AIM Infotech

AEM EMS4 V 1.21 +Dynoshaft ECU

Release 1.00

ECU

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

1 Prerequisites

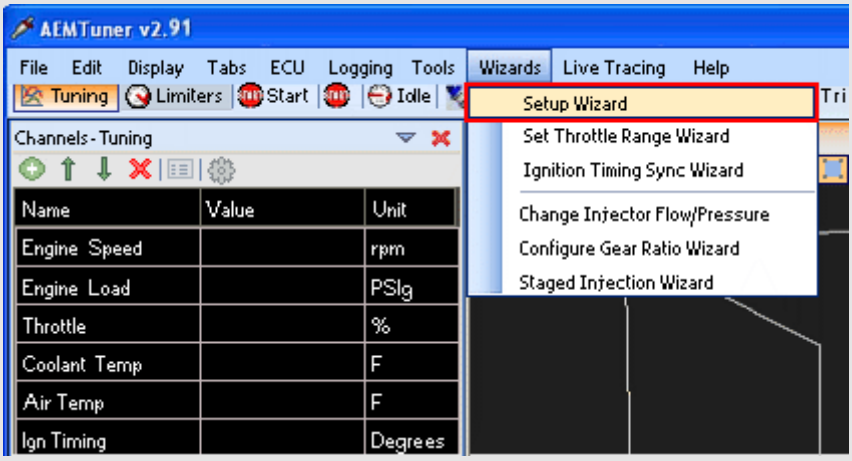
EMS4 V 1.21 ECU with dynoshaft communicates with AIM devices if two prerequisites are satisfied:

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

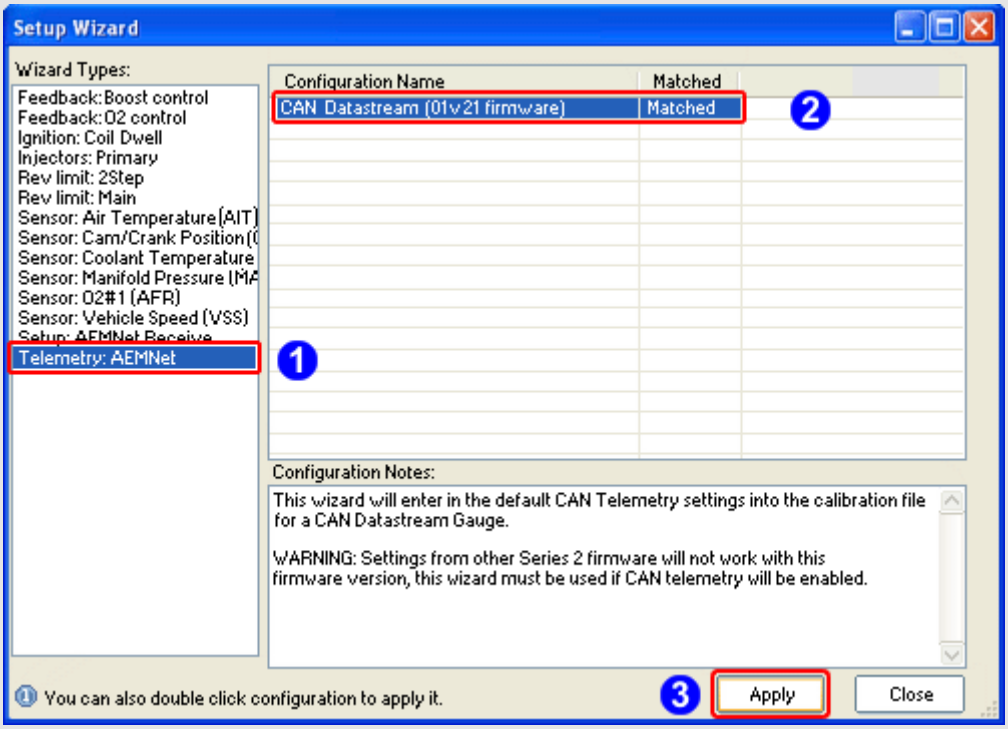
2 ECU Software configuration

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

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

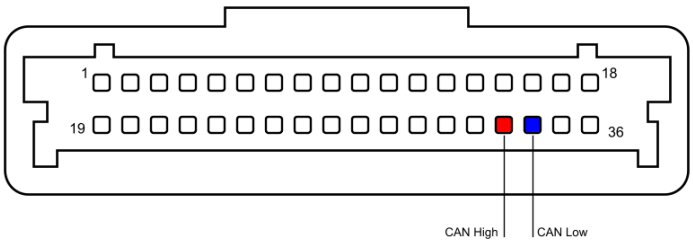


- "Setup Wizard" panel appears: select "Telemetry AEMNet" (**1**);
- "Configuration name" appears in the right part of the window as shown below (**2**) notifying the user that firmware version matches system requirements;
- press "Apply" (**3**).



3
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-

4
AIM Logger configuration

Before connecting the ECU connected to the device set it up as follows:

Run Race Studio 2 software and follow this path:

- Device Configuration –> select the device you are using;
- select the configuration or press “New” to create a new one;
- select ECU manufacturer “AEM” and ECU Model “EMS-4 v1.21 CAN + Dynoshaft”;
- transmit the configuration to the device pressing “Transmit”.

4
Available channels

Channels received by AIM loggers connected to "AEM" "EMS4 V 1.21+Dynoshaft" protocolare listed here below. Please note: channels from 21 to 36 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	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: bit = 0 – Sensor firmware error bit = 1 – Controller firmware error bit = 2 – Sensor comms active bit = 3 – Got good zero offset bit = 4 – Got good calibration bit = 5 – Led aligned bit = 6 – Auto zero active bit = 7 – not used