EFI USA 2.1

Racing Data Power

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 USA " Model "2.1".
Refer to Race Studio Configuration user manual for further information concerning the loggers configuration.

Warning: for any further information concerning ECU firmware/software settings and/or upgrading it is always recommended to address to the ECU dealer.

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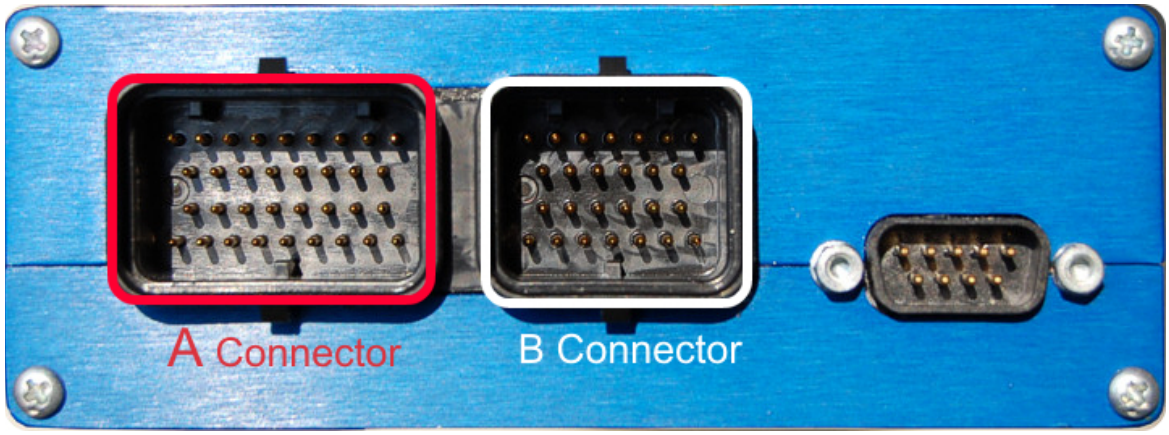
Chapter 1 – Serial communication Setup

EFI USA 2.1 has a serial communication protocol (RS 232) and is equipped with 2 connectors (A and B).

The ECU is equipped with 2 connectors: “A” connector has 34 pins, “B” connector has 26 pins. Both the connectors are used to communicate with an external data logger or to configure the ECU itself.



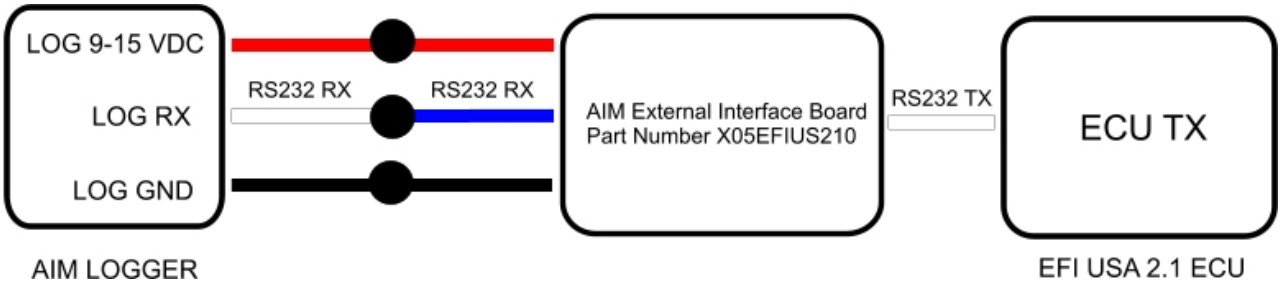
PIN	CONNECTOR	DESCRIPTION
26	A	**Ground**
22	B	**RS232TX**

Warning : do not connect GND cable to pin 15 – see A connector, image above.

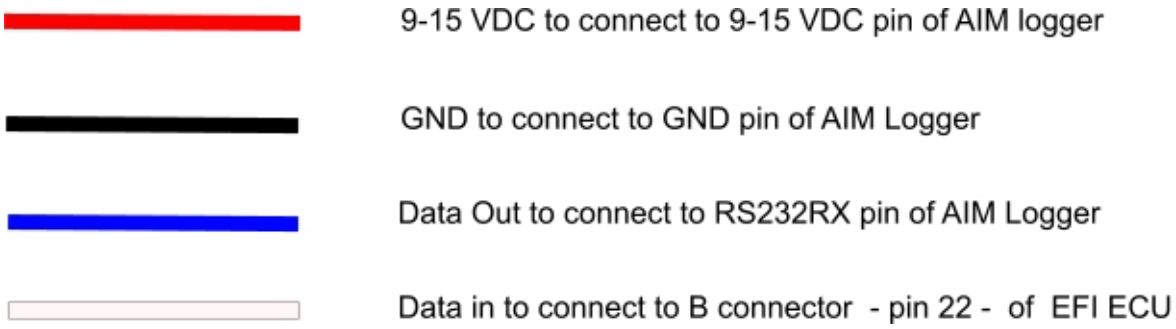
Chapter 2 – Connection with AIM loggers

Note: before the cables connection, it is necessary to set the ECU selecting "third party datastream" output directly from EFI software.

To connect this ECU to AIM loggers an external interface board supplied by AIM (Part Number X05EFIUS210) is needed. This board needs to be connected to pin 22 of the B connector of EFI ECU and with AIM logger as shown below.



The external interface board has all wires already labelled as follows:



Warning: ensure that ECU GND, AIM External Interface Board GND and AIM Logger GND are the same.
(In the pinout table reported below GND has been connected to pin "26"of A connector – Please, refer to "Serial communication setup" chapter to see the pinout).

Chapter 3 – EFI USA 2.1 ECU communication protocol

Channels shown on AIM data loggers via serial protocol with EFI USA 2.1 are:

ID	CHANNEL NAME	FUNCTION
ECU_1	EFI_RPM	RPM Value
ECU_2	EFI_BATTERY	Battery voltage
ECU_3	EFI_THROTTLE	Throttle position
ECU_4	EFI_MAP	Manifold pressure
ECU_5	EFI_SHIFTCUT	Gear shiftcut
ECU_6	EFI_FUEL_PRESSURE	Fuel pressure
ECU_7	EFI_OILP_PRESSURE	Oil Pressure
ECU_8	EFI _BEACON	Beacon signal
ECU_9	EFI_FUEL_TEMP	Fuel temperature
ECU_10	EFI_AIR_TEMP	Intake air temperature
ECU_11	EFI_WATER_TEMP	Water temperature
ECU_12	EFI_OIL_TEMP	Oil temperature
ECU_13	EFI_ECU_TEMP	ECU temperature
ECU_14	EFI_LAMBDA_1	Lambda value #1
ECU_15	EFI_LAMBDA_2	Lambda value #2
ECU_16	EFI_SPEED	Vehicle speed
ECU_17	EFI_LAPCOUNT	Lap counter
ECU_18	EFI_GEAR_POSITION	Engaged gear
ECU_19	EFI_FUEL_SWITCH	Fuel switch on/off
ECU_20	EFI_LAMBDA_TEMP	Lambda probe temperature
ECU_21	EFI_LATERAL_G	Lateral g
ECU_22	EFI_DUTY1	Duty cycle #1
ECU_23	EFI_DUTY2	Duty cycle #2
ECU_24	EFI_CDI_TEMP	ECU temperature
ECU_25	EFI_RAW_GEAR	Raw gear value
ECU_26	RESERVED	Reserved channel
ECU_27	RESERVED	Reserved channel
ECU_28	EFI_FUEL	Fuel indicator