

TECH NOTE

Configuring CAN BUS communication between EMU BLACK or EMU CAN and PMU16



Introduction

EMU output control (eg. coolant fan control fuel pump, start/stop, etc) may be done through the PMU using CAN BUS, simplifying the vehicle electrical system.

Requirements

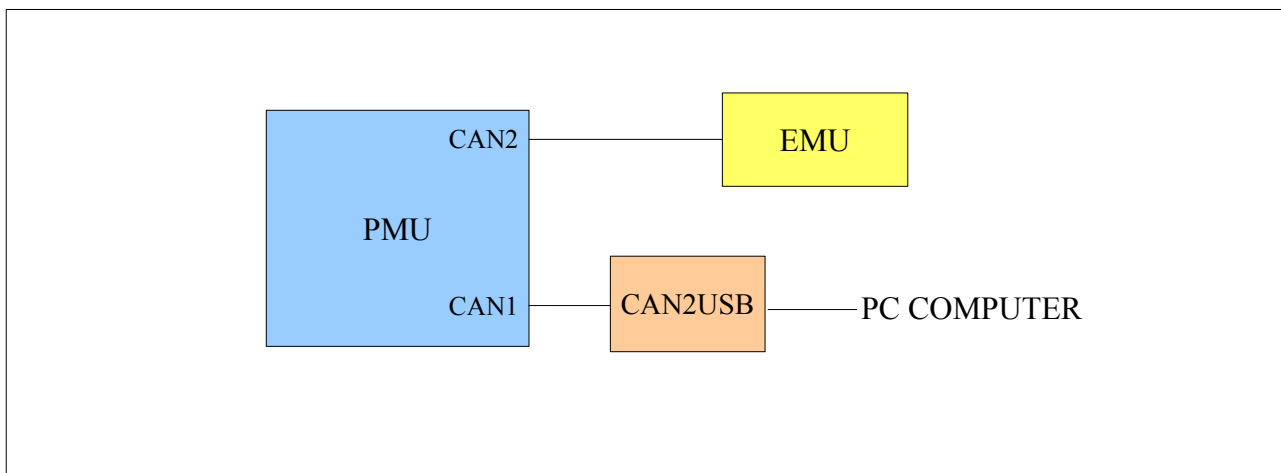
For EMU BLACK firmware 2.045 or higher is required.

For EMU firmware 1.188 or higher is required

For PMU firmware 0.0265.0 or higher is required

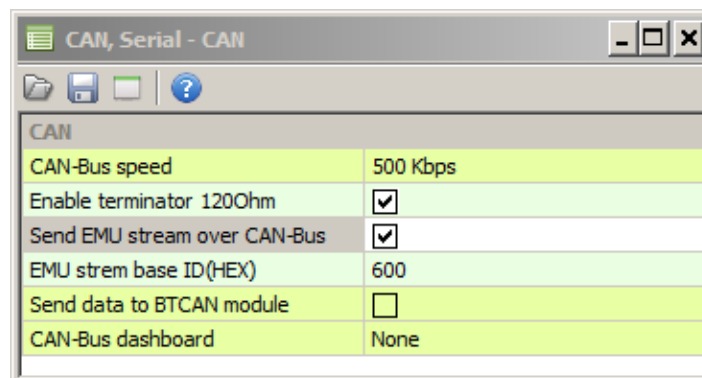
Connection diagram

First, connect the EMU and PMU via CAN BUS. Here is an example of that connection.



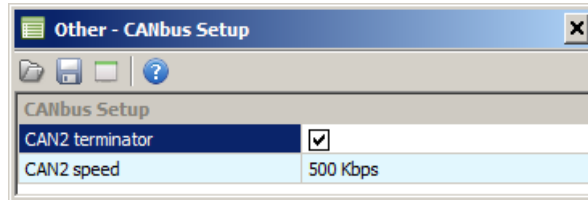
Next, set the correct CAN BUS speed. In this example we use 500kbps and termination on both devices. Remember to use twisted pair cables to connect any CAN BUS devices!

For EMU BLACK the configuration of CAN should look like the following:

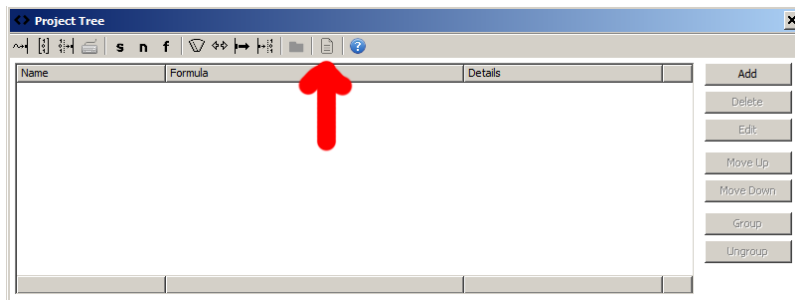


It is critical that you enable “Send EMU stream over CAN-Bus”. This activates the EMU standard CAN stream with critical ECU parameters like RPM, CLT, state of coolant fan, fuel pump, etc. More information about the EMU standard stream can be found in help menus of the EMU software. Another important parameter is EMU stream base ID. In this example the value is 0x600 and is the default CAN stream ID.

On the PMU side, CAN#2 input must be configured

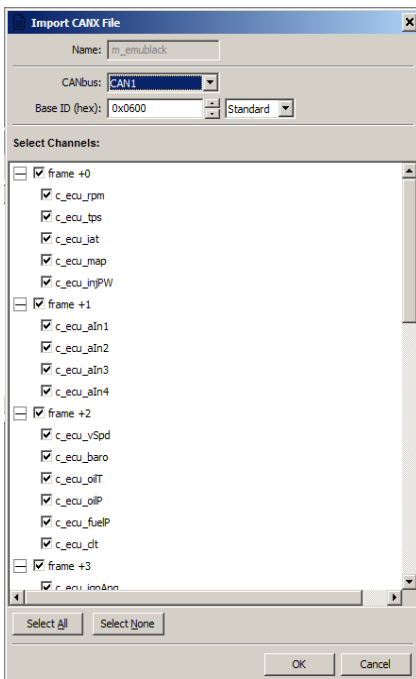


The next step is to import the *canx* file into the PMU by pressing the indicated icon.



Next select **EMU_BLACK.canx** file (for both classic EMU and EMU BLACK)

A selection window will appear:



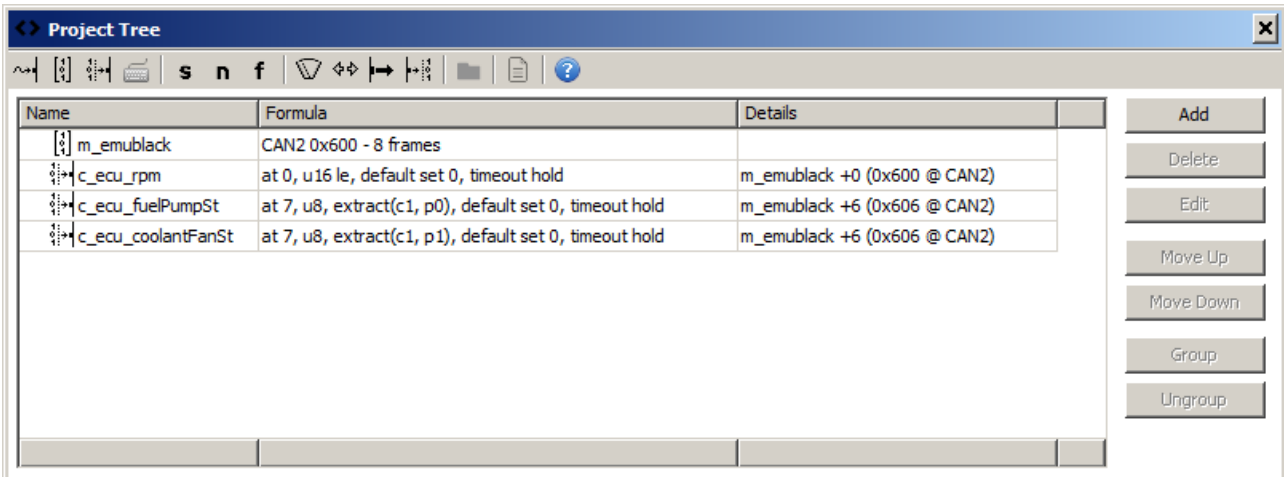
First select the proper CAN BUS input (CAN2)

Base ID must be the same as Base ID in EMU Black (in our example it is 0x600).

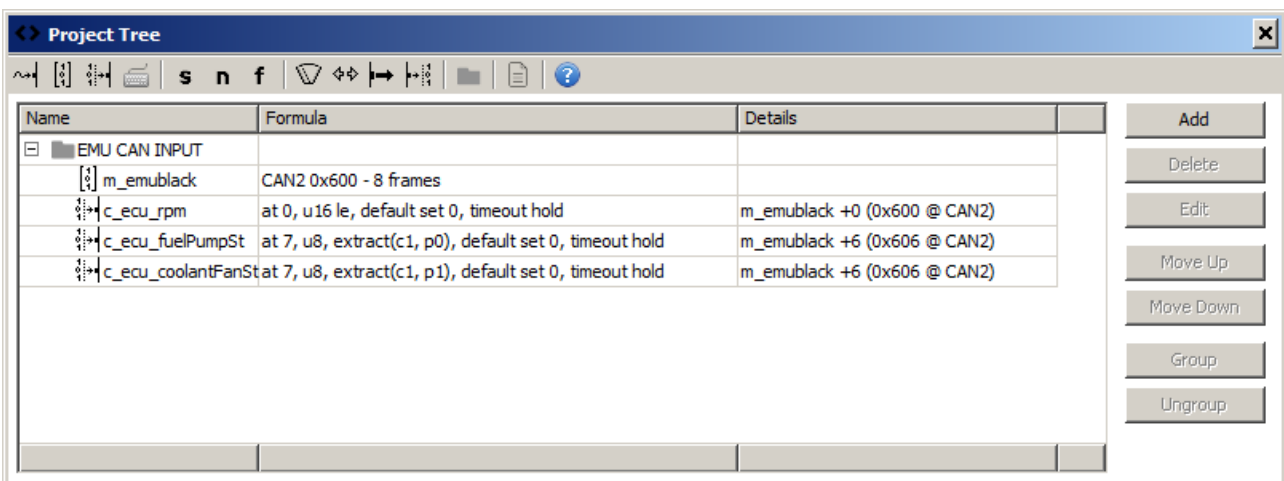
Next mark the channels that you want to use in the PMU.

In our example we select c_ecu_rpm, c_ecu_fuelPumpSt, and c_ecu_coolantFanSt.

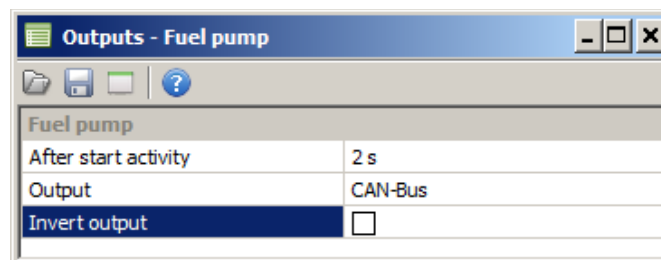
The project tree should look like this:



You can use Group to make the project more clear. Select all elements and press Group button. Then set the group name. In our example it is EMU CAN INPUT



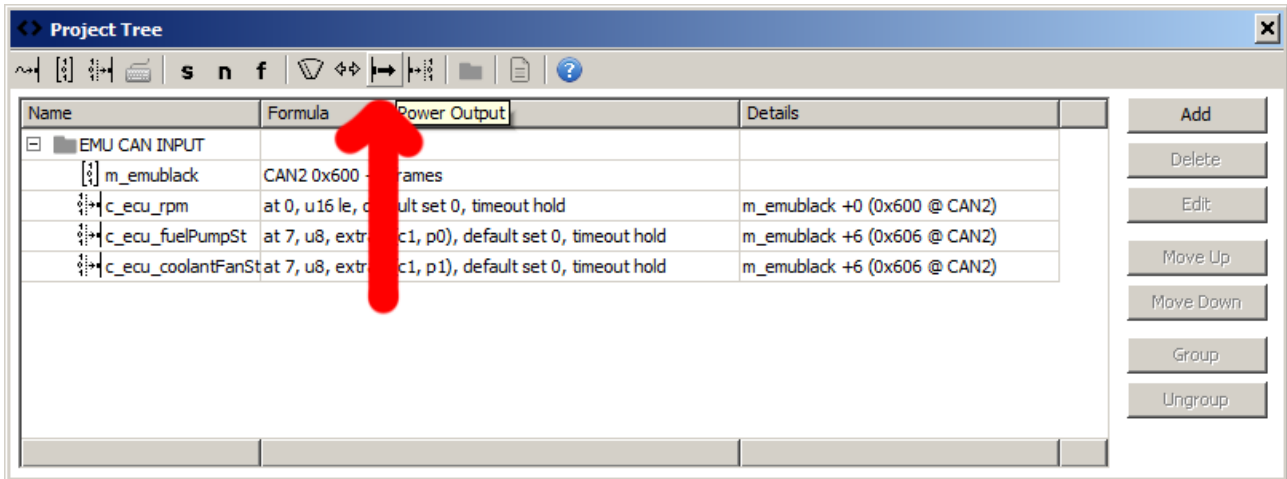
To use CAN output in EMU BLACK you need to select CAN BUS output for the strategy. For example fuel pump control:



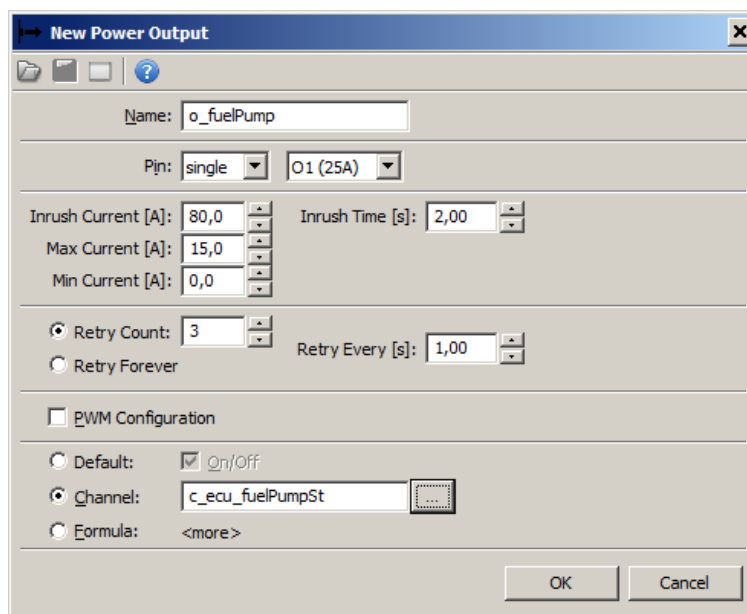
Now you can use data from EMU ECU.

Activation of fuel pump based on EMU request:

First add power output by clicking icon on the toolbar



The configuration window:



Set output name and configure the currents. As you can see in the picture above, Channel **c_ecu_fuelPumpSt** is used for output activation. Press F4 or click the button to select the channel from a list.

Here is an example of a shift light output that will activate when engine RPM are above 9000.

The screenshot shows the 'New Power Output' dialog box with the following configuration:

- Name: o_revLimiterLight
- Pin: single, O6 (15A)
- Inrush Current [A]: 10,0
- Inrush Time [s]: 1,00
- Max Current [A]: 5,0
- Min Current [A]: 0,0
- Retry Count: 3
- Retry Every [s]: 1,00
- PWM Configuration
- Default: On/Off
- Channel: [Empty]
- Formula:


```
value =
c_ecu_rpm > 9000
and ...
or
...
```

In this case the following formula is used: ***c_ecu_rpm > 9000***