

AiM Infotech

MoTec M4 and M48 ECUs

Release 1.02



ECU





This tutorial explains how to connect MoTec ECUs to AiM devices.

1 Supported models

MoTec supported models are:

- M4
- M48

2 Software check (M48 only) and configuration

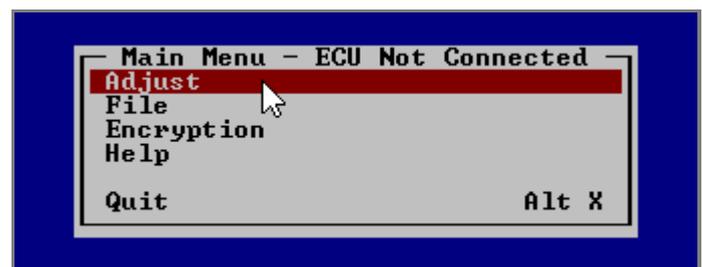
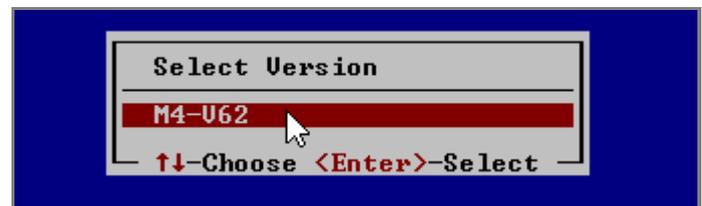
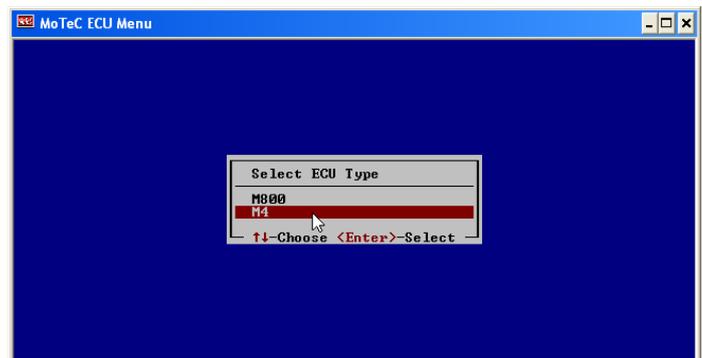
Before connecting MoTec M48 ECU to AiM devices check its settings using MoTec "ECU Menu" V6.20 software. This can be downloaded from MoTec website. Connecting the ECU to PC serial port two cases can occur:

- MoTec software detects an older version in the ECU and an updating is needed; in this case address to your MoTec dealer for a software upgrade unit; upgrading is automatically made by the software selecting the corresponding voice;
- MoTec software detects the ECU software version is ok and nothing is needed.

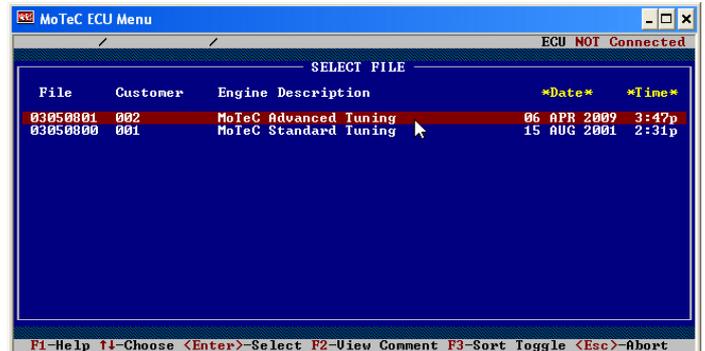
2.1 Software configuration

MoTeC ECU needs to be configured via software "ECU Menu" 6.20 version to correctly communicate with AiM devices. Follow these steps.

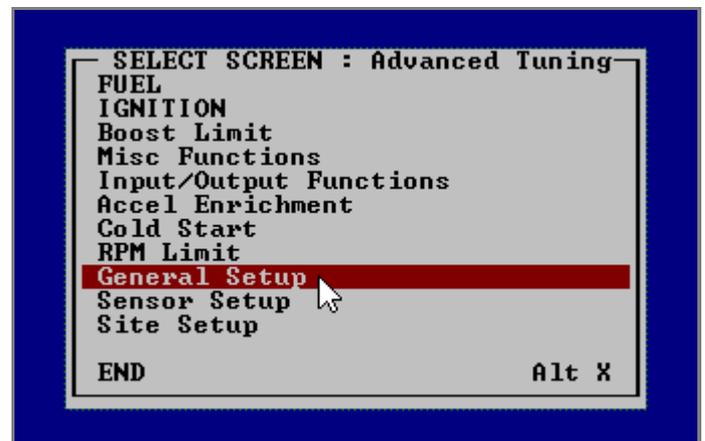
- Run "ECU Menu"
- Select "M4" and press "Enter"
- Press "Enter"
- Select "M4 ECU Calibration/Setup and Diagnostics";
- Press "Enter"
- Select "Adjust"
- Press "Enter"



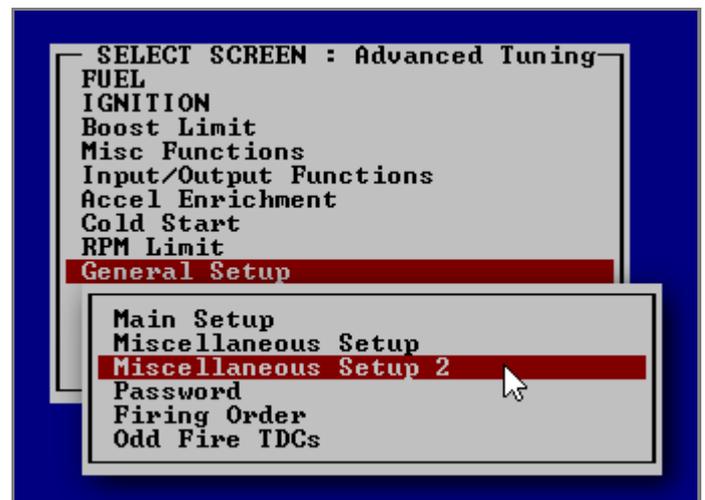
- Select "MoTeC advanced tuning"
- Press "Enter"



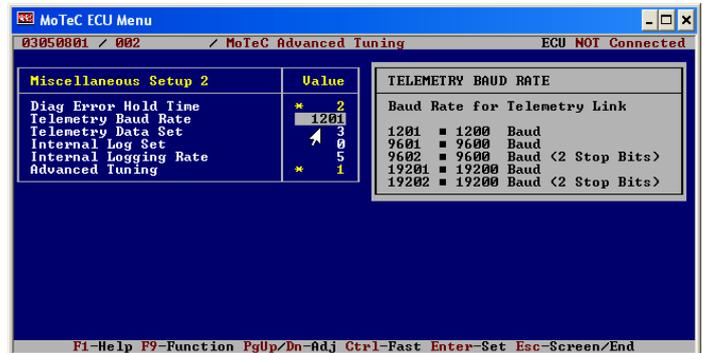
- Select "General Setup"
- Press "Enter"



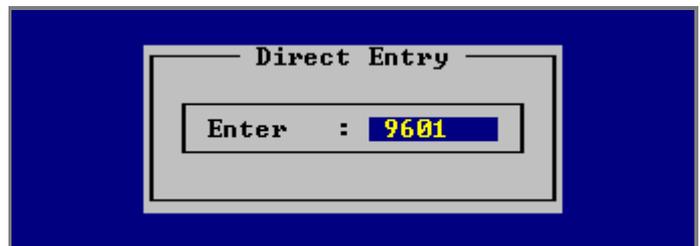
- Select "Miscellaneous Setup 2"
- Press "Enter"



- "Telemetry Baud Rate" and "Telemetry Data Set" need to be set;
- Select the correct row and start writing;
- Setting windows appear;



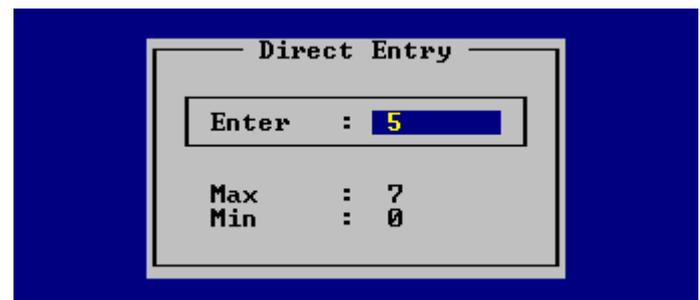
- To set Baud Rate "9600" type: **"9601"**



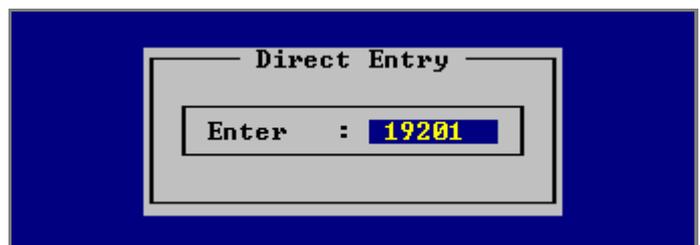
- Switch to Data Set
- Type **"3"** to use Data Set 3



- Type **"5"** to use Data Set 5



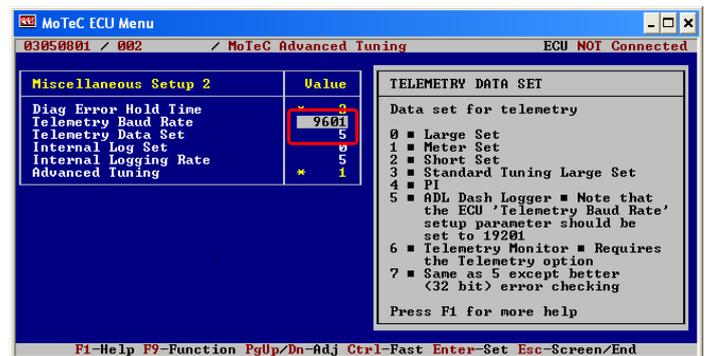
- To set Baud Rate at "19200"; type: **"19201"**



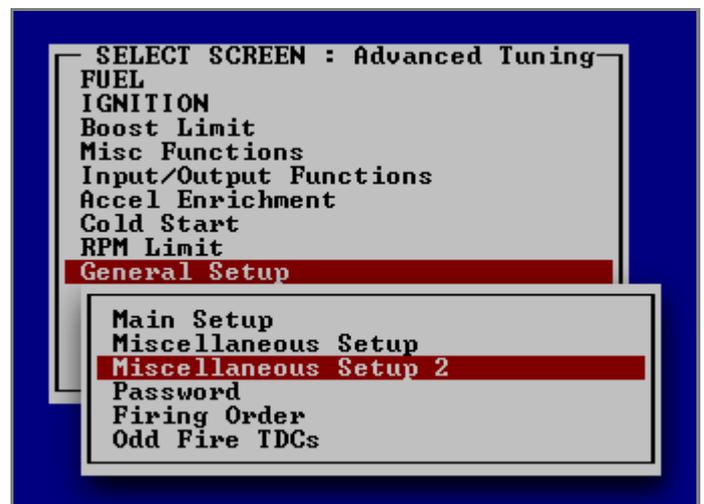
- Switch to Data Set
- Type "5" to use Data Set 5;
- **please note:** Data Set 3 with Baud Rate 19200 protocol is not supported by AiM devices.



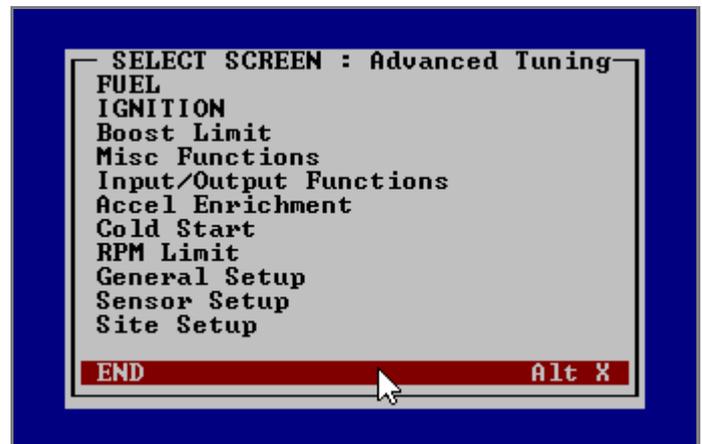
- Now the software shows the parameters correctly set.



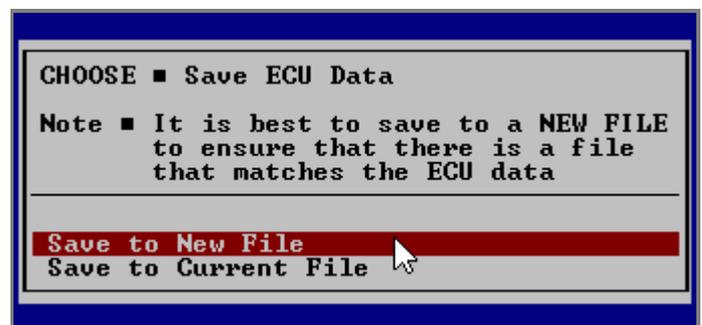
- Press "Esc"



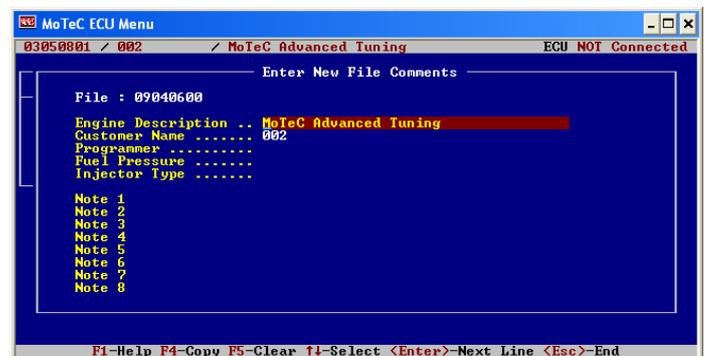
- Select "End" and press "Enter" or press "Alt+X"



- Select "Save to New File"
- Press "Enter"



- "File Comments" window appears
- Fill it in as you wish
- Press "Esc"
- The configuration is saved and the ECU is re-started.



3

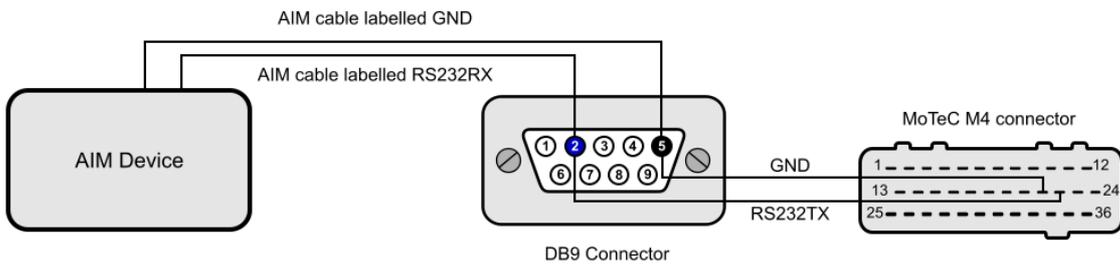
Wiring connection

MoTec M4 and M48 ECUs feature a serial communication protocol. Using DB9 harness connector you can connect the ECU to AiM devices.

3.1

MoTec M4 wiring connection

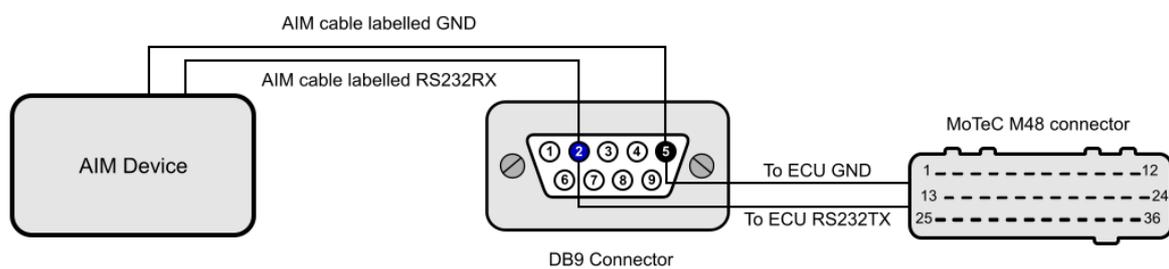
Here below you see connection scheme and connection table of MoTec M4.



AiM cable label	DB9 pin	Pin function	MoTec M4 connector pin
RS232RX	2	RS232TX	22
GND	5	GND	21

3.2 MoTec M48 wiring connection

Here below you see connection scheme and connection table of MoTec M48.



AiM cable label	DB9 pin	Pin function	MoTec M48 connector pin
RS232RX	2	RS232TX	RS232TX
GND	5	GND	GND

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 "MoTec"
- ECU Model
 - "M4-M48-Data3" to use Baud Rate 9600 and Data Set3
 - "M4-M48-Data5" to use Baud Rate 9600 and Data Set5;
 - "M4-M48-Data5-19200" to use Baud Rate 19200 and Data Set5

5

Available channels

Channels received by AiM loggers connected to MoTec M4 and M48 ECUs changes according to the selected protocol.

5.1

"MoTec" "M4-M48-Data3" protocol

Channels received by AiM loggers connected to "MoTec" "M4-M48-Data3" are:

ID	CHANNEL NAME	FUNCTION
ECU_1	M4_M48_RPM	RPM
ECU_2	M4_M48_FUELUSED	Injected fuel
ECU_3	M4_M48_AUXV	Auxiliary voltage
ECU_4	M4_M48_AUXT	Auxiliary temperature
ECU_5	M4_M48_MAP	Manifold air pressure
ECU_6	M4_M48_TP	Throttle position
ECU_7	M4_M48_LA	Lambda value
ECU_8	M4_M48_ET	Engine temperature
ECU_9	M4_M48_AT	Intake air temperature
ECU_10	M4_M48_VB	Battery supply
ECU_11	M4_M48_ECUTEMP	ECU Temperature
ECU_12	M4_M48_FAPW	Fuel actual pulse width
ECU_13	M4_M48_FEPW	Fuel effective pulse width
ECU_14	M4_M48_FTIME	Fuel injection time
ECU_15	M4_M48_DUTY	Duty cycle
ECU_16	M4_M48_ACCEL	Acceleration value
ECU_17	M4_M48_IADV	Ignition advance
ECU_18	M4_M48_EPOINT	Engine point
ECU_19	M4_M48_PWM0_DUTY	Pulse width modulation duty
ECU_20	M4_M48_GEAR	Engaged gear

5.2

"MoTec" "M4-M48-Data5" protocol

Channels received by AiM loggers connected to "MoTec" "M4-M48-Data5" are:

ID	CHANNEL NAME	FUNCTION
ECU_1	M4_M48_RPM	RPM
ECU_2	M4_M48_THROTPOS	Throttle position
ECU_3	M4_M48_MANIFPRES	Manifold air pressure
ECU_4	M4_M48_AIRTEMP	Intake air temperature
ECU_5	M4_M48_ENGINE_TEMP	Engine temperature
ECU_6	M4_M48_LAMBDA1	Lambda value 1
ECU_7	M4_M48_AUXTEMP	Auxiliary temperature
ECU_8	M4_M48_AUXVOLT	Auxiliary voltage
ECU_9	M4_M48_BATTVOLT	Battery supply
ECU_10	M4_M48_ECUTEMP	ECU Temperature
ECU_11	M4_M48_BAROPRESS	Barometric pressure
ECU_12	M4_M48_SPEED1	Vehicle speed 1
ECU_13	M4_M48_SPEED2	Vehicle speed 2
ECU_14	M4_M48_GROUNDSPEED	Ground speed
ECU_15	M4_M48_DRIVESPEED	Dashboard speed
ECU_16	M4_M48_SLIP	Driven/dragged speed difference
ECU_17	M4_M48_GEAR	Engaged gear
ECU_18	M4_M48_LAMBDA SHORTTRIM	Lambda short trim
ECU_19	M4_M48_LAMBDA LONGTRIM	Lambda long trim

5.3

"MoTec" "M4-M48-Data5-19200" protocol

Channels received by AiM loggers connected to "MoTec" "M4-M48-Data5-19200" are:

ID	CHANNEL NAME	FUNCTION
ECU_1	M4_M48_RPM	RPM
ECU_2	M4_M48_THROTPOS	Throttle position
ECU_3	M4_M48_MANIFPRES	Manifold air pressure
ECU_4	M4_M48_AIRTEMP	Intake air temperature
ECU_5	M4_M48_ENGINE_TEMP	Engine temperature
ECU_6	M4_M48_LAMBDA1	Lambda value 1
ECU_7	M4_M48_AUXTEMP	Auxiliary temperature
ECU_8	M4_M48_AUXVOLT	Auxiliary voltage
ECU_9	M4_M48_BATTVOLT	Battery supply
ECU_10	M4_M48_ECUTEMP	ECU Temperature
ECU_11	M4_M48_BAROPRESS	Barometric pressure
ECU_12	M4_M48_SPEED1	Vehicle speed 1
ECU_13	M4_M48_SPEED2	Vehicle speed 2
ECU_14	M4_M48_GROUNDSPEED	Ground speed
ECU_15	M4_M48_DRIVESPEED	Dashboard speed
ECU_16	M4_M48_SLIP	Driven/dragged speed difference
ECU_17	M4_M48_GEAR	Engaged gear
ECU_18	M4_M48_LAMBDA SHORTTRIM	Lambda short trim
ECU_19	M4_M48_LAMBDA LONGTRIM	Lambda long trim