

SETUP GUIDE



MoTeC PLM CAN Interface to CD Dash

Supported Devices

MoTeC PLM

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.

PLM Auxiliary Connector – Female D9 Pin 1 (CAN Hi) → AEM CD Dash "CAN 2" 2 Pin DTM Pin 1 (CAN 2+), Gray wire in twisted/shielded pair

PLM Auxiliary Connector – Female D9 Pin 6 (CAN Lo) → AEM CD Dash "CAN 2" 2 Pin DTM Pin 2 (CAN 2-), Black wire in twisted/shielded pair

The CD Dash has a software selectable CAN termination resistor. Each network needs 2 terminating resistors with one at each end. The PLM wideband does not have an internal terminating resistor and relies on external terminating plugs. You must have 2 in total, one at each end of the network.

MoTeC PLM Software Setup

The MoTeC PLM Manager software is not required if using a single PLM unit pre-configured by MoTeC. The .aemcan file provided for the PLM by AEM matches this default configuration.

Supported Channels

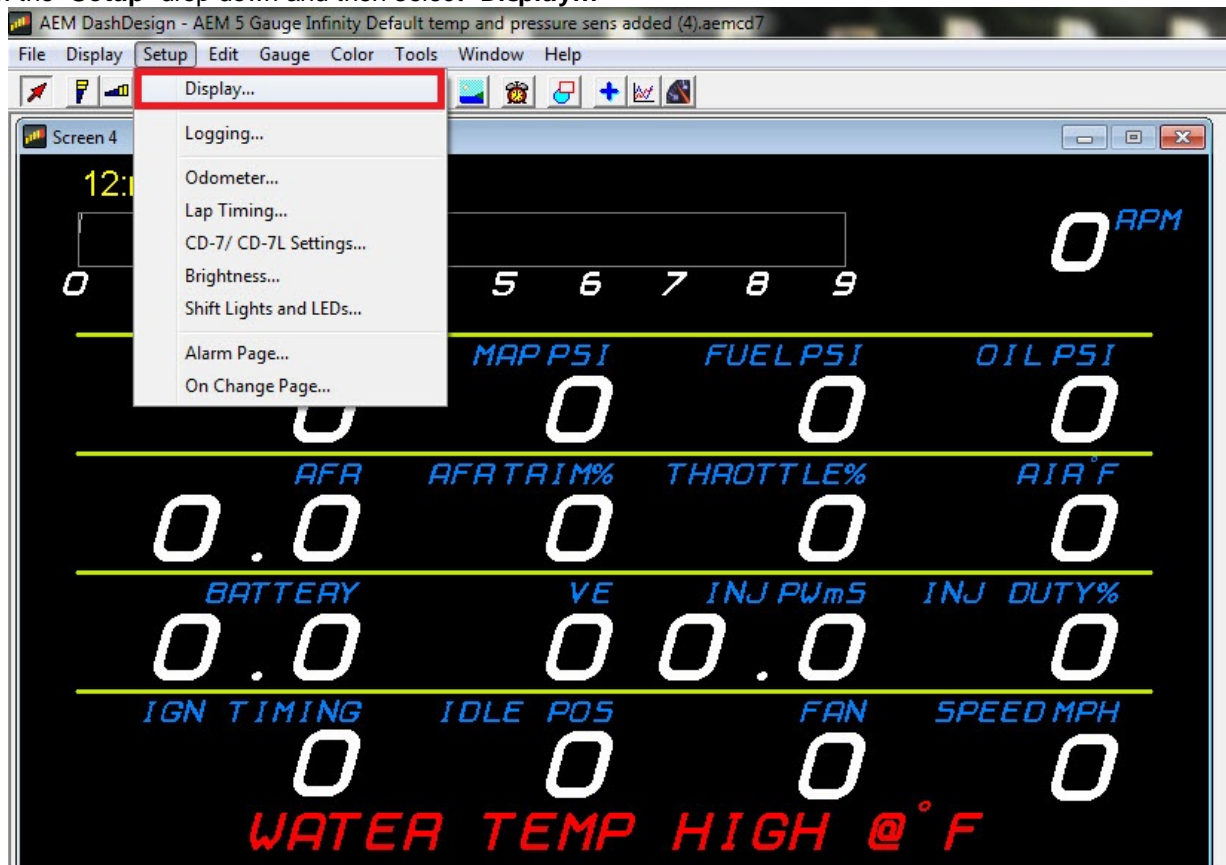
The AEMCD Dash supports 48 unique channels transmitted from the MoTeC PLM.

CH	CD Dash CHANNEL NAME	CH	CD Dash CHANNEL NAME
1	PLM1_ADCRefFault_raw	25	PLM2_ADCRefFault_raw
2	PLM1_AnalogOutNeg_raw	26	PLM2_AnalogOutNeg_raw
3	PLM1_AnalogOutPos_raw	27	PLM2_AnalogOutPos_raw
4	PLM1_BattVolts_raw	28	PLM2_BattVolts_raw
5	PLM1_BoschCalResistor_raw	29	PLM2_BoschCalResistor_raw
6	PLM1_ExternalReset_raw	30	PLM2_ExternalReset_raw
7	PLM1_FirmwareVersion_raw	31	PLM2_FirmwareVersion_raw
8	PLM1_HeaterDuty_raw	32	PLM2_HeaterDuty_raw
9	PLM1_IllegalAddressReset_raw	33	PLM2_IllegalAddressReset_raw
10	PLM1_IllegalOperationReset_raw	34	PLM2_IllegalOperationReset_raw
11	PLM1_Index_raw	35	PLM2_Index_raw
12	PLM1_InternalTemp_raw	36	PLM2_InternalTemp_raw
13	PLM1_Lambda_raw	37	PLM2_Lambda_raw
14	PLM1_Low VoltageReset_raw	38	PLM2_Low VoltageReset_raw
15	PLM1_NTKCalResistor_raw	39	PLM2_NTKCalResistor_raw
16	PLM1_RPM_raw	40	PLM2_RPM_raw
17	PLM1_SensorCOLD_raw	41	PLM2_SensorCOLD_raw
18	PLM1_SensorFAULT_raw	42	PLM2_SensorFAULT_raw
19	PLM1_SensorRUN_raw	43	PLM2_SensorRUN_raw
20	PLM1_SensorState_raw	44	PLM2_SensorState_raw
21	PLM1_SensorType_raw	45	PLM2_SensorType_raw
22	PLM1_SensorWARMUP_raw	46	PLM2_SensorWARMUP_raw
23	PLM1_WatchdogTimerReset_raw	47	PLM2_WatchdogTimerReset_raw
24	PLM1_Zp_raw	48	PLM2_Zp_raw

AEM Setup in DashDesign

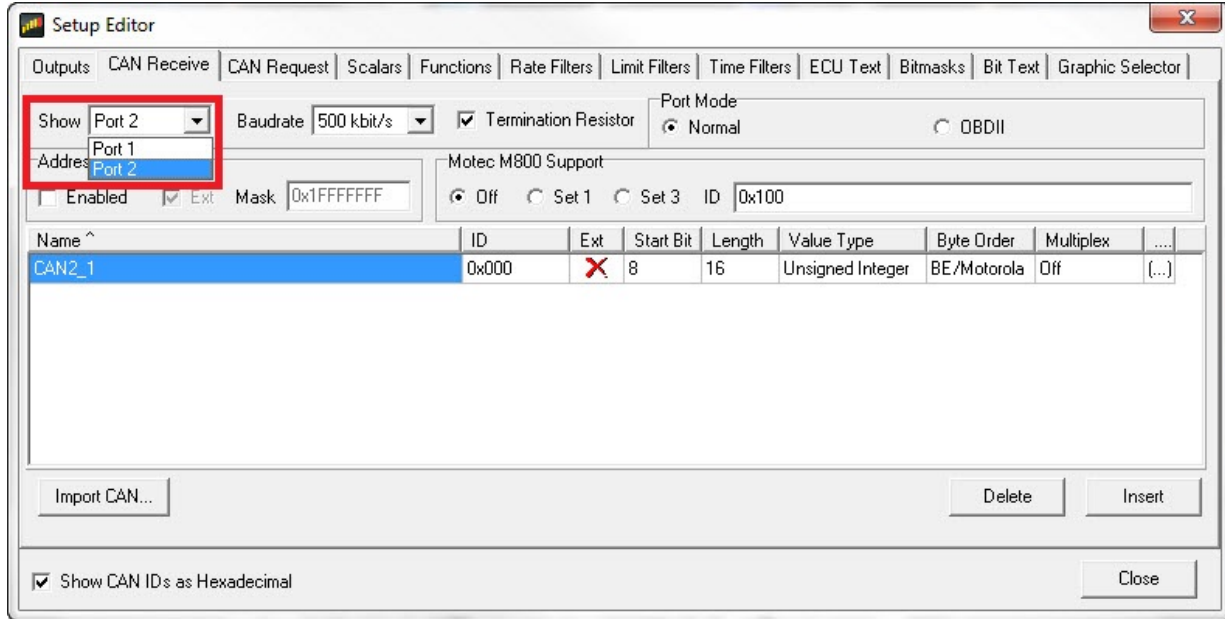
AEM provides pre-configured layouts that can be easily adapted to accept, display and log (if using a logging CD Dash) the CAN bus channel data from a MoTeC PLM. The following steps will show you how to quickly setup your PLM to work with an existing AEM DashDesign layout.

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 dashdesignDashDesign.
3. Click the “**Setup**” drop down and then select “**Display...**”



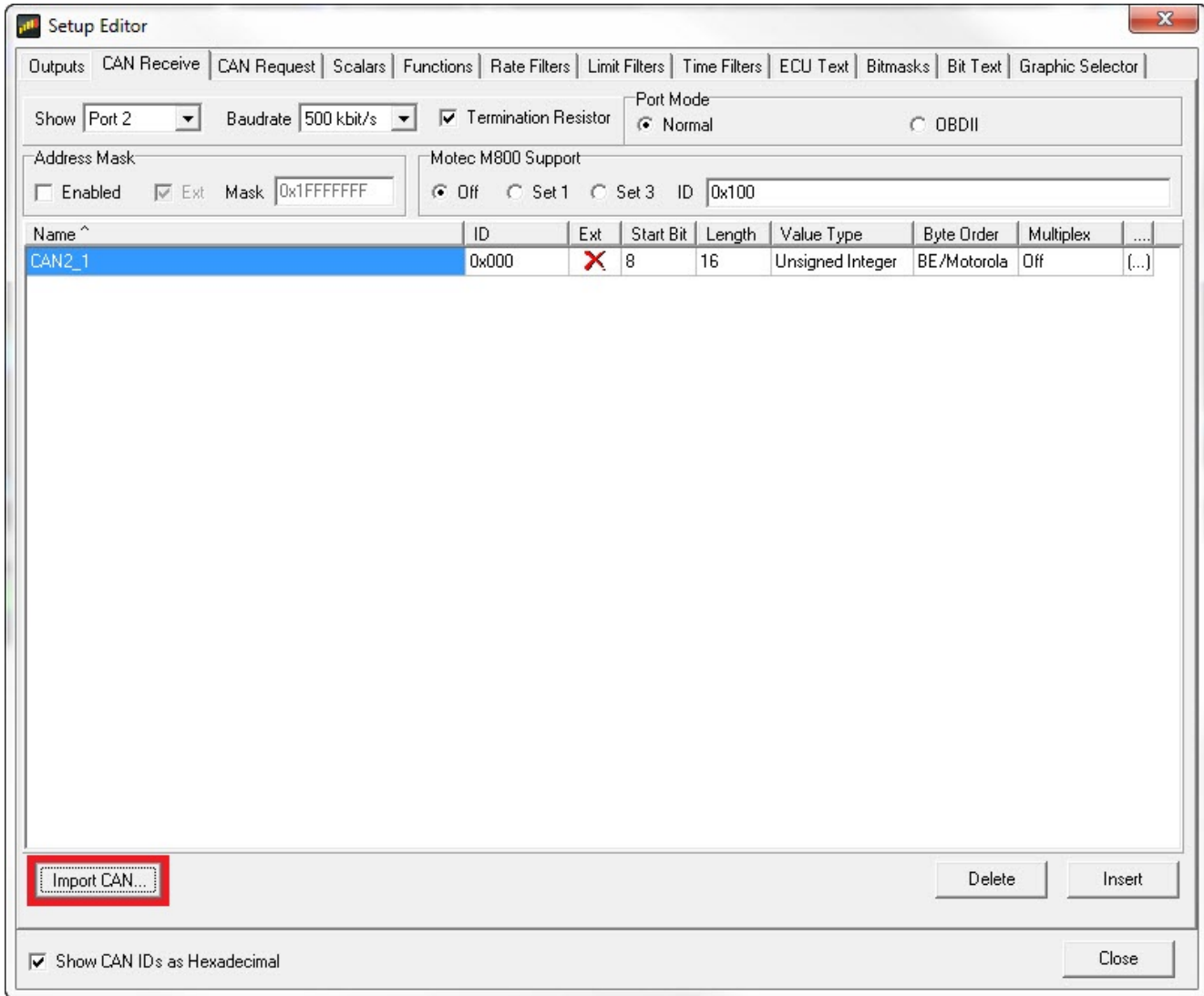
4. Under the “**CAN Receive**” tab, click the drop down next to “**Show**” and select “**Port 2**”

SETUP GUIDE



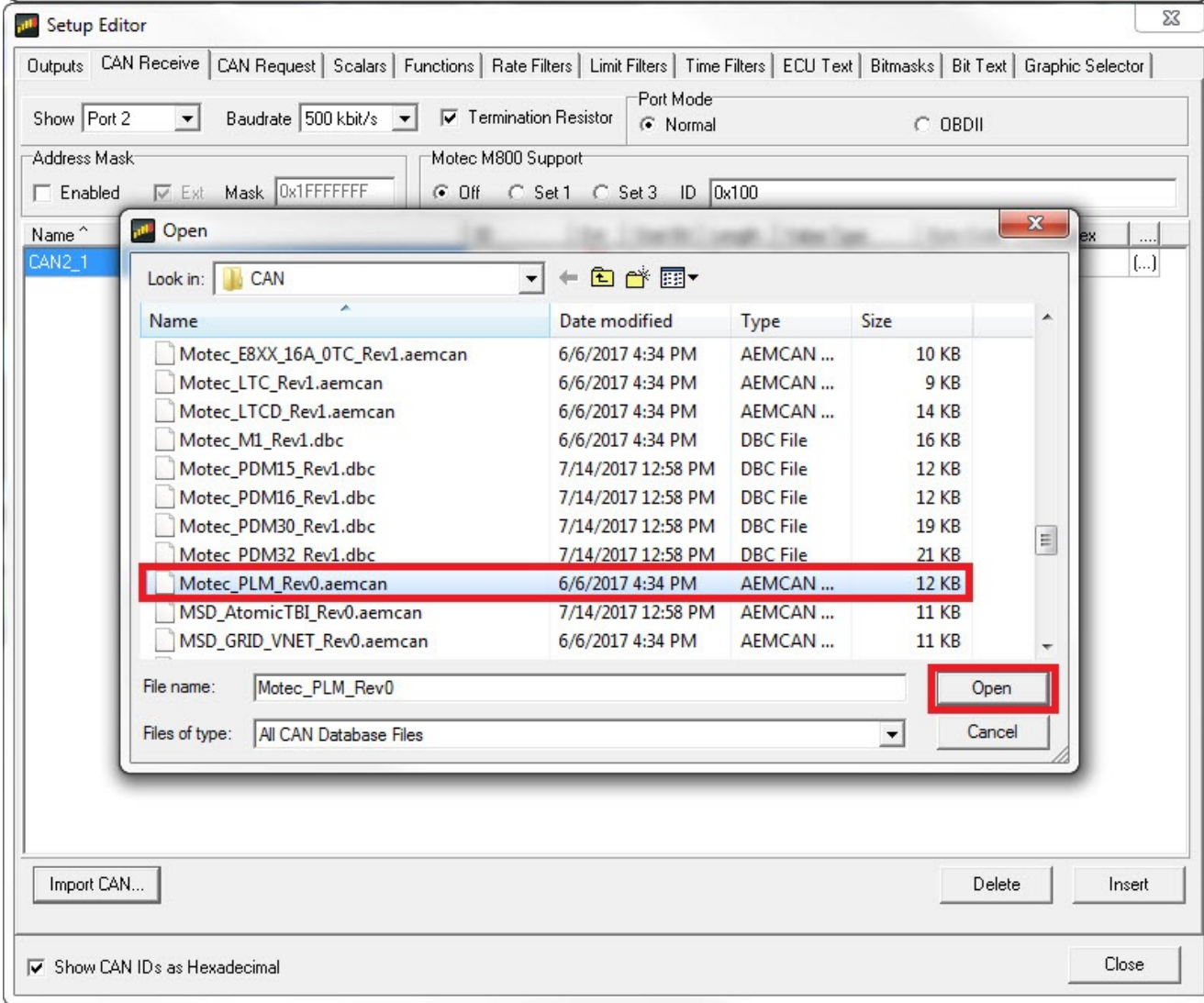
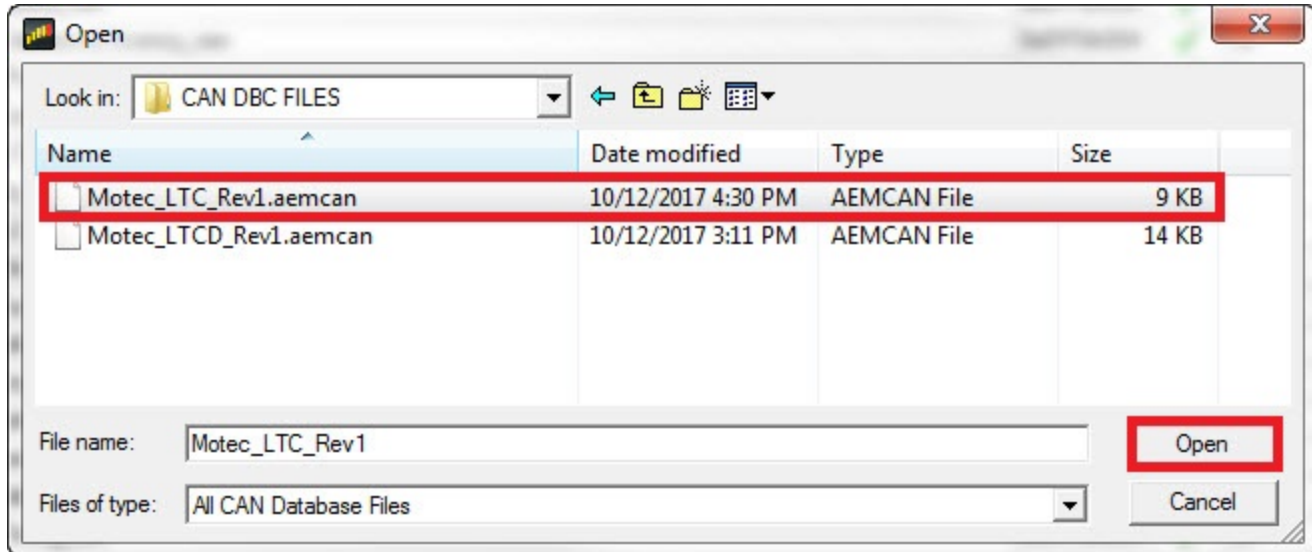
5. Under the “CAN Receive” tab, select “Import CAN...”

SETUP GUIDE



6. Navigate to the .aemcan file you downloaded in step two for your application. Select the file and click **“Open”**.

SETUP GUIDE

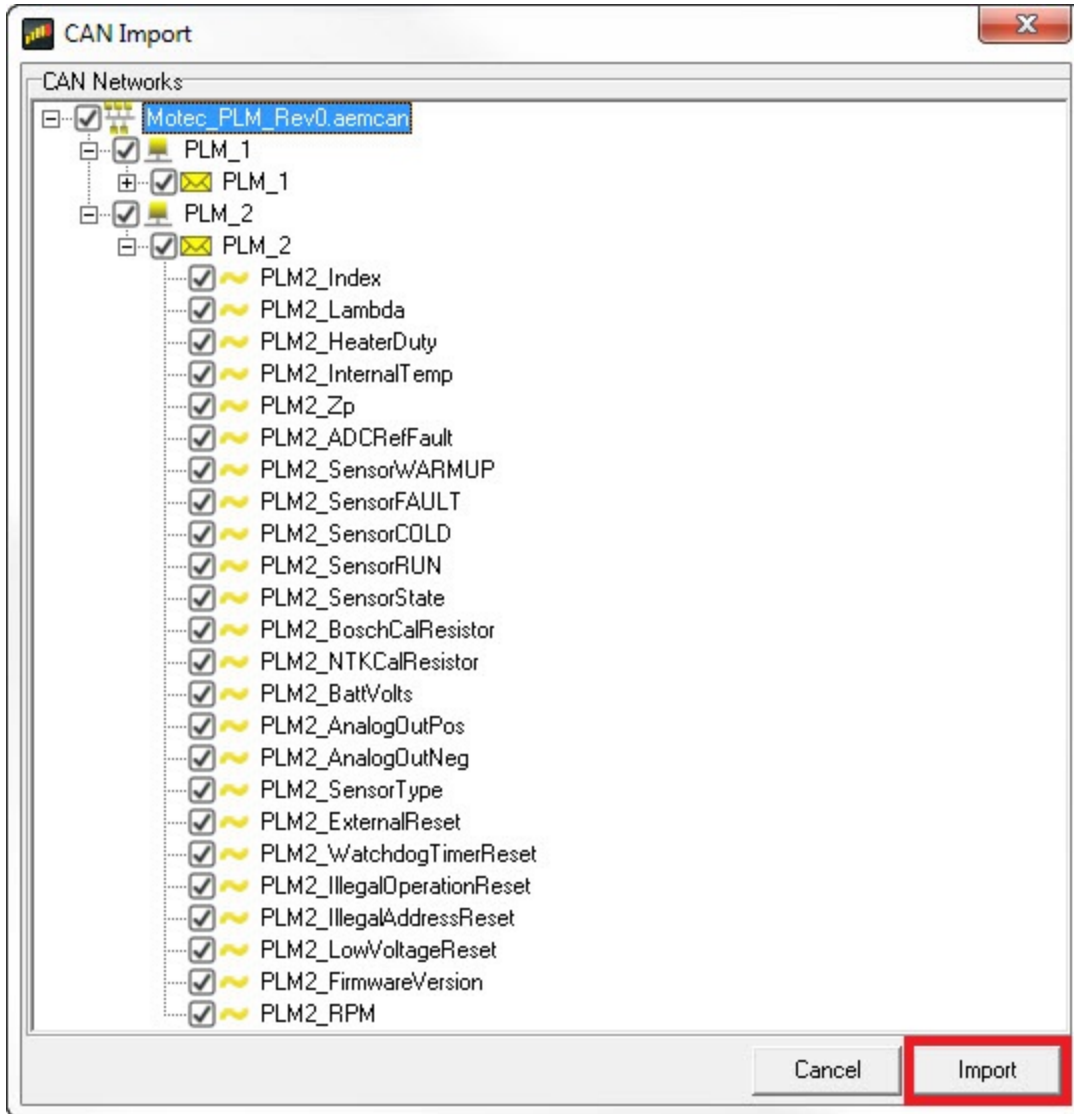


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SETUP GUIDE



7. In the “CAN Import” window you may expand the drop downs to see all of the available CAN channels for your device. You can import all of the channels available or you may select only the channels you wish to display. Be sure to include “PLM1_Lambda” (and “PLM2_Lambda” if applicable) as selected channels. For this example, we will include all available channels. Unused channels can easily be deleted after you finish setting up your CD Dash. After selecting the channels you want to import, click “Import”.



8. In the Setup Editor under the “Outputs” tab, check the channels that were selected to import are present. If they are not, go back to step 5 and try again. As you can see below the PLM channels are present.

SETUP GUIDE



Setup Editor

Outputs | CAN Receive | CAN Request | Scalars | Functions | Rate Filters | Limit Filters | Time Filters | ECU Text | Bitmasks | Bit Text | Graphic Selector

Show Port 1 Baudrate 500 kbit/s Termination Resistor Port Mode Normal OBDII

Address Mask Enabled Ext Mask 0xFFFFFFFF Motec M800 Support Off Set 1 Set 3 ID 0x100

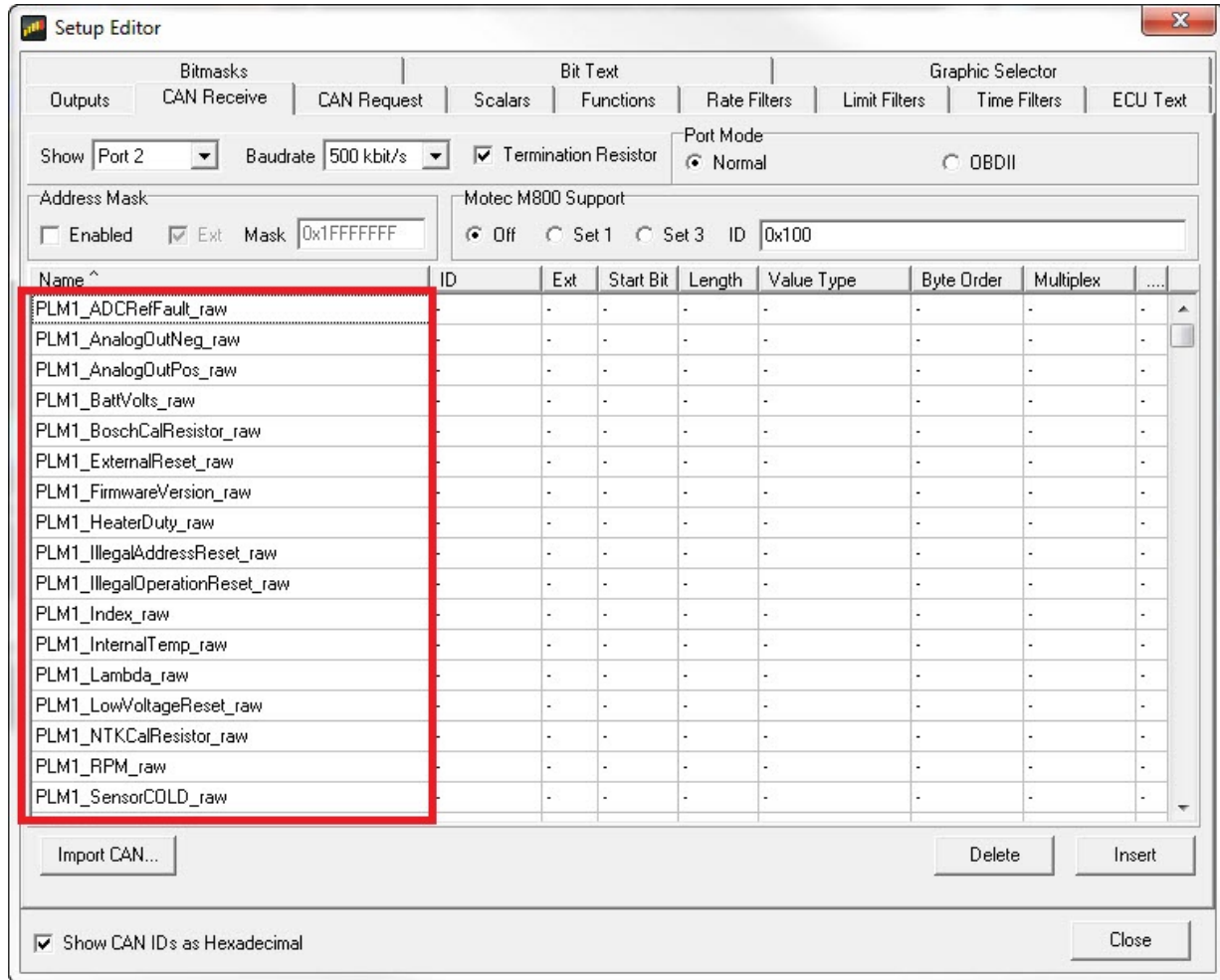
Name ^	ID	Ext	Start Bit	Length	Value Type	Byte Order	Multiplex	...
IgnitionTiming_raw	0x01F0A003	✓	40	8	Unsigned Integer	BE/Motorola	Off	(...)
IntakeManifoldAirPress_raw	0x01F0A004	✓	8	16	Unsigned Integer	BE/Motorola	Off	(...)
IntakeManifoldAirPressErrorState_raw	0x01F0A008	✓	61	1	Unsigned Integer	BE/Motorola	Off	(...)
IntakeManifoldAirTemp_raw	0x01F0A000	✓	48	8	Signed Integer	BE/Motorola	Off	(...)
IntakeManifoldAirTempErrorState_raw	0x01F0A008	✓	62	1	Unsigned Integer	BE/Motorola	Off	(...)
LTC1_BattVolts_raw	-	-	-	-	-	-	-	-
LTC1_HeaterDutyCycle_raw	-	-	-	-	-	-	-	-
LTC1_HeaterFailedtoHeat_raw	-	-	-	-	-	-	-	-
LTC1_HeaterOpenCircuit_raw	-	-	-	-	-	-	-	-
LTC1_HeaterShorttoGND_raw	-	-	-	-	-	-	-	-
LTC1_HeaterShorttoVBATT_raw	-	-	-	-	-	-	-	-
LTC1_Index_raw	-	-	-	-	-	-	-	-
LTC1_InternalFault_raw	-	-	-	-	-	-	-	-
LTC1_InternalTemp_raw	-	-	-	-	-	-	-	-
LTC1_lp_raw	-	-	-	-	-	-	-	-
LTC1_lpn_raw	-	-	-	-	-	-	-	-
LTC1_Lambda_raw	-	-	-	-	-	-	-	-
LTC1_Ri_raw	-	-	-	-	-	-	-	-
LTC1_SensorControlFault_raw	-	-	-	-	-	-	-	-
LTC1_SensorState_raw	-	-	-	-	-	-	-	-
LTC1_SensorWireShort_raw	-	-	-	-	-	-	-	-
OilPress_raw	0x01F0A004	✓	32	8	Unsigned Integer	BE/Motorola	Off	(...)
OilPressErrorState_raw	0x01F0A008	✓	59	1	Unsigned Integer	BE/Motorola	Off	(...)
OilTemp_raw	0x01F0A007	✓	48	8	Unsigned Integer	BE/Motorola	Off	(...)
ThrottlePos_raw	0x01F0A000	✓	40	16	Unsigned Integer	BE/Motorola	Off	(...)
ThrottlePosErrorState_raw	0x01F0A008	✓	56	1	Unsigned Integer	BE/Motorola	Off	(...)
VehicleSpeed_raw	0x01F0A003	✓	24	16	Unsigned Integer	BE/Motorola	Off	(...)

Import CAN... Delete Insert

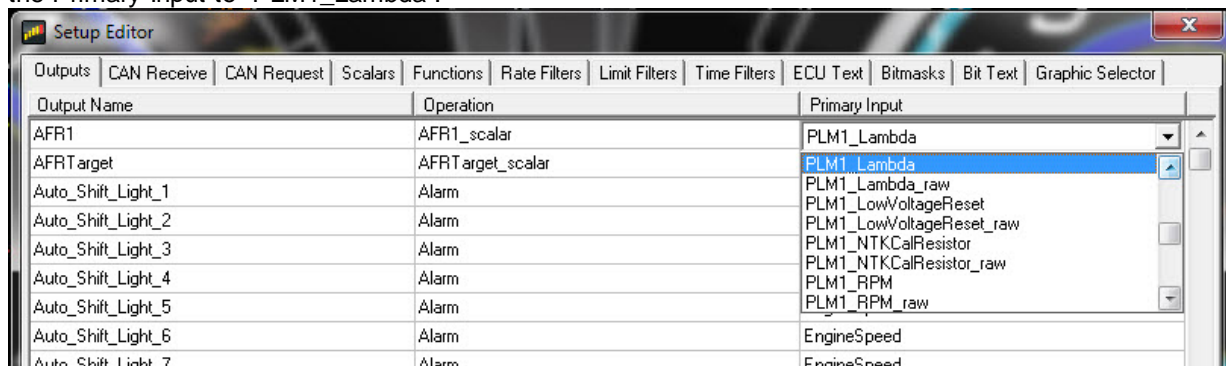
Show CAN IDs as Hexadecimal Close

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SETUP GUIDE

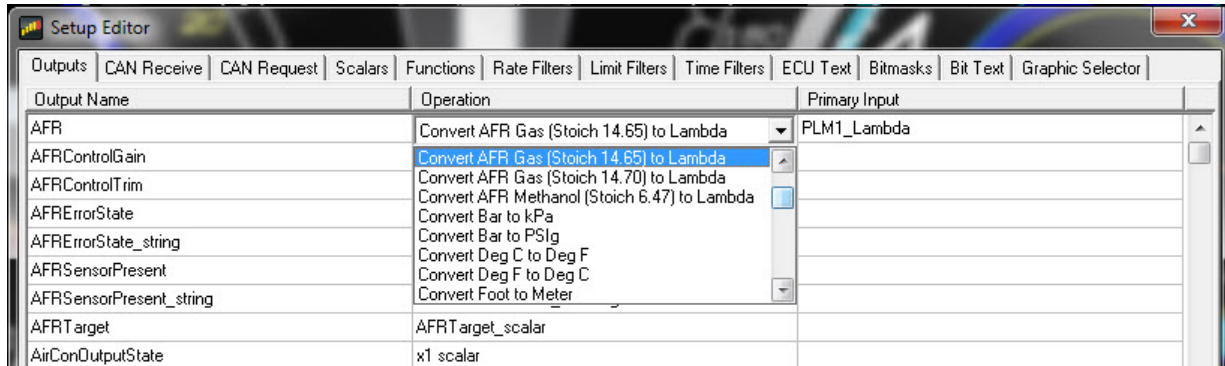


- Find the output “AFR1” and set its Primary Input to “PLM1_Lambda” or select “Insert” at the bottom of the window to create a new channel. Name your new channel PLM1_AFR or similar so it is easy to keep track of. Set the Primary Input to “PLM1_Lambda”.

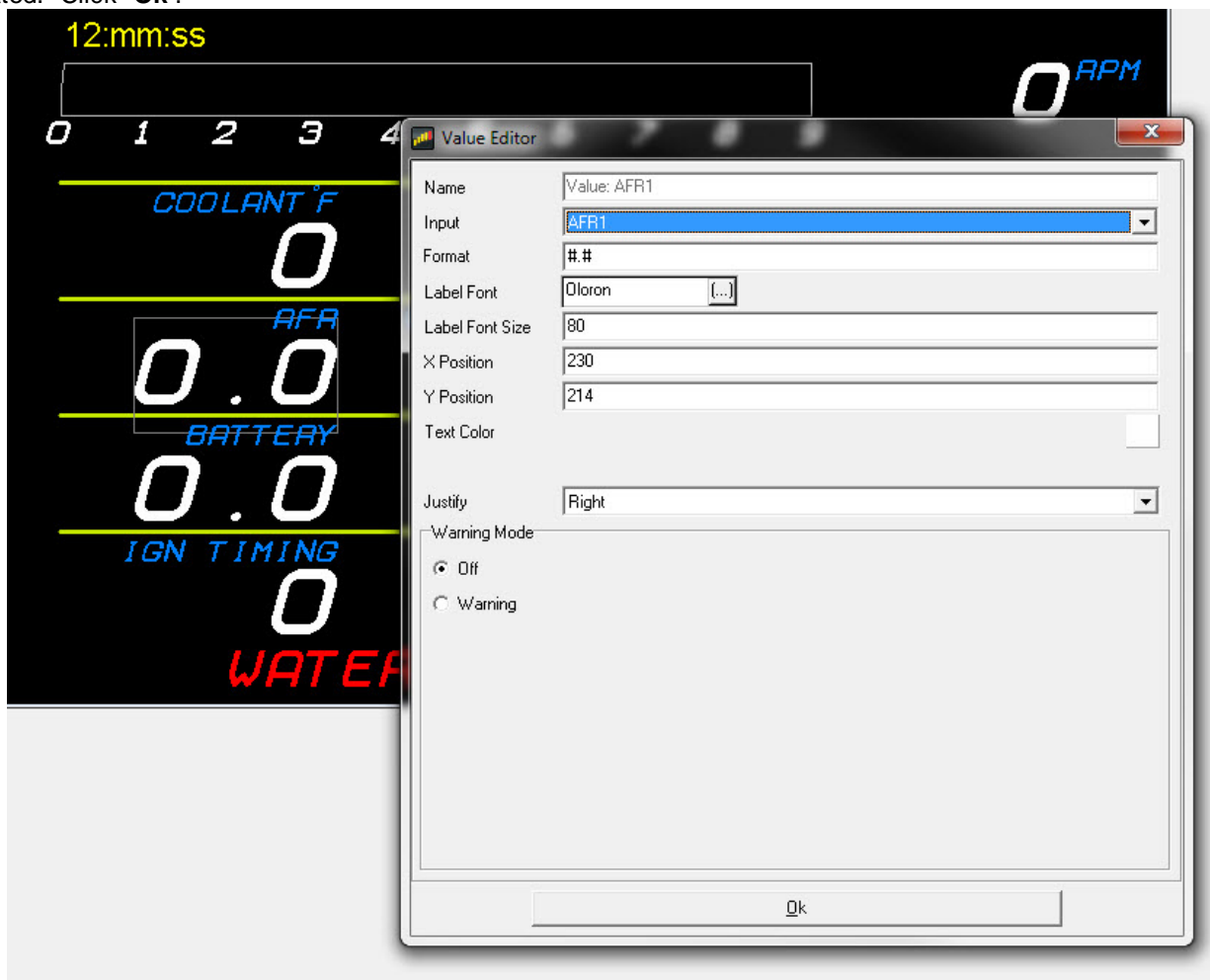


- Now select the correct conversion for your fuel type and preferred display units. Select the drop down under the “Operation” column for AFR1 (or your new channel) and scroll down to “Convert Lambda to AFR Gas (Stoich 14.65)” or whichever one matches the Stoich ratio of your fuel.

SETUP GUIDE



11. Next, open a page in your layout that displays AFR. Double click on the AFR value or on the 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”.



12. Save your 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 you may unplug the dash from the computer. You should now be able to view the AFR from your MoTeC PLM on the AEM CD Dash.