# SETUP GUIDE



## MoTeC LTC to CD Dash

## Supported Devices

### MoTeC LTC / LTCD / LTC NGK / LTCD NGK

## CAN Bus Wiring

AEM CD has 2 separate CAN ports. For 3rd party devices, AEM recommends you use AEM CAN Bus 2, whose connections are contained in a 2 pin Deutsch DTM connector. On older harnesses it may be in an unterminated, twisted/shielded flying lead in the dash harness.

MoTeC LTC (CAN HIGH) →  AEM CD "CAN 2" Pin 1 (CAN 2+), Gray wire in twisted/shielded pair
MoTeC LTC (CAN LOW) → AEM CD "CAN 2" Pin 2 (CAN 2-), Black wire in twisted/shielded pair

The AEM CD Dash has a software selectable CAN termination resistor. Each network needs 2 terminating resistors, one at each end. The LTC wideband does not have an internal terminating resistor and relies on external Terminating plugs. You can either use those or replace one of them with the internal CD Dash resistor. You must have 2 in total, one at each end of the network.

## MoTeC LTC Software Setup

The MoTeC LTC Manager software is not required if using a single LTC or LTCD unit pre-configured by MoTeC. The DBC file provided for the LTC/LTCD by AEM matches this default configuration.

## Supported Channels

The AEM CD Dash supports 16 unique channels transmitted from the MoTeC LTC and 32 from the LTCD.

| CH | CD Dash CHANNEL NAME | CH | CD Dash CHANNEL NAME |
|---|---|---|---|
| 1 | LTC1_BattVolts_raw | 17 | LTC2_BattVolts_raw |
| 2 | LTC1_HeaterDutyCycle_raw | 18 | LTC2_HeaterDutyCycle_raw |
| 3 | LTC1_HeaterFailedtoHeat_raw | 19 | LTC2_HeaterFailedtoHeat_raw |
| 4 | LTC1_HeaterOpenCircuit_raw | 20 | LTC2_HeaterOpenCircuit_raw |
| 5 | LTC1_HeaterShorttoGND_raw | 21 | LTC2_HeaterShorttoGND_raw |
| 6 | LTC1_HeaterShorttoVBATT_raw | 22 | LTC2_HeaterShorttoVBATT_raw |
| 7 | LTC1_Index_raw | 23 | LTC2_Index_raw |
| 8 | LTC1_InternalFault_raw | 24 | LTC2_InternalFault_raw |
| 9 | LTC1_InternalTemp_Raw | 25 | LTC2_InternalTemp_Raw |
| 10 | LTC1_Ip_raw | 26 | LTC2_Ip_raw |
| 11 | LTC1_Ipn_raw | 27 | LTC2_Ipn_raw |
| 12 | LTC1_Lambda_raw | 28 | LTC2_Lambda_raw |
| 13 | LTC1_Ri_raw | 29 | LTC2_Ri_raw |
| 14 | LTC1_SensorControlFault_raw | 30 | LTC2_SensorControlFault_raw |
| 15 | LTC1_SensorState_raw | 31 | LTC2_SensorState_raw |
| 16 | LTC1_SensorWireShort_raw | 32 | LTC2_SensorWireShort_raw |

# AEM Setup in DashDesign

AEM has provided some pre-configured layouts that can be easily adapted to accept, display and log (if using logging version of CD Dash) the CAN bus channel data from a MoTeC LTC or LTCD. The following steps will show you how to quickly setup your LTC/LTCD to work with an existing AEM DashDesign Layout. A MoTeC LTC was used for this example but the same steps would be used to setup a LTCD / LTC NGK / LTCD NGK.
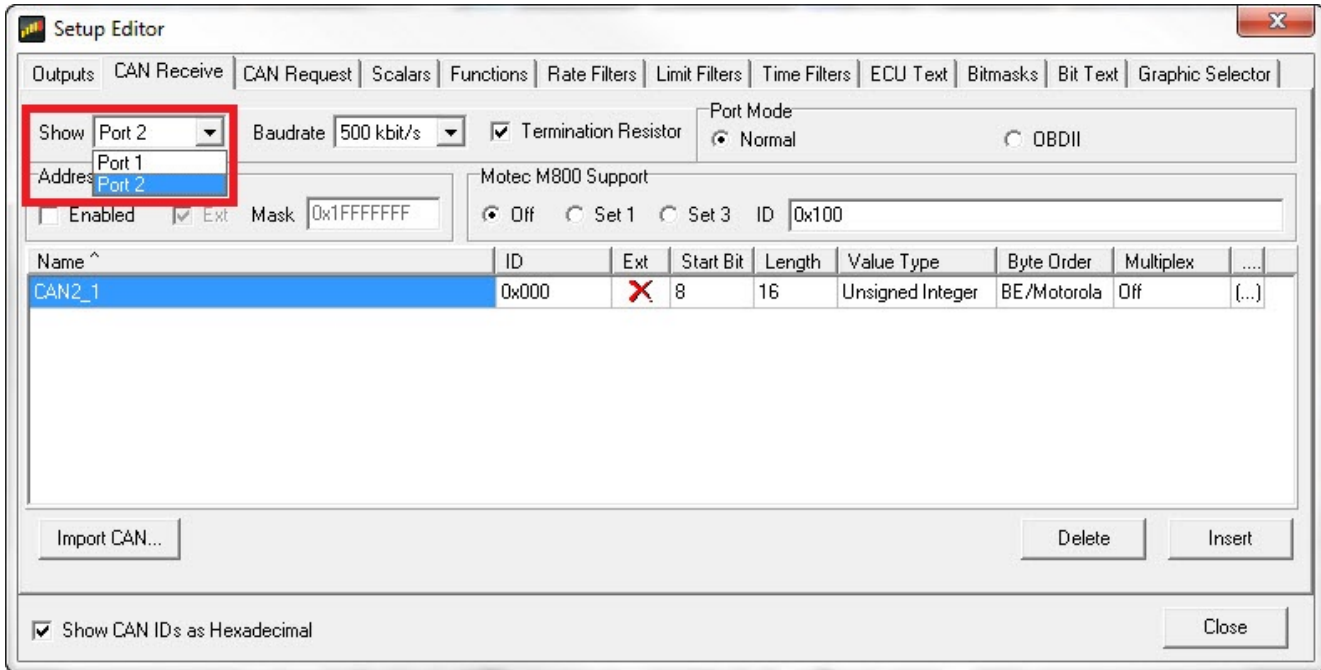
1. Visit www.aemelectronics.com/forum and scroll down to the CD Dash forum. This is a great place to find answers to all AEM Dash related questions you may have.
2. Open your layout in AEM DashDesign.
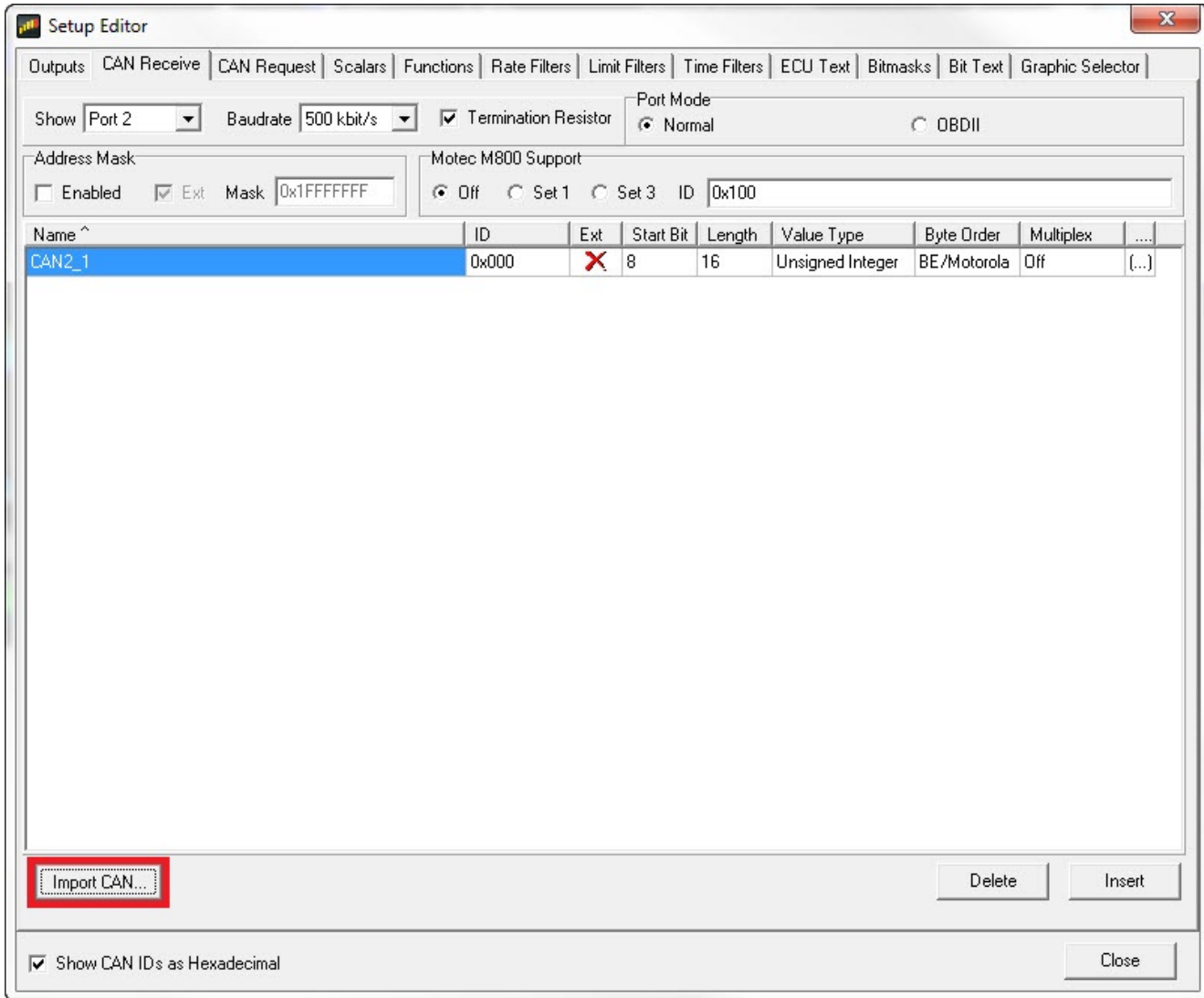3. Click the "Setup" drop down and then select "**Display…**".

# SETUP GUIDE
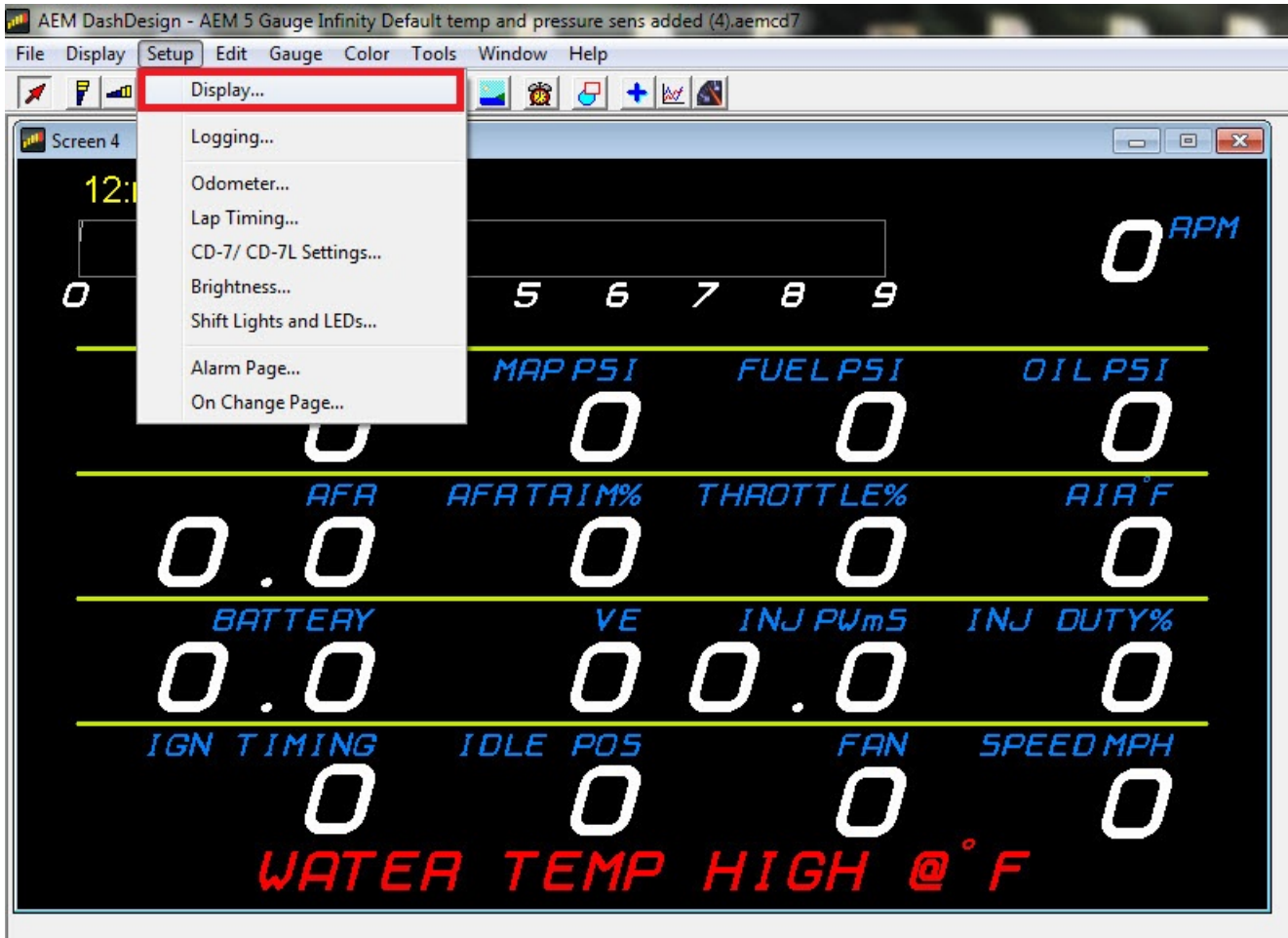


4. Under the "**CAN Receive**" tab, click the drop down next to "**Show**" and select "Port 2"
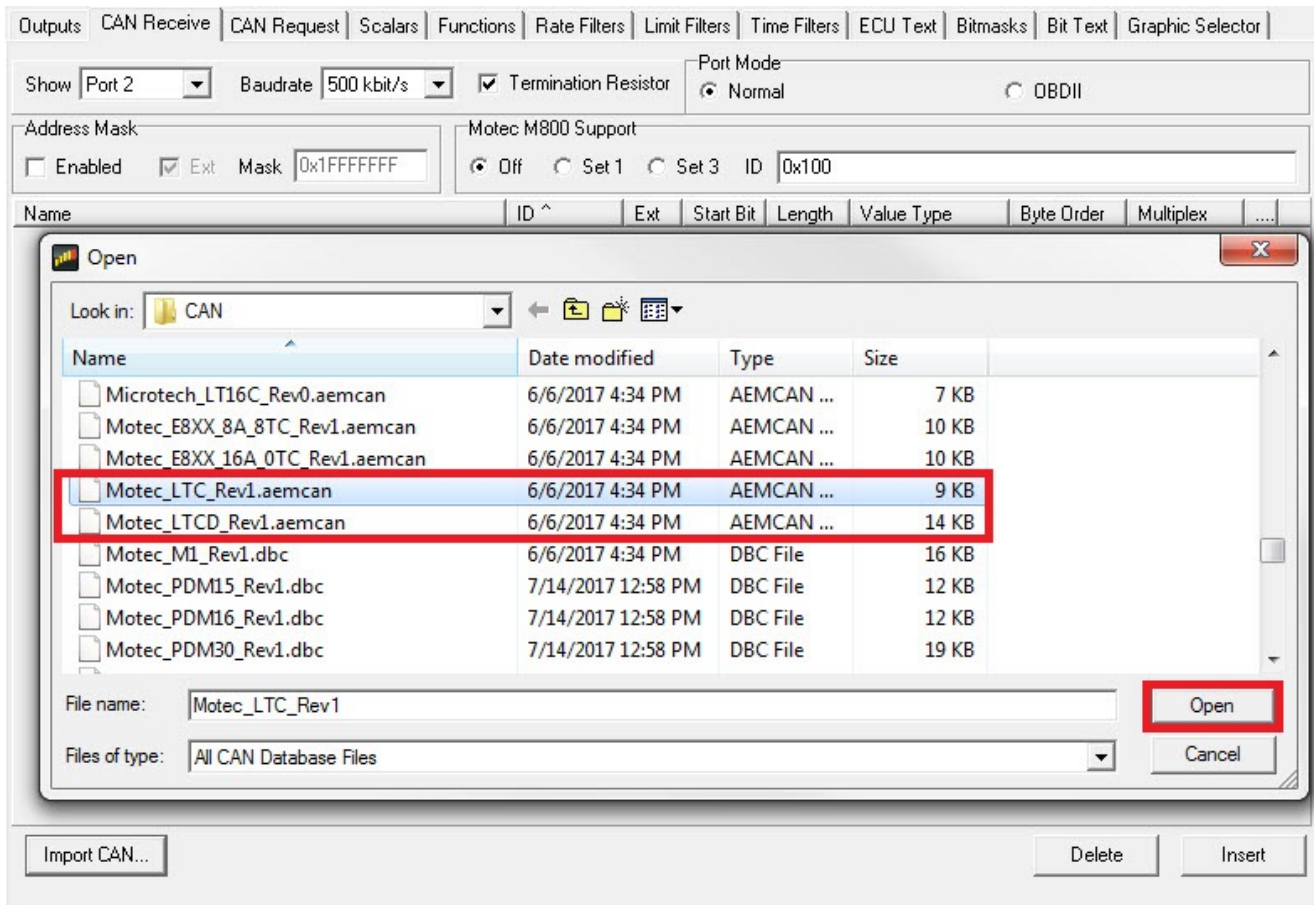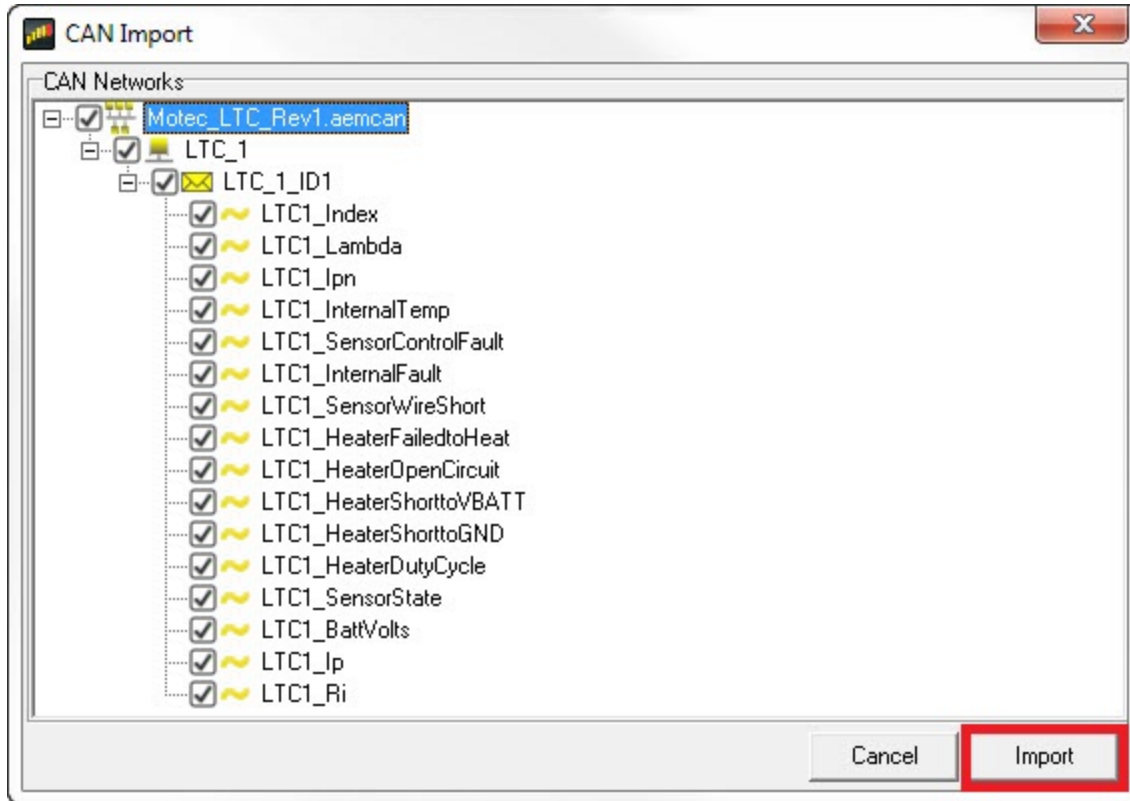
5. Under the "**CAN Receive**" tab, select "**Import CAN…**"

6. Navigate to the .aemcan (dbc) file for your application. Select the file and click "Open".

7. In the CAN Import window you may expand the drop downs and see all of the available CAN channels for your device. You may choose to import all of the channels available or you may select only the channels you wish to display. Just be sure to include "LTC1_Lambda" (and "LTC2_Lambda"if applicable) as a selected channel. For this example we will include all available channels. If using a LTCD, you will see twice as many channels available here. Once you have selected the channels you wish to import, click "**Import**".
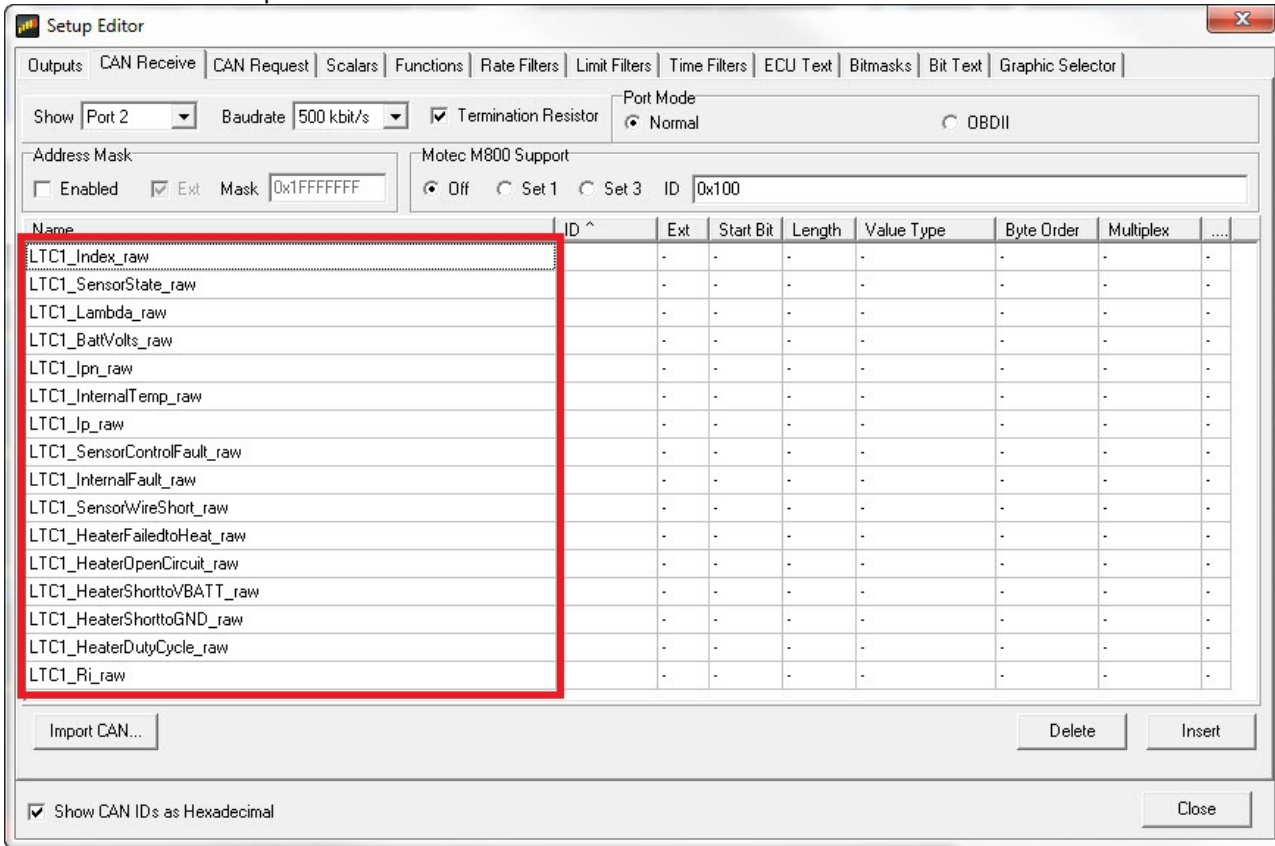
8.  In the Setup Editor under the "**CAN Receive**" tab Port 2, check to make sure the channel names you selected to import are present.  If they are not, go back to step 4 and try again.  As you can see below all of the
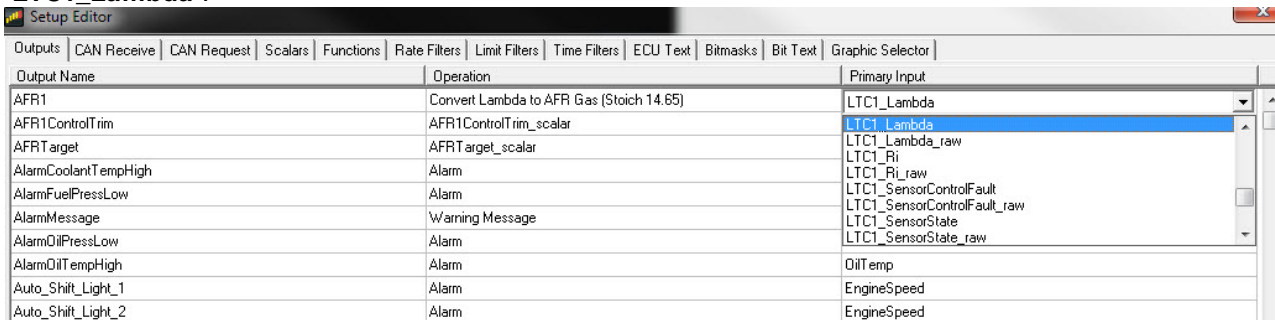
channels for LTC1 are present.



9. Find the output "**AFR1**" and set its Primary Input to "**LTC1_Lambda**" or select "**Insert**" to create a new channel. Name your new channel LTC1_AFR or similar so it is easy to keep track of. Set the Primary Input to "**LTC1_Lambda**".



10. Now you need to select the correct conversion for your fuel type and preferred display units. Select the drop down under the "**Operation**" column for AFR1 (or your new channel) and scroll down to "**Convert Lambda to AFR Gas (Stoich 14.65)**" or whichever one matches the stoich ratio of your fuel.

11. Next, open a page in your layout that displays AFR.  Double click on the afr value or needle/bar graph you wish to use to display AFR.  This should open the "Value Editor", "Dynamic Needle Gauge Editor" or "Bar Editor" window.  Click on the "Input" drop down and select the channel "AFR1" or the channel you created.  Click "Ok".  Do this for every location in your layout where you wish to display AFR.
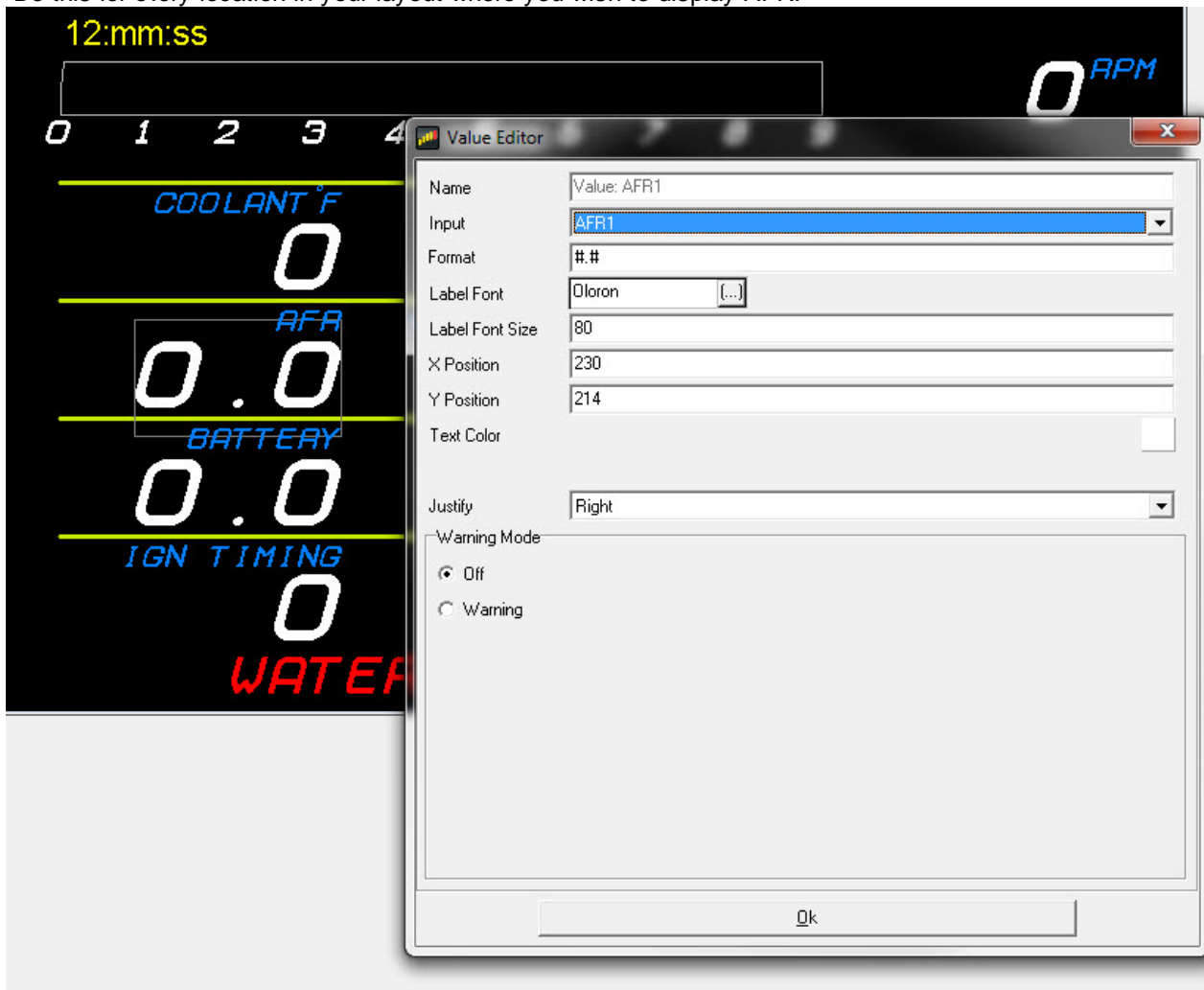


12. Save the layout.  Once the layout has been saved connect the dash to your computer and press "Ctrl+U" or "File>Upload to Display…"  Once the upload has completed unplug the dash from the computer.  You should now be able to view the AFR from your MoTeC LTC/LTCD device on the AEM CD Dash.