





gaugeART Analog to CAN Converter to CD Dash

Supported Devices

gaugeART Analog to CAN Converter

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.

gaugeART terminal block position labeled **CANH** \rightarrow AEM CD "CAN 2" Pin 1 (CAN 2+), Gray wire in twisted/shielded pair gaugeART terminal block position labeled **CANL** \rightarrow AEM CD "CAN 2" Pin 2 (CAN 2-), Black wire in twisted/shielded pair

The CD Dash has a software selectable CAN termination resistor. Each CAN network needs 2 terminating resistors with one located at each end. The gaugeART Analog to CAN Converter has an internal terminating resistor that is jumper selectable. If these are the only devices on the CAN bus enable both terminating resistors. If there are other CAN devices make sure you have 2 terminating resistors with one at each end of the network.



Supported Channels

The AEM CD Dash supports 9 unique channels transmitted from each gaugeART Analog to CAN Converter; up to 4 on the same CAN bus.

СН	CD Dash CHANNEL NAME	СН	CD Dash CHANNEL NAME
	Module 1		Module 3
1	AnalogVoltsExt1_4	19	AnalogVoltsExt3_4
2	AnalogVoltsExt1_3	20	AnalogVoltsExt3_3
3	AnalogVoltsExt1_2	21	AnalogVoltsExt3_2
4	AnalogVoltsExt1_1	22	AnalogVoltsExt3_1
5	FlexFuelTemp_1	23	FlexFuelTemp_3
6	FlexFuelContent_1	24	FlexFuelContent_3
7	ThermVoltsExt1_2	25	ThermVoltsExt3_2
8	ThermVoltsExt1_1	26	ThermVoltsExt3_1
9	AnalogVoltsExt1_5	27	AnalogVoltsExt3_5
	Module 2		Module 4
10	AnalogVoltsExt2_4	28	AnalogVoltsExt4_4
11	AnalogVoltsExt2_3	29	AnalogVoltsExt4_3
12	AnalogVoltsExt2_2	30	AnalogVoltsExt4_2
13	AnalogVoltsExt2_1	31	AnalogVoltsExt4_1
14	FlexFuelTemp_2	32	FlexFuelTemp_4
15	FlexFuelContent_2	33	FlexFuelContent_4
16	ThermVoltsExt2_2	34	ThermVoltsExt4_2
17	ThermVoltsExt2_1	35	ThermVoltsExt4_1
18	AnalogVoltsExt2_5	36	AnalogVoltsExt4_5

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.

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- 1. Visit <u>www.aemelectronics.com/forum</u> 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..."

AEM DashD	esign - AEM 5 Gauge Infinity Defa	ault temp and pressure sens ad	dded (4).aemcd /	
File Display	Setup Edit Gauge Color	Tools Window Help		
1 7 -	Display	🔜 🙍 🛃	🜌 🚮	
🗾 Screen 4	Logging			- • 💌
121	Odometer			
	Lap Timing			- RPM
	CD-7/ CD-7L Settings			
	Brightness	56	789	<u> </u>
	Shift Lights and LEDs			
	Alarm Page	MAP P51	FUELPSI	OILPSI
	On Change Page		0	
	\cup			U
	AFR	AFATAIM%	THROTTLE%	AIR [°] F
	0.0	0	0	0
	BATTERY	VE	INJ PWm5	INJ DUTY%
	<u>0</u> .0	0	<u>0</u> .0	O
	IGN TIMING	IDLE POS	FAN	SPEED MPH
	-	-		
	LIDTE	A TEMO	HIGH	n° F
	WAIL			

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



utputs CAN Receive	CAN Request Scalars Fu	nctions Rate Fill	ers L	imit Filters	Time Filt	ers ECU Text Bit	masks Bit Tex	kt Graphic S	elector
ihow Port 2 💌	Baudrate 500 kbit/s 💌	✓ Termination	Resist	or Port N	Mode Iormal		O OBDII		
ddres Port 1		Motec M800 Sup	oport		_				
Enabled 🔽 E:	T Mask Ox1FFFFFFF	● Off ⊂ Se	et1 (Set 3	ID 0x10	0			
ame ^		ID	Ext	Start Bit	Length	Value Type	Byte Order	Multiplex	
AN2_1		0x000	X	8	16	Unsigned Integer	BE/Motorola	Off	()

5. Under the "CAN Receive" tab, select "Import CAN..."



Jutputs CAN Receive CAN Request Scalars Fu	unctions			Port Mod	le	Gu (1950)			
how Port 2 Baudrate 500 kbit/s		l ermination H	esistor	Norn	nal		C OBDII		
vddress Mask	Moteo	c M800 Suppo	ort						
Enabled 🔽 Ext Mask Ox1FFFFFF	• 0	ff C Set 1	0	Set 3 ID	0x100				
lame ^		ID	Ext	Start Bit	Length	Value Type	Byte Order	Multiplex	
AN2_1		0x000	X	8	16	Unsigned Integer	BE/Motorola	Off	()

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



how Port 2	■ Baudrate 500 kbit/s ■ ▼ Termination	Resistor 🕞 Normal		C OBDII	
ddress Mask Enabled 🔽	Ext Mask Ox1FFFFFFF	pport et 1 C Set 3 ID 0x100			
ame		D^ Ext Sta	rt Bit Length Va	ilue Type 🛛 🗍 Byte C)rder Multiplex
	🔟 Open				×
	Look in: 🌗 CAN	- ← 🗈 💣 📰 -			
	Name	Date modified	Туре	Size	_ A
	EFI_TechUSA_Rev0.aemcan	7/14/2017 12:58 PM	AEMCAN File	18 KB	
	Electromotive_TEC_Rev0.aemcan	7/14/2017 12:58 PM	AEMCAN File	6 KB	
	Emerald_K3_K6_ECUs_Rev0.aemcan	7/14/2017 12:58 PM	AEMCAN File	7 KB	
	EMtron_Rev0.aemcan	7/14/2017 12:58 PM	AEMCAN File	10 KB	
	FAST XFI20 Rev0.aemcan	6/6/2017 4:34 PM	AEMCAN File	54 KB	
	gaugeART_31_001_Rev1.aemcan	7/14/2017 12:58 PM	AEMCAN File	13 KB	
	Haltech_V2_Rev1.aemcan	6/6/2017 4:34 PM	AEMCAN File	23 KB	
		C (C (2017 4 24 DE4	APRACANIES	C MD	· ·
	File name: gaugeART_31_001_Rev1			Op	en
	Files of type: All CAN Database Files			- Can	icel
L					
					• • • • •
Import CAN					Delete Insert

7. In the "CAN Import" window you may expand the drop downs and 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 need to display. For this example all available channels are selected. Unused channels can easily be deleted after completing the setup of your CD Dash. Once you have selected the channels you wish to import, click "Import".

CAN Import	X
CAN Networks	
gaugeART_31_001_Rev1.dbc	
GaugeArt_Analog_to_CAN_Module_1	
AnalogVoltsExt1_4	
Analogy of sext _ 5	
AnalogVottsExt1_2	
🗄 🕢 💻 GaugeArt_Analog_to_CAN_Module_2	
🗄 🐨 🗹 💻 GaugeArt_Analog_to_CAN_Module_3	
🗄 🕢 💻 GaugeArt_Analog_to_CAN_Module_4	
	Cancel Import

8. In the "Setup Editor" under the "CAN Receive" tab, check to make sure the channels you selected to import are present. If they are not, go back to step 4 and try again.

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Show Port 2 Baudrate 500 kbit/s	Termination Resistor	Port N	1ode ormal		c	OBDII			
Address Mask	lotec M800 Support	Set 3	ID 0x100						_
Name	D 1	Ext	Start Bit	Length	Value Type	Byte Order	Multiplex		
AnalogVoltsExt1_1_raw	-	1	-	20	-	-	-	-	-
AnalogVoltsExt1_5_raw	- 201	-	-28	2	-	-	<u>-</u>	3- <u>-</u> 31	
AnalogVoltsExt2_1_raw	•3	-	-0	32	-				
AnalogVoltsExt4_5_raw	-	-		25	-	-	-	1.0	
AnalogVoltsExt2_5_raw	1.0	-	10	•	0	•	-	8.58	
AnalogVoltsExt3_1_raw		-	-	•	-	•	•	1.0	
AnalogVoltsExt4_1_raw	-	-	-	2	-	1, 2	-	-	
AnalogVoltsExt3_5_raw	•d	-	-8	51	-		-0	3.53	
FlexFuelTemp_1_raw		-	-a ()	1	-	0	-	-3	
FlexFuelTemp_2_raw	120	-	-	2	-	2	-24	1993	
FlexFuelTemp_4_raw	•	-	-	-2	-	•			
FlexFuelTemp_3_raw		-	-	25	-		-		
AnalogVoltsExt1_2_raw	-	-	-	•	-	•	-	8.78	
FlexFuelContent_4_raw		-	-	•	-			-0	
ElevEuelContent 1 raw	12	2	1.	2	2	12	i.	122	-
Import CAN						Delete	e	Insert	

9. For this example we will setup "AnalogVoltsExt1_1" as fuel pressure using an AEM 150psi sensor. You will follow the same general steps to setup other pressure and temperature sensors with the gaugeART 8ch Analog to CAN module and AEM CD Dash. Find the output "FuelPress" in the "Outputs" tab and the Primary Input to "AnalogVoltsExt1_1".

Output Name	Operation	Primary Input
FuelInjHPulsewidth	FuelInjHPulsewidth_scalar	
FuelInjPulsewidth	FuelInjPulsewidth_scalar	
FuelMassFlowRateHigh	FuelMassFlowRateHigh_scalar	
FuelMassFlowRateLow	FuelMassFlowRateLow scalar	
FuelPress	FuelPress_scalar	AnalogVoltsExt1_1
-uelPressErrorState	x1 scalar	
FuelPressErrorState_string	FuelPressErrorState_bit string	
FuelPressInjDelta	FuelPressInjDelta_scalar	
FuelPumpState	x1 scalar	
FuelPumpState_string	FuelPumpState_bit string	
GPS_Altitude	x1 scalar	
GPS_Course	GPS_Course_scalar	
Show Predefined Outputs		Delete Insert

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 Select the correct conversion for your specific sensor. Locate the drop down under the "Operation" column for the "FuelPress" output and scroll down to "Sensor; AEM Pressure 150psi PN 30-2130-150; V to PSI" or the one matches your sensor.

Setup Editor				
Outputs CAN Receive CAN Request Scalars Fur	nctions Rate Filters Limit Filters Time Filters ECU Tex	t Bitmasks Bit Text Graphic Selector		
Output Name	Operation	Primary Input		
FuelInjFPulsewidth	FuelInjFPulsewidth_scalar		-	
FuelInjGPulsewidth	FuellnjGPulsewidth_scalar			
FuelInjHPulsewidth	FuelInjHPulsewidth_scalar			
FuelInjPulsewidth	FuelInjPulsewidth_scalar			
FuelMassFlowRateHigh	FuelMassFlowRateHigh_scalar			
FuelMassFlowRateLow	FuelMassFlowRateLow_scalar		1	
FuelPress	Sensor; AEM Pressure 150psi PN 30-2130-150; V to 💌	AnalogVoltsExt1_1		
FuelPressErrorState	Sensor; AEM MAP 7Bar PN 30-2130-7; V to PSI		1	
FuelPressErrorState_string	Sensor; AEM Pressure 1000psi PN 30-2130-1000; V t			
FuelPressInjDelta	Sensor; AEM Pressure 150psi PN 30-2130-100; V to P		1	
FuelPumpState	Sensor; AEM Pressure 2000psi PN 30-2130-2000; V t		-	
FuelPumpState_string	Sensor; AEM Pressure 500psi PN 30-2130-500; V to P			
J	Sensor; AEM UEGO Analog Gauge PN 30-5130; V to 🛫		-	
Show Predefined Outputs		Delete		
		Close		

11. Navigate to a page in your layout that displays Fuel Pressure. Double click on the Fuel Pressure value or needle/bar graph you wish to use to display Fuel Pressure. This will open the "Value Editor", "Dynamic Needle Gauge Editor" or "Bar Editor" window. Click on the "Input" drop down and select the channel "FuelPress". Click "Ok".



🟴 Screen 4		
Value Editor		
Name	Value: FuelPress	
Input	FuelPress	
Format	#	
Label Font	Oloron []	FUEL PSI DILPSI
Label Font Size	80	
X Position	570	
Y Position	134	
Text Color		HUTTER HIRF
Justify	Right	
Warning Mode		INJ PWm5 INJ DUTY%
(• Uff		
C Warning		
		FAN SPÉEDMPH
		IIGH O'F
	<u>0</u> k	

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 is complete unplug the dash from the computer. You should now be able to view the Fuel Pressure from your gaugeART Analog to CAN Converter on your AEM CD Dash.