AiM Infotech

Marelli MF4 Black Box Tab

Release 1.02

ECU

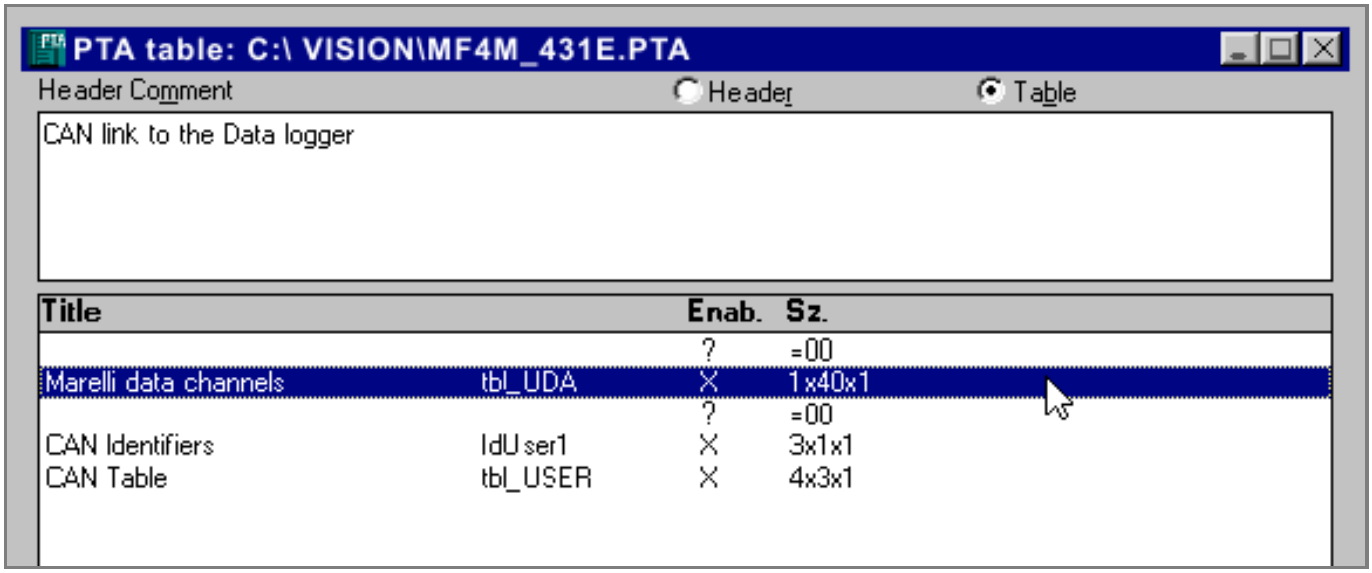
1 Introduction

This tutorial explains how to connect Marelli MF4 Black Box Tab ECU to AiM devices.

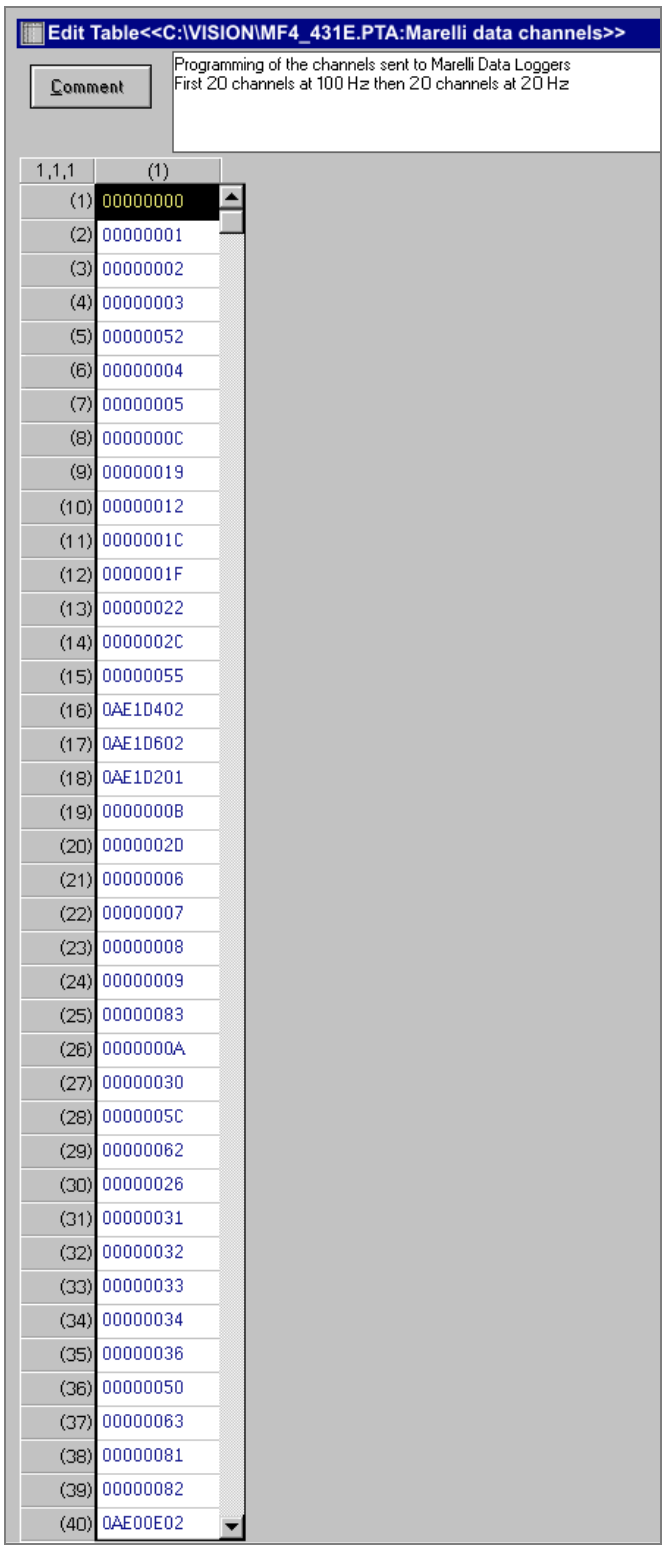
2 Software setting

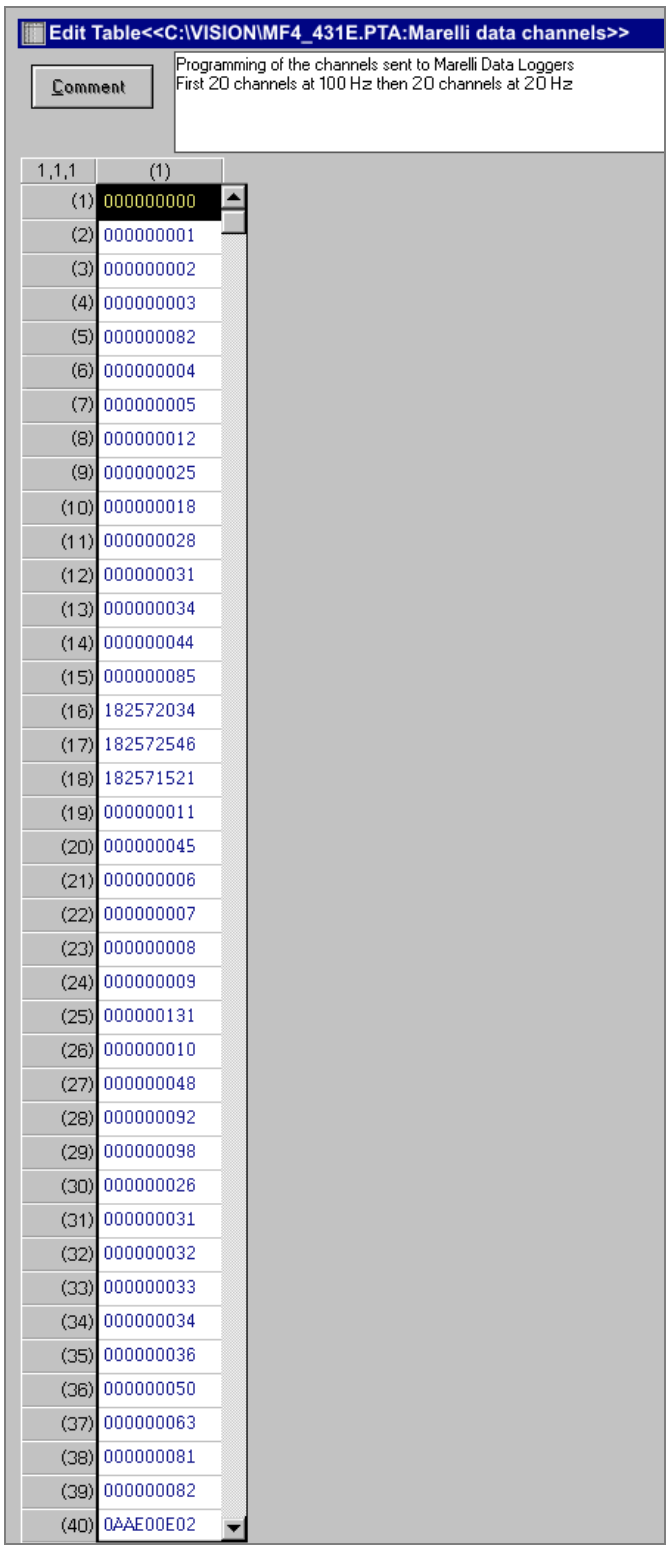
Marelli MF4M Black Box Tab ECU needs an appropriate software setting to correctly communicate with AiM devices. To do so:

- install and run Marelli "Vision" software
- load MF4M.PTA file
- the window below appears: select "Marelli data channels"



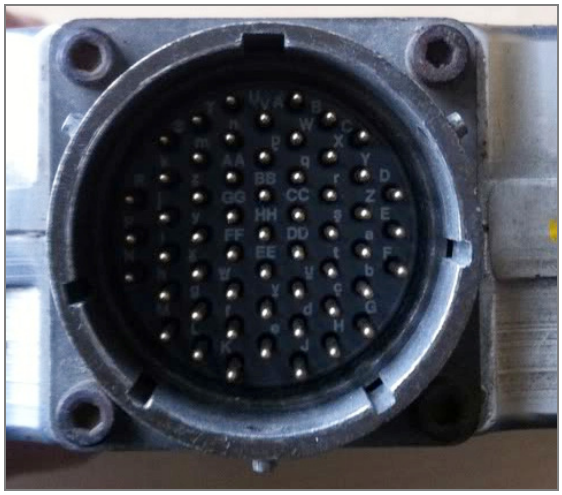
"Data channels table" appears. Digits to be filled in are shown below. They can be in Hexadecimal or in decimal format. In case the system does not accept the first format you can use the second. Here below you see both tables: hexadecimal format on the left and decimal on the right.

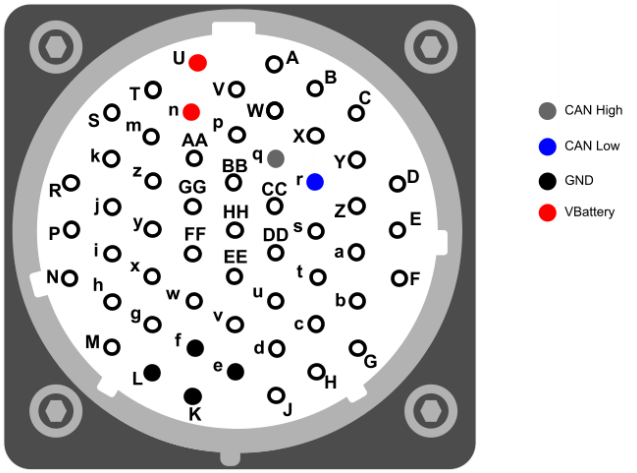




3
Connection to AiM devices

Marelli MF4 BlackBox Tab ECU features a bus communication protocol based on CAN on the 55 pins front male connector. Here below you see the connector in detail on the left, its pinout on the right and connection table on bottom.





55 pins Deutsch connector pin	Pin function	AiM cable
q	CAN High	CAN+
r	CAN Low	CAN-
K, L, e, f	GND	GND
U, n	V Battery	9-15 VDC

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 “MARELLI”
- ECU Model "MF4M_BlackBoxTab"

5 Available channels

Channels received by AiM devices connected to "MARELLI" "MF4M_BlackBoxTab" protocol are:

ID	CHANNEL NAME	FUNCTION
ECU_1	MF4M_RPM	RPM
ECU_2	MF4M_TPS	Throttle position sensor
ECU_3	MF4M_IN_AIR_PR	Intake air pressure
ECU_4	MF4M_BARO_PR	Barometric pressure
ECU_5	MF4M_DYN_PR	Dynamic pressure sensor
ECU_6	MF4M_FUEL_PR	Fuel pressure
ECU_7	MF4M_OIL_PR	Oil pressure
ECU_8	MF4M_LAMBDA_V	Lambda sensor analogue voltage
ECU_9	MF4M_LAMBDA	Lambda value
ECU_10	MF4M_TINJH	Injection time ramp 1 high
ECU_11	MF4M_QINJH_ul	Fuel quantity injection ramp 1 High
ECU_12	MF4M_QINJ_ul	Global injection quantity
ECU_13	MF4M_BINJ_MAP_ul	Base injection map
ECU_14	MF4M_SPARK_ADV	Spark advance
ECU_15	MF4M_BMAP_ADV	Base map advance
ECU_16	MF4M_BADV_TRBO	Base advance turbo mode

ECU_17	MF4M_QINJT_ul	Base fuel quantity in turbo mode
ECU_18	MF4M_WAST_DUCY	Waste gate duty cycle
ECU_19	MF4M_VBAT	Battery supply
ECU_20	MF4M_VEH_SPEED	Vehicle speed
ECU_21	MF4M_WATER_T	Engine coolant temperature
ECU_22	MF4M_AIR_T	Intake air temperature
ECU_23	MF4M_FUEL_T	Fuel temperature
ECU_24	MF4M_OIL_T	Oil temperature
ECU_25	MF4M_TCK	Thermocouple temperature
ECU_26	MF4M_GEAR_BARR	Gear barrel position
ECU_27	MF4M_KLAMBDA	Lambda correction gain in closed loop
ECU_28	MF4M_GEAR	Engaged gear
ECU_29	MF4M_EN_ACC_ul	Enrichment on acceleration
ECU_30	MF4M_KOBJ	Richness target
ECU_31	MF4M_DIAG_ACQ1	I/O defaults diagnostic
ECU_32	MF4M_DIAG_ACQ2	I/O defaults diagnostic
ECU_33	MF4M_DIAG_ACQ3	I/O defaults diagnostic
ECU_34	MF4M_ALARM_ACQ	I/O alarm
ECU_35	MF4M_FUEL_CONS	Fuel consumption
ECU_36	MF4M_ST_SWITCH	State of the switches
ECU_37	MF4M_EN_DEC_ul	Enleaning on deceleration
ECU_38	MF4M_GAIN_LOOP	Gain for closed loop
ECU_39	MF4M_ECU_T	ECU temperature
ECU_40	MF4M_ANAUPSHFT	Up shift Input voltage