

AIM Infotech

AEM EMS4 V 1.21
+Dynoshift ECU

Release 1.01



ECU

This tutorial explains how to connect AEM EMS4 V 1.21 + Dynoshift ECU to AIM devices through the CAN Bus. AEM Dynoshift is an on-vehicle dynamometer system that allows user to see some additional channels marked as "DY" in the channels list.

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Prerequisites

EMS4 V 1.21 ECU with dynoshift communicates with AIM devices if:

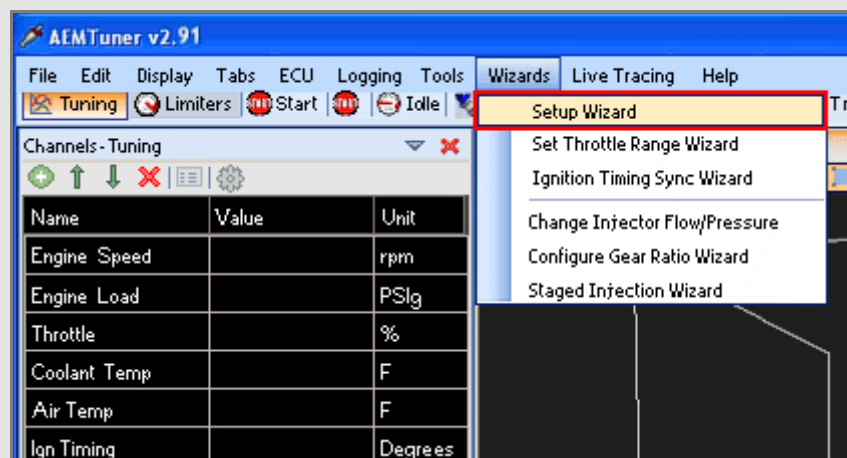
- ECU firmware version is 1.21 or higher
- AEM Tuner software version is 2.91 or higher

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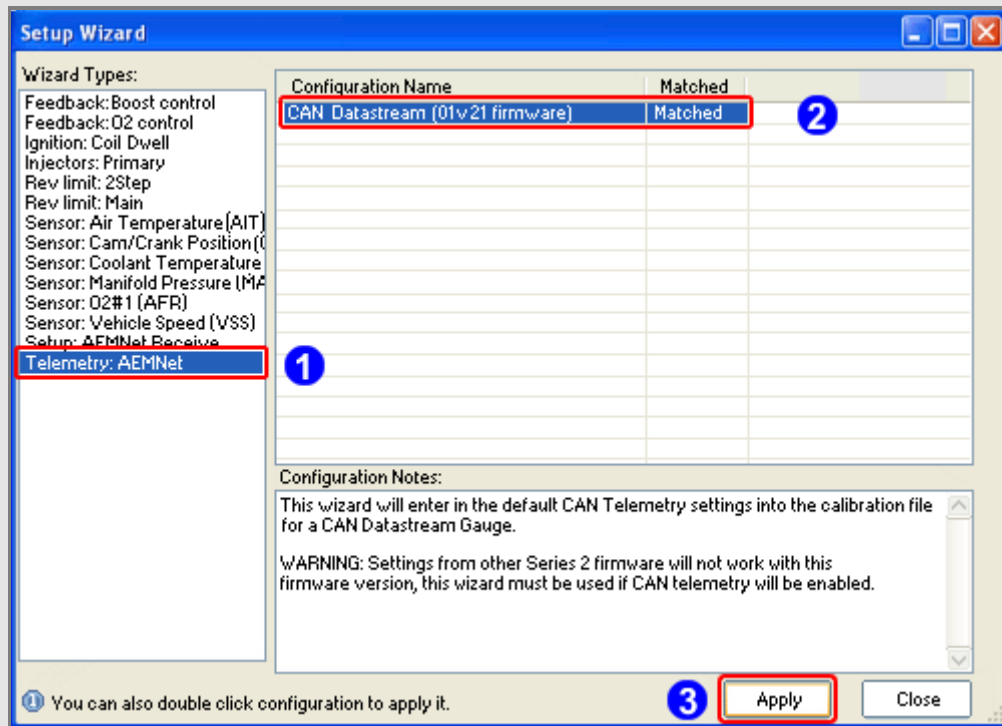
ECU Software configuration

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

- run the software
- follow this path: Wizards >> Setup Wizard as shown here below



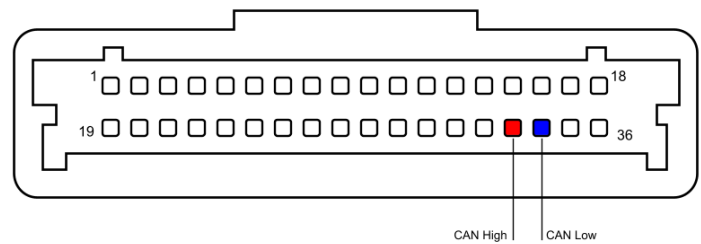
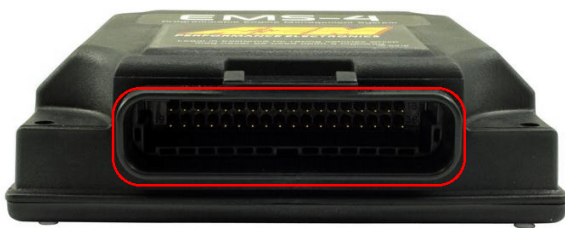
- "Setup Wizard" panel appears: select "Telemetry AEMNet" (1);
- "Configuration name" appears in the right part of the window as shown below (2) notifying the user that firmware version matches system requirements;
- press "Apply" (3).



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Wiring Connection

AEM EMS4 V 1.21 ECU is equipped with a 36 pins front male connector shown here below on the left.; on the right is connector pinout and below connection table



ECU Pin	Pin Function	AiM Cable
33	CAN High	CAN+
34	CAN Low	CAN-

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AiM device configuration

Before connecting the ECU to AiM device set this using AiM Race Studio software. The parameters to select in the device configuration are:

- ECU manufacturer "AEM"
- ECU Model "EMS-4 v1.21 CAN + Dynoshift";

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Available channels

Channels received by AIM loggers connected to "AEM" "EMS4 V 1.21+Dynoshift" protocol are listed here below. Please note: channels from 21 to 36 marked as "DY" are only available if AEM Dynoshift is connected. Otherwise these channels will be shown as in error.

ID	CHANNEL NAME	FUNCTION
ECU_1	EMS4_RPM	RPM
ECU_2	EMS4_ENG_LOAD	Engine Load
ECU_3	EMS4_TPS	Throttle position sensor
ECU_4	EMS4_AIR_TEMP	Air Temperature
ECU_5	EMS4_COOL_TEMP	Engine Coolant Temperature
ECU_6	EMS4_GPIO2	General purpose output 2
ECU_7	EMS4_GPIO4	General purpose output 4
ECU_8	EMS4_GPIO5	General purpose output 5
ECU_11	EMS4_GPIO6	General purpose output 6
ECU_12	EMS4_GPIO7	General purpose output 7
ECU_13	EMS4_BATT_VOLT1	Battery Voltage 1
ECU_14	EMS4_O2_#1	Lambda sensor
ECU_16	EMS4_VEH_SPEED	Vehicle speed
ECU_17	EMS4_GEAR	Engaged Gear
ECU_18	EMS4_IGN_TIM	Ignition Time
ECU_19	EMS4_BATT_VOLT2	Battery Voltage 2
ECU_20	EMS4_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 2



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: <ul style="list-style-type: none">bit = 0 – Sensor firmware errorbit = 1 – Controller firmware errorbit = 2 – Sensor comms activebit = 3 – Got good zero offsetbit = 4 – Got good calibrationbit = 5 – Led alignedbit = 6 – Auto zero activebit = 7 – not used