

AiM Infotech

Pectel SQ6 and SQ6M ECUs

Release 1.03



ECU



This tutorial explains how to connect Pectel ECUs to AiM devices. Supported models are:

- SQ6
- SQ6M

1 Software setup

Pectel ECUs are equipped with a bus communication protocol based on CAN. CAN stream needs a software setup through PiCalTool, the software provided by Pectel. To correctly configure the CAN stream follow these steps.

- Run the software and load ECU configuration
- This window appears; scroll the left panel and select "CAN Port 1 PC Delay Timeout"
- Set the corresponding box on the right on "1.00"

The screenshot shows the PiCalTool software interface. The title bar reads "Harry.cws - Pi CalTool - [Untitled*] (SQ6 NA - Version: 10.64.0.1)". The main window is titled "Offline Editing [Dataset and device have values that are different; At least one different parameter is not patchable or is constant]".

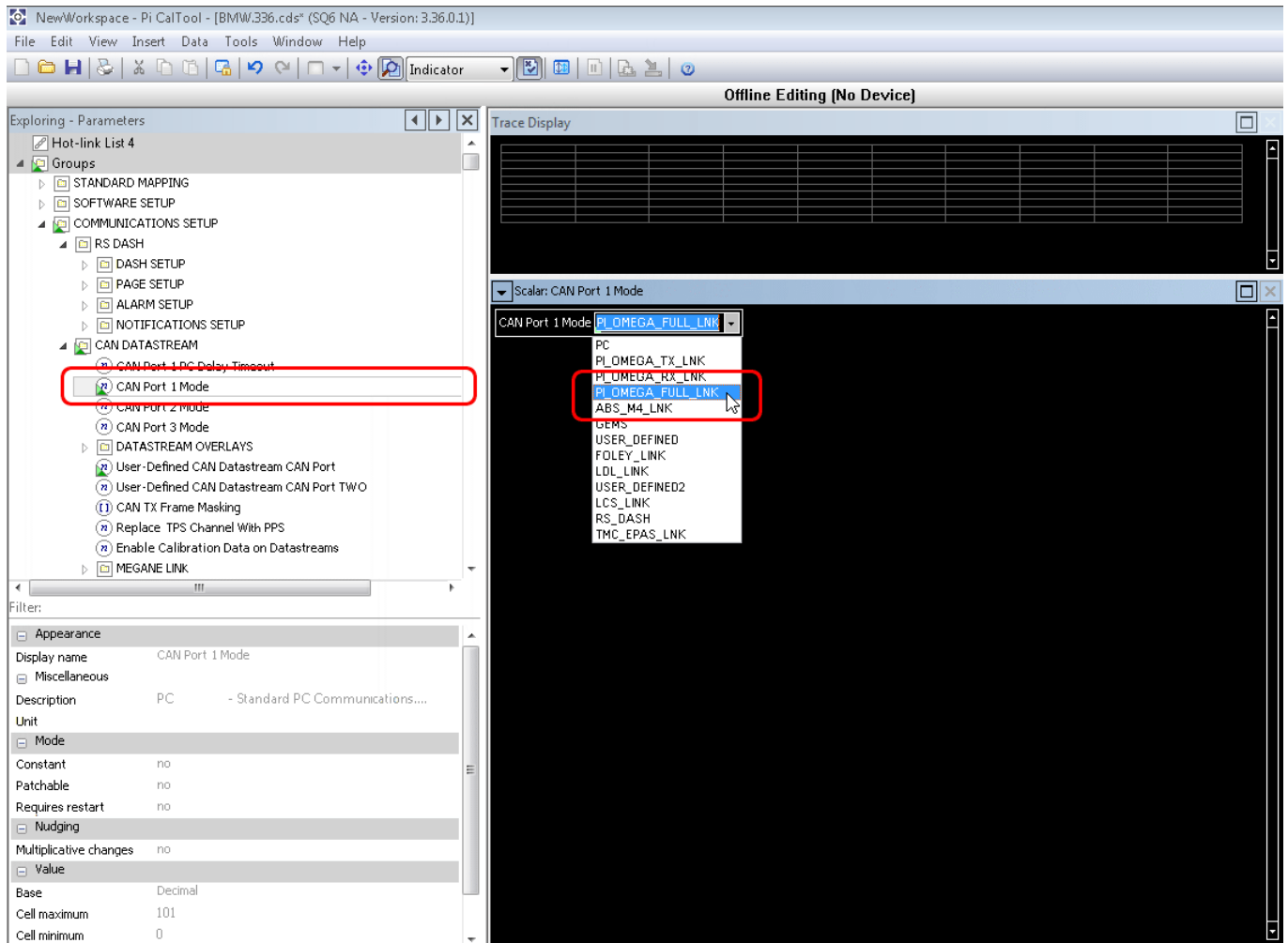
On the left, the "Exploring - Parameters" tree is expanded to "CAN DATASTREAM" > "CAN Port 1 PC Delay Timeout", which is highlighted with a red box. Below the tree, the "Miscellaneous" tab is selected, showing the "CAN Port 1 PC Delay Timeout" parameter with a value of "1.00" in the "Value" field.

On the right, a list of parameters is displayed, including:

- CAL_POT: CAL1
- engine_mode: STOP
- fbwClosedLoopIdleEnable: ENABLED
- PPS: 1,0°
- RPM: 0 r.
- sync_mode: NONE
- TPS: 6,5°
- VBAT: 14,64V
- ACT: 25,0°C
- BAP: 1013 mbar
- ECT: 100,0°C
- EOP: 0,00 bar
- EOT: 100,0°C
- GBT: 100,0°C
- MAP: 72 mbar
- inVcam1Angle: 0,00°
- inVcam1Error: 0,00°
- LAM1: 1,00 Lambda
- TEX1: 1000°C
- gear_pos: REVERSE
- P_SYS: 10,00 bar
- A_ign_total: 0,00°
- closed_loop_lambda: DISABLED
- in_b0_duty: 0,0%
- t_in_b0_total: 0,000 ms

At the bottom, a graph shows RPM (rpm) vs Time (s) with a scale from -20 to 0. The status bar at the bottom indicates "Pectel ECU (Ethernet) (SQ6 NA) [Metafile: 10.64.0.1, Dataset: (Not Saved), Software: 10.64.1, SN: 2114]".

- Now come back to the left panel and select "CAN 1 Port mode"
- Scroll the drop down menu that appears on the right and select "PI_OMEGA_FULL_LNK"



Please note: Pectel SQ6 has two CAN port available while SQ6M has three so if a CAN Port is for any reason unavailable other are supplied. It is very important that the same CAN line you have connected on the ECU hardware is set via software. in this example we have selected CAN Port 1.

- Scroll the left panel of the window
- open "OMEGA LINK" and select "OMEGA TX Link Base CAN ID"
- set "Omega TX Link Base CAN ID" to 100H (the protocol will use the base address 0x100)

The screenshot displays the Pi CalTool software interface. The main window is titled "NewWorkspace - Pi CalTool - [BMW.336.cds*] (SQ6 NA - Version: 3.36.0.1)". The interface is divided into several panels:

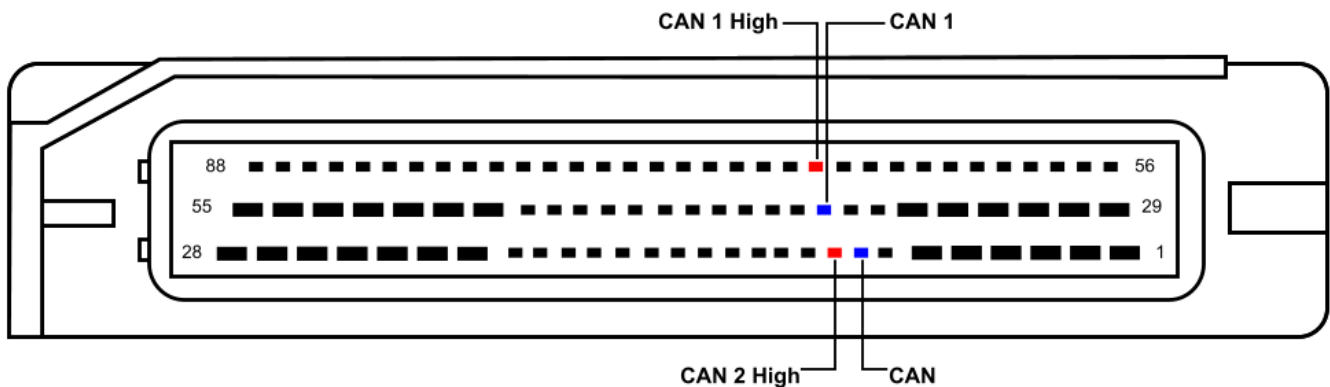
- Exploring - Parameters:** A tree view on the left showing various CAN-related parameters. The "OMEGA LINK" folder is expanded, and the "Omega TX Link Base CAN ID" parameter is selected and highlighted with a red box.
- Trace Display:** A panel on the right showing a table for displaying CAN data. It is currently empty.
- Scalar: Omega TX Link Base CAN ID:** A panel on the right showing the value of the selected parameter. The value is set to "100 h".
- Filter:** A panel at the bottom left showing the properties of the selected parameter. The "Display name" is "Omega TX Link Base CAN ID". The "Description" is "Offset the Omega link ARB ID to avoid clashes." The "Unit" is "h". The "Base" is "Hex". The "Cell maximum" is "7ff h" and the "Cell minimum" is "0".

2 Connection with AiM devices

Pectel SQ6 and SQ6M ECUs are equipped with a bus communication protocol based on CAN on the front connectors.

2.1 Connection of Pectel SQ6

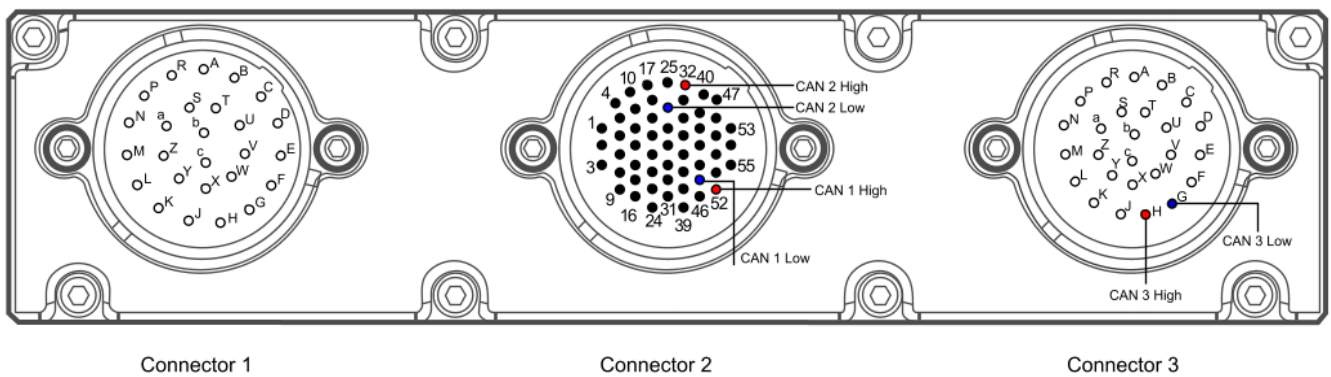
To connect Pectel SQ6 to AiM devices use the 88 pins front connector. Here below are connector pinout and connection table.



Pin	Pin function	AiM cable
67	CAN 1 High	CAN+
37	CAN 1 Low	CAN-
9	CAN 2 High	CAN+
8	CAN 2 Low	CAN-

2.2 Connection of Pectel SQ6M

To connect Pectel SQ6M to AiM devices use the central and the right front connectors labelled respectively "Connector 2" and "Connector 3". Here below are connectors pinout and connection table.



Connector	Pin	Pin function	AiM cable
Connector 2	52	CAN 1 High	CAN+
Connector 2	45	CAN 1 Low	CAN-
Connector 2	32	CAN 2 High	CAN+
Connector 2	26	CAN 2 Low	CAN-
Connector 3	H	CAN 3 High	CAN+
Connector 3	G	CAN 3 Low	CAN-

3

AiM Logger configuration

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

- ECU manufacturer "Pectel"
- ECU Model "SQ6_OMEGA_CAN_Stream "

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Available channels

Channels received by AiM devices connected to "Pectel" "SQ6_OMEGA_CAN_Stream " protocol are:

ID	CHANNEL NAME	FUNCTION
ECU_1	CAN_RPM	ROM
ECU_2	CAN_SPEED	Vehicle Speed
ECU_3	CAN_FL_SPEED	Front Left wheel speed
ECU_4	CAN_FR_SPEED	Front Right wheel speed
ECU_5	CAN_RL_SPEED	Rear Left wheel speed
ECU_6	CAN_RR_SPEED	Rear Right wheel speed
ECU_7	CAN_TPS_A	Throttle position sensor A
ECU_8	CAN_TPS_B	Throttle position sensor B
ECU_9	CAN_PPS	Pedal Position sensor
ECU_10	CAN_ACT	Intake air temperature
ECU_11	CAN_ECT	Engine coolant temperature
ECU_12	CAN_EOT	Oil temperature
ECU_13	CAN_FT	Fuel temperature
ECU_14	CAN_TEX1	Thermocouple 1 Temperature
ECU_15	CAN_TEX2	Thermocouple 2 Temperature
ECU_16	CAN_TEX3	Thermocouple 3 Temperature



ECU_17	CAN_AAT	Ambient temperature
ECU_18	CAN_ECUT	ECU internal temperature
ECU_19	CAN_MAP	Manifold air pressure
ECU_20	CAN_EOP	Oil pressure
ECU_21	CAN_FP	Fuel Pressure
ECU_22	CAN_FRP	Fuel Rail Pressure
ECU_23	CAN_PRP	Restrictor Pressure
ECU_24	CAN_CCP	Crankcase pressure
ECU_25	CAN_P_WAT	Engine coolant pressure
ECU_26	CAN_P_SYS	Transmission System Pressure
ECU_27	CAN_BAP	Ambient Pressure
ECU_28	CAN_GEAR	Engaged gear
ECU_29	CAN_VBAT	Battery Voltage
ECU_30	CAN_STEER	Steering Angle
ECU_31	CAN_LAMB1	Lambda 1
ECU_32	CAN_LAMB2	Lambda 2
ECU_33	CAN_LAMB3	Lambda 3
ECU_34	CAN_LAMB4	Lambda 4
ECU_35	CAN_GEAR_CUT	Gear Cut Load Cell Voltage
ECU_36	CAN_INJ_TIME	Injection time
ECU_37	CAN_IGN_ANG	Ignition angle
ECU_38	CAN_D_WG_TOTAL	Waste gate Total
ECU_39	CAN_WG_TARGET	Waste gate target
ECU_40	CAN_FUEL_USED	Used fuel
ECU_41	CAN_TURBO1	Turbo Speed 1
ECU_42	CAN_TURBO2	Turbo Speed 2
ECU_43	CAN_ALS_STATE	ALS State
ECU_44	CAN_TCS_STATE	Traction control system State
ECU_45	CAN_CAL_POT	Calibration potentiometer
ECU_46	CAN_TCS_POT	Traction control system Potentiometer position
ECU_47	CAN_BOOST_POT	Boost Potentiometer position
ECU_48	CAN_ENGINE_ERR	Engine error bit field



ECU_49	CAN_BRAKE_SW	Brake switch
ECU_50	CAN_P2P_SW	Push to pass switch on
ECU_51	CAN_TPS_C	Throttle position sensor C
ECU_52	CAN_OIL_LEVEL	Oil level