AiM InfoTech

MoTec M400-M600-M800

Release 1.05

ECU

This tutorial explains how to connect AiM devices to MoTec M400-M600-M800 ECUs.

1
Mandatory prior checks

MoTec M400, M600 and M800 ECUs feature a data transmission bus based on CAN.

These prior checks and settings are mandatory to avoid that the communication fails for different reasons, related to hardware as well as to firmware or software reasons.

1.1
Firmware check

MoTec M400, M600, M800 ECUs baud rate changes according to the ECU firmware version. Please select the proper model in accordance with the following list.

- firmware version lower than 2.30S
  - baud rate 400kbit   select ECU Model: **M8XX-M600-M400**

- firmware version 2.30S or higher
  - baud rate 1Mbit   select ECU Model: **M8XX-M600-M400-1M**

- firmware version 3.x – baud rate can be set on 1M or 500 kbit
  - select ECU Model: **M8XX-M600-M400-1M_v3** (baud rate: 1Mbit)
   **M8XX-M600-M400-500k_v3** (baud rate: 500kbit)

This panel appears:

- select "communication" layer and
- choose "1 mbit (Default)" or 500 kbit according to your ECU setting
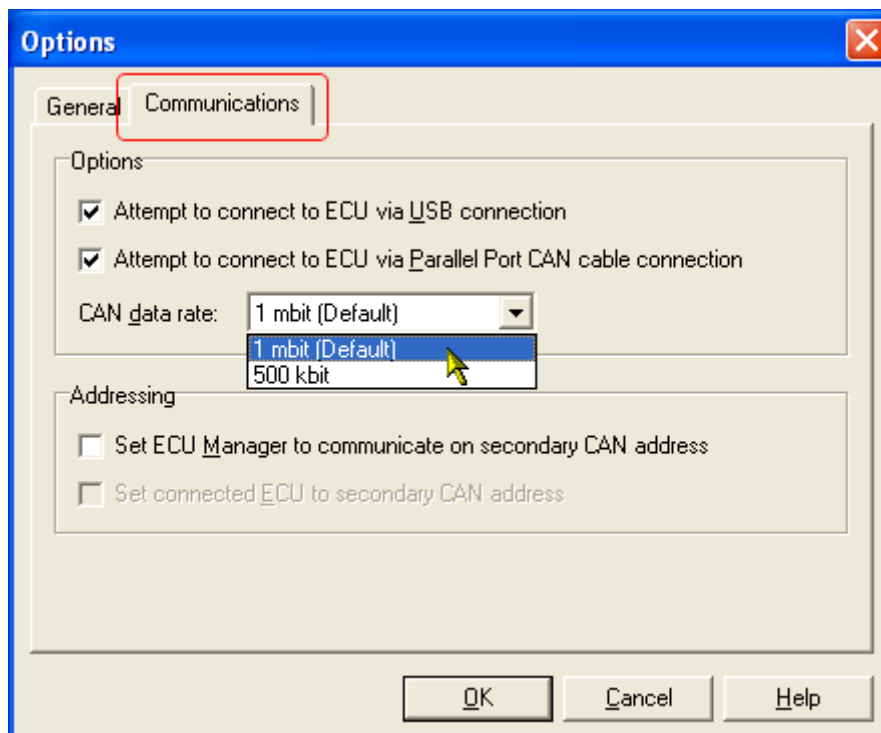
It is now necessary to set some communication parameters. Follow this path:

- Adjust –> General Setup –> Communications –> CAN Setup.
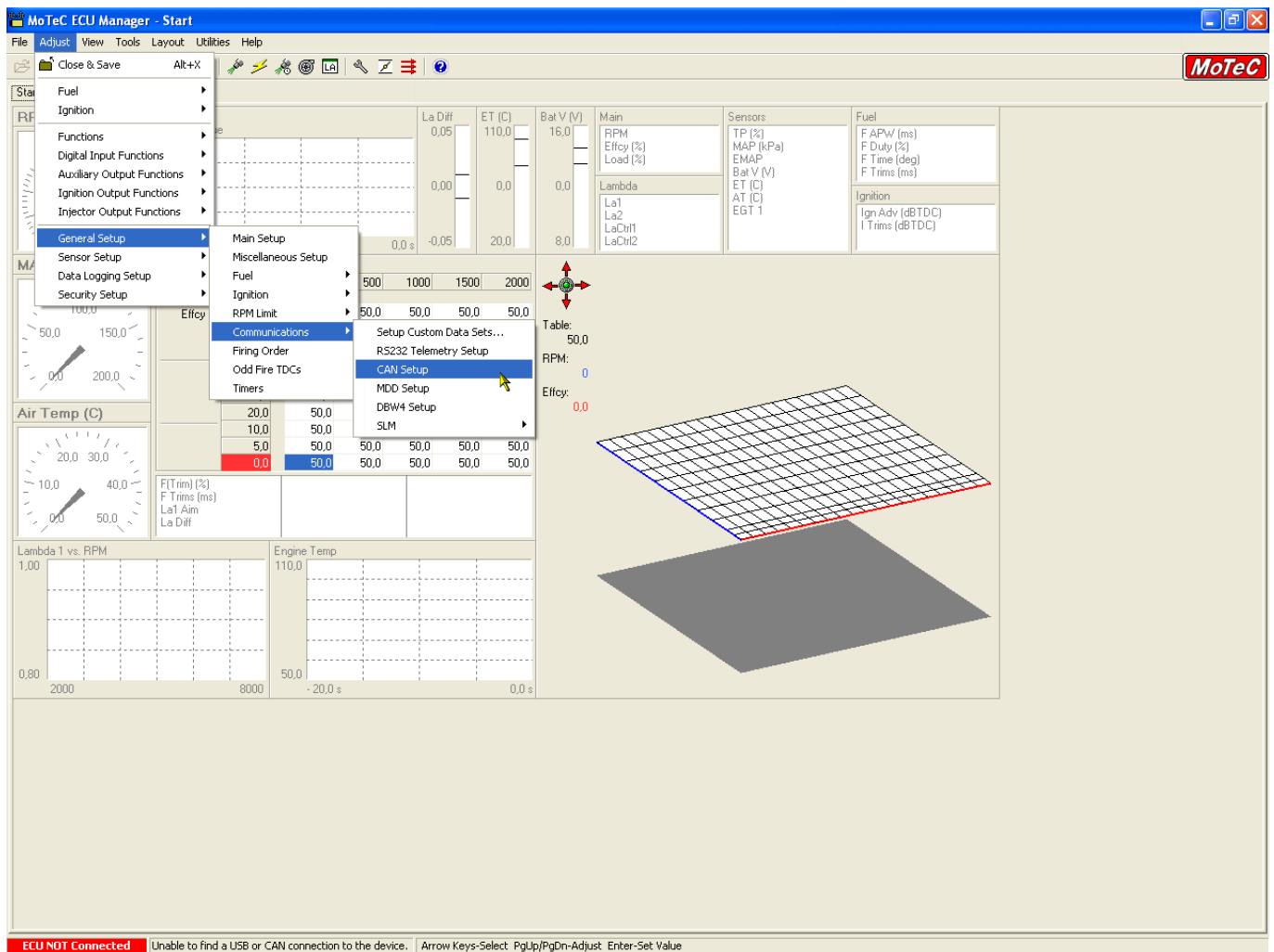
The window here below appears. The parameters to set are:

- CAN Data
- CAN Address

You can choose CAN 0 or CAN1 line and the other parameter is subsequent.

In the example below CAN 0 was chosen.

Start selecting the CAN line you want to use and right click on it selecting "Properties..." as shown below.
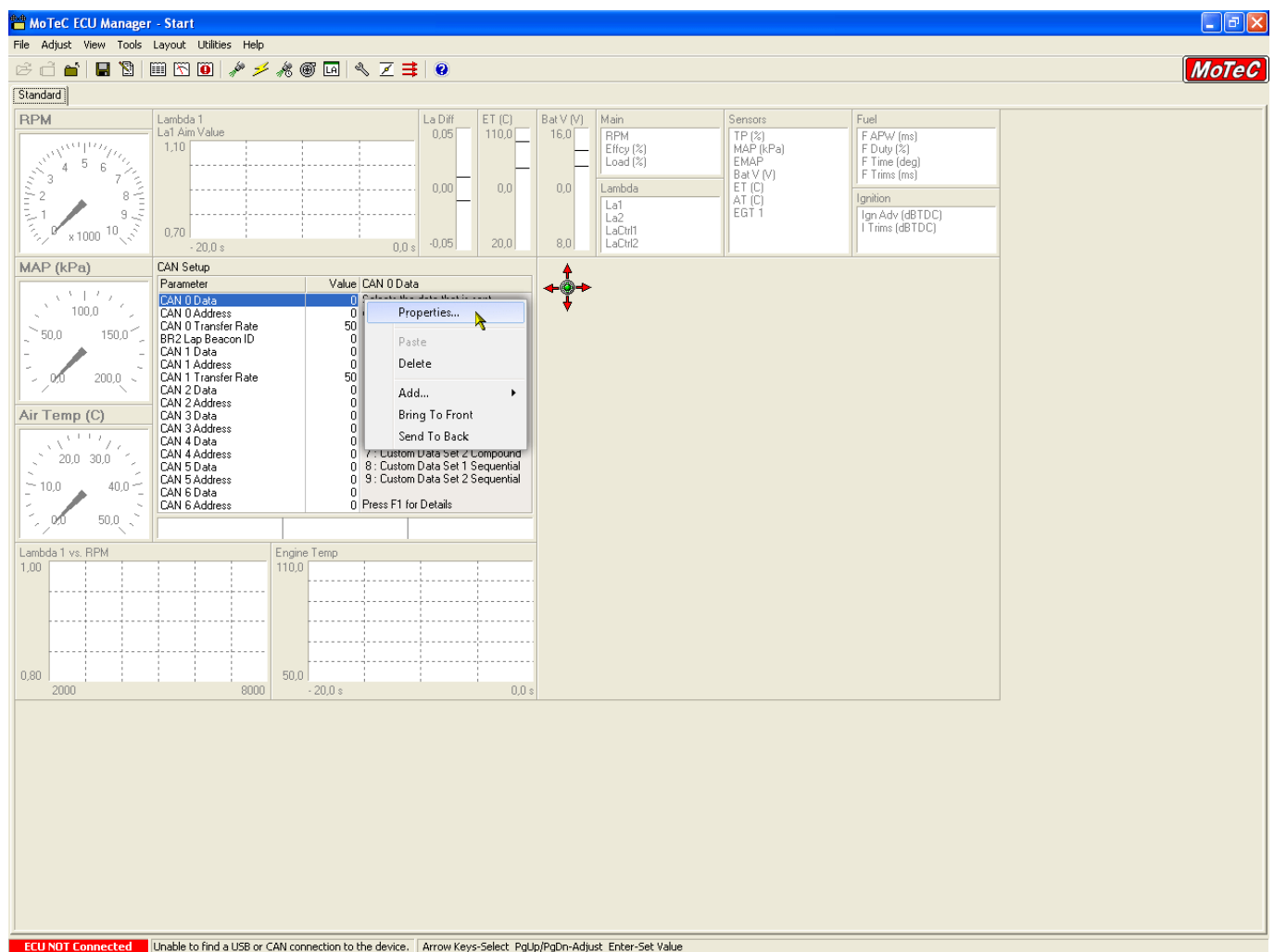
"Direct Entry" panel appears.

- fill in "1" and press "OK"
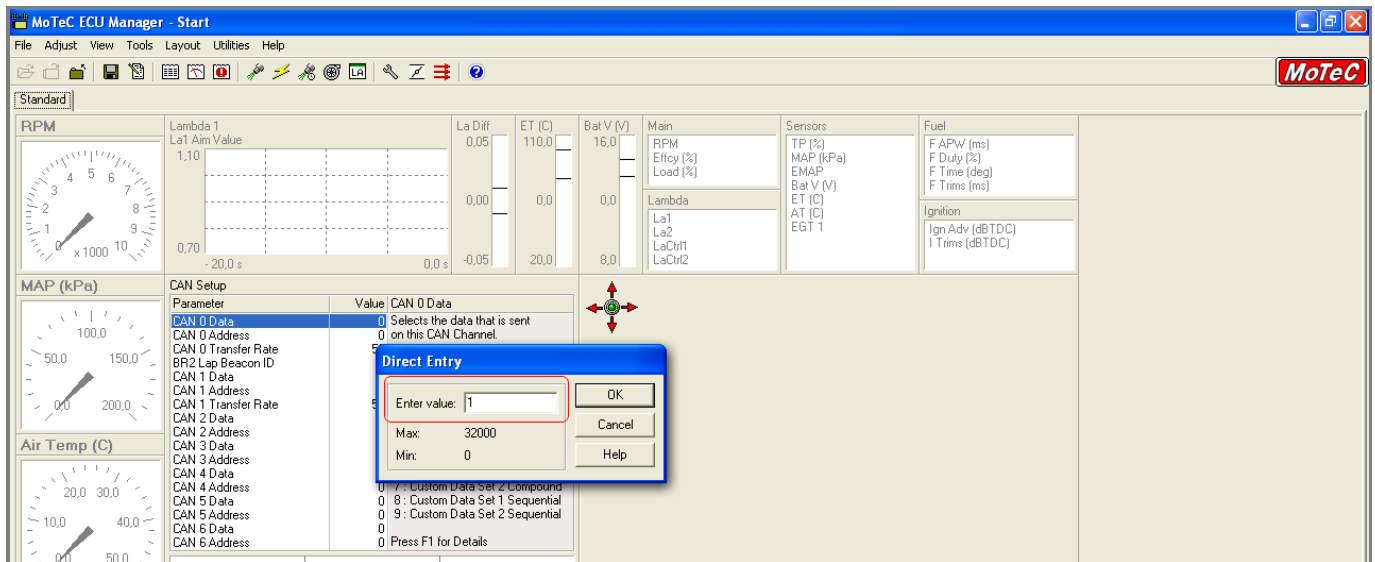
Then do the same with "CAN 0 Address"

- fill in 1520 and press "OK"
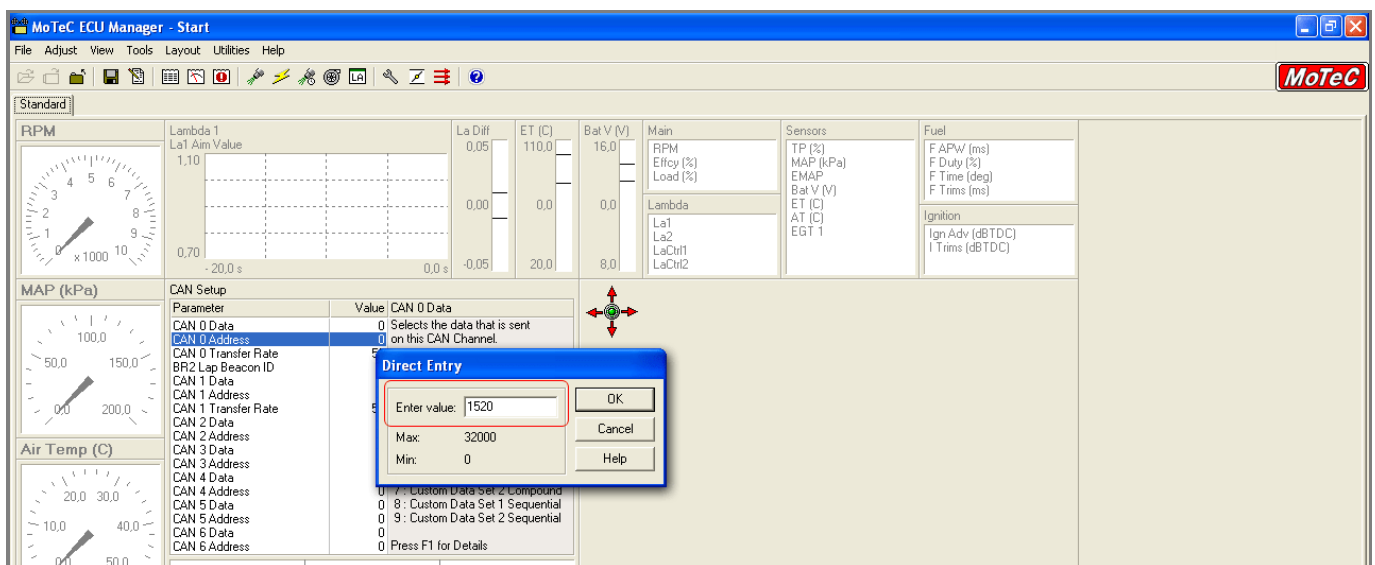
The software comes back to the main window. Save and close following this path:

- File –> Close & Save
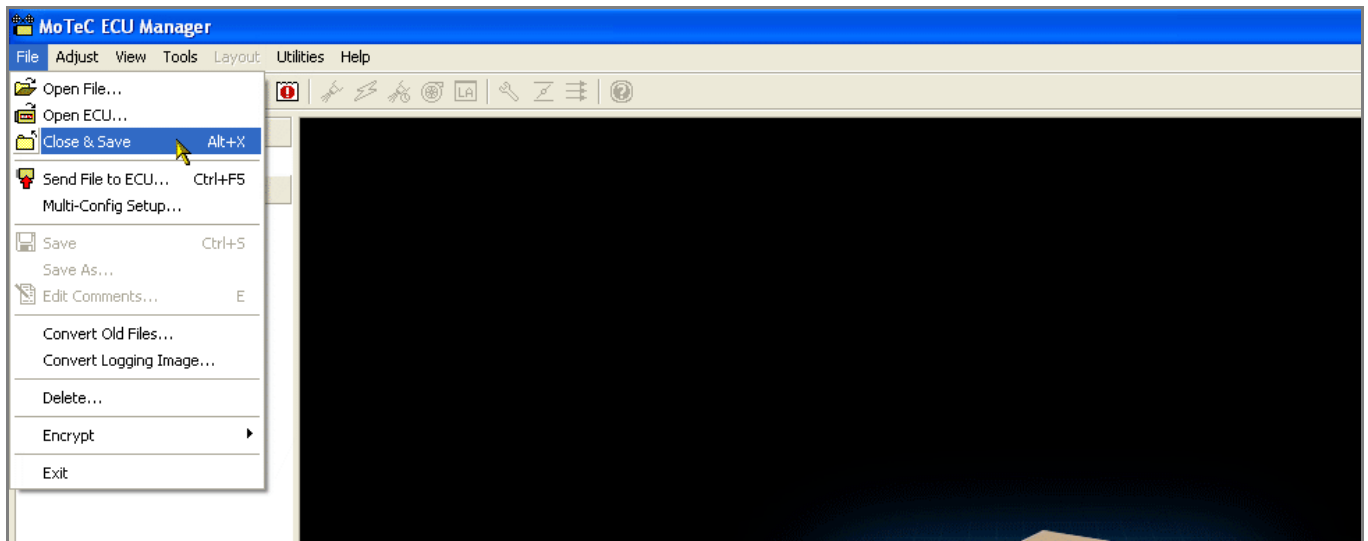
Transmit the configuration to the ECU following this path:

- File –> "Send file to ECU..."
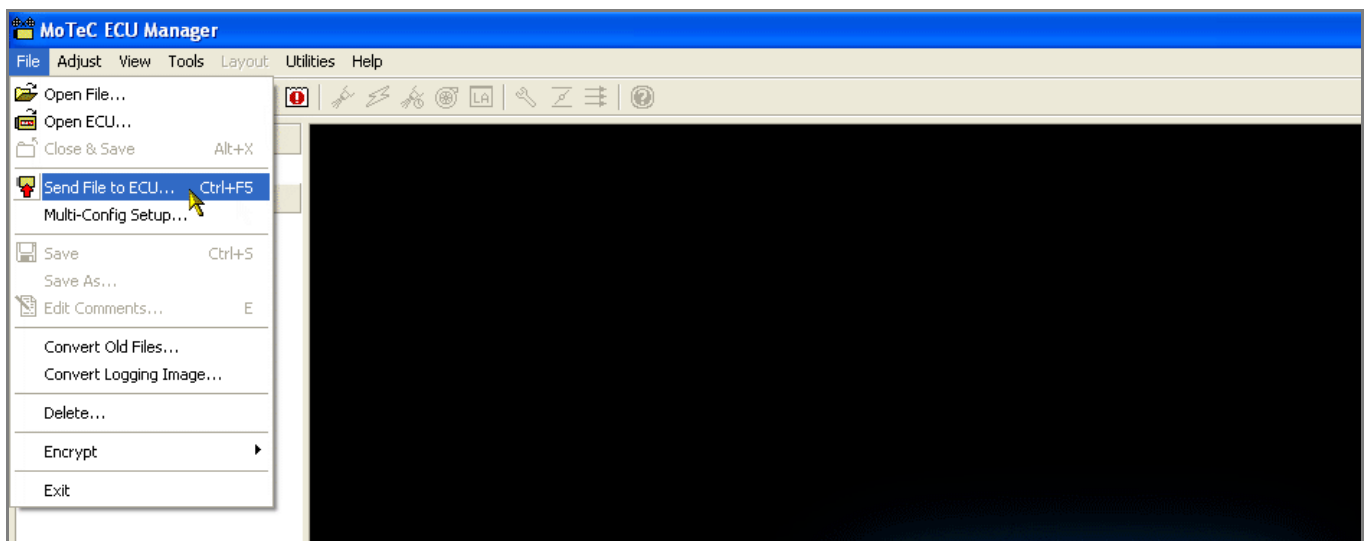
2
Wiring connection

For MoTec M400, M600 and M800 ECUs, it is possible to connect to AiM devices through the front male "B" connector (26pins; following left picture). Here below you find the 26pins "B" connector pinout and connection table.
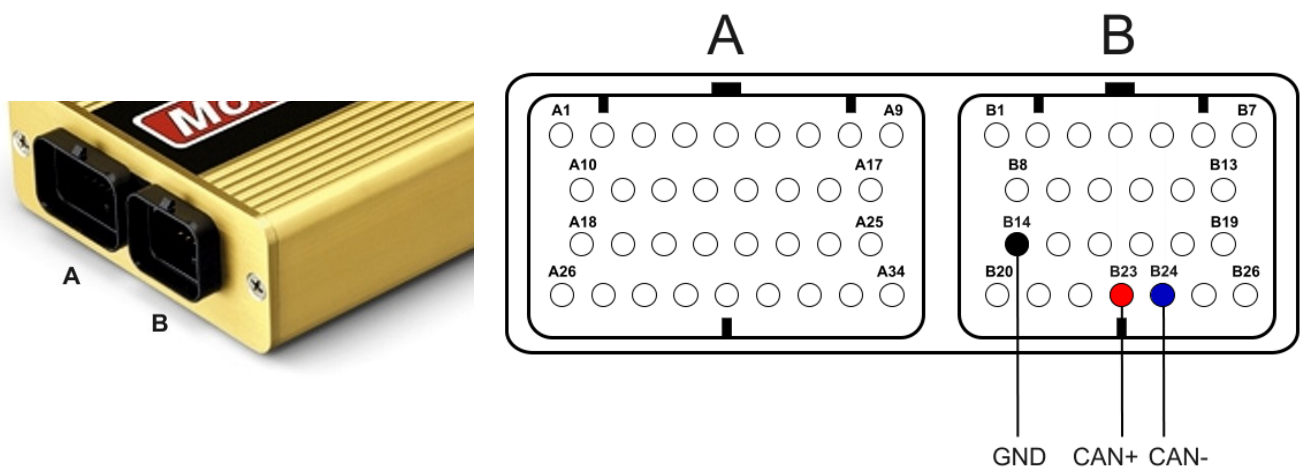
"B" connector pin	Pin function	AiM Cable
B23	CAN+	CAN+
B24	CAN-	CAN-
B14	GND	GND

Please note: this connection requires GND to be connected too.

3
AiM device configuration

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

- ECU manufacturer: **MoTec**
- ECU Model:

  - **M8XX-M600-M400** for ECU with firmware version lower than 2.30S
  - **M8XX-M600-M400-1M** for ECU with firmware version 2.30S onwards
  - **M8XX-M600-M400-1M_v3** for ECU with firmware version 3.x set to 1Mbit baud rate
  - **M8XX-M600-M400-500k_v3** for ECU with firmware version 3.x set to 500kbit baud rate

4
Protocols

Channels received by AiM devices change according to the selected protocol.

4.1
"MoTec – M8XX-M600-M400" protocol

Channels received by AiM loggers connected to "MoTec – M8XX-M400-M600" protocol are:

CHANNEL NAME	FUNCTION
M800 RPM	RPM
M800 THROTPOS	Throttle Position
M800 MANIFPRES	Manifold air pressure
M800 AIRTEMP	Intake air temperature
M800 ENGINE_TEMP	Engine temperature
M800 LAMBDA1	Lambda value 1
M800 LAMBDA2	Lambda value 2
M800 EXHAUST_PRESS	Exhaust gas pressure
M800 AIR CHARGE	Air/fuel ratio
M800 FUELTEMP	Fuel temperature
M800 FUELPRESS	Fuel pressure
M800 OILTEMP	Oil temperature
M800 OILPRESS	Oil pressure
M800 GEARVOLT	Gearshift voltage
M800 KNOCKVOLT	Knock sensor voltage
M800 GEARSHIFTFORCE	Gearshift force
M800 EXHTEMP1	Exhaust temperature 1
M800 EXHTEMP2	Exhaust temperature 2
M800 CHANN1	Custom channel 1

M800 CHANN2	Custom channel 2
M800 CHANN3	Custom channel 3
M800 CHANN4	Custom channel 4
M800 BATTVOLT	Battery supply
M800 ECUTEMP	ECU temperature
M800 SPEED1	Vehicle speed 1
M800 SPEED2	Vehicle speed 2
M800 SPEED3	Vehicle speed 3
M800 SPEED4	Vehicle speed 4
M800 GROUNDSPEED	Ground speed
M800 DRIVESPEED	Dashboard speed
M800 SLIP	Driven/dragged speed difference
M800 AIMSLIP	Target slip value
M800 LAUNCHRPM	RPM at launch
M800 GEAR	Engaged gear

4.2
"MoTec – M8XX-M600-M400-1M" protocol

Channels received by AiM loggers connected to "MoTec – M8XX-M400-M600-1M" protocol are:

CHANNEL NAME	FUNCTION
M800 RPM	RPM
M800 THROTPOS	Throttle position
M800 MANIFPRES	Manifold air pressure
M800 AIRTEMP	Intake air temperature
M800 ENGINE_TEMP	Engine temperature
M800 LAMBDA1	Lambda value 1
M800 LAMBDA2	Lambda value 2
M800 EXHAUST_PRESS	Exhaust gas pressure
M800 AIR CHARGE	Air/fuel ratio
M800 FUELTEMP	Fuel temperature
M800 FUELPRESS	Fuel pressure
M800 OILTEMP	Oil temperature
M800 OILPRESS	Oil pressure
M800 GEARVOLT	Gearshift voltage
M800 KNOCKVOLT	Knock sensor voltage
M800 GEARSHIFTFORCE	Gearshift force
M800 EXHTEMP1	Exhaust gas temperature 1
M800 EXHTEMP2	Exhaust gas temperature 2
M800 CHANN1	Custom channel 1
M800 CHANN2	Custom channel 2
M800 CHANN3	Custom channel 3
M800 CHANN4	Custom channel 4
M800 BATTVOLT	Battery supply
M800 ECUTEMP	ECU temperature
M800 SPEED1	Vehicle speed 1

M800 SPEED2	Vehicle speed 2
M800 SPEED3	Vehicle speed 3
M800 SPEED4	Vehicle speed 4
M800 GROUNDSPEED	Ground speed
M800 DRIVESPEED	Dashboard speed
M800 SLIP	Driven/dragged speed difference
M800 AIMSLIP	Target slip value
M800 LAUNCHRPM	RPM at launch
M800 GEAR	Engaged gear
M800 OILP PSI	Oil pressure in PSI
M800 FUELP PSI	Fuel pressure in PSI

4.3
"MoTec M8XX-M600-M400-1M_v3" protocol

Channel received by AiM loggers connected to "MoTec – M8XX-M400-M600-1M_v3" protocol are:

CHANNEL NAME	FUNCTION
M800 RPM	RPM
M800 THROTPOS	Throttle position sensor
M800 MANIFPRES	Manifold pressure
M800 AIRTEMP	Intake air temperature
M800 ENGINE_TEMP	Engine temperature
M800 LAMBDA1	Lambda value 1
M800 LAMBDA2	Lambda value 2
M800 EXHAUST_PRESS	Exhaust gas pressure
M800 AIR CHARGE	Air/fuel ratio
M800 FUELTEMP	Fuel temperature
M800 FUELPRESS	Fuel pressure
M800 OILTEMP	Oil temperature
M800 OILPRESS	Oil pressure
M800 GEARVOLT	Gear voltage
M800 KNOCKVOLT	Knock sensor voltage
M800 GEARSHIFTFORCE	Gearshift force
M800 EXHTEMP1	Exhaust gas temperature 1
M800 EXHTEMP2	Exhaust gas temperature 2
M800 CHANN1	Custom channel 1
M800 CHANN2	Custom channel 2
M800 CHANN3	Custom channel 3
M800 CHANN4	Custom channel 4
M800 BATTVOLT	Battery supply
M800 ECUTEMP	ECU temperature

M800 SPEED1	Vehicle speed 1
M800 SPEED2	Vehicle speed 2
M800 SPEED3	Vehicle speed 3
M800 SPEED4	Vehicle speed 4
M800 GROUNDSPEED	Ground speed
M800 DRIVESPEED	Dashboard speed
M800 SLIP	Driven/dragged speed difference
M800 AIMSLIP	Target slip value
M800 LAUNCHRPM	RPM at launch
M800 GEAR	Engaged gear
M800 OILP PSI	Oil Pressure in PSI
M800 FUELP PSI	FUEL Pressure in PSI

4.4
MoTeC M8XX-M600-M400-500K_v3 protocol

Channel received by AiM loggers connected to "MoTec – M8XX-M400-M600-500K_v3" protocol are:

CHANNEL NAME	FUNCTION
M800 RPM	RPM
M800 THROTPOS	Throttle position
M800 MANIFPRES	Manifold air pressure
M800 AIRTEMP	Intake air temperature
M800 ENGINE_TEMP	Engine temperature
M800 LAMBDA1	Lambda value 1
M800 LAMBDA2	Lambda value 2
M800 EXHAUST_PRESS	Exhaust gas pressure
M800 AIR CHARGE	Air/fuel ratio
M800 FUELTEMP	Fuel temperature
M800 FUELPRESS	Fuel pressure
M800 OILTEMP	Oil temperature
M800 OILPRESS	Oil pressure
M800 GEARVOLT	Gear voltage
M800 KNOCKVOLT	Knock sensor voltage
M800 GEARSHIFTFORCE	Gearshift force
M800 EXHTEMP1	Exhaust gas temperature 1
M800 EXHTEMP2	Exhaust gas temperature 2
M800 CHANN1	Custom channel 1
M800 CHANN2	Custom channel 2
M800 CHANN3	Custom channel 3
M800 CHANN4	Custom channel 4
M800 BATTVOLT	Battery supply
M800 ECUTEMP	ECU temperature
M800 SPEED1	Vehicle speed 1

M800 SPEED2	Vehicle speed 2
M800 SPEED3	Vehicle speed 3
M800 SPEED4	Vehicle speed 4
M800 GROUNDSPEED	Ground speed
M800 DRIVESPEED	Dashboard speed
M800 SLIP	Driven/dragged speed difference
M800 AIMSLIP	Target slip value
M800 LAUNCHRPM	RPM at launch
M800 GEAR	Engaged gear
M800 OILP PSI	Oil Pressure in PSI
M800 FUELP PSI	FUEL Pressure in PSI