ECUMASTER ADU

Application Note

MoTeC M1 Series

Revision 1.01

1. Copyright and trademarks

2. Introduction

This application note explains how to connect and configure the ADU with MoTeC M1 series ECUs:

- M130
- M142
- M150
- M170
- M182
- M190

3. Electrical connection

All M1 series MoTec ECUs are able to select 1Mbps or 500kbps CAN Bus speed.
The user may select which ECU CAN network is used for sending the standard CAN stream.
When the bus speed is 1Mbps, either ADU CAN may be used. When the speed is 500kbps or lower, only ADU CAN2 may be used.

M130	ADU CAN1	ADU CAN2	Comment
B18	4	6	CAN L, ECU CAN1
B17	3	5	CAN H, ECU CAN1

M142/M150	ADU CAN1	ADU CAN2	Comment
D18	4	6	CAN L, ECU CAN1
D17	3	5	CAN H, ECU CAN1
A31	4	6	CAN L, ECU CAN2
A30	3	5	CAN H, ECU CAN2
A29	4	6	CAN L, ECU CAN3
A28	3	5	CAN H, ECU CAN3

M170	ADU CAN1	ADU CAN2	Comment
A31	4	6	CAN L, ECU CAN1
A40	3	5	CAN H, ECU CAN1

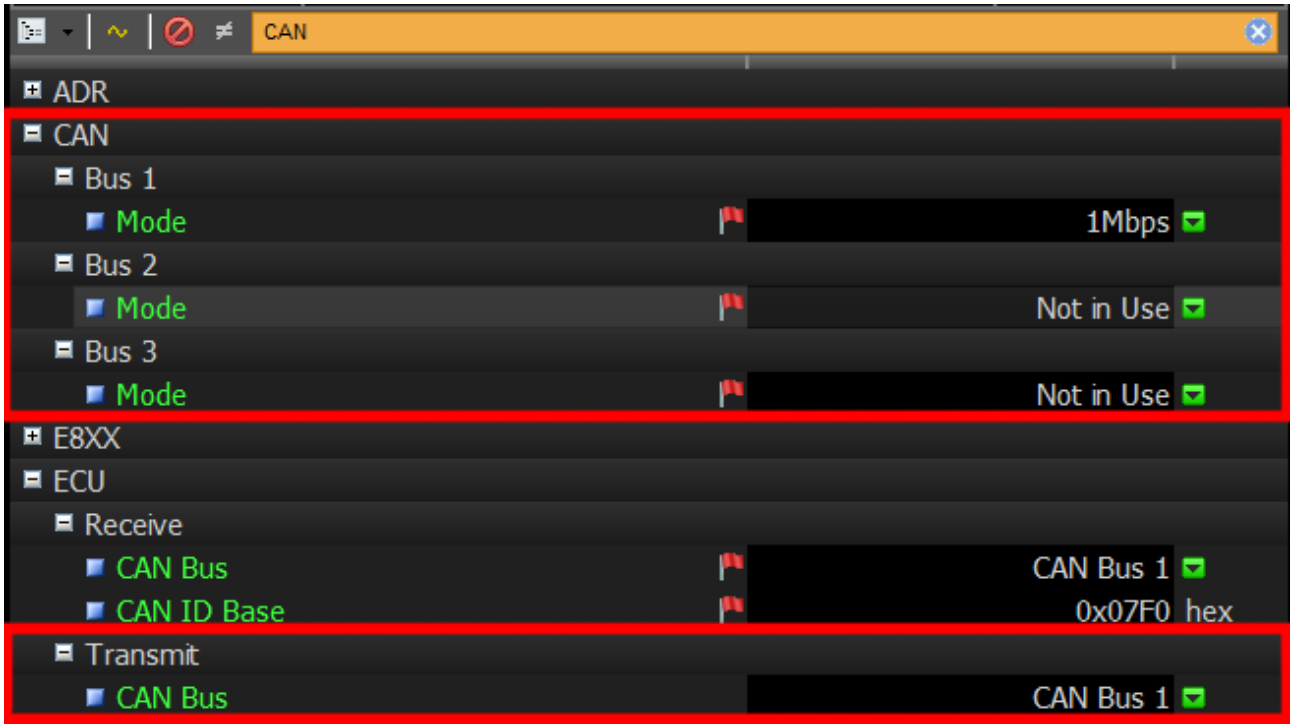
M181/M182/M190	ADU CAN1	ADU CAN2	Comment
C31	4	6	CAN L, ECU CAN1
C24	3	5	CAN H, ECU CAN1
A31	4	6	CAN L, ECU CAN2
A24	3	5	CAN H, ECU CAN2
A46	4	6	CAN L, ECU CAN3
A39	3	5	CAN H, ECU CAN3

Twisted pair cable is required for any CAN BUS connection!

Ensure that the CAN BUS is properly terminated!

4. ADU and MoTeC M1 ECU configuration

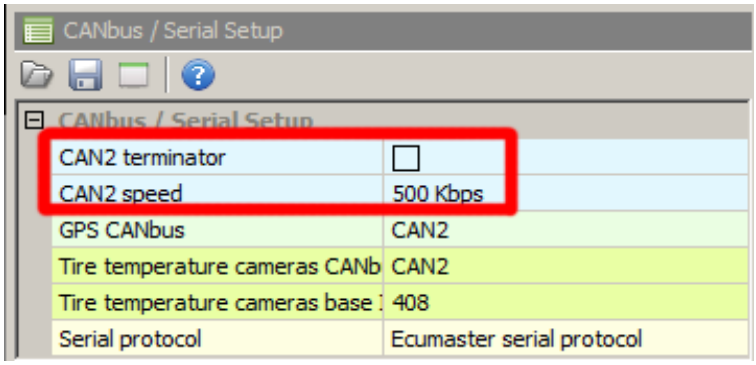
The first step is to enable the MoTeC standard output stream. Please enter CAN in the "*All calibrate"* search field.



The "ECU/Transmit" option defines which MoTec M1 CAN Bus should be used for sending standard data stream. The speed of CAN Bus can be set in option: CAN/Bus1, CAN/Bus2 and CAN/Bus3.

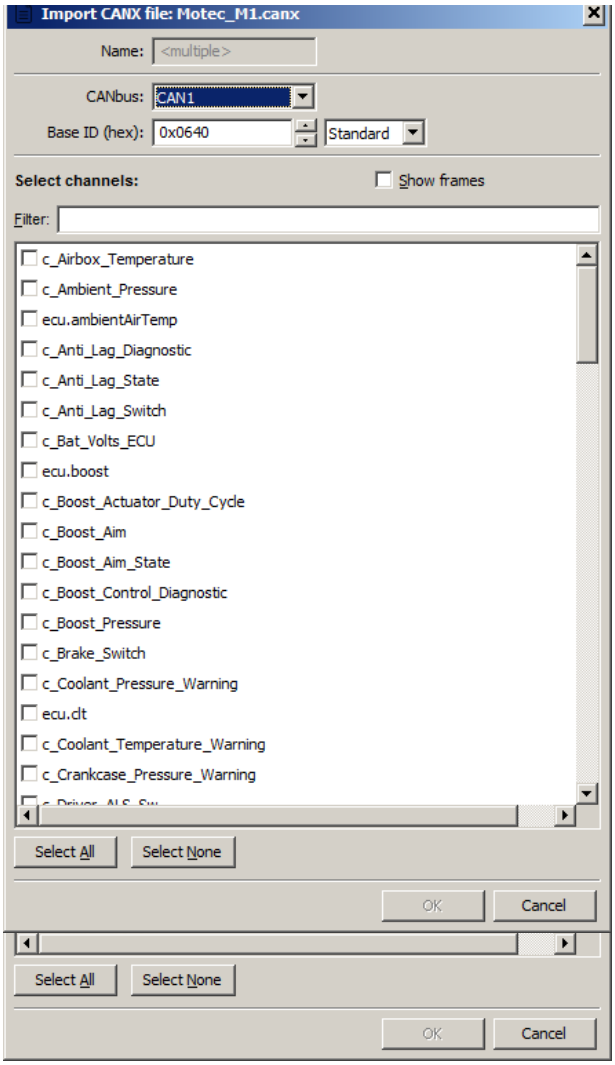
The ADU CAN1 bus has a fixed speed of 1Mbps and cannot be changed. If you connect the MoTec M1 ECU to ADU CAN2, the appropriate CAN bus speed must be selected (must be set to the same speed as the MoTec ECU).

To open CAN2 configuration, press F9 to show the pane selector. Then open "*General / CAN BUS Serial setup".* Select the appropriate CAN2 speed and termination.

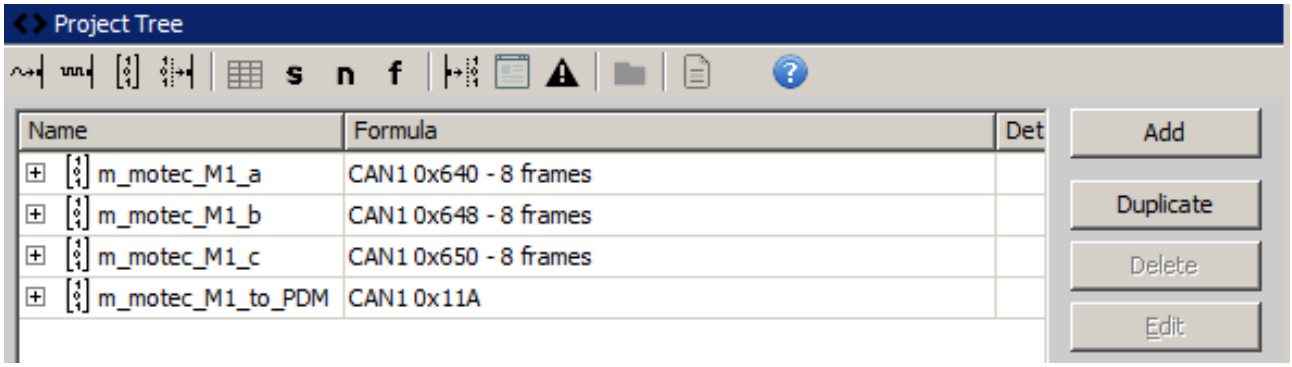


Next, load the *CANX* file with MoTeC M1 channel definitions.

In the Project tree click the "Add" button and select "Import .CANX file". When the file dialog opens, select "*Motec_M1.canx* file".



At this point, select the CAN BUS that will be used for communication (CAN1 or CAN2) and the channels you want to read. In most situations all channels should be loaded (Select All). The project tree should look like the following:



If you open "*m_motec_M1_a, m_motec_M1_b, m_motec_M1_c, m_motec_M1_to_PDM* mob", all available CAN inputs are visible.

5. Supported channels

ADU channel	Description
ecu.ambientAirTemp	Ambient air temperature
ecu.baro	Barometric pressure (ambient pressure)
ecu.battery	Battery voltage
ecu.boost	Boost level
ecu.clt	Engine coolant temperature
ecu.fuelPress	Fuel pressure
ecu.fuelTemp	Fuel temperature
ecu.gear	Current gear
ecu.gearboxOilTemp	Gearbox oil temperature
ecu.iat	Intake manifold temperature
ecu.ignAngle	Ignition advance
ecu.lambda1	Lambda from oxygen sensor #1
ecu.lambda2	Lambda from oxygen sensor #2
ecu.map	Manifold absolute pressure
ecu.oilPress	Engine oil pressure
ecu.oilTemp	Engine oil temperature
ecu.rpm	Engine RPM
ecu.speed	Vehicle speed
ecu.tps	Throttle position sensor
c_Airbox_Temperature	Airbox temperature
c_Anti_Lag_Diagnostic	Anti lag diagnostic
c_Anti_Lag_State	Anti lag state
c_Anti_Lag_Switch	Anti lag switch state
c_Boost_Actuator_Duty_Cycle	Boost actuator DC
c_Boost_Aim	Boost aim
c_Boost_Aim_State	Boost aim state
c_Boost_Control_Diagnostic	Boost control diagnostic
c_Brake_Switch	Brake switch
c_Coolant_Pressure_Warning	Coolant pressure warning
c_Coolant_Temperature_Warning	Coolant temperature warning
c_Crankcase_Pressure_Warning	Crankcase pressure warning
c_Driver_ALS_Sw	Driver ALS switch state
c_Driver_Gear_Lever	Gear lever force
c_ECU_Uptime	ECU uptime

c_Engine_Load_Average	Average engine load
c_Engine_OilPressureLow_Switch	Oil pressure switch state
c_Engine_Oil_Pressure_Warning	Oil pressure warning
c_Engine_Oil_Temp_Warning	Oil temperature warning
c_Engine_Overrun_State	Engine overrun state
c_Engine_Run_Time	Engine run time
c_Engine_Speed_Limit_Ignition	Engine speed limit ignition
c_Engine_Speed_Limit_State	Engine speed limit state
c_Engine_Speed_Reference_State	Engine speed reference state
c_Engine_Speed_Warning	Engine speed warning
c_Engine_State	Engine state
c_Exhaust_Temperature	Engine exhaust temperature
c_Fuel_Closed_Loop_Diagnostic	Fuel closed loop diagnostic
c_Fuel_Closed_Loop_State	Fuel closed loop state
c_Fuel_Cut_State	Fuel cut state
c_Fuel_Diagnostic	Fuel diagnostic
c_Fuel_Level	Fuel level in litres
c_Fuel_Pressure_Warning	Fuel pressure warning
c_Fuel_Pump_State	Fuel pump state
c_Fuel_Timing	Fuel timing
c_Fuel_Used_M1	Fuel used
c_Ignition_Switch	Ignition switch state
c_Knock_State	Knock state
c_Knock_Warning	Knock warning
c_Launch_Diagnostic	Launch diagnostic
c_Launch_State	Launch state
c_Launch_Switch	Launch switch state
c_Neutral_Switch	Neutral switch
c_PDM_Byte_0_Mask_01	PDM Byte 0 Mask 01
c_PDM_Byte_0_Mask_02	PDM Byte 0 Mask 02
c_PDM_Byte_0_Mask_04	PDM Byte 0 Mask 04
c_PDM_Byte_0_Mask_08	PDM Byte 0 Mask 08
c_PDM_Byte_0_Mask_10	PDM Byte 0 Mask 10
c_PDM_Byte_0_Mask_20	PDM Byte 0 Mask 20
c_PDM_Byte_0_Mask_40	PDM Byte 0 Mask 40
c_PDM_Byte_0_Mask_80	PDM Byte 0 Mask 80
c_PDM_Byte_1_Mask_01	PDM Byte 1 Mask 01
c_PDM_Byte_1_Mask_02	PDM Byte 1 Mask 02

c_PDM_Byte_1_Mask_04	PDM Byte 1 Mask 04
c_PDM_Byte_1_Mask_08	PDM Byte 1 Mask 08
c_PDM_Byte_1_Mask_10	PDM Byte 1 Mask 10
c_PDM_Byte_1_Mask_20	PDM Byte 1 Mask 20
c_PDM_Byte_1_Mask_40	PDM Byte 1 Mask 40
c_PDM_Byte_1_Mask_80	PDM Byte 1 Mask 80
c_PDM_Byte_2_Mask_01	PDM Byte 2 Mask 01
c_PDM_Byte_2_Mask_02	PDM Byte 2 Mask 02
c_PDM_Byte_2_Mask_04	PDM Byte 2 Mask 04
c_PDM_Byte_2_Mask_08	PDM Byte 2 Mask 08
c_PDM_Byte_2_Mask_10	PDM Byte 2 Mask 10
c_PDM_Byte_2_Mask_20	PDM Byte 2 Mask 20
c_PDM_Byte_2_Mask_40	PDM Byte 2 Mask 40
c_PDM_Byte_2_Mask_80	PDM Byte 2 Mask 80
c_Pit_Switch	Pit limiter switch
c_Throttle_Aim_State	Throttle aim state
c_Throttle_Pedal	Throttle pedal
c_Traction_Switch	Traction control switch
c_Warning_Source	Warning source
c_Wheel_Speed_FL	Wheel speed front left
c_Wheel_Speed_FR	Wheel speed front right
c_Wheel_Speed_RL	Wheel speed rear left
c_Wheel_Speed_RR	Wheel speed rear right

6. Revision log

1.01

- ADU CAN terminals description fixed