

EFI Europe
Euro 4 Auto V160 ECU



INTRODUCTION

AIM has developed special applications for many of the most popular ECUs: by special applications we mean user-friendly systems which allow to easily connect your ECU to our high tech data loggers: user needs only to install harness between the **logger** and the ECU.

Once connected, the logger displays (and/or records, depending on the logger and on the ECU data stream and configuration) values like RPM, engine load, throttle position (TPS), air and water temperatures, battery voltage, speed, gear, lambda value (air/fuel ratio) analog channels...

All AIM loggers include – free of charge – **Race Studio 2** software, a powerful tool to configure the system and analyze recorded data on your PC.

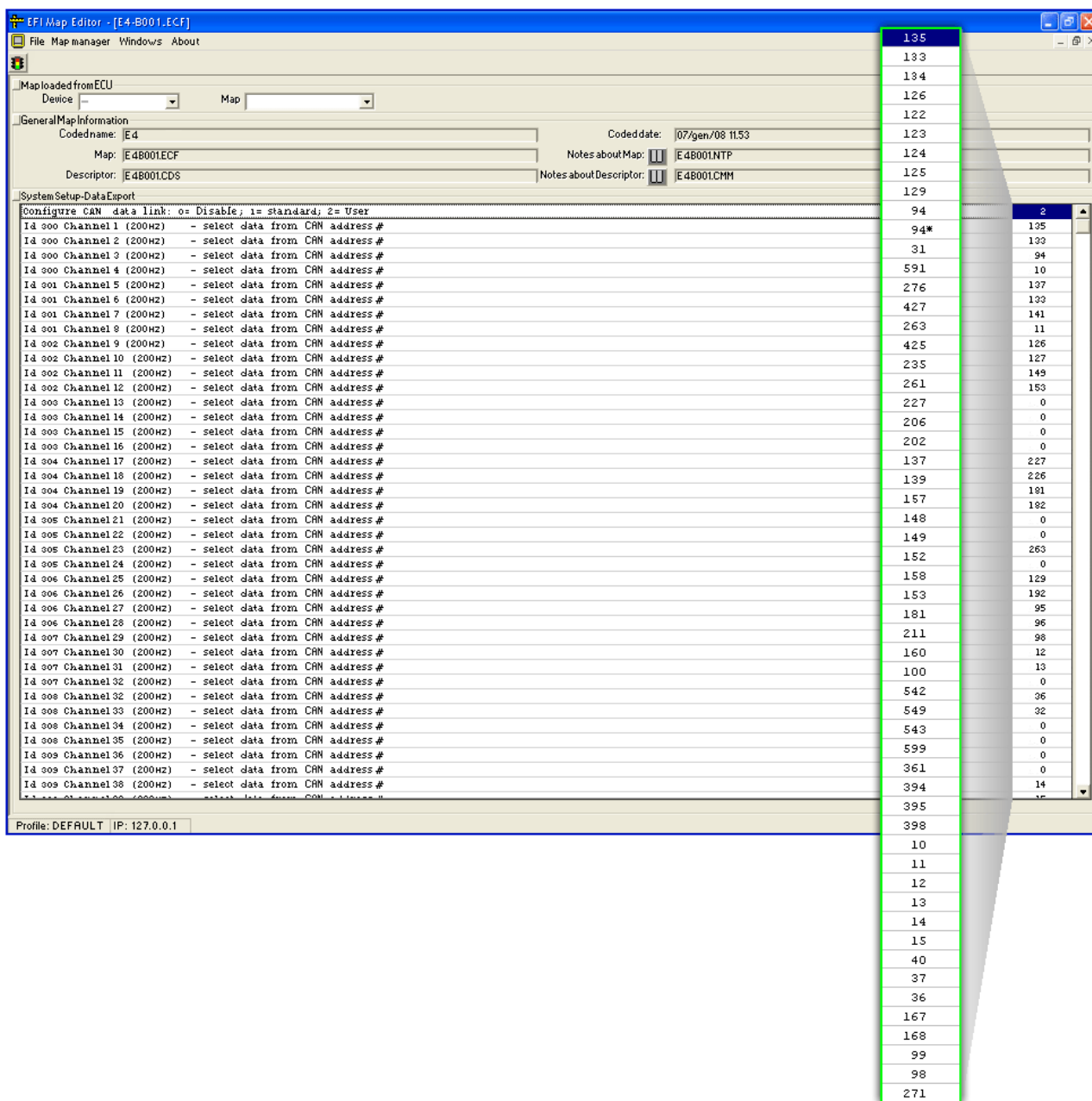
Warning: once the ECU is connected to the logger, it is necessary to set it in the logger configuration in Race Studio 2 software.
Select Manufacturer “EFI_EUROPE” Model “Euro_4_AUTO_V160_ATL_TURBO”.
Refer to Race Studio Configuration user manual for further information concerning the loggers configuration.

1 – Technical communication notes

EFI Euro 4 Auto V160 (firmware version 160) is an ECU developed for car applications equipped with Turbo engine. It can communicate with AIM loggers through the CAN bus.

1.1 – Software check

EFI ECU comes with a dedicated software whose data export table is to be set to allow the ECU communicating with AIM loggers. The image below shows the correct codes (in the green box) to be filled in.



The screenshot shows the 'EFI Map Editor - [E4-B001.ECF]' window. The 'General Map Information' tab is active, displaying 'Map: E4B001.ECF' and 'Descriptor: E4B001.CDS'. The 'System Setup-Data Export' section shows the 'Configure CAN data link' settings. A table of 38 channels is displayed, each with a 'data link' value. A green box highlights the values for channels 1 through 38, which are: 135, 133, 134, 126, 122, 123, 124, 125, 129, 94, 94*, 31, 591, 276, 427, 263, 425, 235, 261, 227, 206, 202, 137, 139, 157, 148, 149, 152, 158, 153, 181, 211, 160, 100, 542, 549, 543, 599, 361, 394, 395, 398, 10, 11, 12, 13, 14, 15, 40, 37, 36, 167, 168, 99, 98, and 271.

| Channel | data link |
|---------------------------|-----------|
| Id 000 Channel 1 (200Hz) | 135 |
| Id 000 Channel 2 (200Hz) | 133 |
| Id 000 Channel 3 (200Hz) | 134 |
| Id 000 Channel 4 (200Hz) | 126 |
| Id 001 Channel 5 (200Hz) | 122 |
| Id 001 Channel 6 (200Hz) | 123 |
| Id 001 Channel 7 (200Hz) | 124 |
| Id 001 Channel 8 (200Hz) | 125 |
| Id 002 Channel 9 (200Hz) | 129 |
| Id 002 Channel 10 (200Hz) | 94 |
| Id 002 Channel 11 (200Hz) | 94* |
| Id 002 Channel 12 (200Hz) | 31 |
| Id 003 Channel 13 (200Hz) | 591 |
| Id 003 Channel 14 (200Hz) | 276 |
| Id 003 Channel 15 (200Hz) | 427 |
| Id 003 Channel 16 (200Hz) | 263 |
| Id 003 Channel 17 (200Hz) | 425 |
| Id 003 Channel 18 (200Hz) | 235 |
| Id 003 Channel 19 (200Hz) | 261 |
| Id 003 Channel 20 (200Hz) | 227 |
| Id 003 Channel 21 (200Hz) | 206 |
| Id 003 Channel 22 (200Hz) | 202 |
| Id 004 Channel 23 (200Hz) | 137 |
| Id 004 Channel 24 (200Hz) | 139 |
| Id 004 Channel 25 (200Hz) | 157 |
| Id 005 Channel 26 (200Hz) | 148 |
| Id 005 Channel 27 (200Hz) | 149 |
| Id 005 Channel 28 (200Hz) | 152 |
| Id 006 Channel 29 (200Hz) | 158 |
| Id 006 Channel 30 (200Hz) | 153 |
| Id 006 Channel 31 (200Hz) | 181 |
| Id 007 Channel 32 (200Hz) | 211 |
| Id 007 Channel 33 (200Hz) | 160 |
| Id 007 Channel 34 (200Hz) | 100 |
| Id 008 Channel 35 (200Hz) | 542 |
| Id 008 Channel 36 (200Hz) | 549 |
| Id 008 Channel 37 (200Hz) | 543 |
| Id 008 Channel 38 (200Hz) | 599 |
| Id 009 Channel 39 (200Hz) | 361 |
| Id 009 Channel 40 (200Hz) | 394 |
| Id 009 Channel 41 (200Hz) | 395 |
| Id 009 Channel 42 (200Hz) | 398 |
| Id 009 Channel 43 (200Hz) | 10 |
| Id 009 Channel 44 (200Hz) | 11 |
| Id 009 Channel 45 (200Hz) | 12 |
| Id 009 Channel 46 (200Hz) | 13 |
| Id 009 Channel 47 (200Hz) | 14 |
| Id 009 Channel 48 (200Hz) | 15 |
| Id 009 Channel 49 (200Hz) | 40 |
| Id 009 Channel 50 (200Hz) | 37 |
| Id 009 Channel 51 (200Hz) | 36 |
| Id 009 Channel 52 (200Hz) | 167 |
| Id 009 Channel 53 (200Hz) | 168 |
| Id 009 Channel 54 (200Hz) | 99 |
| Id 009 Channel 55 (200Hz) | 98 |
| Id 009 Channel 56 (200Hz) | 271 |

2 – Connection to AIM loggers

EFI Euro 4 Auto V150 ECU is equipped with two male connectors. The CAN bus is on the left one (CNR). Connect:

- AIM cable labelled “CAN+” to pin F3 of the right connector;
- AIM cable labelled “CAN-” to pin E4 of the right connector.



3 – Communication protocol

Channels received by AIM loggers connected to EFI Euro 4 Auto V160 ECU are:

| ID | CHANNEL NAME | FUNCTION |
|--------|-----------------|--|
| ECU_1 | E4_RPM | RPM |
| ECU_2 | E4_TPS_1 | Throttle Position Sensor 1 |
| ECU_3 | E4_TPS_2 | Throttle Position Sensor 2 |
| ECU_4 | E4_CAR_SPEED | Vehicle speed |
| ECU_5 | E4_FR_SPEED | Front Right wheel speed |
| ECU_6 | E4_FL_SPEED | Front left wheel speed |
| ECU_7 | E4_RR_SPEED | Rear right wheel speed |
| ECU_8 | E4_RL_SPEED | Rear Left wheel speed |
| ECU_9 | E4_GEAR | Engaged gear |
| ECU_10 | E4_MAP | Manifold Air pressure |
| ECU_11 | E4_BOOST | Gauge boost managed by AIM logger |
| ECU_12 | E4_KNOCK | Knock counter |
| ECU_13 | E4_LAMBDA_TEMP | Lambda sensor temperature |
| ECU_14 | E4_LAMBDA1 | Lambda sensor 1 |
| ECU_15 | E4_LAMBDA2 | Lambda sensor 2 |
| ECU_16 | E4_CLC_1 | Closed loop control 1 (injection) |
| ECU_17 | E4_CLC_2 | Closed loop control 2 (injection) |
| ECU_18 | E4_LEARN_1 | Fuel correction coefficient for auto mapping |
| ECU_19 | E4_FUEL_C_L | Fuel open/closed |
| ECU_20 | E4_T_INJ_BASE | TerogBase1 |
| ECU_21 | E4_T_INJ_U | Upper injectors injection time |
| ECU_22 | E4_T_INJ_L | Lower injectors injection time |
| ECU_23 | E4_D_TPS_1 | Throttle position sensor 1 derivative |
| ECU_24 | E4_D_MAP | Manifold Air pressure derivative |
| ECU_25 | E4_TC_STATUS | Traction control status |
| ECU_26 | E4_TC_SLIP | Traction control slip |
| ECU_27 | E4_TC_SLIP_CALC | Slip calculation for traction control |
| ECU_28 | E4_TC_SLIP_TRIM | Slip multiplier for traction control |
| ECU_29 | E4_TC_CUT | Cut for traction control |
| ECU_30 | E4_TC_SA_OFFSET | Osa slip |
| ECU_31 | E4_SA_BASE | Spark advance base |

| | | |
|--------|------------------|---------------------------|
| ECU_32 | E4_SA | Spark advance |
| ECU_33 | E4_SHIFT_CUT | Shift Cut |
| ECU_34 | E4_SYNC | Sync |
| ECU_35 | E4_ATL_ACTIVE | Anti turbo lag active |
| ECU_36 | E4_TURBO_SPEED | Turbo speed |
| ECU_37 | E4_EXHST_TEMP | Exhausted air temperature |
| ECU_38 | E4_LAMBDA_OXY | Lambda oxygen percentage |
| ECU_39 | E4_IDLE_DC | Idle DC OUT |
| ECU_40 | E4_BOOST_TARG | Target Map Boost |
| ECU_41 | E4_BOOST_ERROR | Pressure sensor |
| ECU_42 | E4_BOOST_WG_OUT | Boost out |
| ECU_43 | E4_ANALOG_1 | Analog channel 1 |
| ECU_44 | E4_ANALOG_2 | Analog channel 2 |
| ECU_45 | E4_ANALOG_3 | Analog channel 3 |
| ECU_46 | E4_ANALOG_4 | Analog channel 4 |
| ECU_47 | E4_ANALOG_5 | Analog channel 5 |
| ECU_48 | E4_ANALOG_6 | Analog channel 6 |
| ECU_49 | E4_ANALOG_7 | Analog channel 7 |
| ECU_50 | E4_ANALOG_8 | Analog channel 8 |
| ECU_51 | E4_VBATT | Battery supply |
| ECU_52 | E4_P_BRAKE_R | Rear brake pressure |
| ECU_53 | E4_P_BRAKE_F | Front brake pressure |
| ECU_54 | E4_P_CLUTCH | Clutch pressure |
| ECU_55 | E4_P_BARO | Barometric pressure |
| ECU_56 | E4_FUEL_USED_LTR | Used fuel |
| ECU_57 | E4_FUEL_REM_LTR | Remaining fuel |
| ECU_58 | E4_T_H2O | Water temperature |
| ECU_59 | E4_T_OIL | Oil temperature |
| ECU_60 | E4_T_AIR | Air temperature |
| ECU_61 | E4_T_SPARE | Spare Temperature |
| ECU_62 | E4_P_OIL | Oil temperature |
| ECU_63 | E4_P_FUEL | Fuel temperature |
| ECU_64 | E4_SEL_MAP | Selected map |