AiM Infotech

ViPec V44-V88
CAN Bus Base and
CAN Bus Full protocol

Release 1.01

1
Prerequisites

This tutorial explains how to connect ViPec V44-V88 to AiM loggers using the CAN Bus. This communication protocol offers two different configurations: a CAN Bus Base (supplied by default) and a CAN Bus Full, available downloading a file from AIM website www.aim-sportline.com (See par. 2.2).
For any further information concerning ECU firmware / software settings and/or upgrading it is always recommended to address to the ECU dealer.

ViPec V44-V88 feature a bus communication protocol based on CAN. For a correct communication between the ECU and AiM device some pre-requisites are to be verified:
* ECU Firmware version is to be 4.8.0 or higher;
* ECU serial number is to be 10000 or higher;
* VTS software release is to be 4.8.xxx OR HIGHER.

2
Software setup

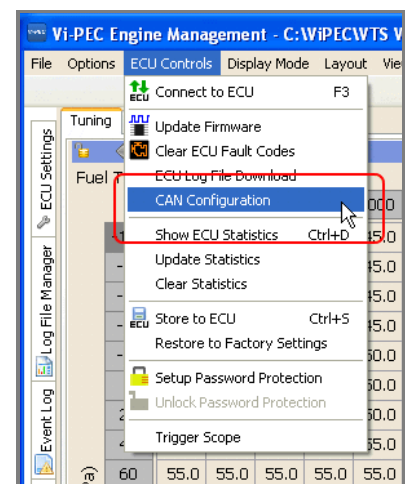ViPec V44-V88 ECUs need a software setting via "VTS" software.

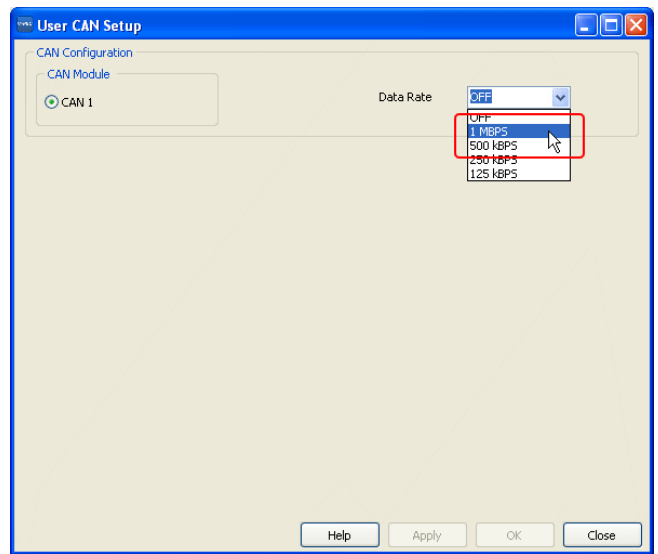# 2.1
VTS Software setting for CAN Bus Base configuration

To set ViPec V44-V88 ECU CAN Bus Base:
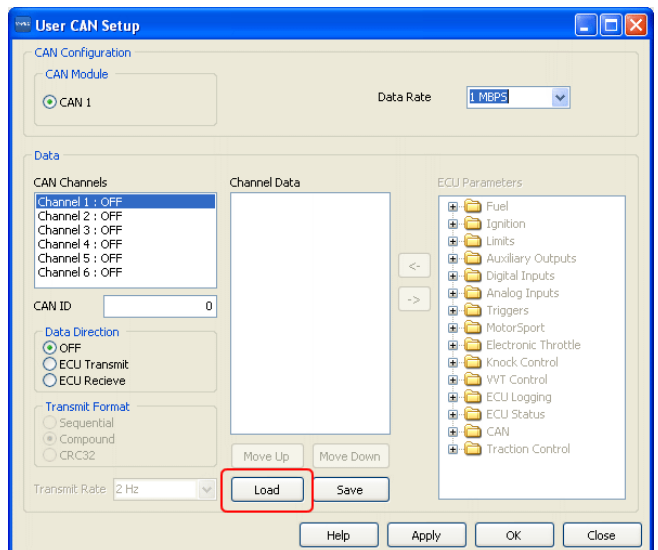* run the software
* load a configuration (File –> open)
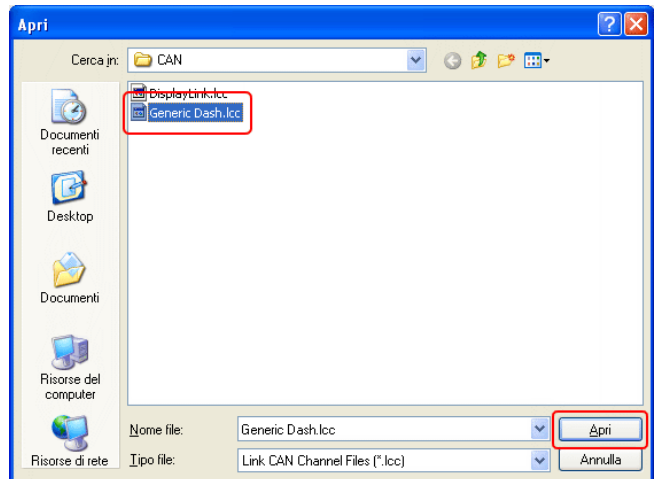* follow this path: ECU Controls –> CAN Configuration as shown here on the right.

"User CAN Setup" panel appears: select Data Rate 1 MBPS.

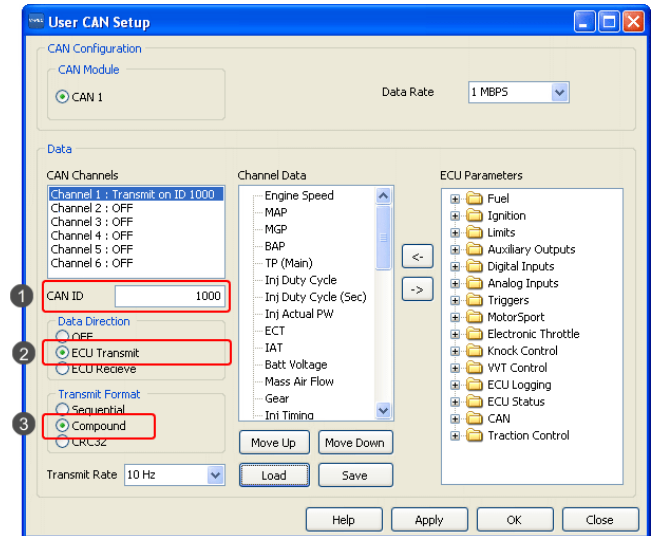The panel shows the selected CAN Setup. Press "Load".

Select "Generic Dash.lcc" and press "Open"

It is now necessary to check the following parameters settings:

- CAN ID: 1000 (**1**);
- ECU Transmit flag: enabled (**2**);
- Compound flag: enabled (**3**).

Once these parameters verified press "Apply" and "OK"

The system warns you to check your ECU serial number to verify that it is 10000 or higher. Press "OK" and transmit the configuration to the ECU.
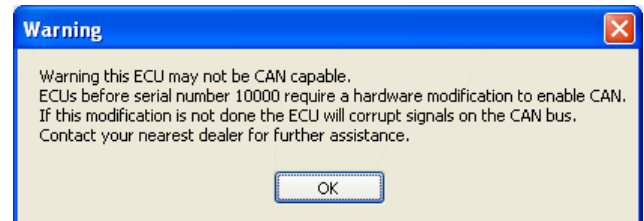
Please note: once "Generic Dash" file loaded, Channels Data" box, highlighted here below, must show exactly the list that follows.
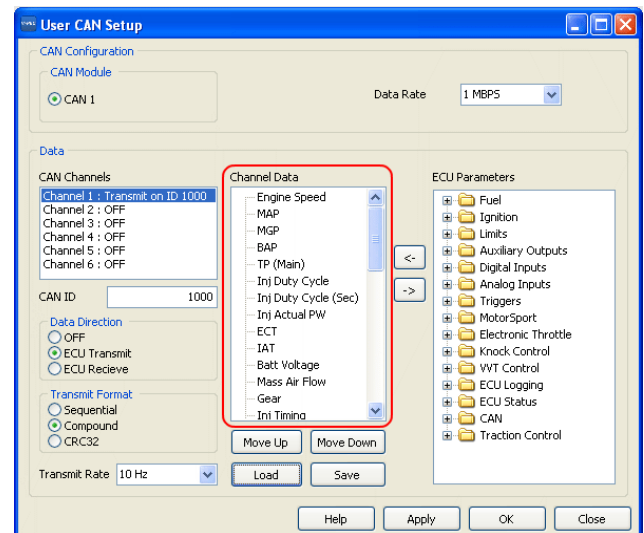
Channel Data list:

Engine speed	Inj Timing	Speed#1 – DI
MAP	Ign Angle	Speed#2 - DI
MGP	Inlet/LH Posn	Speed#3 – DI
BAP	Inlet/RH Posn	Speed#4 - DI
TP (Main)	Exh/LH Posn	Knk Level Cyl 1
Inj Duty Cycle	Exh/RH Posn	Knk Level Cyl 2
Inj Duty Cycle (sec)	WideBand1	Knk Level Cyl 3
Inj Actual PW	WideBand2	Knk Level Cyl 4
ECT	Trig1 Err Counter	Knk Level Cyl 5
IAT	Fault Codes	Knk Level Cyl 6
Battery Voltage	Fuel Pressure	Knk Level Cyl 7
Mass Air Flow	Oil Temp	Knk Level Cyl 8
Gear	Oil Pressure	Limits Flags Word

2.2
VTS Software setting for CAN Bus Full configuration

To correctly load "CAN Bus Full" configuration via VTS software, it is necessary to download a specific file you find in AIM website at www.aim-sportline.com, following this path:

- Download –> ECUs connections –> Racing ECU's list–> Vi-PEC.

Under the list of available ViPec ECU documents you find the link to download the configuration file (ViPec_All_inputs.lcc). Click on it and store the file where you prefer.

Once the file downloaded run VTS software, load a configuration (File –> open) and follow this path:
ECU Controls –> CAN Configuration.

"User CAN Setup" panel appears: select Data Rate 1 MBPS.
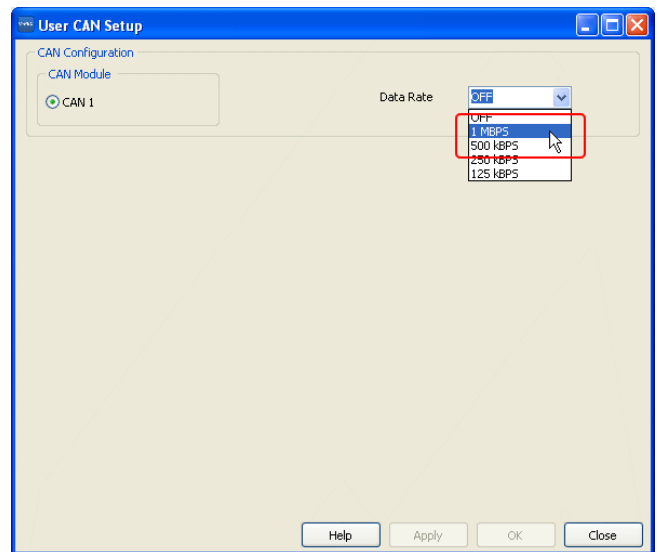
The panel shows the selected CAN Setup. Press "Load".

Browse the folders until the one where the file has been stored, select "ViPec_All_Inputs.lcc" and press "Open"
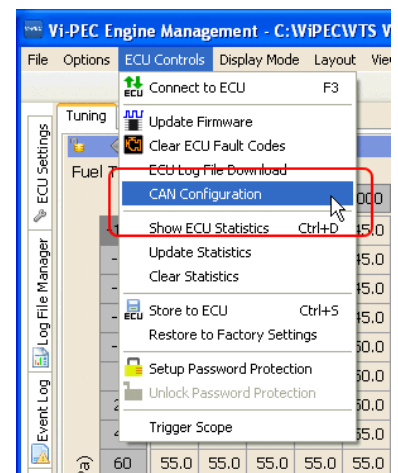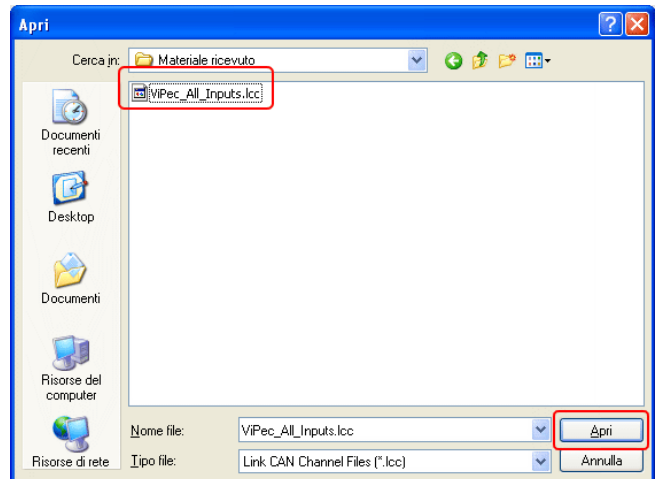
It is now necessary to check the following parameters settings:

- CAN ID: 1000 (**1**);
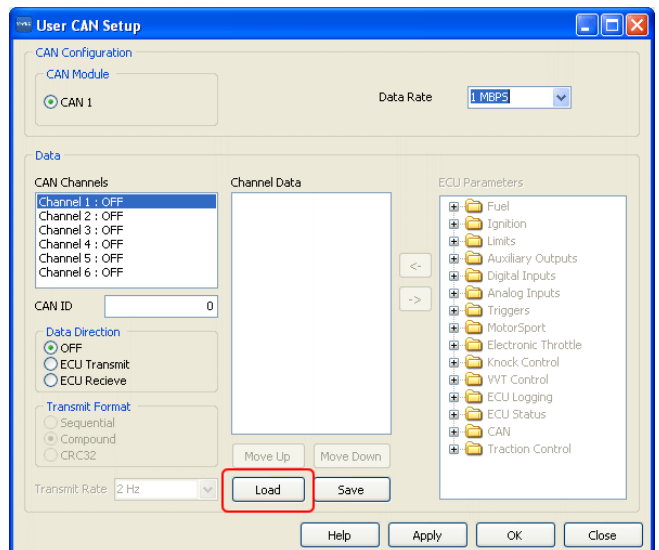- ECU Transmit flag: enabled (**2**);
- Compound flag: enabled (**3**).

Once these parameters verified press "Apply" and "OK"
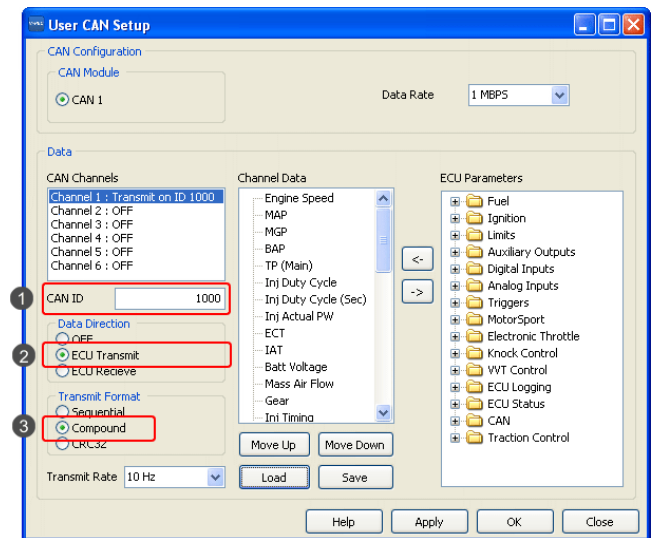
The system warns you to check your ECU serial number to verify that it is 10000 or higher. Press "OK" and transmit the configuration to the ECU.
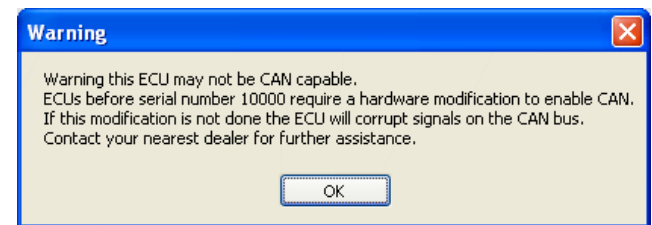
Please note: once "Generic Dash" file loaded, Channels Data" box, highlighted here below, must show exactly the list that follows.
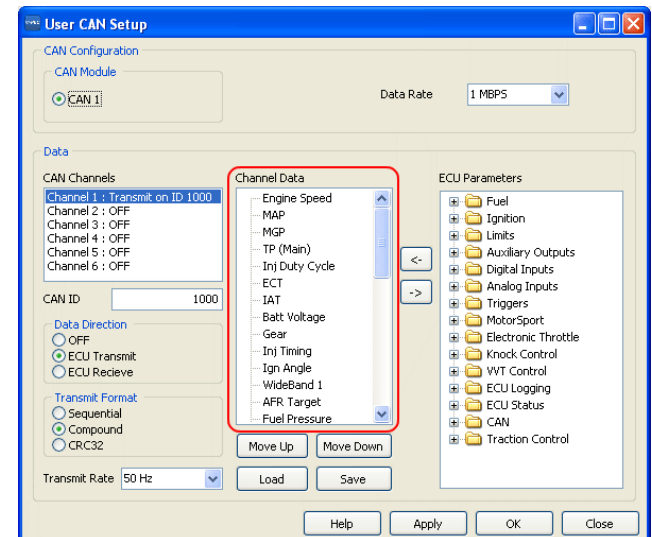
Channel Data list:

Engine speed	AFR Target	AN Volt 6
MAP	Fuel Pressure	AN Volt 7
MGP	Oil Temp	AN Volt 8
TP (Main)	Oil Pressure	AN Volt 9
Inj Duty Cycle	Speed#1 – DI	AN Volt 10
ECT	Speed#2 - DI	AN Volt 11
IAT	Speed#3 – DI	Digital Input 5
Battery Voltage	Speed#4 - DI	Digital Input 6
Gear	AT1 – GP Temp	Digital Input 7
Inj Timing	AT2 – GP Temp	Digital Input 8
Ign Angle	AT3 – GP Temp	Digital Input 9
WideBand1	AT4 – GT Temp	Digital Input 10

3
Wiring connection

ViPec V44-V88 ECU CAN Bus is on the bottom right connector shown here below.

Here below are the connector pinout and the connection table.
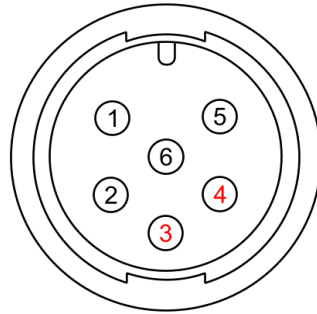
ECU connector pin	Function	Cable colour	AiM cable
3	CAN High	White	CAN+
4	CAN Low	Green	CAN-

4
AiM device configuration

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

- ECU manufacturer "ViPec"
- ECU Model
  - o "CAN_BUS_BASE_LCC" or
  - o "CAN_BUS_FULL_LCC"

5
Available channels

Channels received by AiM devices connected to ViPec V44-V88 ECU using the CAN bus changes according to the selected configuration.

5.1
"CAN_BUS_BASE_LCC" protocol

Channels received by AiM devices connected "ViPec" "CAN_BUS_BASE_LCC" protocol are:

ID	CHANNEL NAME	FUNCTION
ECU_1	ECU_RPM	RPM
ECU_2	ECU_SPEED1	Speed 1
ECU_3	ECU_SPEED2	Speed 2
ECU_4	ECU_SPEED3	Speed 3
ECU_5	ECU_SPEED4	Speed 4
ECU_6	ECU_TPS	Throttle Position Sensor
ECU_7	ECU_ECT	Engine coolant temperature
ECU_8	ECU_IAT	Intake air temperature
ECU_9	ECU_OILT	Oil temperature
ECU_10	ECU_GEAR	Engaged gear
ECU_11	ECU_MAP	Manifold Air pressure
ECU_12	ECU_MGP	Manifold gauge pressure
ECU_13	ECU_BARO	Barometric pressure
ECU_14	ECU_MAF_GR_SEC	Manifold Air flow (g/sec)
ECU_15	ECU_OIL_PRESS	Oil pressure
ECU_16	ECU_FUEL_PRESS	Fuel pressure
ECU_17	ECU_VOLTS	Battery Voltage
ECU_18	ECU_WBO2_LAM1	Lambda 1

ECU_19	ECU_WBO2_LAM2	Lambda 2
ECU_20	ECU_CAM_IN_LF	Camshaft Left inlet position
ECU_21	ECU_CAM_IN_RH	Camshaft Right inlet position
ECU_22	ECU_CAM_EX_LF	Camshaft left exhaust position
ECU_23	ECU_CAM_EX_RH	Camshaft Right exhaust position
ECU_24	ECU_INJECT_TIM	Injection time
ECU_25	ECU_IGN_TIM	Ignition time
ECU_26	ECU_INJ_DC	Injection dwell counter
ECU_27	ECU_INJ_DC_SEC	Injection dwell counter in seconds
ECU_28	ECU_INJ_PULSE	Injection pulse
ECU_29	ECU_TRIG1_ERR	Trigger 1 error
ECU_30	ECU_FAULT_CODE	Fault code
ECU_31	ECU_KNOCK_LEV1	Knock level 1
ECU_32	ECU_KNOCK_LEV2	Knock level 2
ECU_33	ECU_KNOCK_LEV3	Knock level 3
ECU_34	ECU_KNOCK_LEV4	Knock level 4
ECU_35	ECU_KNOCK_LEV5	Knock level 5
ECU_36	ECU_KNOCK_LEV6	Knock level 6
ECU_37	ECU_KNOCK_LEV7	Knock level 7
ECU_38	ECU_KNOCK_LEV8	Knock level 8
ECU_39	ECU_RPM_LIM	RPM Limiter
ECU_40	ECU_MAP_LIM	Manifold Air pressure limiter
ECU_41	ECU_SPEED_LIM	Speed limiter
ECU_42	ECU_MAX_IGN	Maximum ignition

5.2
"CAN_BUS_FULL_LCC" protocol

Channels received by AiM devices connected to "ViPec" "CAN_BUS_FULL_LCC" protocol are:

ID	CHANNEL NAME	FUNCTION
ECU_1	ECU_RPM	RPM
ECU_2	ECU_SPEED1	Speed 1
ECU_3	ECU_SPEED2	Speed 2
ECU_4	ECU_SPEED3	Speed 3
ECU_5	ECU_SPEED4	Speed 4
ECU_6	ECU_TPS	Throttle Position Sensor
ECU_7	ECU_ECT	Engine coolant temperature
ECU_8	ECU_IAT	Intake air temperature
ECU_9	ECU_OILT	Oil temperature
ECU_10	ECU_GEAR	Engaged gear
ECU_11	ECU_MAP	Manifold Air pressure
ECU_12	ECU_MGP	Manifold gauge pressure
ECU_13	ECU_EGT	Exhaust gas temperature
ECU_14	ECU_ENG_COOL_P	Engine coolant pressure
ECU_15	ECU_OIL_PRESS	Oil pressure
ECU_16	ECU_FUEL_PRESS	Fuel pressure
ECU_17	ECU_BATT_VOLT	Battery Voltage
ECU_18	ECU_WBO2_LAM1	Lambda 1
ECU_19	ECU_AFR_TARGET	Air/Fuel Ratio target
ECU_20	ECU_AT1	GP Temp 1
ECU_21	ECU_AT2	GP Temp 2
ECU_22	ECU_AT3	GP Temp 3
ECU_23	ECU_AT4	GP Temp 4
ECU_24	ECU_INJ_TIM	Ignition time
ECU_25	ECU_IGN_TIM	ECU Ignition time

ECU_26	ECU_INJ_DC	Injection dwell counter
ECU_27	ECU_EXH_BACK_P	exhausted back pressure
ECU_28	ECU_CRANK_PR	Crank Pressure
ECU_29	ECU_DIFF_TEMP	Differential control temperature
ECU_30	ECU_AN_VOLT11	Analog voltage 11
ECU_31	ECU_DIG_IN5	Digital input 5
ECU_32	ECU_DIG_IN6	Digital input 6
ECU_33	ECU_DIG_IN7	Digital input 7
ECU_34	ECU_DIG_IN8	Digital input 8
ECU_35	ECU_DIG_IN9	Digital input 9
ECU_36	ECU_DIG_IN10	Digital input 10