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AiM Infotech

# Marelli SRAE-SRT ECU

Release 1.02

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This tutorial explains how to connect Marelli SRAE and Marelli SRT ECUs to AiM devices.

## 1 Hardware check

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All AiM devices have a 120 Ohm CAN termination resistor. Before connecting Marelli CAN bus to any of them check that only two termination resistors work on the CAN bus once the network is completed. With a multimeter check the resistance between CAN High (positive probe) and CAN Low (ground probe).

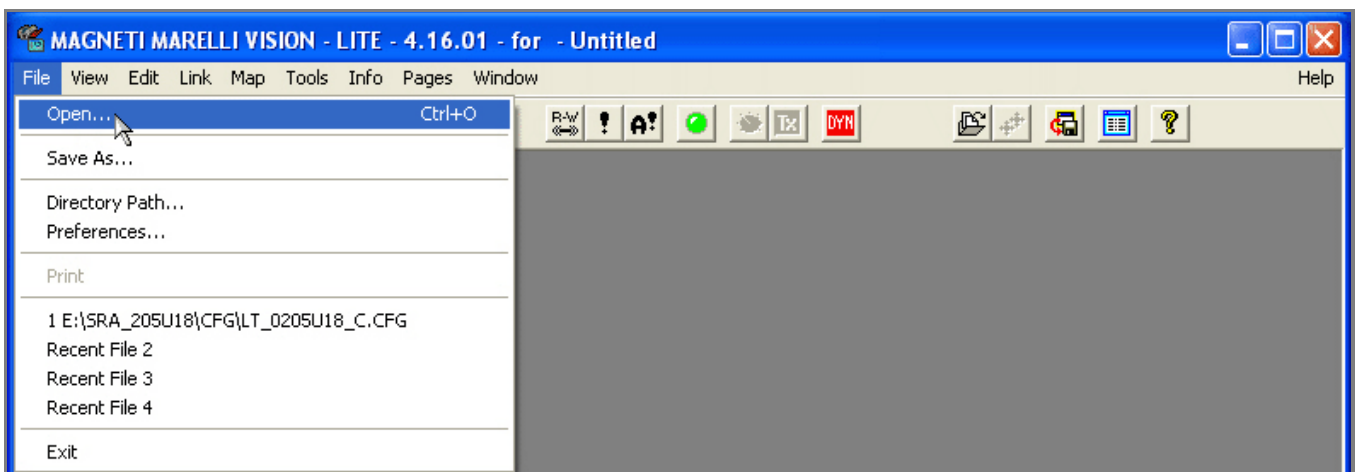
- If the reading is 120 Ohm: there is one termination resistor on the ECU site, no additional operations are required: connect AiM device to the vehicle CAN bus.
- If the reading is 50-60 Ohm: there are two termination resistors: either AiM termination resistor – located on the wiring – or one of the resistor located on the vehicle CAN bus are to be removed;
- If the reading shows a very high resistance (nearly infinite): no termination resistor is present: add a resistor on the ECU CAN bus and leave the one included in AiM device.

## 2 Software setup

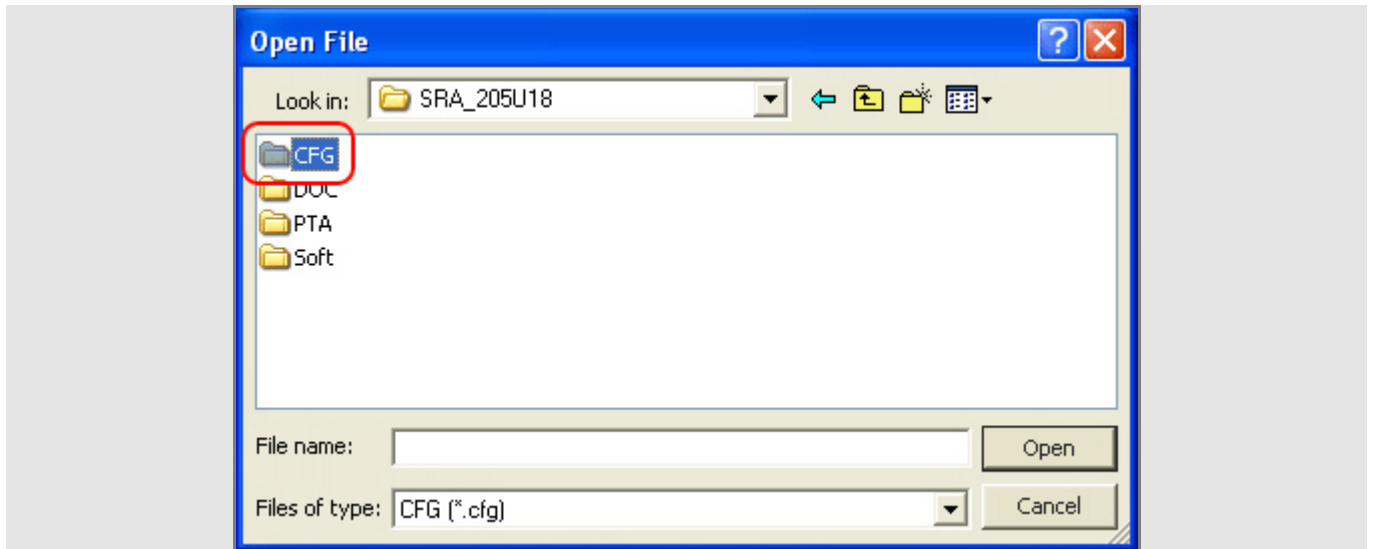
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Marelli SRAE and Marelli SRT ECUs need a software setting through "Magneti Marelli Vision" application to correctly communicate with AiM devices. Run it and follow carefully these instructions.

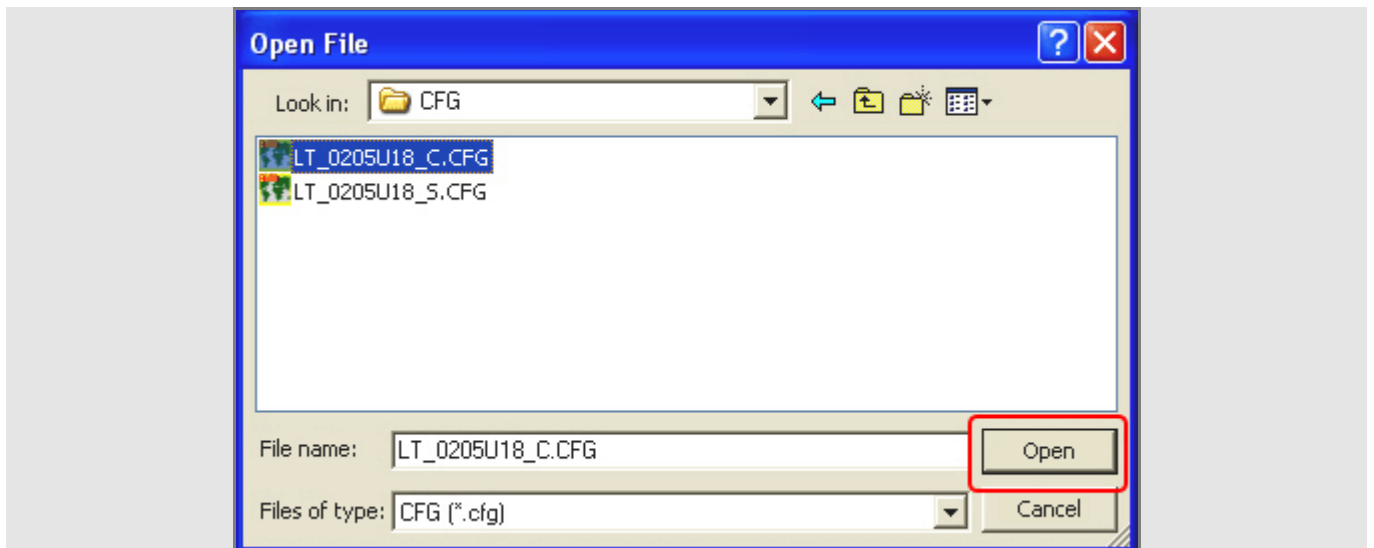
- Follow the path: File -> Open



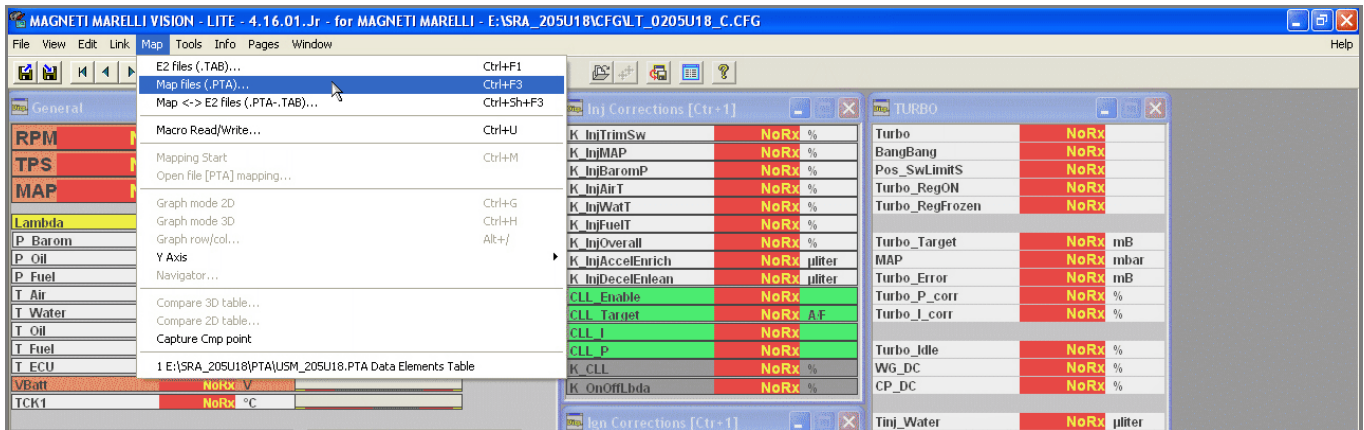
- "Open File" panel appears -> Select "SRA\_XXXXXX" folder -> Select "CFG" folder.



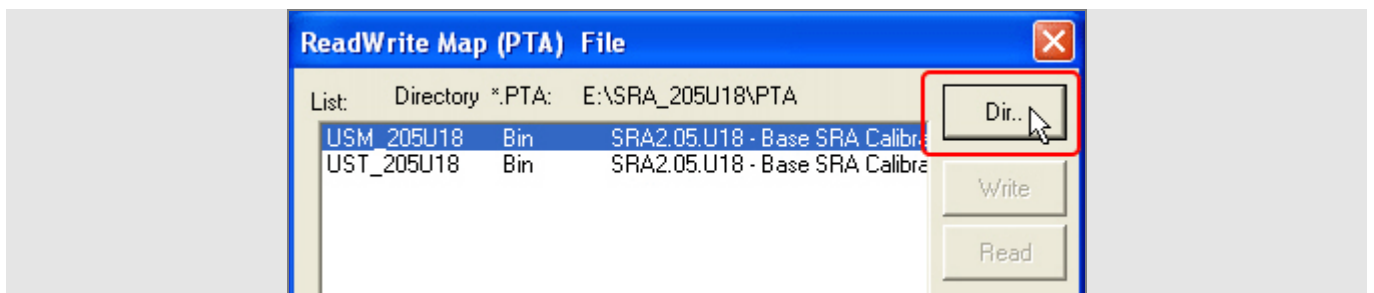
- Select the configuration file to open -> Click "Open".



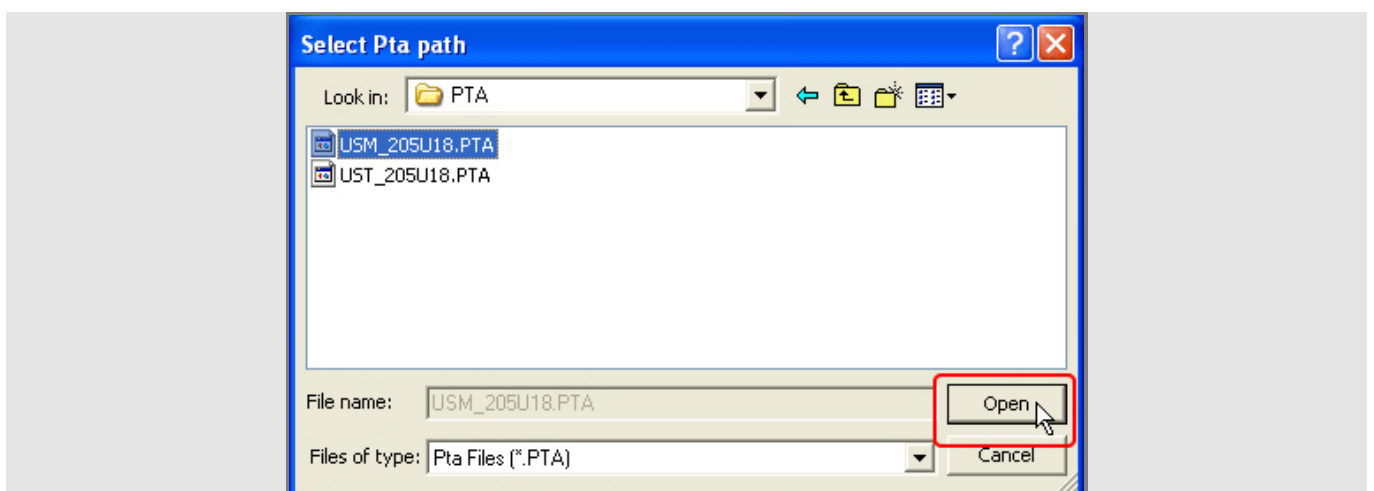
- Follow the path: Map → Map files (PTA)...



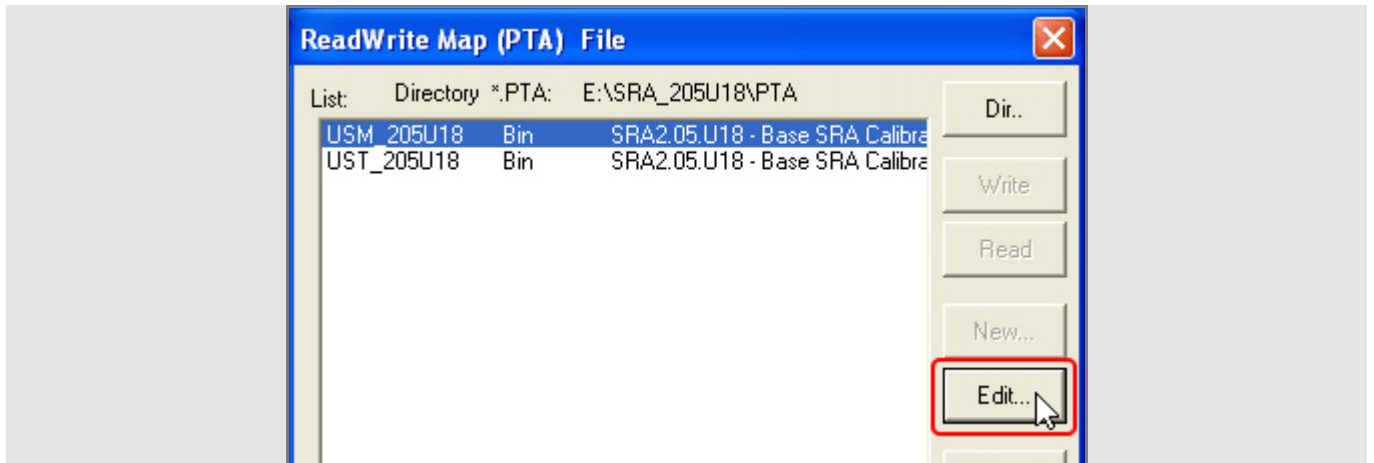
- ReadWrite Map (PTA) File panel appears: click "Dir.."



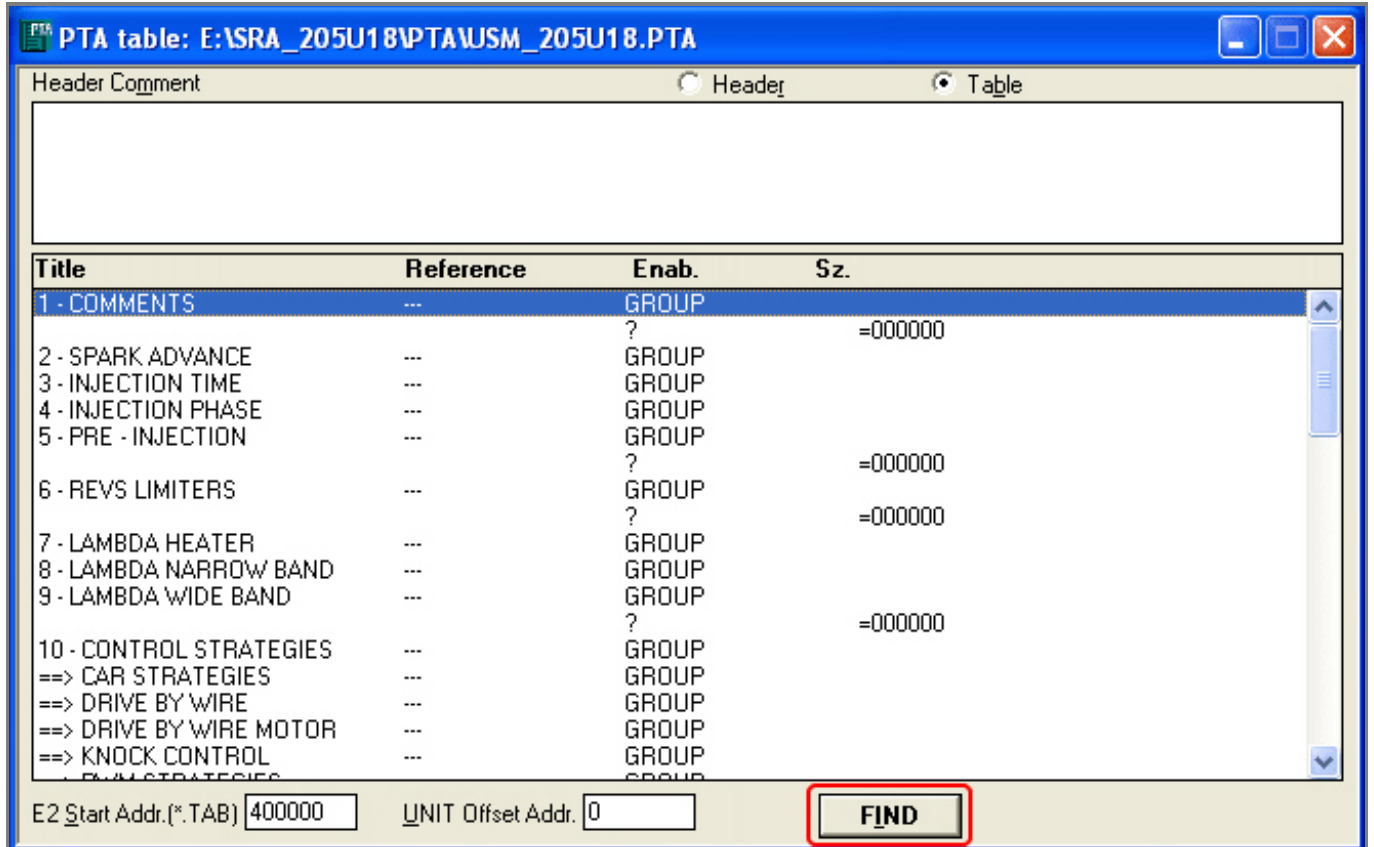
- Select "PTA" folder → Select the file to open → Click "Open"



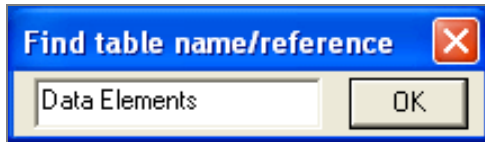
- ReadWrite Map (PTA) File panel appears: click "Edit..."



- PTA Table panel appears: click "FIND"



- Fill in "Data Elements" and if the panel re-appears click "No"



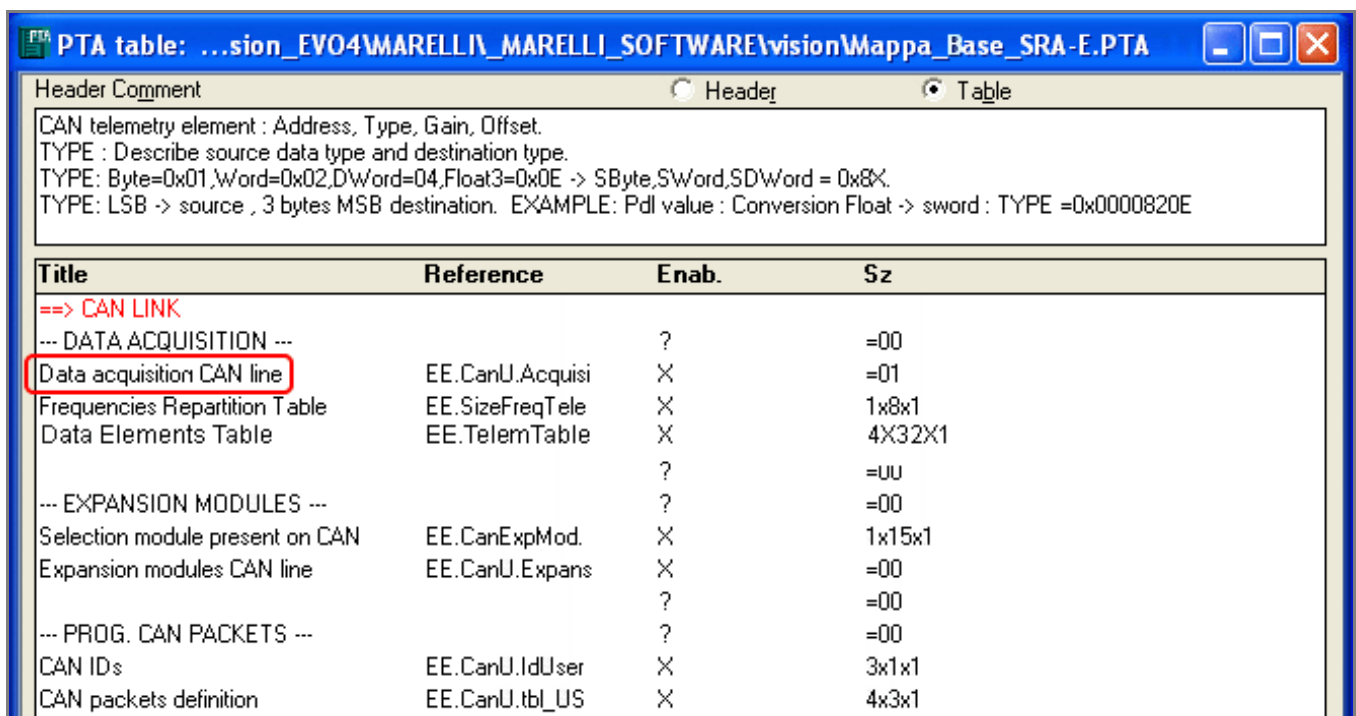
It is now necessary to set these parameters:

- Data Acquisition CAN Line (paragraph 1.1)
- Frequencies repartition table (paragraph 1.2)
- Data Elements Table (paragraph 1.3)

## 2.1 Setup of Data acquisition CAN line

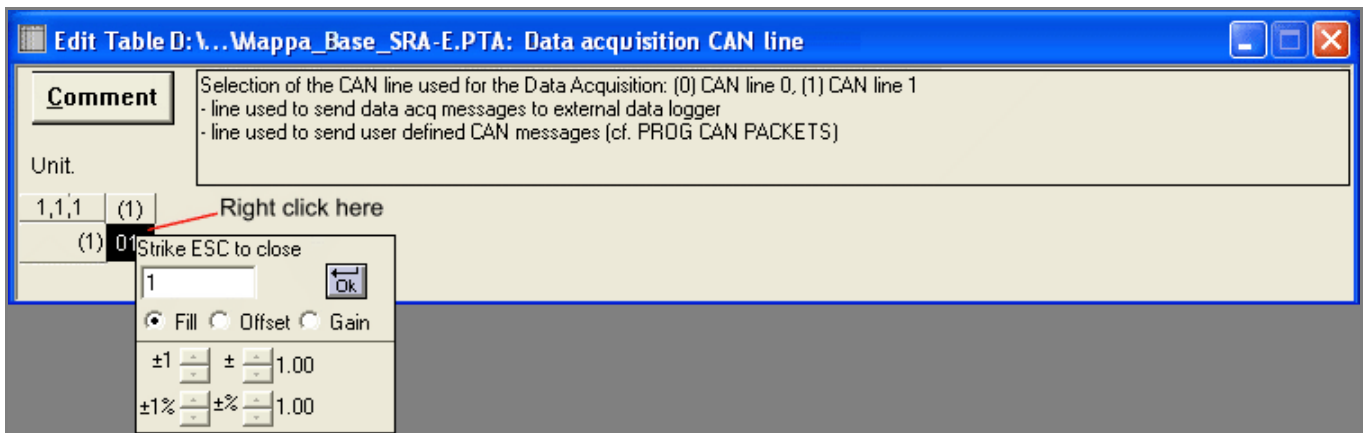
These Marelli ECUs features two CAN Lines; it is therefore necessary to set via software the CAN Line that will be used when connecting AiM devices.

- Double click "Data acquisition CAN line".



To change the CAN line set by default – if necessary – follow these steps:

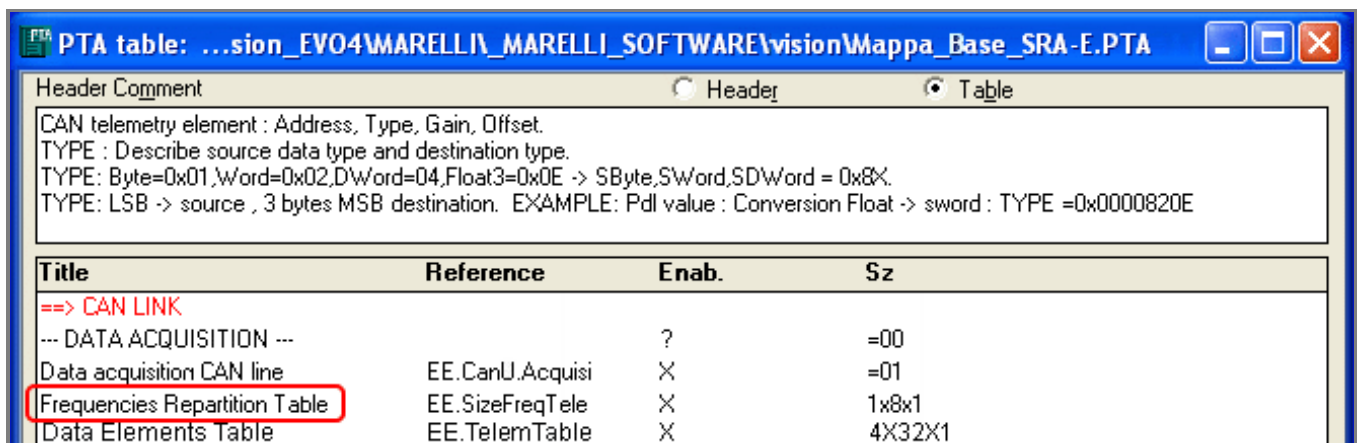
- right click on the cell highlighted in the image here below
- enable "fill" checkbox
- fill in the CAN line to be used (1 or 0)
- click "OK"
- Press "Esc"



## 2.2 Setup of Frequencies repartition table

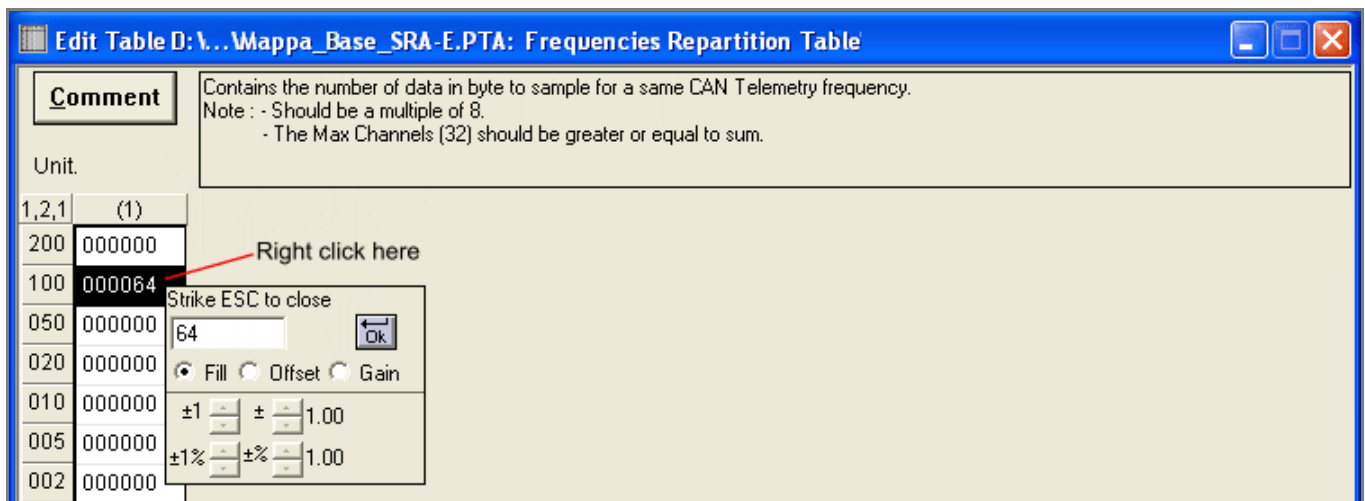
To set the data transmission frequencies used by AiM devices follow these instructions.

- Double click "Frequencies repartition table"



To properly set this table:

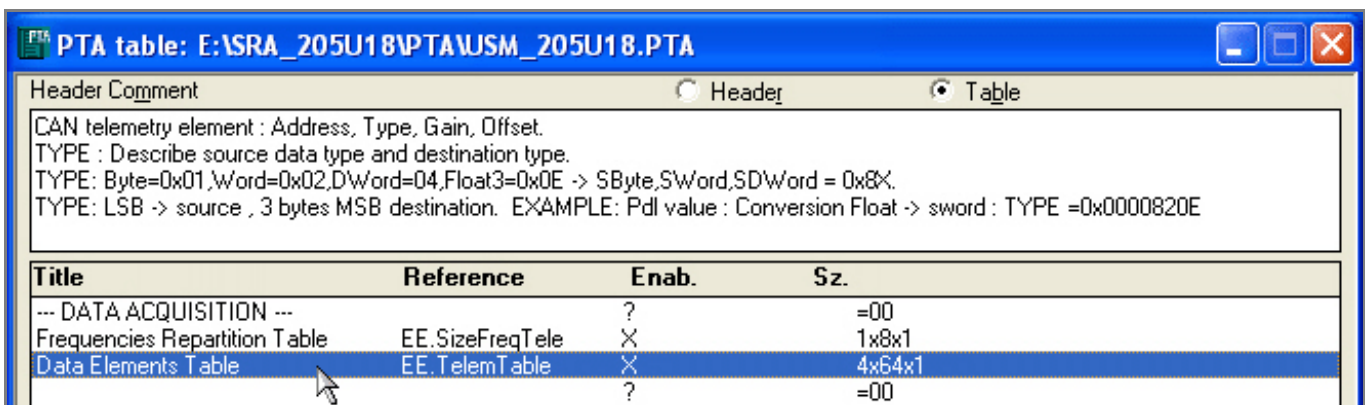
- right click on the cell highlighted in the image here below
- enable "fill" checkbox and fill in the desired frequency (for example 0x64)
- click "OK"
- Press "Esc"



## 2.3 Setup of Data Elements Table

This table sets ECU channels.

- Double click "Data Elements Table"





The table that appears is made up of four columns that correspond to the four fields of each record. Each row corresponds to an ECU channel. Change cell digits as shown before, using values shown in the table of paragraph 1.4.

**Edit Table E:\...WSM\_205U18.PTA: Data Elements Table**

**Comment** CAN telemetry element : Address, Type, Gain, Offset.  
 TYPE : Describe source data type and destination type.  
 TYPE: Byte=0x01,Word=0x02,DWord=04,Float3=0x0E -> SByte,SWord,SDWord = 0x8X.  
 TYPE: LSB -> source , 3 bytes MSB destination. EXAMPLE: Pdl value : Conversion Float -> sword : TYPE =0x0000820E

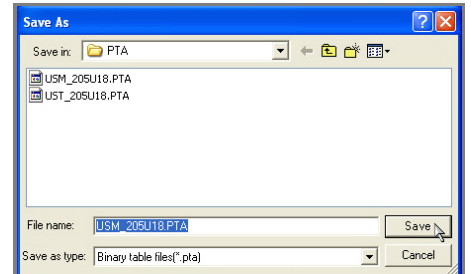
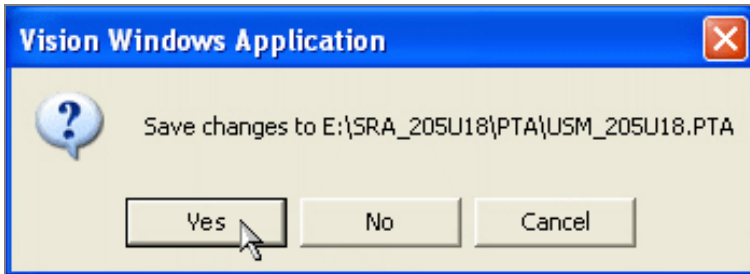
Unit:

1,1,1	(1)	(2)	(3)	(4)
(1) 00208270	00000002	3F800000	00000000	
(2) 00000000	00000001	3F800000	00000000	
(3) 002080AA	00000082	3F800000	00000000	
(4) 00000000	00000001	3F800000	00000000	
(5) 00208084	00000082	3F800000	00000000	
(6) 00000000	00000001	3F800000	00000000	
(7) 0020808A	00000082	3F800000	00000000	
(8) 00000000	00000001	3F800000	00000000	
(9) 00208088	00000082	3F800000	00000000	
(10) 00000000	00000001	3F800000	00000000	
(11) 002080BC	00000002	3F800000	00000000	
(12) 00000000	00000001	3F800000	00000000	
(13) 00208086	00000002	3F800000	00000000	
(14) 00000000	00000001	3F800000	00000000	
(15) 00208386	00000001	3F800000	00000000	
(16) 002085C4	00000001	3F800000	00000000	
(17) 00208398	00000002	3F800000	00000000	
(18) 00000000	00000001	3F800000	00000000	
(19) 00208094	00000082	3F800000	00000000	
(20) 00000000	00000001	3F800000	00000000	
(21) 00208129	00000001	3F800000	00000000	
(22) 00208382	00000081	3F800000	00000000	
(23) 002080B6	00000002	3F800000	00000000	
(24) 00000000	00000001	3F800000	00000000	
(25) 00208E04	00000002	3F800000	00000000	
(26) 00000000	00000001	3F800000	00000000	
(27) 00208550	00000204	3F800000	00000000	
(28) 00000000	00000001	3F800000	00000000	
(29) 0020852C	00000082	3F800000	00000000	

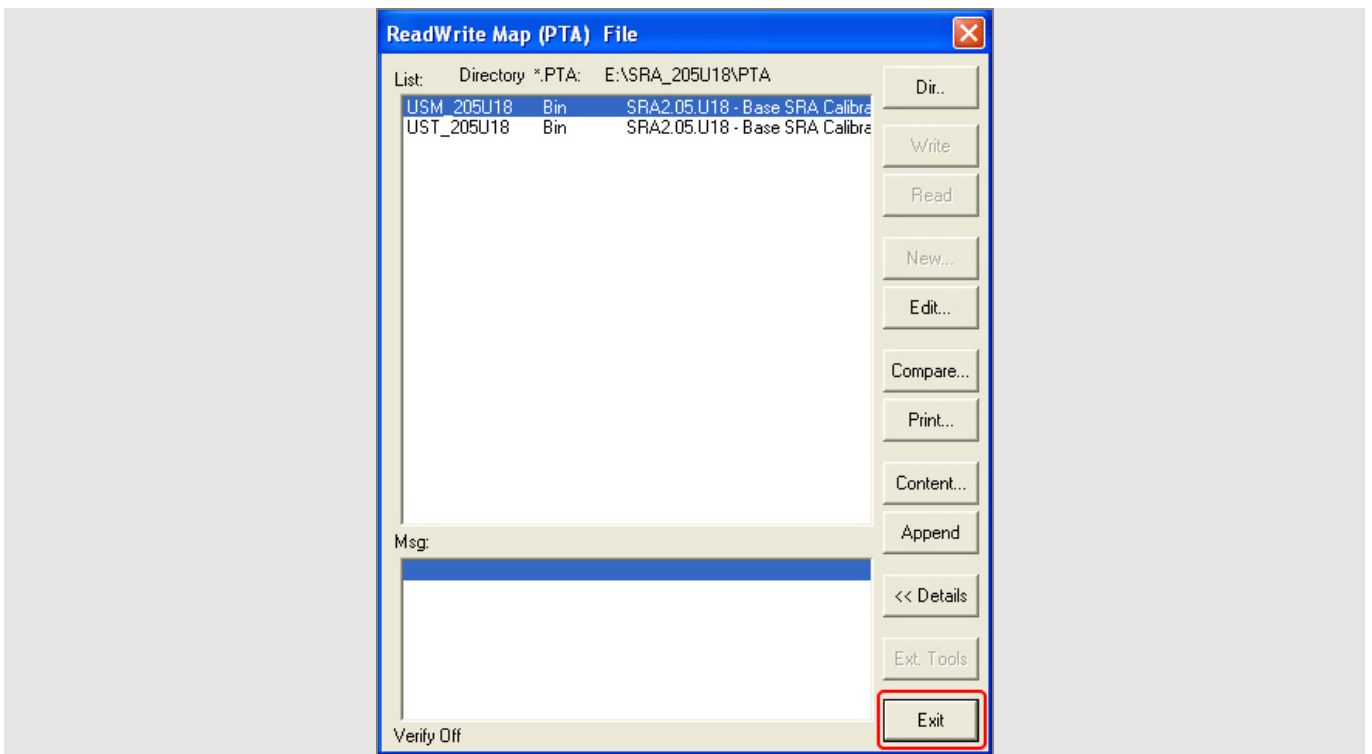
1,1,1 = Counter  
 1 = Address  
 2 = Type  
 3 = Gain  
 4 = Offset

When the table has been completely filled in and ESC is pressed again, the software comes back to the previous page: quit clicking on the red cross top right of the window.

It is necessary to save changes: click "Yes" and then fill in "Save as" panel and click "Save".



Click "Exit"



Click "Tx" to transmit the configuration to the ECU.





COUNTER	ADDRESS	TYPE	GAIN	OFFSET
1	00210270	00000002	3F800000	00000000
2	00000000	00000001	3F800000	00000000
3	00210080	00000082	3F800000	00000000
4	00000000	00000001	3F800000	00000000
5	0021008C	00000082	3F800000	00000000
6	00000000	00000001	3F800000	00000000
7	002100A0	00000082	3F800000	00000000
8	00000000	00000001	3F800000	00000000
9	0021008A	00000082	3F800000	00000000
10	00000000	00000001	3F800000	00000000
11	002100A8	00000082	3F800000	00000000
12	00000000	00000001	3F800000	00000000
13	00210088	00000082	3F800000	00000000
14	00000000	00000001	3F800000	00000000
15	00210086	00000082	3F800000	00000000
16	00000000	00000001	3F800000	00000000
17	00210084	00000082	3F800000	00000000
18	00000000	00000001	3F800000	00000000
19	002100A4	00000082	3F800000	00000000
20	00000000	00000001	3F800000	00000000
21	002100BC	00000002	3F800000	00000000
22	00000000	00000001	3F800000	00000000
23	00210392	00000082	3F800000	00000000
24	00000000	00000001	3F800000	00000000
25	00210082	00000082	3F800000	00000000
26	00000000	00000001	3F800000	00000000
27	0021008E	00000082	3F800000	00000000
28	00000000	00000001	3F800000	00000000
29	002100AA	00000002	3F800000	00000000
30	00000000	00000001	3F800000	00000000
31	00210094	00000082	3F800000	00000000



32	00000000	00000001	3F800000	00000000
33	002100B4	00000002	3F800000	00000000
34	00000000	00000001	3F800000	00000000
35	002100BA	00000002	3F800000	00000000
36	00000000	00000001	3F800000	00000000
37	00210E06	00000002	3F800000	00000000
38	00000000	00000001	3F800000	00000000
39	002100A6	00000082	3F800000	00000000
40	00000000	00000001	3F800000	00000000
41	00210D25	00000001	3F800000	00000000
42	00210D26	00000001	3F800000	00000000
43	00210D17	00000001	3F800000	00000000
44	00210D18	00000001	3F800000	00000000
45	00210846	00000001	3F800000	00000000
46	00210845	00000001	3F800000	00000000
47	0021083D	00000001	3F800000	00000000
48	00210130	00000001	3F800000	00000000
49	00210385	00000001	3F800000	00000000
50	00210383	00000001	3F800000	00000000
51	00210381	00000001	3F800000	00000000
52	002105B7	00000001	3F800000	00000000
53	002105B8	00000001	3F800000	00000000
54	002105B6	00000001	3F800000	00000000
55	002105B5	00000001	3F800000	00000000
56	00210386	00000001	3F800000	00000000
57	002100B0	0000820E	3F800000	00000000
58	00000000	00000001	3F800000	00000000
59	00210A18	0000820E	3F800000	00000000
60	00000000	00000001	3F800000	00000000
61	00000000	00000001	3F800000	00000000
62	00000000	00000001	3F800000	00000000
63	00000000	00000001	3F800000	00000000
64	00000000	00000001	3F800000	00000000

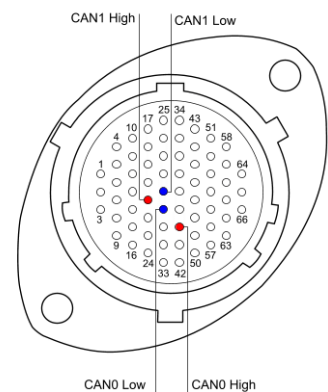
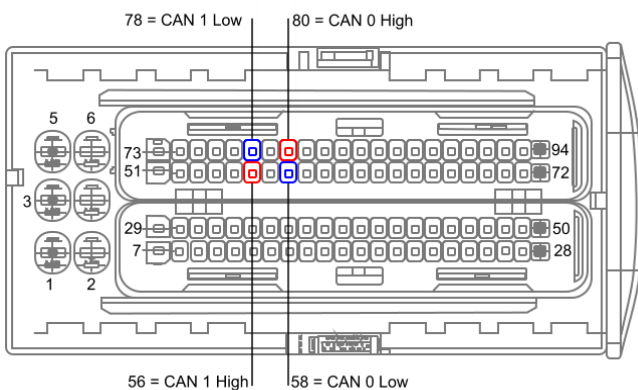
### 3

## Wiring connection

SRAE and SRT ECUs feature the same communication protocol based on CAN but the hardware is different.

- SRAE has two front connectors: a 60 pins and a 94 pins. The CAN bus is on the 94 pins connector.
- SRT has two front Deutsch connectors: AS218-35PA (with yellow ring) and AS218-35PN (with red ring). The CAN bus is on the AS218-35PA (yellow ring).

Here below you see the two ECUs – SRAE on the left and SRT on the right – with connectors indication and connector pinout.



Here is connection table

<b>SRAE Connector pin</b>	<b>Pin function</b>	<b>AiM cable</b>
56	CAN1 High	CAN High
78	CAN1 Low	CAN Low
80	CAN0 High	CAN High
58	CAN0 Low	CAN Low

<b>SRT Connector pin</b>	<b>Pin function</b>	<b>AiM Cable</b>
21	CAN1 High	CAN High
29	CAN1 Low	CAN Low
40	CAN0 High	CAN High
30	CAN0 Low	CAN Low

**Please note:** remember to connect the CAN line you set in software setup (paragraph 1.1).

## 4 AiM device configuration

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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 "SRA\_SRAE\_SRT"

## 5

# Available channels

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Channels received by AiM devices connected to "Marelli" "SRA\_SRAE\_SRT" protocol are:

<b>ID</b>	<b>CHANNEL NAME</b>	<b>FUNCTION</b>
ECU_1	SRA_RPM	RPM
ECU_2	SRA_TPS1	Throttle position sensor bank 1
ECU_3	SRA_PDL1	Active throttle position bank 1
ECU_4	SRA_WTEMP	Engine coolant temperature
ECU_5	SRA_OILP	Oil pressure
ECU_6	SRA_OILT	Oil temperature
ECU_7	SRA_FUELP	Fuel pressure
ECU_8	SRA_ATMP	Atmospheric pressure
ECU_9	SRA_MAP	Manifold air pressure
ECU_10	SRA_AIRT	Intake air temperature
ECU_11	SRA_AFR	Air fuel ratio
ECU_12	SRA_ADV	Ignition advance
ECU_13	SRA_TPS2	Throttle position sensor bank 2
ECU_14	SRA_PDL2	Active throttle position bank 2
ECU_15	SRA_TPS	Throttle position sensor
ECU_16	SRA_TCK1	Thermocouple 1
ECU_17	SRA_GEAR	Engaged gear
ECU_18	SRA_LAMBDAmV	Lambda value in mV
ECU_19	SRA_SPEED	Speed
ECU_20	SRA_TFUEL	Fuel temperature
ECU_21	SRA_KINGFIL	Injection Correction During Up shift
ECU_22	SRA_KTEATFIL	Advance Correction F (Up shift)
ECU_23	SRA_PWM1	Duty cycle of Pwm1
ECU_24	SRA_PWM2	Duty cycle of Pwm2
ECU_25	SRA_DPV	Derivative pressure



ECU_26	SRA_DWG	Duty cycle waste gate
ECU_27	SRA_PRLD	Rotary switch position for bang start limiter
ECU_28	SRA_ITSP	Injection trim switch position
ECU_29	SRA_ASTP	Absolute throttle position (default 90%)
ECU_30	SRA_KAWT	Coefficient engine cooling temperature multiplier
ECU_31	SRA_KABARO	Ign coefficient barometric pressure multiplier (Cranking)
ECU_32	SRA_IKTA	Coefficient intake air temperature multiplier (Cranking)
ECU_33	SRA_IKTF	Coefficient Fuel temperature multiplier (Cranking)
ECU_34	SRA_IKBARO	Inj. coefficient barometric pressure multiplier (Cranking)
ECU_35	SRA_IKADM	Injection correction F (Padmission)
ECU_36	SRA_CLAV	Advance Correction F (Trimmer Position)
ECU_37	SRA_PDL	Active throttle position
ECU_38	SRA_TPSE	Throttle position sensor (Encoder)