AiM Infotech

EFI USA 2.1 ECU

Release 1.03

ECU

This tutorial explains how to connect EFI USA 2.1 ECU to AiM devices.

1 Supported models

Supported models are:

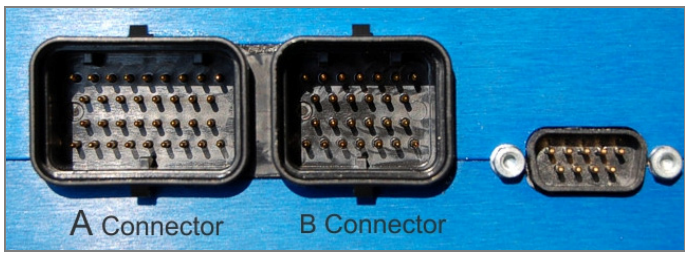
- EFI USA 2.1
- EFI USA 2.1 V7

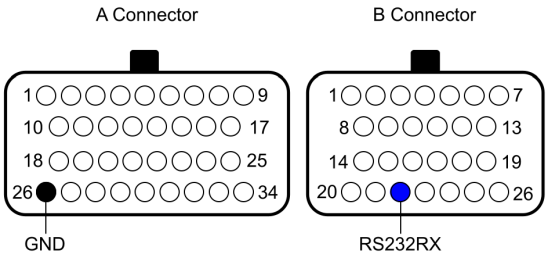
2 Software setup

Before connect EFI USA 2.1 ECU to AiM devices set it up using EFI software. The required setting is "Third party datastream" output.

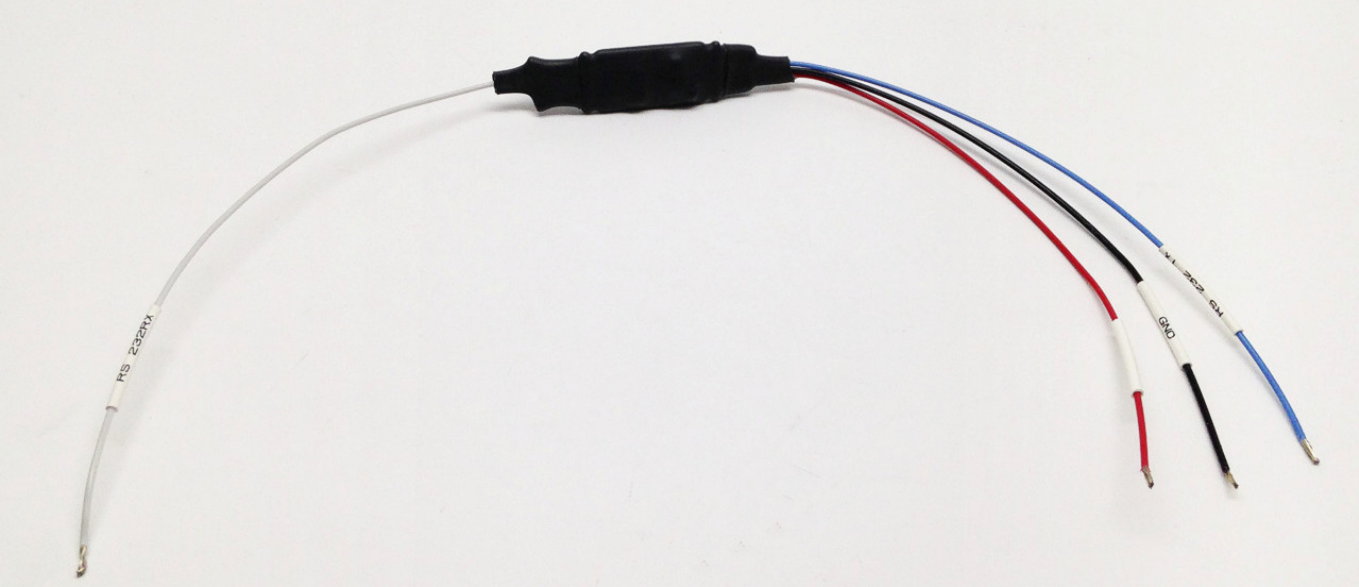
3 Hardware setup and wiring connection

EFI USA 2.1 features a serial communication protocol on the right front male connector (labelled "B"). Here below both connectors are shown with their pinout.

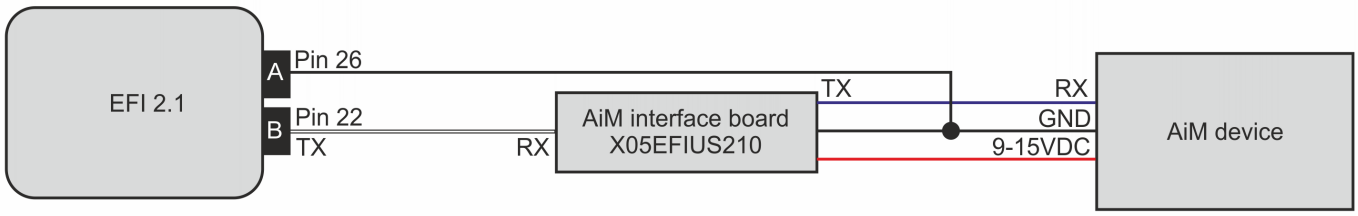




To connect EFI USA 2.1 ECU to AiM devices an interface board is required. Its part number is: **X05EFIUS210** and it is shown here below.



Here below is the wiring diagram of AiM interface board and bottom of it is the connection table.



EFI connector pin	EFI Pin function	AiM interface board cable label	AiM device pin
"A" connector pin 26	GND	GND (black)	GND
"B" connector pin 22	RS232TX →	RS232RX (white)	
		RS232TX (blue) →	RS232RX
		9-15VDC (red)	9-15VDC

Warning: please ensure that AiM device GND, AiM interface board GND and ECU GND are the same and do not use pin 15 of EFI ECU "B" connector for GND signal.

Please note: pin 26 of "A" connector is to be connected directly to GND cable of AiM interface board.

4 AiM device configuration

Before connecting the ECU to AiM device set this up using AiM Race Studio software. The parameters to select in the device configuration are:

- ECU manufacturer “EFI_USA”
- ECU Model
    - "2.1" or
    - "2.1_ V7"

5 Available channels

Channels received by AiM devices connected to "EFI USA 2.1" ECU change according to the selected protocol.

5.1 "EFI USA" "2.1" protocol

Channels received by AiM devices connected to "EFI USA" "2.1" protocol are:

ID	CHANNEL NAME	FUNCTION
ECU_1	EFI_RPM	RPM
ECU_2	EFI_BATTERY	Battery supply
ECU_3	EFI_THROTTLE	Throttle position sensor
ECU_4	EFI_MAP	Manifold air pressure
ECU_5	EFI_SHIFTCUT	Speed limiter
ECU_6	EFI_FUEL_PRESSURE	Fuel pressure
ECU_7	EFI_OILP_PRESSURE	Oil pressure
ECU_8	EFI_BEACON	Lap marker

ECU_9	EFI_FUEL_TEMP	Fuel temperature
ECU_10	EFI_AIR_TEMP	Intake air temperature
ECU_11	EFI_WATER_TEMP	Engine coolant temperature
ECU_12	EFI_OIL_TEMP	Oil temperature
ECU_13	EFI_ECU_TEMP	ECU Temperature
ECU_14	EFI_LAMBDA1	Lambda value 1
ECU_15	EFI_LAMBDA2	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
ECU_20	EFI_LAMBDA_TEMP	Lambda temperature
ECU_21	EFI_LATERAL_G	Gyroscope
ECU_22	EFI_DUTY1	Duty cycle 1
ECU_23	EFI_DUTY2	Duty cycle 2
ECU_24	EFI_CDI_TEMP	CDI Temperature
ECU_25	EFI_RAW_GEAR	Gear value
ECU_26	RESERVED1	Reserved channel 1
ECU_27	RESERVED2	Reserved channel 2
ECU_28	EFI_FUEL	Fuel level

5.2
"EFI USA" "2.1_V7" protocol

Channels received by AiM devices connected to "EFI USA" "2.1_V7" protocol are:

ID	CHANNEL NAME	FUNCTION
ECU_1	EFI_RPM	RPM
ECU_2	EFI_BATTERY	Battery voltage
ECU_3	EFI_TPS	Throttle position sensor
ECU_4	EFI_AIRBOX_PRESS	Airbox pressure
ECU_5	EFI_CRANK_PRESS	Crank pressure
ECU_6	EFI_FUEL_PRESS	Fuel pressure
ECU_7	EFI_OILP_PRESS	Oil pressure
ECU_8	EFI_LATERAL_G	Gyroscope
ECU_9	EFI_FUEL_TEMP	Fuel temperature
ECU_10	EFI_AIR_TEMP	Intake air temperature
ECU_11	EFI_WATER_TEMP	Engine coolant temperature
ECU_12	EFI_OIL_TEMP	Oil temperature
ECU_13	EFI_ECU_TEMP	ECU Temperature
ECU_14	EFI_LAMBDA1	Lambda value 1
ECU_15	EFI_LAMBDA2	Lambda value 2
ECU_16	EFI_CDI_TEMP	CDI temperature
ECU_17	EFI_THROTTLE_RATE	Throttle rate
ECU_18	EFI_GEAR	Engaged gear
ECU_19	EFI_FUEL_SWITCH	Fuel percentage switch
ECU_20	EFI_BOOST_SWITCH	Boost switch
ECU_21	EFI_BEACON	Lap marker
ECU_22	EFI_DUTY1	Duty cycle 1
ECU_23	EFI_DUTY2	Duty cycle 2
ECU_24	EFI_FRONT_SPEED	Front wheel speed
ECU_25	EFI_REAR_SPEED	Rear wheel speed

ECU_26	EFI_FUEL	Fuel level
ECU_27	EFI_INJT	Injection time
ECU_28	EFI_ADVANCE	Spark advance
ECU_29	EFI_EGT1	Exhaust gas temperature 1
ECU_30	EFI_EGT2	Exhaust gas temperature 2