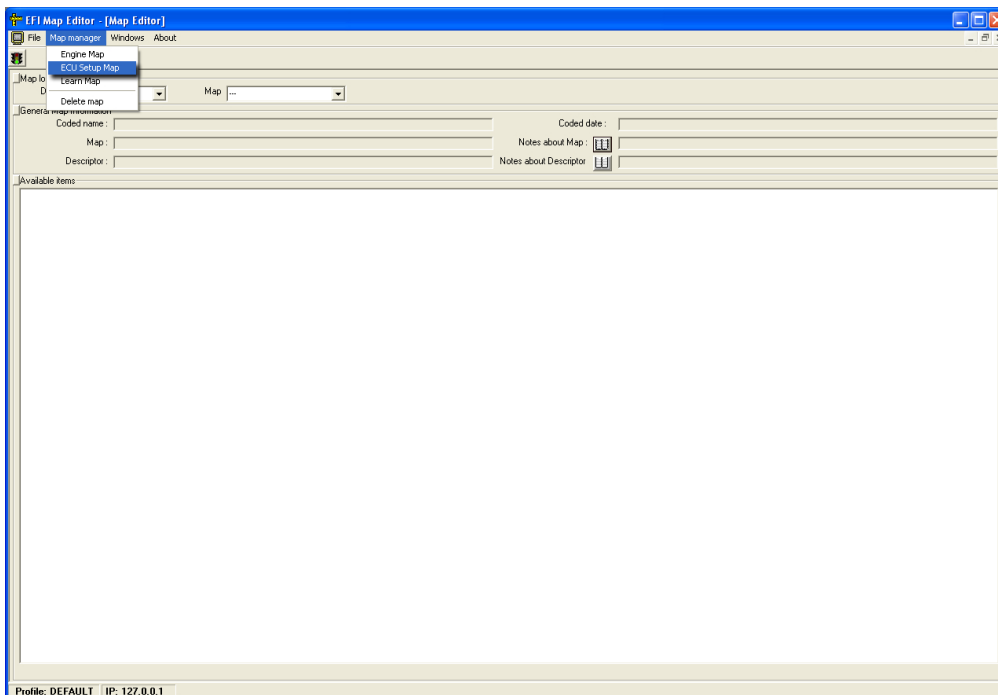
Please ensure that the logger connected to the ECU is upgraded at the latest firmware version.

## 1.3 – Software setup

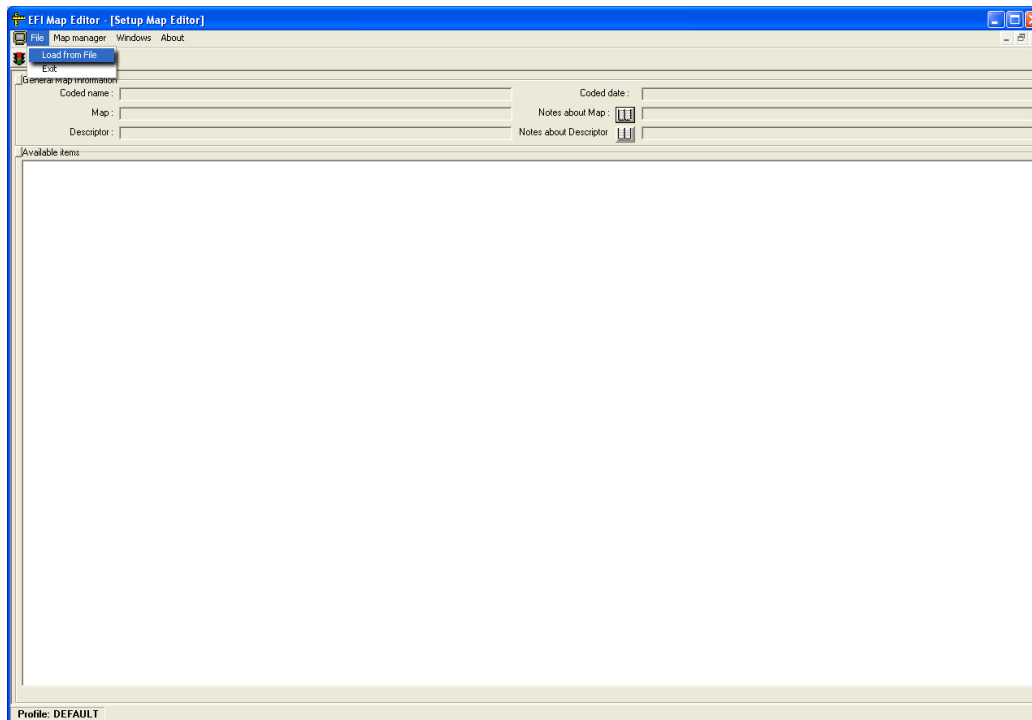
As far as software set up is concerned here follows explanation of what to do.  
For Euro 1 ECU with Firmware version 400 to communicate with AIM loggers it is necessary to set ECU Map through “ECT Mod”, the EFI software so that their CAN bus is managed as AIM loggers manage it.

To configure EFI Euro 1 ECU:

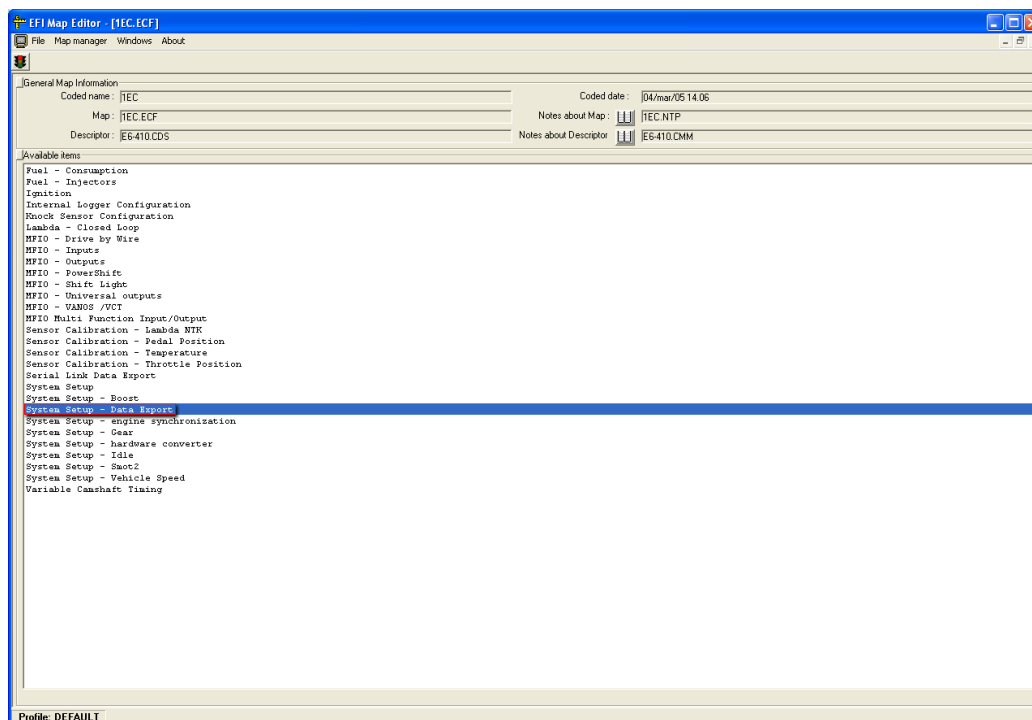
- run “ECT Mod” software
- load an “Euro 1” ECU
- click “Map Editor”
- click Map Manager and select “ECU Setup Map”



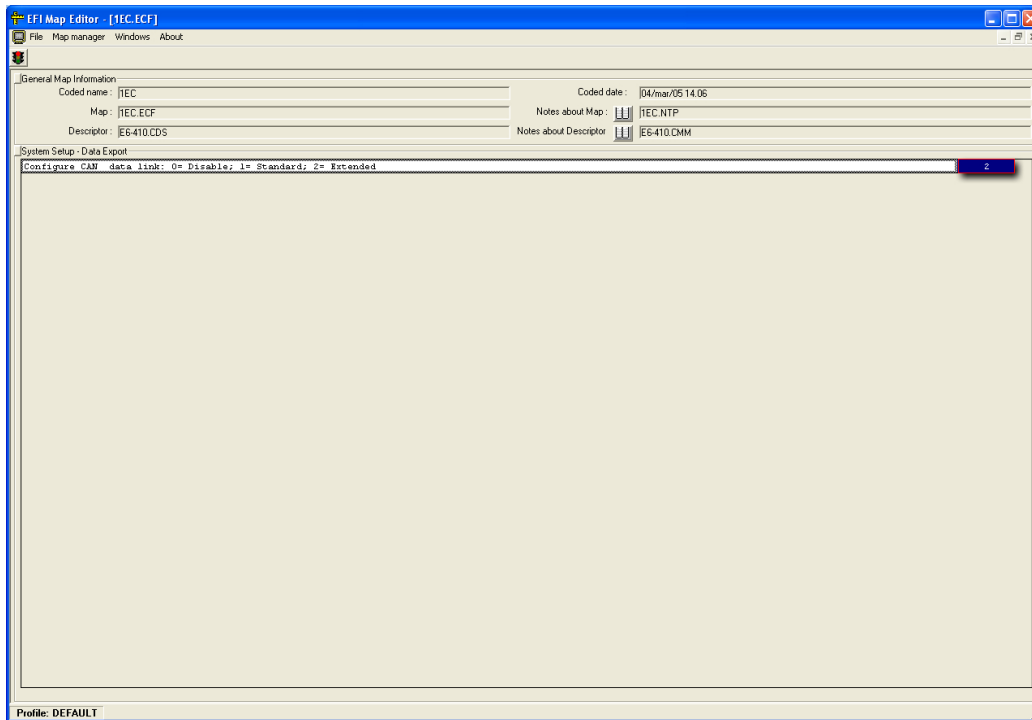
- Click File and select “Load from file” option.



- Select the “.ECF” file;
- select the “.CDS” file.
- the map is loaded
- select “System setup – data export” option



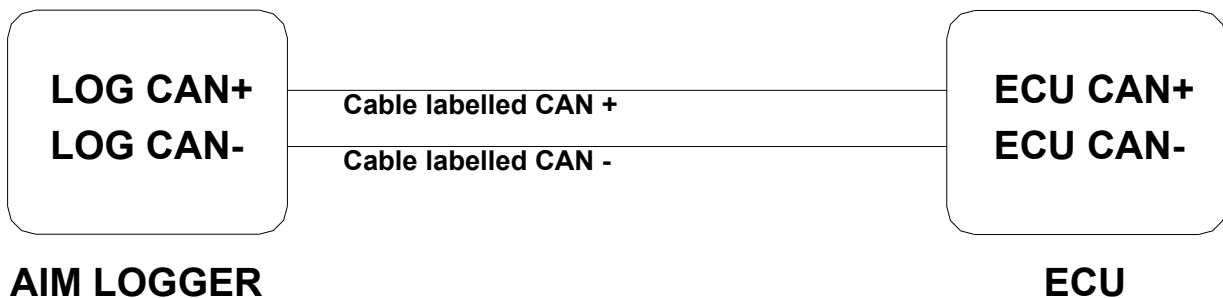
- Data export table is loaded.



Available options are: 0= Disable, 1 = standard, 2= Extended. **Set option “2 =Extended.”**  
Please ensure as well that AIM logger connected to EFI ECU is configured with the latest version of Race Studio 2 Software.

## Chapter 2 – CAN communication Setup

EFI Euro 1 ECU is equipped with a CAN communication setup used to communicate parameters to an external logger.  
The image here below shows the standard CAN communication setup.



## Chapter 3 – Connection with AIM loggers

EFI Euro 1 ECU is equipped with a 35 pin AMP connector used to communicate parameters to an external data logger or to configure the ECU itself.

To connect AIM logger to the ECU connect:

- AIM cable labelled CAN+ with pin 22 of AMP connector;
- AIM cable labelled CAN- with pin 6 of the AMP connector.

## Chapter 4 – EFI Euro 1 communication protocol

Channels received by AIM loggers connected to EFI Euro 1 ECU are:

ID	CHANNEL NAME	FUNCTION
ECU_1	EFI_RPM	RPM
ECU_2	EFI_TPS	Throttle position sensor
ECU_3	EFI_DFARF	Throttle position derivative
ECU_4	EFI_MAP	Manifold pressure
ECU_5	EFI_BARO	Barometric pressure
ECU_6	EFI_ARR_TRANS	Fuel enrichment multiplier on throttle position transient
ECU_7	EFI_SPEED	Speed
ECU_8	EFI_VBATT	Voltage supply
ECU_13	EFI_TEROGBASE	Injection table – injection time
ECU_14	EFI_TEROG	Real injection time
ECU_15	EFI_TEROG12	Injection time of cylinder 1-2
ECU_16	EFI_TEROG34	injection time of cylinder 3-4
ECU_17	EFI_SABASE	Ignition table - spark advance
ECU_18	EFI_SA	Real spark advance
ECU_19	EFI_SA1	Spark advance 1
ECU_20	EFI_SA2	Spark advance 2
ECU_21	EFI_NTK1	Lambda value 1
ECU_22	EFI_FCCLAT	Auto mapping flag
ECU_23	EFI_KFUELLEARN	Fuel correction coefficient for auto mapping