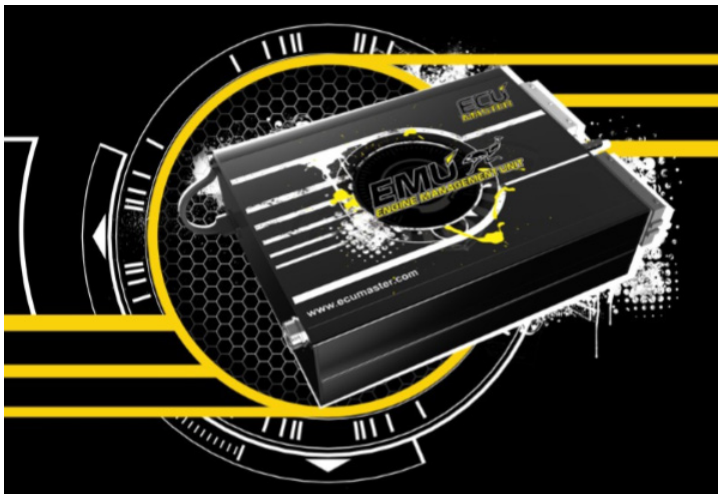
AiM User Guide

EcuMaster EMU Classic/ EMU Black - CAN

Release 1.01



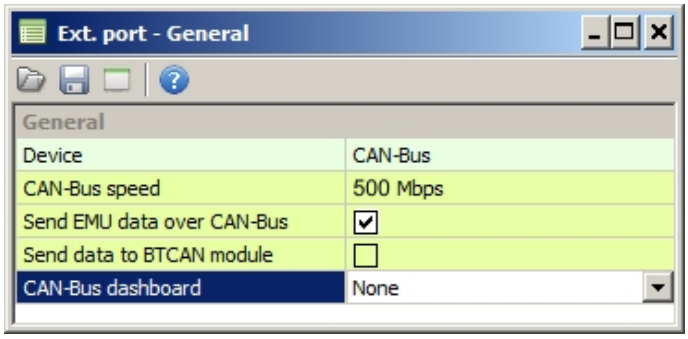
1 Supported models

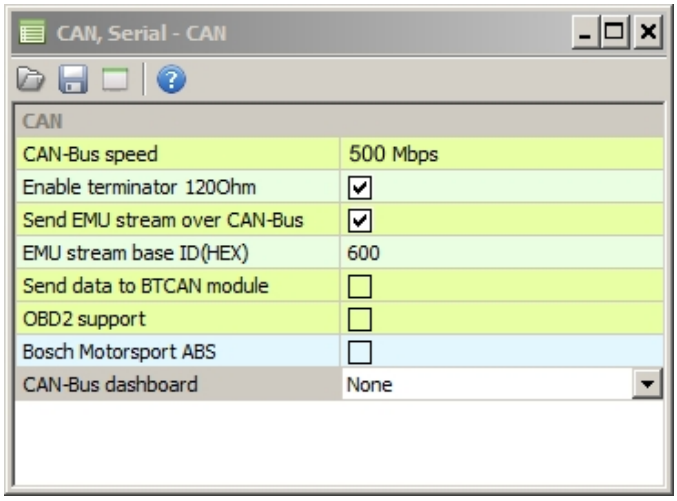
This user guide explains how to connect EcuMaster ECU to AiM devices. Supported model is:

- 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):



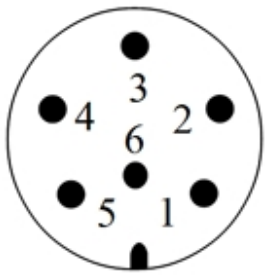


- CAN Bus Speed: 500 Mbps
- Enable “Send EMU Data/Stream over CAN-Bus”
- CAN-Bus dashboard: None
- Base ID (EMU Black only): 600

3
Wiring connection

3.1
EMU Classic

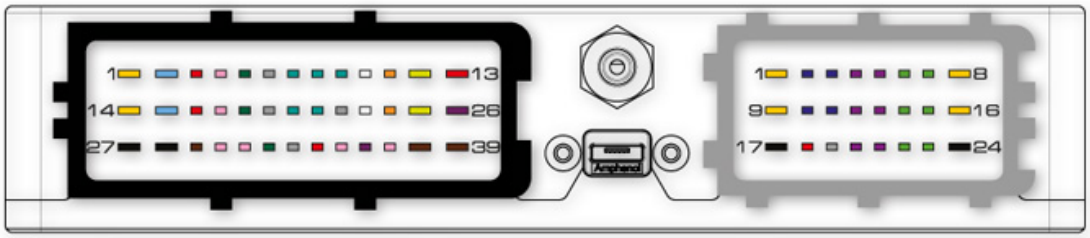
EMU Classic ECU features CAN communication protocol through the CAN-BUS Module (required) port whose pinout is shown below with the connection table.

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 120 Ohm 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 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 120 Ohm resistor must be enabled through the ECU configuration software, according to the CAN Bus topology.

4 AiM device 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”

5 Available channels

Channels received by AiM devices connected to “ECU MASTER” "EMU" protocol are:

ID	CHANNEL NAME	FUNCTION
ECU_1	ECU RPM	Engine RPM
ECU_2	ECU TPS	Throttle position sensor
ECU_3	ECU IAT	Intake Air Temp
ECU_4	ECU MAP	Manifold Air Pressure
ECU_5	ECU INJ PW	Injection time
ECU_6	ECU ANAL 1	Analog channel 1 voltage
ECU_7	ECU ANAL 2	Analog channel 2 voltage
ECU_8	ECU ANAL 3	Analog channel 3 voltage
ECU_9	ECU ANAL 4	Analog channel 4 voltage
ECU_10	ECU VEH SPD	Vehicle speed
ECU_11	ECU BARO	Barometric pressure
ECU_12	ECU OIL T	Oil temperature
ECU_13	ECU OIL P	Oil pressure
ECU_14	ECU FUEL P	Fuel pressure
ECU_15	ECU ECT	Engine Coolant Temperature
ECU_16	ECU IGN ANG	Ignition angle

ECU_17	ECU DWELL	Dwell angle
ECU_18	ECU LAMBDA	Lambda
ECU_19	ECU LAM COR	Lambda corrector
ECU_20	ECU EGT1	Exhaust Gas Temperature 1
ECU_21	ECU EGT2	Exhaust Gas Temperature 2
ECU_22	ECU GEAR	Engaged gear
ECU_23	ECU TEMP	ECU temperature
ECU_24	ECU V BATT	Battery voltage
ECU_25	ECU ERR FLAG LSB	Failure messages
ECU_26	ECU FLAGS 1	Failure messages
ECU_27	ECU ETHANOL	Ethanol percentage
ECU_28	ECU ERR FLAG MSB	Failure messages
ECU_29	ECU DBW POS	Drive by wire position
ECU_30	ECU DBW TARG	Drive by wire target position
ECU_31	ECU TC DRPM N	TC Delta RPM
ECU_32	ECU DRPM	Delta RPM
ECU_33	ECU TC TRQ R	TC Torque reduction
ECU_34	ECU PIT LIMIT	Pit Limiter torque reduction
ECU_35	ECU ANAL5	Analog channel 5 voltage
ECU_36	ECU ANAL6	Analog channel 6 voltage
ECU_37	ECU OutFlags1	Numeric Status of Bit Field
ECU_38	ECU OutFlags2	Numeric Status of Bit Field
ECU_39	ECU OutFlags3	Numeric Status of Bit Field
ECU_40	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**