EFI Europe Euro 4 Bike 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" Model "Euro_4_Bike". Refer to Race Studio Configuration user manual for further information concerning the loggers configuration.



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Chapter 1 – Technical communication notes

EFI Euro 4 "B" (Bike – from here onward "B") versions can communicate with AIM loggers through the CAN bus. This communication can be wrong due to different reasons related to hardware, firmware or software.

1.1 Hardware check

EFI CAN line works normally with two only wires: CAN high (corresponding to AIM CAN+) and CAN low (corresponding to AIM CAN-). Generally AIM loggers do not need to ground CAN line. To check if hardware is ok:

- ensure that a 120 Ohm "end line resistor" is installed between CAN+ and CAN-; use a multimeter; disconnect AIM logger from the ECU and make this check on both sides (ECU and logger);
- check if the amplitude of each bit is 2 V (or at least 1.8V); using a scope ground the probe on CAN- while measuring CAN+. Please ensure that no filtering feature is enabled on the scope: this because of high baud rate of this line.

1.2 – Software setup and firmware check

EFI Euro4 "B" versions ECU are ECUs whose firmware has been developed for bike applications and for them to communicate with AIM loggers it is necessary to set ECU map through "ECT Mod", the EFI software so that their CAN bus is managed as AIM loggers manage it.

To configure EURO 4 "B" versions:

- run "ECT Mod" software;
- load a "B001" or higher device;
- click "Map Editor" and the related page appears;
- click Map Manager and select "ECU setup MAP"



• click "file" and select "Load from file" option.



-		
🚏 EFI Map Editor - [Setup Map Editor]	
Ele Map manager	Windows About	_ 8 ×
Load from File		
General map information		
Coded name :	Eoded date :	
Map:	Notes about Map : [1]	
Descriptor :	Notes about Descriptor 111	
làvaible items	,	,
Profile: DEFAULT		

- Select the ".ECF" file.
- Select the ".CDS" file.



- the map is loaded
- select "system setup data export" option

Pie Menander Wicken Abod Image: Second S	🚏 EFI Map Editor - [E4-B001.ECF]		
Condition: C	🔲 File - Map manager	Windows About		_ 8 ×
Jaced May Formation Coded over F4 May: F40001CFF Decoder F4 Coded over F4 Coded over F40001CFF Decoder F40001CFF Decoder F40001CFF To Top F10001CFF	8			
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Data export table is loaded.

EFI Map Editor - [E4-B001.ECF]			
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Device Map			
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Coded name: E4	Coded date : [U//gen/U811.53		
Map : [E4-8001.ECF	Notes about Map : LL E4-8001.NTP		_
Descriptor: E48001.CDS	Notes about Descriptor	_	-
System Setup - Data Export	200		
Configure CAN data link: 0= Disable; 1= Standard; 2= User		2	-
Id 300 Channel 1 (200Hz) - select data from CAN address #		135	
Id 300 Channel 2 (200Hz) - select data from CAN address #		133	
Id 300 Channel 3 (200Hz) - select data from CAN address #		94	1
Id 300 Channel 4 (200Hz) - select data from CAN address #		10	
Id 301 Channel 5 (200Hz) - select data from CAN address #		137	
Id 301 Channel 6 (200Hz) - select data from CAN address #		139	1
Id 301 Channel 7 (200Hz) - select data from CAN address #		141	
Id 301 Channel 8 (200Hz) - select data from CAN address #		11	
Id 302 Channel 9 (200Hz) - select data from CAN address #		126	
Id 302 Channel 10 (200Hz) - select data from CAN address #		127	
Id 302 Channel 11 (200Hz) - select data from CAN address #		149	
Id 302 Channel 12 (200Hz) - select data from CAN address #		153	
Id 303 Channel 13 (200Hz) - select data from CAN address #		0	
Id 303 Channel 14 (200Hz) - select data from CAN address #		0	
Id 303 Channel 15 (200Hz) - select data from CAN address #		0	
Id 303 Channel 16 (200Hz) - select data from CAN address #		0	
Id 304 Channel 17 (100Hz) - select data from CAN address #		227	
Id 304 Channel 18 (100Hz) - select data from CAN address #		226	
Id 304 Channel 19 (100Hz) - select data from CAN address #		181	
Id Jue Channel 20 (10082) - select data from CAN address p		102	
Id SUS Channel 21 (100HE) - Select data from CAN address #		0	
Te sos chammel 22 (100Ms) - select data from CAN address #		0	
Id 305 Channel 25 (100Ms) - select date from CAN address #		263	
Id 305 Channel 24 (100Hz) - select data from CAN address #		109	
To 200 Channel 20 (100Ma) - search data from CAN address #		192	
Id 306 Channel 22 (100Mz) = relect data from CAN address #		95	
Td 206 Channel 20 (100Wr) - select data from CAN address f		96	
Id 307 Channel 29 (100Hz) - select data from CAN address #		98	
Id 307 Channel 30 (100Hz) - select data from CAN address #		12	
Id 307 Channel 31 (100Hz) - select data from CAN address #		13	1
Id 307 Channel 32 (100Hz) - select data from CAN address #		0	1
Id 308 Channel 33 (100Hz) - select data from CAN address #		36	1
Id 308 Channel 34 (100Hz) - select data from CAN address #		32	1
Id 308 Channel 35 (100Hz) - select data from CAN address #		0	-
Profile: DEFAULT IP: 127.0.0.1 Map Compare: by scaled value			

The right column of this table needs to be modified from ID 300 up to ID 308 except for the cell of the first row "Configure CAN data line", that remains set on "2".

Warning: ID from 309 onwards have to be set to "0".



Here below is shown the column to modify with values to set on the left and default one on the right.

🕆 EFI Map Editor - [E4-B001.ECF]			
File Map manager Windows About	2	_ 8 ×	2
	135		135
8	599		133
_JMap loaded from ECU	276		94
Device v Map	276		24
_General Map Information	227		10
Coded name : [E4 Coded date : [07/gen/08 11.53	200		137
Map: E4-8001.ECF Notes about Map: E4-8001.NTP	202		139
Descriptor : E48001 CDS Notes about Descriptor 1111 E48001 CMM	206		141
Kusten Selue - Data Finort	255		11
System setup - Owa capao Constiguent 2000 - Owa capao	254		126
TA 300 (Channel 1 (2008) - select, 1 - ocalizat, 2 - ocalizat, 2 - ocalizat, 2 - ocalizat, 2 - ocalizat, 3 - ocalizat, 2 - ocali	101	135	107
Id 300 Channel 2 (200Hz) - select data from CAN address #	181	133	127
Id 300 Channel 3 (200Hz) - select data from CAN address #	211	94	149
Id 300 Channel 4 (200Hz) - select data from CAN address #	153	10	153
Id 301 Channel 5 (200Hz) - select data from CAN address #	122	137	0
Id 301 Channel 6 (200Hz) - select data from CAN address #	124	139	0
Id 301 Channel 7 (200Hz) - select data from CAN address #	164	141	-
Id 301 Channel © (200Hz) - select data from CAN address #	259	11	U
Id 302 Channel 9 (200%) - select data from CAN address #	260	126	0
Id 302 Channel IU (2008) - select data from LAN address B	133	127	227
TA 302 Channel 14 (2008) - select data from CAN address #	314	153	226
Id 203 Channel 13 (200H) - select data from CAN address #	169	0	101
Id 303 Channel 14 (200Hz) - select data from CAN address #	160		181
Id 303 Channel 15 (200Hz) - select data from CAN address #	167		182
Id 303 Channel 16 (200Hz) - select data from CAN address #	94		0
Id 304 Channel 17 (100Hz) - select data from CAN address #	149	227	0
Id 304 Channel 18 (100Hz) - select data from CAN address #	158	226	263
Id 304 Channel 19 (100Hz) - select data from CAN address #	100	181	
Id 304 Channel 20 (100Hz) - select data from CAM address #	192	182	0
Id 305 Channel ZI (100Hz) - select data from CAN address #	253		129
Id 305 Chamnel 22 (100H) - select data from LAN address #	142	262	132
TA 305 Channel 2 (100Hz) = select data from CAN address #	144	0	95
Id 306 Channel 25 (100Hz) - select data from CAN address #	96	129	96
Id 306 Channel 26 (100Hz) - select data from CAN address #		132	
Id 306 Channel 27 (100Hz) - select data from CAN address #	20	95	20
Id 306 Channel 28 (100Hz) - select data from CAN address #	91	96	12
Id 307 Channel 29 (100Hz) - select data from CAN address #	92	98	13
Id 307 Channel 30 (100Hz) - select data from CAN address #	93	12	0
Id 307 Channel 31 (100Hz) - select data from CAN address #	129	13	26
Id 307 Channel 32 (100Hz) - select data from CAN address #	100	0	00
la 300 channel 35 (100rz) - select data from CAN address s	420	30	32
Id 308 Channel 35 (100Ks) - select data from CAN address #	36	0	0
Id 308 Channel 36 (100Hz) - select data from CAN address #	271	0	0
Id 309 Channel 37 (100Hz) - select data from CAN address #	0	0	0
Id 309 Channel 38 (100Hz) - select data from CAN address #	0	0	0
Id 309 Channel 39 (100Hz) - select data from CAN address #		14	
Id 309 Channel 40 (100Hz) - select data from CAN address #	0	15 -	14
	0		15

Profile: DEFAULT IP: 127.0.0.1

Warning: values of the right column shown here below and labelled as "OK" are referred to EFI EURO4 "B002" device. Newer devices can have different values to be set on the same channels. It is strongly recommended to check "Data properties" layer in "Device Manager" page of "ECT MOD" software.



The image here below shows TPS Static position as 133. In case of newer version check the new value for this channel.

Device : C:\Programmi\EFI Technology\ECT_MOD\DEVICE	E\E4-B001.DEV\E4-B001.DDB 🛛 🛛 🔀
Device Can/Info Data Properties :	
String expression sought	
	• 133
ST Pos. Description: Cust 132 Throttle 1 Position TPS	tom Name: Factory Name :
Data Type : Conversion Type : Default Value : Disp	olav Format: Unit:
MIS DEC 0 ##0	0.0 %
Gain 1: Offset 1: Gain 2: Offset 2: Dlogger Dlog max 100 0 0 256 ✓ 50 •	Hz Bytes Min graph val Max graph val
Correction type - Button 'STORE'	
0 - DISABLED	
ASAP :	
Address : Bytes : Data Result :	Check Data
Ir	nherits from Append Delete last
	Exit



The channels to be checked are listed in the table here below, where TPS channel is highlighted.

AIM Channel name	B002 Static table position	EFI channel name
RPM	135	RPMd
AFR	599	ILIOS AFRatio
lambda	276	AFRNGK1
TEROG base	227	terog-base1
TEROG	200	terog-log
TEROG_U	202	tinj-5
TEROG_L	206	tinj-1
FASE_inj_U	255	faseU
FASE_inj_L	254	faseL
ANTICIPO_base	181	SABase1
ANTICIPO	211	teta1
ANTICIPO f(slip)	153	OSAslip
SPEED_A	122	speedFR
SPEED_P	124	speedRR
LASER_A	259	fork_mm
LASER_P	260	Shock_mm
TPS	133	tps
PPS	314	pps
BRAKE_P_a	168	BrakeF
Brake_P_p	167	BrakeR
MAP	94	MAP
SLIP_CALC	149	slipCalc
TC_CUT_LEVEL	158	TC_CUT_LEVEL
IC_IRIM	152	TRIM_SLIP
RIPAR I IZIONE_INJ_U/L	253	kinjhighperc
arricchimento farf+	142	AEDfarfl
derivata farfalla	144	Diaricalc
FUEL_P	96	fuel press
	95	oil press
	91	
H2O_I	92	TH20
AIR_I	93	lair
	129	GEAK
	42U 2C	
VBATI_ECU	30	
denzina usata	2/1	cosumo tuel

Please ensure that the logger connected to the ECU is upgraded at the latest firmware version and has been configured with the latest Race Studio 2 version.



Chapter 2 – CAN communication Setup

EFI Euro 4 "B" versions ECU is equipped with a CAN communication Setup used to communicate with an external logger.

The image here below shows the standard CAN communication setup.



Chapter 3 – Connection with AIM loggers

EFI Euro 4 "B" version ECU is equipped with two male connectors. The CAN bus is on the right 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.





Chapter 4 – EFI Euro 4 Bike communication protocol

Channels received by AIM loggers connected to Efi Euro 4 "Bike" version ECU are:

ID	CHANNEL NAME	FUNCTION
ECU 1	RPM	RPM
ECU ²	AFR	Air/Fuel ratio
ECU_3	Lambda	Lambda value (stoichiometric value =14.70)
ECU_4	TEROG_base	Injection table – injection time
ECU_5	TEROG	Real injection time
ECU_6	TEROG_U	Upper injectors injection time
ECU_7	TEROG_L	Lower injectors injection time
ECU_8	FASE_inj_U	Upper injectors phase
ECU_9	FASE_inj_L	Lower injectors phase
ECU_10	ANTICIPO_base	Ignition table – spark advance
ECU_11	ANTICIPO	Real spark advance
ECU_12	ANTICIPO f(slip)	Advance cut due to SLIP_CALC
ECU_13	Speed_A	Front wheel speed
ECU_14	Speed_P	Rear wheel speed
ECU_15	Laser_A	Fork position
ECU_16	Laser_P	Mono position
ECU_17	TPS	Throttle position sensor
ECU_18	PPS	Throttle request
ECU_19	Brake_P_a	Front brake pressure
ECU_20	Brake_P_P	Rear brake pressure
ECU_21	MAP	Manifold pressure
ECU_22	SLIP_CALC	Calculated slip (with engine strategies)
ECU_23	TC_CUT_LEVEL	Advance cut (for traction control)
ECU_24	TC_TRIM	Slip multiplier (for traction control)
ECU_25	RIPARTIZIONE_INJ_U/L	TEROG_U/TEROG_L
FCU 26	ARRICCHIMENTO FARE+	Fuel enrichment multiplier on throttle positive
		transients
ECU_27	derivata_farfalla	Throttle derivative
ECU_28	Fuel_p	Fuel pressure
ECU_29	Oil_P	Oil pressure
ECU_30	Oil_T	Oil temperature
ECU_31	H2O_T	Engine cooling temperature
ECU_32	AIR_T	Air temperature
ECU_33	GEAR	Engaged gear
ECU_34	MAPPA	Selected Engine Map
ECU_35	VBATT_ECU	ECU Voltage supply
ECU_36	Benzina usata	Injected fuel