



## AiM User Guide

### EcuMaster EMU Classic/ EMU Black - CAN

Release 1.02



# 1

## Supported models

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This user guide explains how to connect EcuMaster ECU to AiM devices. Supported model is:

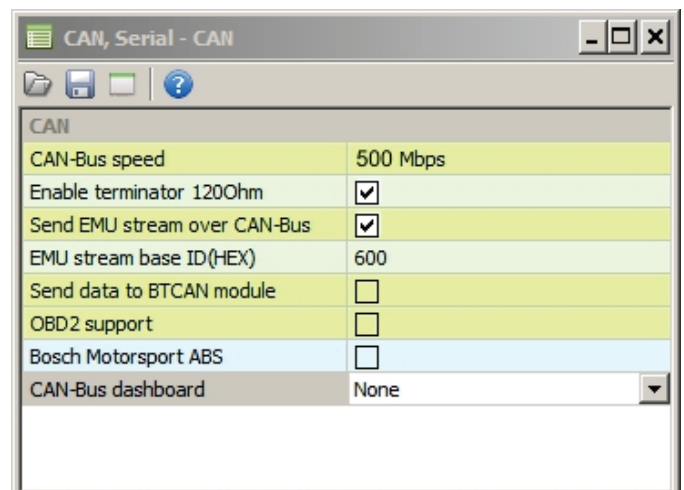
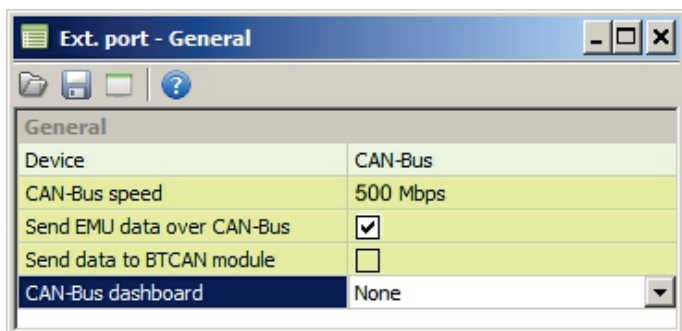
- Ecu Master EMU Classic (CAN)
- Ecu Master EMU Black (CAN)

# 2

## Software setup

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Both EMU Classic and EMU Black ECUs need a software setup to correctly communicate with AiM devices via CAN. Configuration windows are shown in the images below (on the left for EMU Classic/on the right for EMU Black):



- CAN Bus Speed: 500 Kbit/sec
- Enable "Send EMU Data/Stream over Can-Bus"
- CAN-Bus dashboard: None
- Base ID (EMU Black only): 600

## 3

# Wiring connection

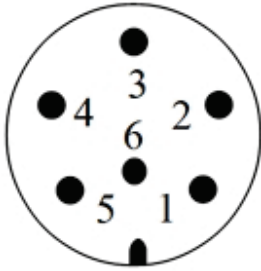
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## 3.1

### EMU Classic

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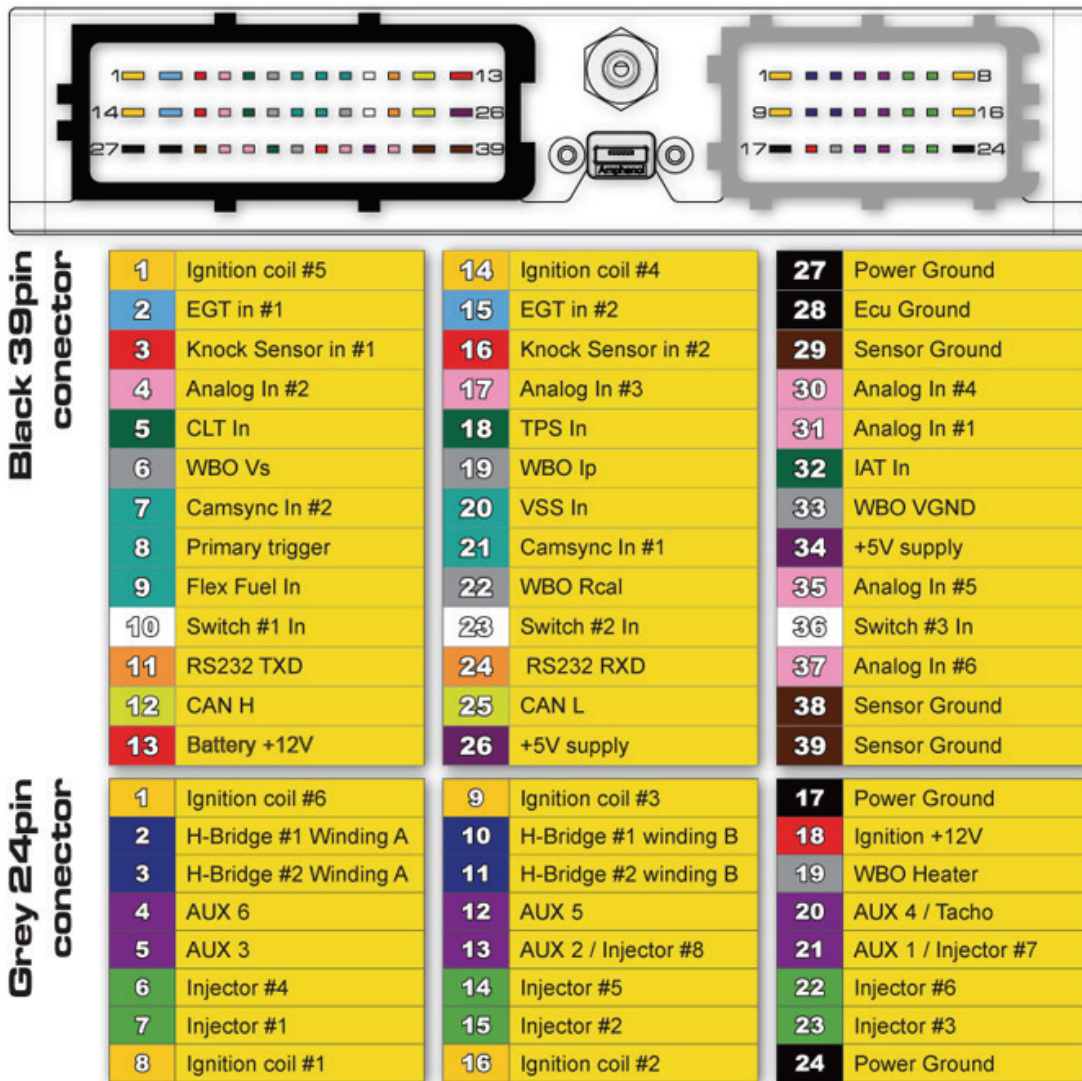
EMU Classic ECU features CAN communication protocol through the CAN-BUS Module (required) port whose pinout – solder view – are shown below with the connection table.

CAN-BUS MODULE PORT DESCRIPTION	
	1 - CAN L
	2 - EXT ANALOG #1
	3 - EXT ANALOG #2
	4 - EXT ANALOG #3
	5 - CAN H
	6 - EXT ANALOG #4

**Please note:** the CAN termination 120Ohm resistor must be enabled through the ECU configuration software, according to the CAN Bus topology.

## 3.2 EMU Black

EMU Black ECU, as well, features CAN communication protocol on EMU Black front connectors whose pinout – solder view – is shown below:



CAN +: pin 12; 39 pins connector (Black)

CAN -: pin 25; 39 pins connector (Black)

**Please note:** the CAN termination 120Ohm resistor must be enabled through the ECU configuration software, according to the CAN Bus topology.

## 4

# Race Studio configuration

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Before connecting the ECU to AiM device set it up using AiM Race Studio 3 software. The parameters to select in the device configuration are:

- ECU manufacturer: **ECU MASTER**
- ECU Model: **EMU 500Kbit/sec**  
**EMU 1MB 1Mbit/sec (Only RS3)**

## 5

# “ECU MASRTER – EMU / EMU 1” Protocols

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Channels received by AiM devices connected to “ECU MASTER – EMU / EMU 1” protocol are:

<b>CHANNEL NAME</b>	<b>FUNCTION</b>
ECU RPM	Engine RPM
ECU TPS	Throttle position sensor
ECU IAT	Intake Air Temp
ECU MAP	Manifold Air Pressure
ECU INJ PW	Injection time
ECU ANAL 1	Analog channel 1 voltage
ECU ANAL 2	Analog channel 2 voltage
ECU ANAL 3	Analog channel 3 voltage
ECU ANAL 4	Analog channel 4 voltage
ECU VEH SPD	Vehicle speed
ECU BARO	Barometric pressure
ECU OIL T	Oil temperature
ECU OIL P	Oil pressure
ECU FUEL P	Fuel pressure
ECU ECT	Engine Coolant Temperature



ECU IGN ANG	Ignition angle
ECU DWELL	Dwell angle
ECU LAMBDA	Lambda
ECU LAM COR	Lambda correction
ECU EGT1	Exhaust Gas Temperature 1
ECU EGT2	Exhaust Gas Temperature 2
ECU GEAR	Engaged gear
ECU TEMP	ECU temperature
ECU V BATT	Battery voltage
ECU ERR FLAG LSB	Failure messages
ECU FLAGS 1	Failure messages
ECU ETHANOL	Ethanol percentage
ECU ERR FLAG MSB	Failure messages
ECU DBW POS	Drive by wire position
ECU DBW TARG	Drive by wire target position
ECU TC DRPM N	TC Delta RPM
ECU TC DRPM	Delta RPM
ECU TC TRQ R	TC Torque reduction
ECU PIT LIMIT	Pit Limiter torque reduction
ECU ANAL5	Analog channel 5 voltage
ECU ANAL6	Analog channel 6 voltage
ECU OutFlags1	Numeric Status of Bit Field
ECU OutFlags2	Numeric Status of Bit Field
ECU OutFlags3	Numeric Status of Bit Field
ECU OutFlags4	Numeric Status of Bit Field

**N.B.:**

- **the following channels work only if the AiM system is connected to a EMU Black ECU:**
  - ECU ANAL5
  - ECU ANAL6
  - ECU OutFlags1
  - ECU OutFlags2
  - ECU OutFlags3
  - ECU OutFlags4