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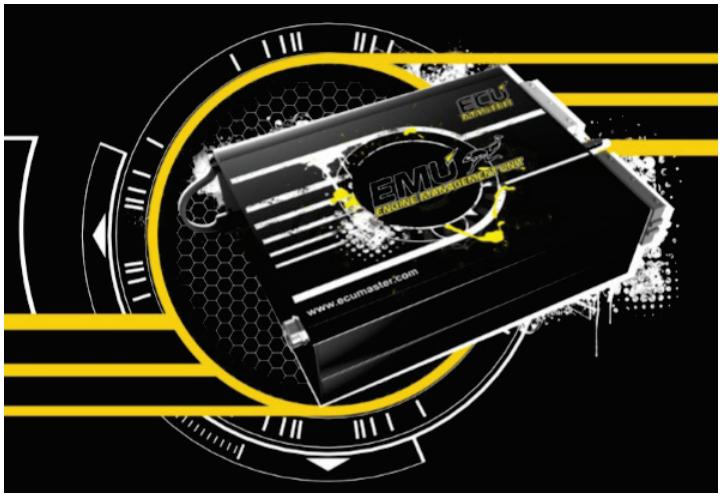
AiM User Guide

EcuMaster EMU Classic/ EMU Black - CAN

Release 1.02



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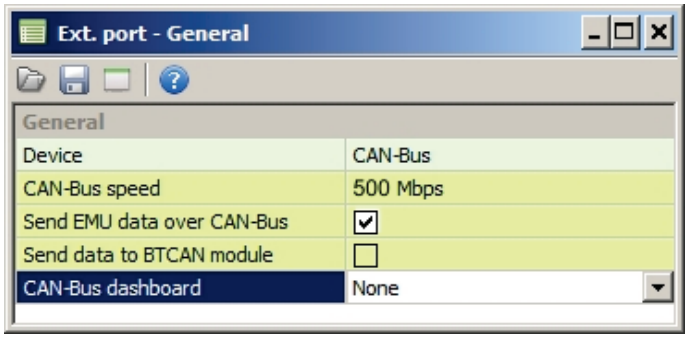
1 Supported models

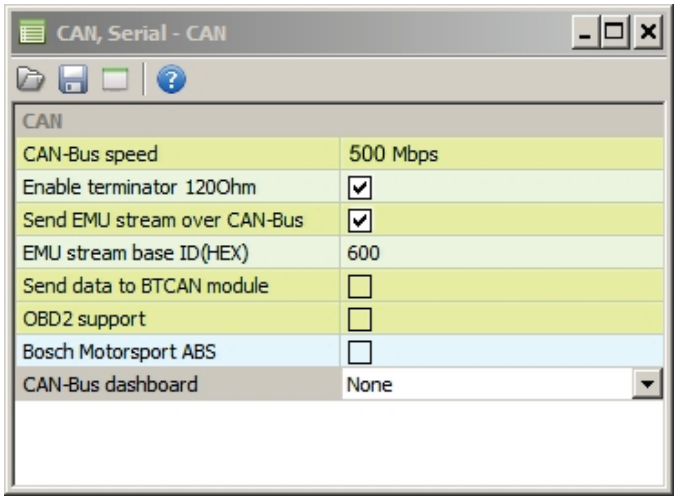
This user guide explains how to connect EcuMaster ECU to AiM devices. Supported model is:

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

2 Software setup

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):



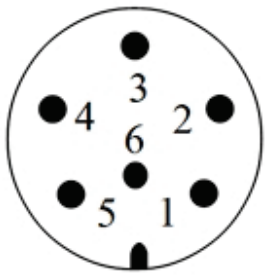


- CAN Bus Speed: 500 Kbit/sec
- Enable “Send EMU Data/Stream over Can-Bus”
- CAN-Bus dashboard: None
- Base ID (EMU Black only): 600

3
Wiring connection

3.1
EMU Classic

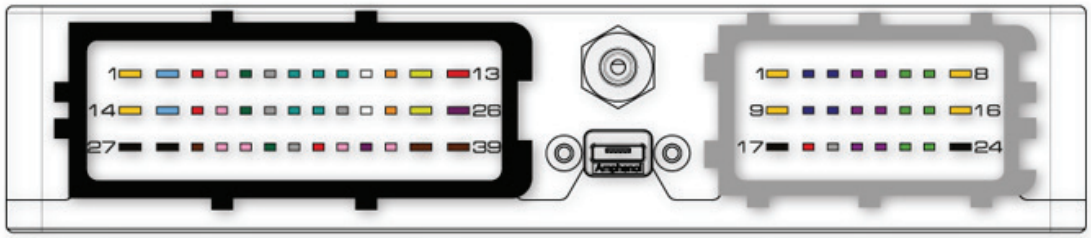
EMU Classic ECU features CAN communication protocol through the CAN-BUS Module (required) port whose pinout – solder view – are shown below with the connection table.

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:



Black 39pin conector

1	Ignition coil #5	14	Ignition coil #4	27	Power Ground
2	EGT in #1	15	EGT in #2	28	Ecu Ground
3	Knock Sensor in #1	16	Knock Sensor in #2	29	Sensor Ground
4	Analog In #2	17	Analog In #3	30	Analog In #4
5	CLT In	18	TPS In	31	Analog In #1
6	WBO Vs	19	WBO Ip	32	IAT In
7	Camsync In #2	20	VSS In	33	WBO VGND
8	Primary trigger	21	Camsync In #1	34	+5V supply
9	Flex Fuel In	22	WBO Rcal	35	Analog In #5
10	Switch #1 In	23	Switch #2 In	36	Switch #3 In
11	RS232 TXD	24	RS232 RXD	37	Analog In #6
12	CAN H	25	CAN L	38	Sensor Ground
13	Battery +12V	26	+5V supply	39	Sensor Ground

Grey 24pin conector

1	Ignition coil #6	9	Ignition coil #3	17	Power Ground
2	H-Bridge #1 Winding A	10	H-Bridge #1 winding B	18	Ignition +12V
3	H-Bridge #2 Winding A	11	H-Bridge #2 winding B	19	WBO Heater
4	AUX 6	12	AUX 5	20	AUX 4 / Tacho
5	AUX 3	13	AUX 2 / Injector #8	21	AUX 1 / Injector #7
6	Injector #4	14	Injector #5	22	Injector #6
7	Injector #1	15	Injector #2	23	Injector #3
8	Ignition coil #1	16	Ignition coil #2	24	Power Ground

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

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

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

CHANNEL NAME	FUNCTION
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**