AIM Infotech

AEM 2 series V 1.17 and V 1.17+Dynoshaft ECU

Release 1.02







This tutorial explains how to connect AEM 2 series V 1.17 and V.117 + Dynoshaft ECU to AiM devices through the CAN Bus. AEM Dyno is an on-vehicle dynamometer system that allows user to see some additional channels marked as "DY" in the channels list.

1 Prerequisites

AEM 2 series V 1.17 ECU (with or without dynoshaft) can communicate with AIM loggers if:

- ECU firmware version: 1.17 or higher
- AEM Tuner software version 2.7 or higher

2 ECU Software configuration

Using AEM Tuner software – provided by AEM – follow these steps:

- run the software
- follow this path: Wizard -> Setup Wizard

🖋 AEMTuner v2. 7 - C:\Programmi\AEM\AEMTuner\Calibrations\AEM Updates\Toyota\6100 Supra MT - stock MAP s 🔳 🗖 🔀					
File Edit Display Tabs ECU Logging Tools Wizard Live Tracing Help					
🖄 Tuning Breakpoints 🔇 Limiters 🚳 Start 🖯			Setup Wizard		
Channels-Tuning 🤝 😾			Set Throttle Range Wizard (Unit=ON/OFF) Enables the O2		
Name	Value	Unit	Ignition Timing Sync Wizard		
Engine Speed		rpm	Change Injector Flow/Pressure		
Engine Load		PSIg	Configure Gear Ratio Wizard		
Throttle		%	Staged Injection Wizard		
Coolant Temp		с			
Air Temp		с			
lgn Timing		Degrees			
Stat Sync'd					
O2 Target		AFR			
02#		AFR	Function Explananation		
			Tuning 🚝		
Workspace 🔻 Calibra	tion× 🔻 🔝 📔		📔 🖶 ECUNot Connected Firmware: N/A 💼 🖛 👘 PC Logging: Off 🕶		



- "Setup Wizard" panel appears: select "Telemetry CAN" (1);
- "Configuration name" appears (2) notifying the user that firmware version matches system requirements;
- press "Apply" (3).

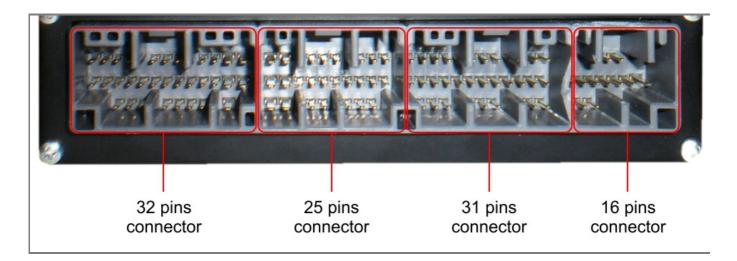
Setup Wizard				
Wizard Types: Feedback:Boost control Feedback:O2 control Ignition: Coil Dwell Injectors: Staged Rev limit: 2Step Rev limit: Main Sensor: Cam/Crank Position ((Sensor: Coolant Temperature Sensor: Variable Valve Sensor: Variable Valve Setup: Valva Senar Telemetry: Senar	Configuration Name CAN Datastream (01v17 firmware) Configuration Notes: This wizard will enter in the default CAN for a CAN Datastream Gauge. WARNING: Settings from other Series 2 fi firmware version, this wizard must be use	irmware will not work with t	his	
① You can also double click configuration to apply it. Close				

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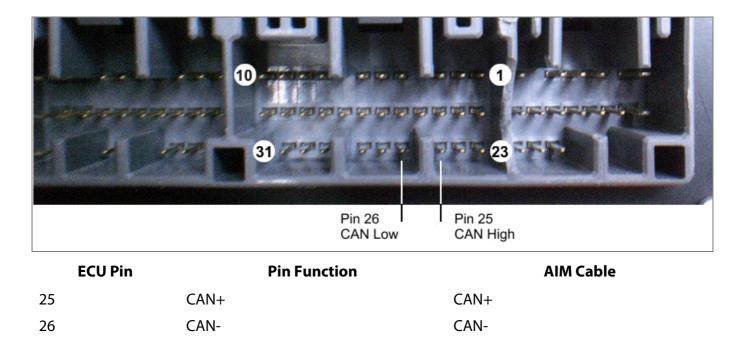


3 Wiring Connection

AEM 2 Series V 1.17 ECU is equipped with 4 AMP male connectors. Starting from left: a 32 pins, a 25 pins, a 31 pins and a 16 pins connector.



The connector to be used for CAN Connection is the 31 pins. It is shown here below: please note that pins are to be numbered from right to left in each row.



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4 AIM device configuration

Before connecting the ECU to AiM device, set this up using AiM Race Studio software. Parameters to select in the device configuration are:

- ECU manufacturer "AEM"
- ECU Model "EMS V1.17 CAN+Dynoshaft";

5 Available channels

Channels received by AIM loggers connected to "AEM" "EMS V1.17 CAN+Dynoshaft" protocol are listed here below. Please note: channels from 20 to 26 marked as "DY" are only available if AEM Dynoshaft is connected. Otherwise these channels will be shown as in error.

ID	CHANNEL NAME	FUNCTION
ECU_1	EMS_RPM	RPM
ECU_2	EMS_ENG_LOAD	Engine Load
ECU_3	EMS_TPS	Throttle position sensor
ECU_4	EMS_AIR_TEMP	Air Temperature
ECU_5	EMS_COOL_TEMP	Engine Coolant Temperature
ECU_6	EMS_ADCR11	Analog Digital Converter 11; 0-5 Volts
ECU_7	EMS_ADCR13	Analog Digital Converter 13; 0-5 Volts
ECU_8	EMS_ADCR14	Analog Digital Converter 14; 0-5 Volts
ECU_9	EMS_ADCR17	Analog Digital Converter 17; 0-5 Volts
ECU_10	EMS_ADCR18	Analog Digital Converter 18; 0-5 Volts
ECU_11	EMS_ADCR15	Analog Digital Converter 15; 0-5 Volts
ECU_12	EMS_ADCR16	Analog Digital Converter 16; 0-5 Volts
ECU_13	EMS_ADCR08	Analog Digital Converter 08; 0-5 Volts
ECU_14	EMS_O2_#1	Lambda sensor



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ECU_15	EMS_O2_#2	Lambda sensor
ECU_16	EMS_VEH_SPEED	Vehicle speed
ECU_17	EMS_GEAR	Engaged Gear
ECU_18	EMS_IGN_TIM	Ignition Time
ECU_19	EMS_BATT_VOLT	Battery Voltage
ECU_20	EMS_ENG_LOAD2	Engine Load 2
ECU_21	DY_DSH_RPM	Driveshaft RPM
ECU_22	DY_DSH_TQ_FTLB	Driveshaft Torque - ft-lb
ECU_23	DY_DSH_PW_HP	DriveShaft Power - HP
ECU_24	DY_TQ_FR_FTLB	Torque Fraction ft-lb
ECU_25	DY_PW_FR_HP	PowerFraction - HP
ECU_26	DY_DSH_RPM2	DriveShaft RPM
ECU_27	DY_DSH_TQ2FTLB	Driveshaft Torque (low range) - ft-lb
ECU_28	DY_DSH_PW2_HP	Driveshaft Power (low range) - HP
ECU_29	DY_SYS_VOLT	System Voltage
ECU_30	DY_TANK_VOLT	Tank Voltage
ECU_31	DY_SENS_VOLT	Sensor Voltage
ECU_32	DY_POW_LEV	Power level
ECU_33	DY_SENS_TEMP	Sensor Temp
ECU_34	DY_DRV_FREQ	Drive Frequency
ECU_35	DY_SYST_TEMP	System Temp
ECU_36	DY_ERROR	Mixed Errors and status:
		bit = 0 – Sensor firmware error
		bit = $1 - Controller$ firmware error
		bit = $2 - $ Sensor comms active
		bit = 3 – Got good zero offset
		bit = $4 - \text{Got good calibration}$
		bit = $5 - \text{Led aligned}$
		bit = 6 – Auto zero active
		bit = $7 - not$ used