

# T-CAN PRO

FOR TESLA CAR MODEL S & X & 3

## User Manual

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*T-CAN PRO* – Diagnostic and Programming Tool for TESLA S, X, 3

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# A Brief History and "Evolution" of T-CAN PRO



**ver. 03**

May 2018



**ver. 03 with multiplexer**

July 2018



**ver. 04**

September 2018



**ver. 05**

February 2019

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## A disclaimer of liability

T-CAN PRO is the first independent device on the market supporting diagnostics in TESLA model S, X and 3 so far.

You must be aware that the use of some T-CAN PRO functions in some countries may be prohibited and against the law.

First of all, what you need to know about the T-CAN PRO before work.

T-CAN PRO:

- The tool is intended only for qualified personnel!
- You must be aware of the risk of loss if something went wrong (learn keys or make adaptations of BMS controller or something else)
- You must have electronic skills which allow you to make adapters yourself and the connection between T-CAN PRO and the vehicle's CAN interface.
- T-CAN PRO uses the CAN network to communicate with the ECU. Therefore, you will not have access to firmware, navigation update, configuration because it cannot be done via CAN. All mentioned things do by LAN on IC,CID not via CAN network.

The author not liable for damage caused or any loss by incorrect use of the T-CAN device.

In addition, he is not liable, if the device's functions are used unlawfully in a country where it is forbidden.

Also the company selling it is not liable for any losses or damage to the goods in question.



## Introduction

T-CAN is a young software with small box interface but is constantly being developed.

Can help you solve a few problems with the TESLA car.

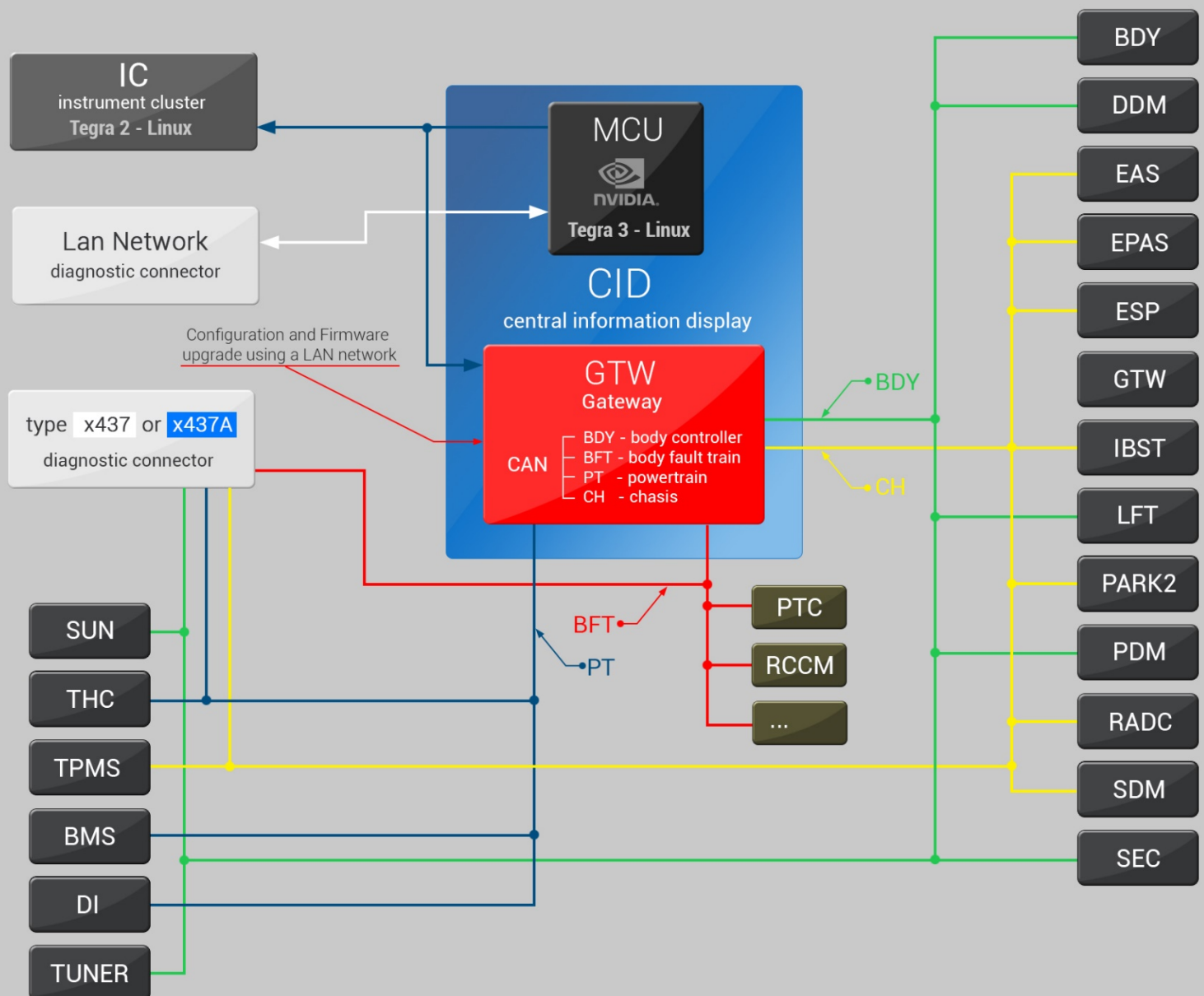
As so far, T-CAN PRO can work with ECU TESLA Model S with some function for TESLA Model X and 3

<b>ALERTS</b>	Alerts on CAN bus ( read and decode alerts codes updated BMS 2018.09.14)
<b>BDY</b>	Body controller on CAN bus
<b>SDM</b>	Supplemental Deployment Module S, X, 3 model (read and decode fault codes, erase stored fault codes and CRASH by Boot mode in S, and diagnostic port in X and 3
<b>SEC</b>	Security controller updated information details 2018.09.14 (Add Keyfob Key)
<b>CP</b>	Charging port
<b>PARK2</b>	Parktronic sensors (read and decode fault codes, erase stored fault codes, Updated fault codes 2018.07.08)
<b>THC</b>	Thermal controller (Add some features 2018.07.08,Open, close valves for fill or drain cooling fluid , Air purge function)
<b>EAS-TAS</b>	Tesla Air suspension System (read and decode fault codes, erase stored fault codes, exit service mode)
<b>BMS</b>	Battery control Module (reset alert warnings w163,w026,w152,w153,w023)
<b>TPMS</b>	Tyre Pressure Monitor System (read and decode fault codes, erase stored fault codes)
<b>ESP</b>	Electronic stability system (read and decode fault codes, erase stored fault codes, Updated fault codes

## Understanding TESLA network

The following diagram of the TESLA "S" network will explain to you what you can use T-CAN PRO for.

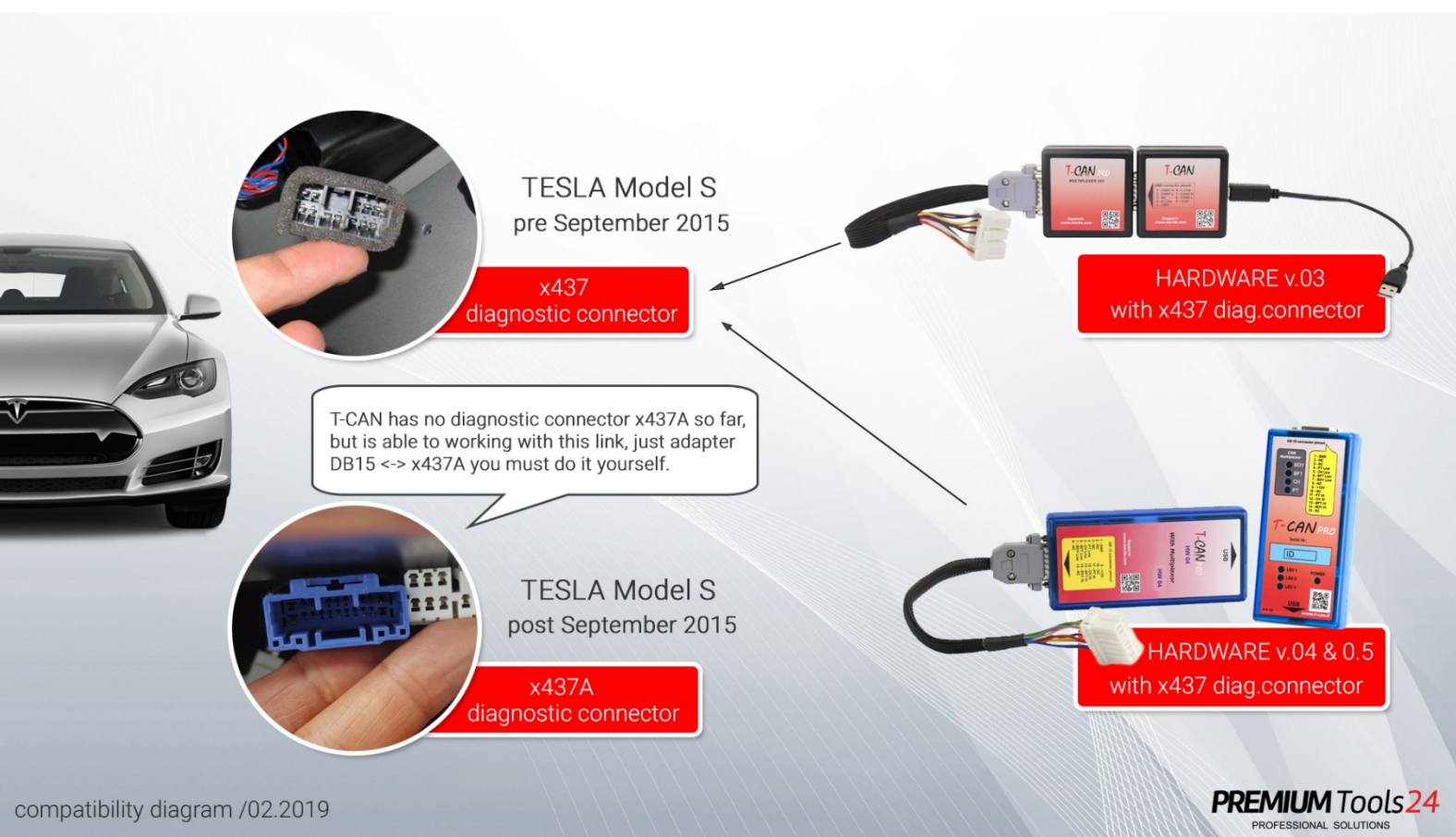
A block diagram, explaining the principle of **Tesla Model S** network





## T-CAN PRO Diagnostic interfaces

T-CAN has no diagnostic connector x437A so far, but is able to working with this link, just adapter DB15 <-> x437A you must do it yourself.



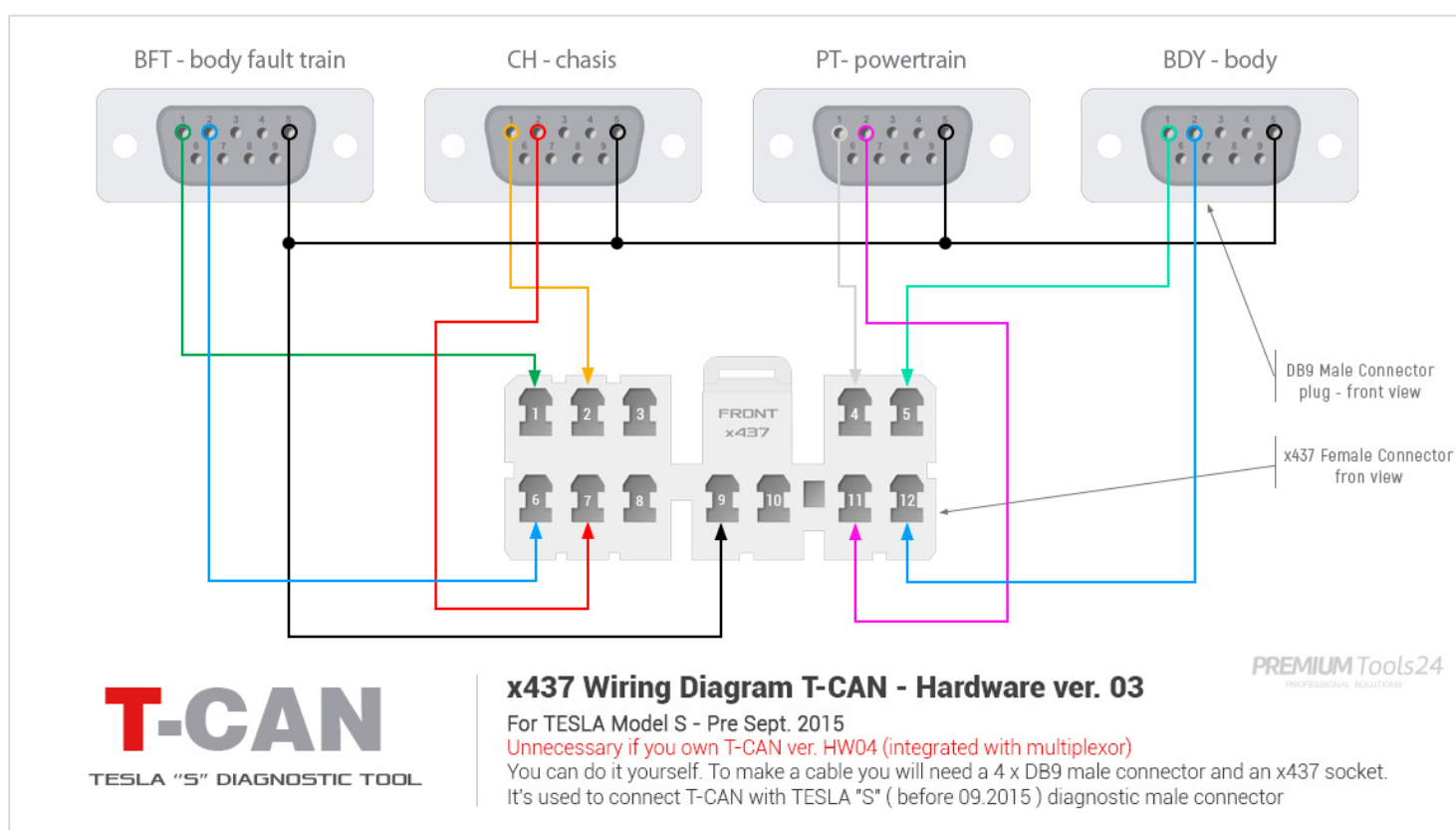
The white or grey connector x437 is used in *TESLA Model S* pre September 2015

The blue connector x437A is used in *TESLA Model S, X, 3* post September 2015

## Wiring Diagrams - x437 and x437A

T-CAN Hardware 03 has two separate units: a diagnostic T-CAN PRO unit and a multiplexor. However, T-CAN Hardware 04 has two the same units enclosed in one long housing.

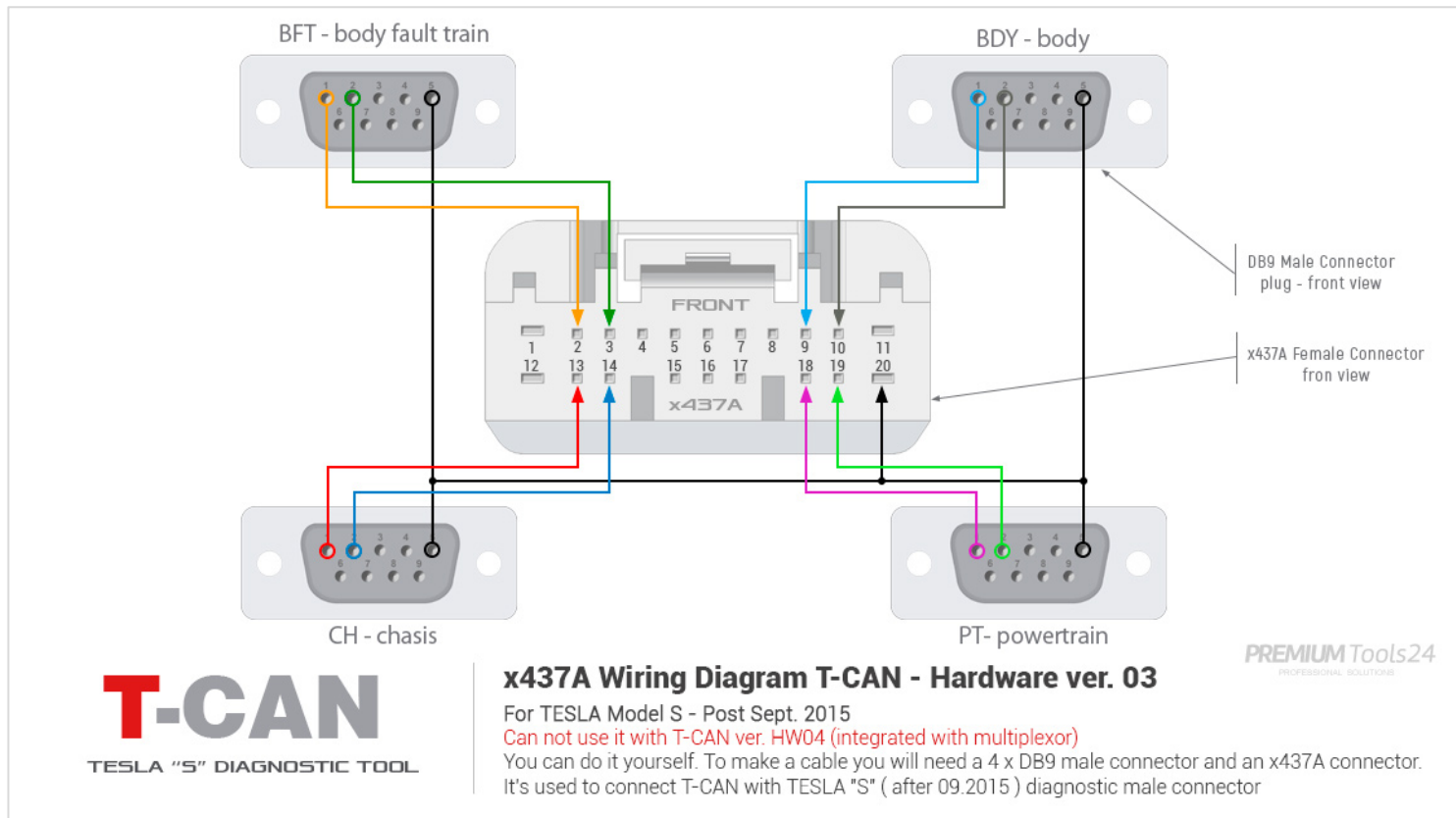
Wiring diagram to use T-CAN v.03 without Multiplexor with x437 connector



applicable for use between T-CAN diagnostic unit and x437 female connector without use a multiplexor.

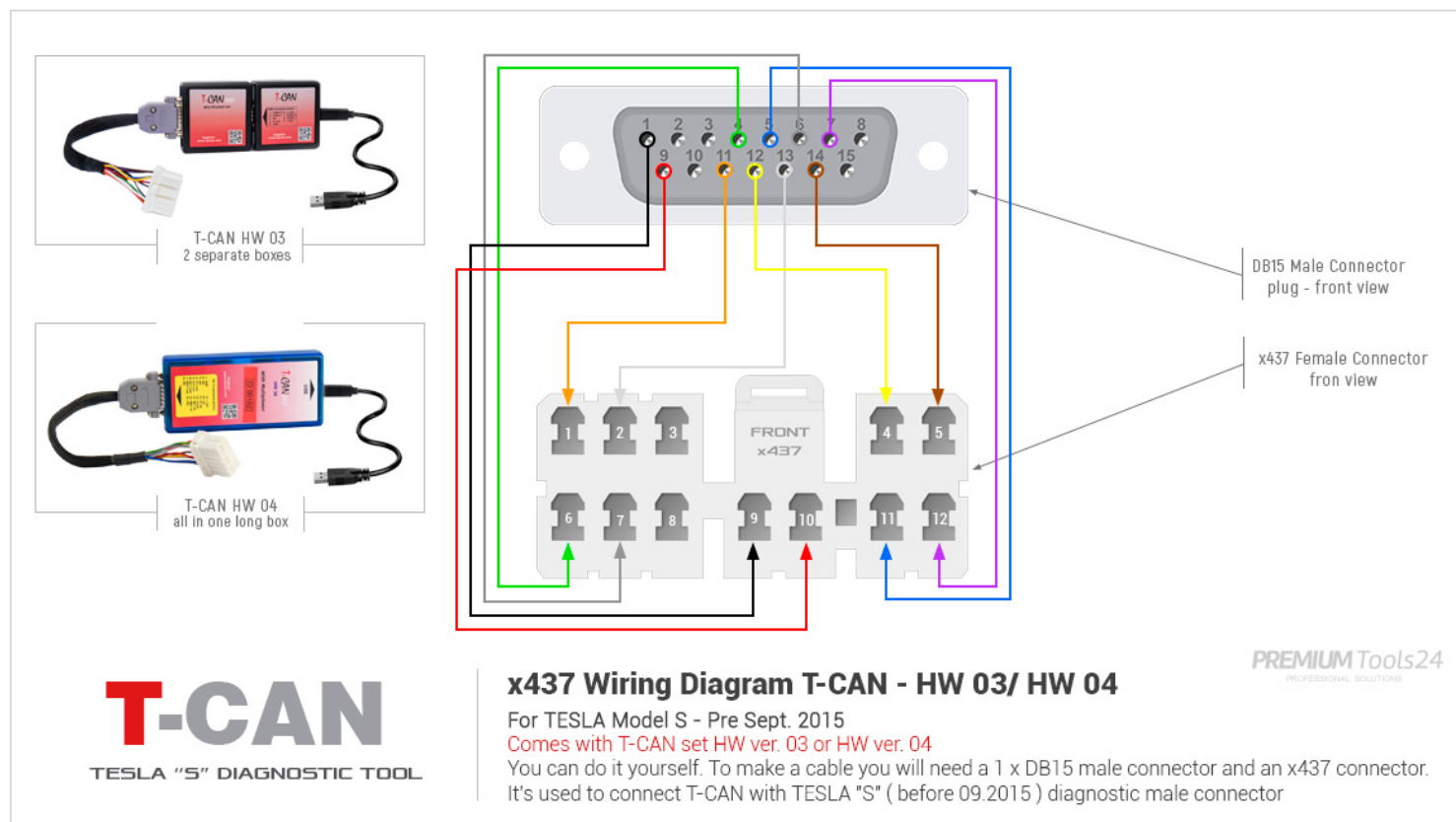


## Wiring diagram to use T-CAN v.03 without Multiplexor with x437A connector



applicable if for some reason you do not want or you cannot use the multiplexor

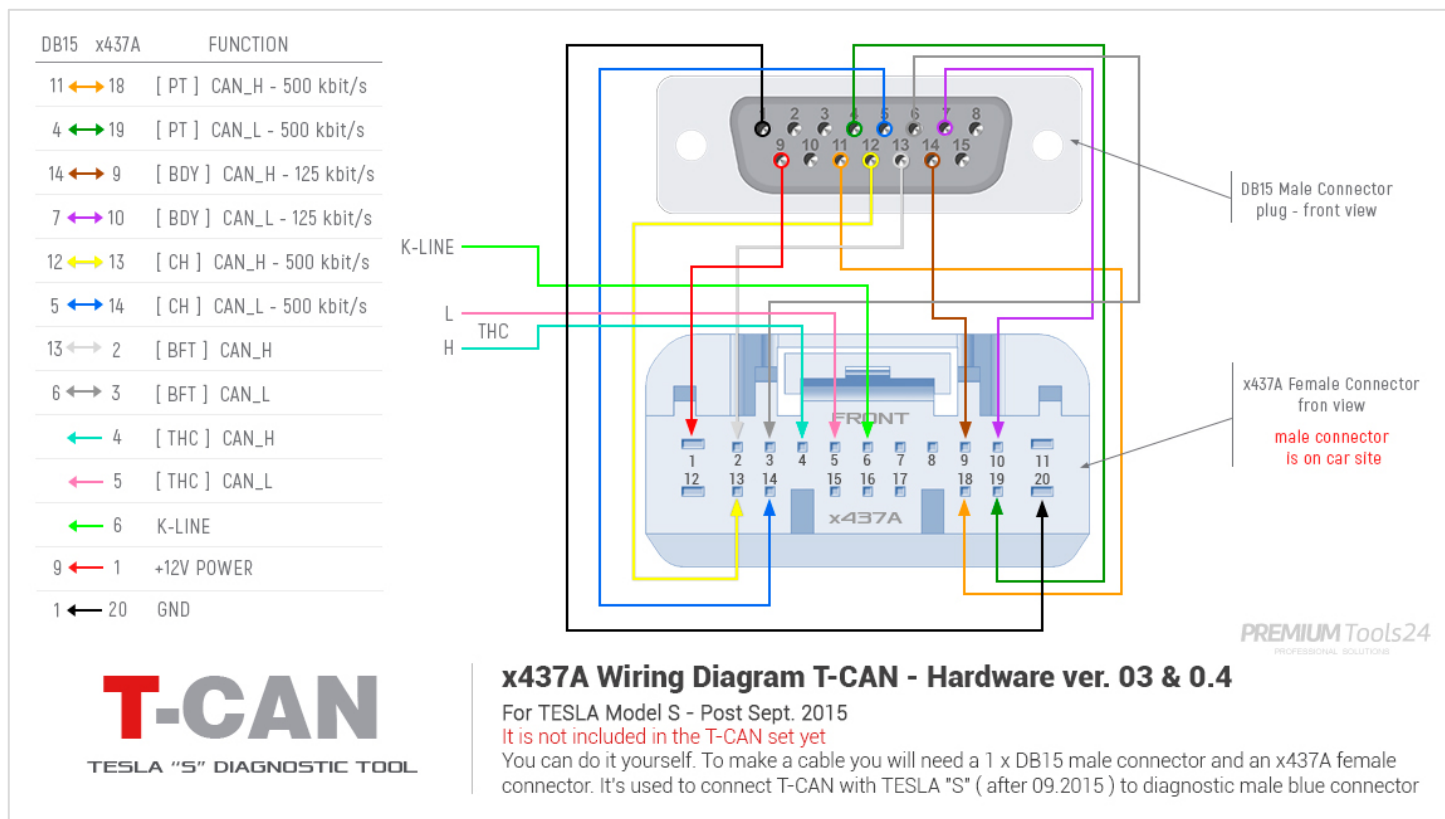
Wiring diagram to use T-CAN v.03 and v.04 and newer with Multiplexor with x437 connector



applicable directly after purchase because exactly this interface you will get with T-CAN Tool set.



Wiring diagram to use T-CAN v.03 and v.04 and newer with Multiplexor with x437A connector



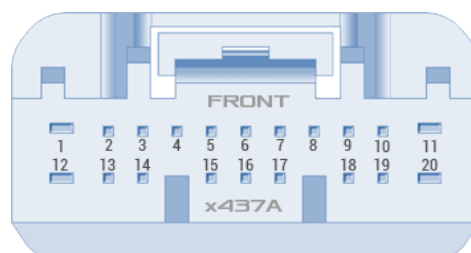
it applies if you going to use T-CAN tool with Multiplexor with  
*TESLA Model S post September 2015* and *TESLA X,3* with blue  
connector

## Tesla Connector x437, x437A Pinouts

### Tesla Diagnostic Port Connector pinout



Pre 2015 Tesla Model S  
Connector x437 white



Post 2015 Tesla Model S  
Connector x437A blue

1 = CAN 3 HI - Powertrain Bus
2 = CAN 4 HI - Body Faults Bus
3 = K Bus ISO9141 single wire LIN
4 = CAN 6 HI Chassis Bus
5 = CAN 2 HI Body Bus
6 = CAN 3 LO Powertrain Bus
7 = CAN 4 LO Body Faults Bus
8 = Not used
9 = Reference Ground
10 = 12V
11 = CAN 6 LO Chassis Bus
12 = CAN 2 LO Body Bus

1 = 12V/5A (F219)
2 = CAN4+ Body Fault
3 = CAN4- Body Fault
7 = K/Serial
9 = CAN2 Body +
10 = CAN2 Body-
13 = CAN6+ Chassis
14 = CAN6 Chassis-
18 = CAN3 Powertrain+
19 = CAN3 Powertrain-
20 = GND



# T-CAN Software Installation & Activation

## System requirements

- Operating system: Microsoft Windows 7/8/8.1/10 (32/64 bit)
- 1 free USB port. 2 or 3.0

## Software download

Software is available to download for free from:

*Manufacturer website:* <http://www.bacila.com>

*Distributor's store:* [https://premium-tools24.com/t-can\\_download](https://premium-tools24.com/t-can_download)

Download and install:

### *1. Main software*

T-CAN PRO (date xx.xx.2019) or newer (RAR archive)

### *2. Drivers USB Serial Port for T-CAN Interface.*

Drivers for T-CAN Interface /CDM20824/ (RAR archive)

in some circumstances you may also need to download and install latest *drivers CDM20824 USB D2XX drivers for FT232RL*, can be downloaded from <http://www.ftdichip.com/Drivers/D2XX.htm>

The software is working without installation.

So you can just simply create folder and extract software wherever you want and lunch by clicking on executable file "*t\_can\_pro.exe*"

## Installation of the license activation file

Before you start working with the mentioned software, you have to activate software using license *TCAN.bin* file that you will receive on your email address after shopping.

### EXAMPLE:

You will received activation file: *TCAN0000000000xxx.rar*

To extract a RAR file, you will need:

WinRAR archiver software: <https://www.rarlab.com/download.htm>

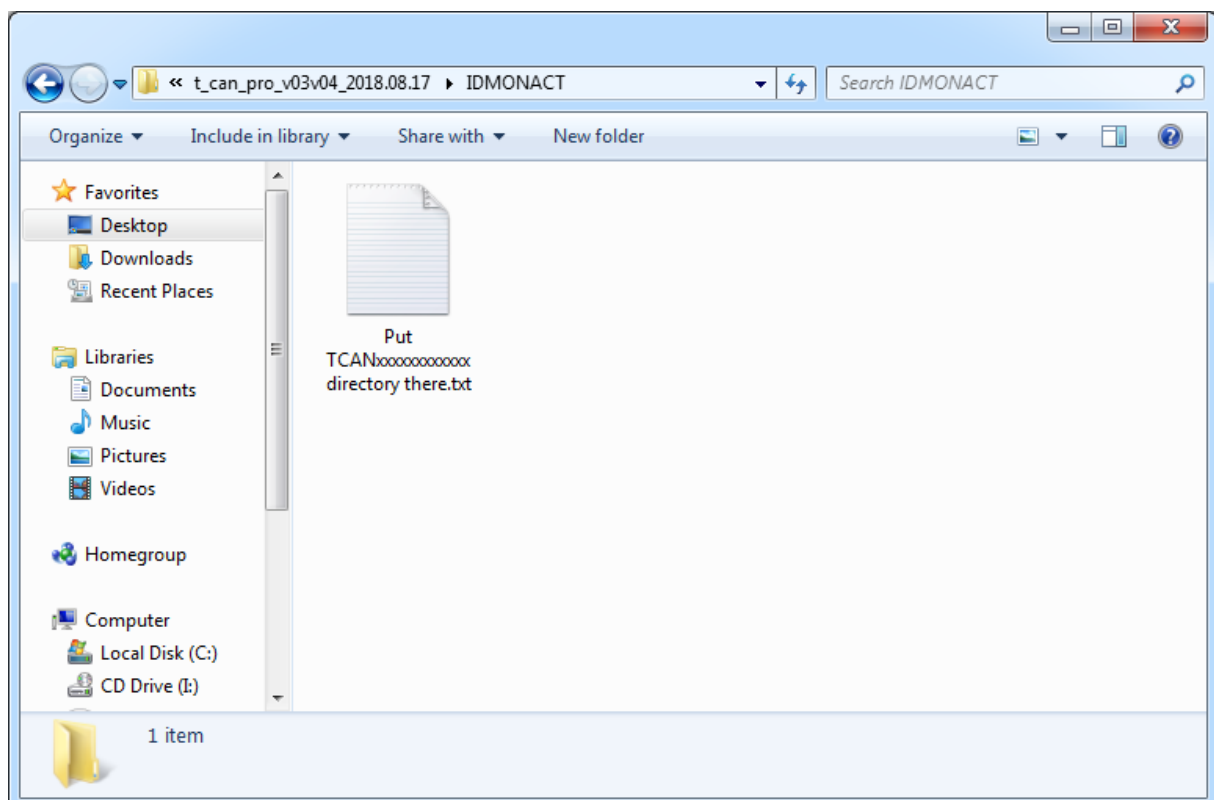
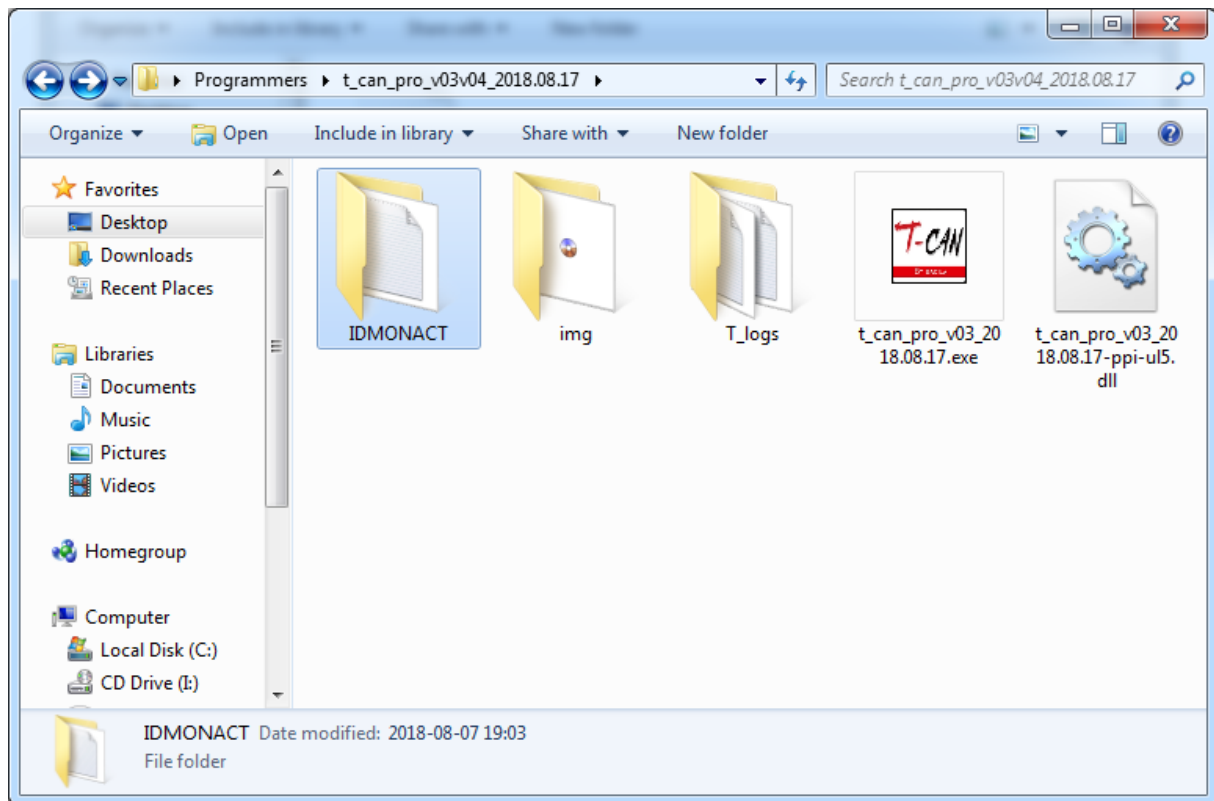
or free and open source 7-Zip <https://www.7-zip.org/>

then after extracting files you need to move/copy *TCAN.bin* file to the directory where is IDMONACT folder

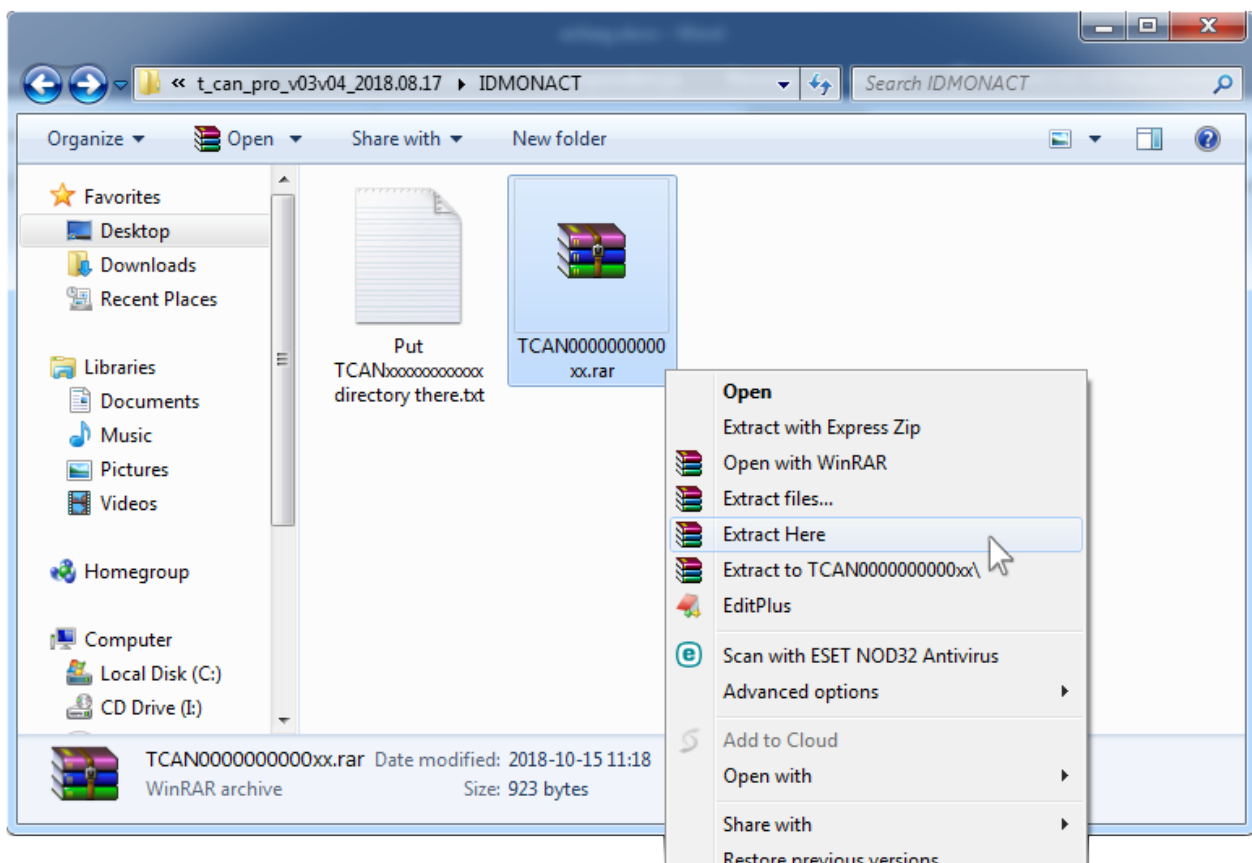
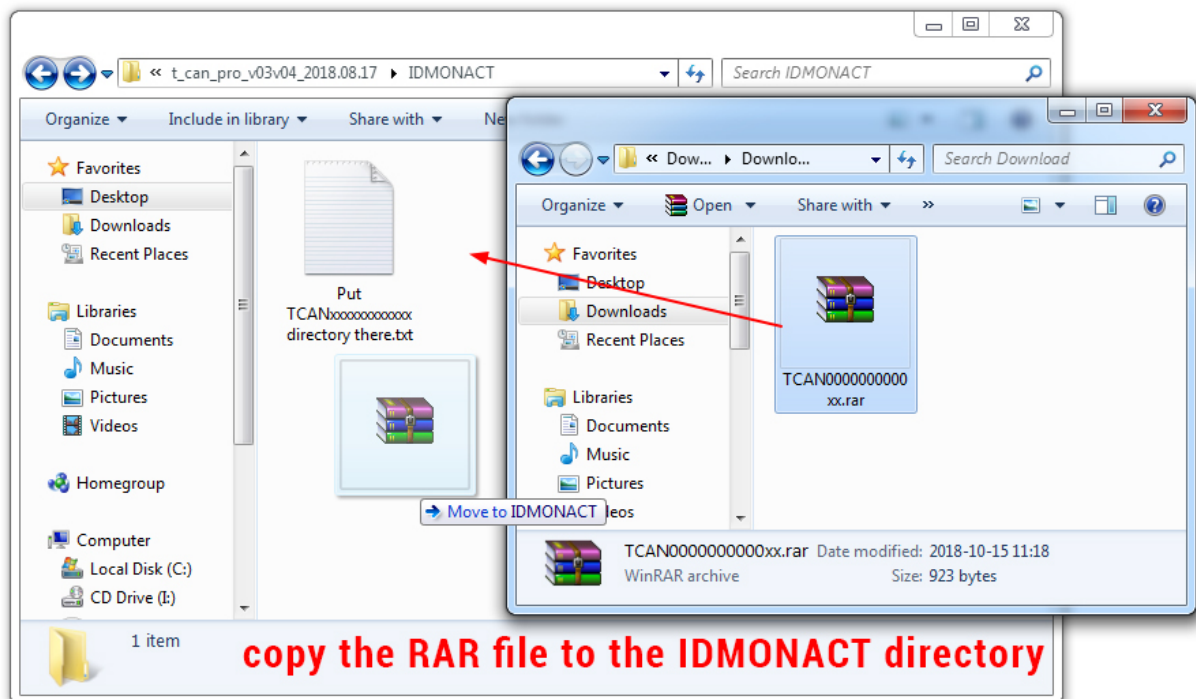
the right path should look as shown in the following:

```
C:\T-CAN PRO\IDMONACT \TCAN0000000000xx\tcan.bin
```

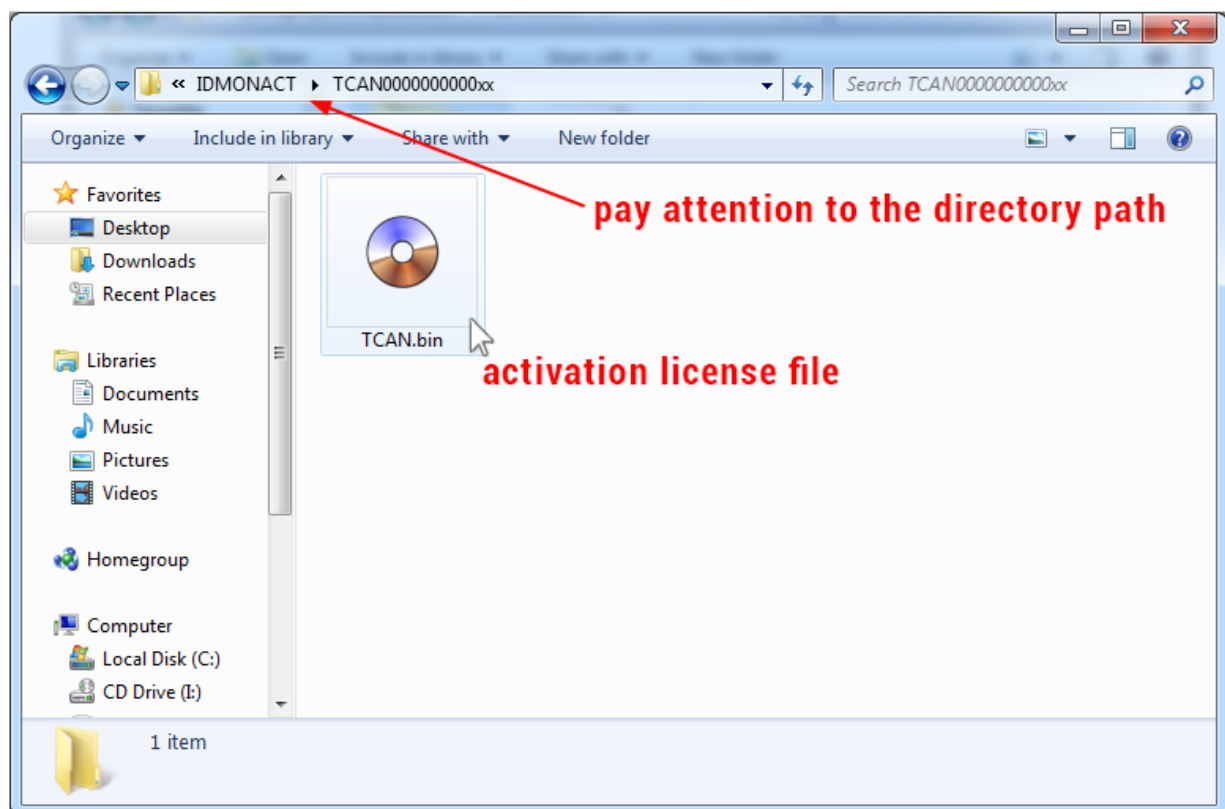
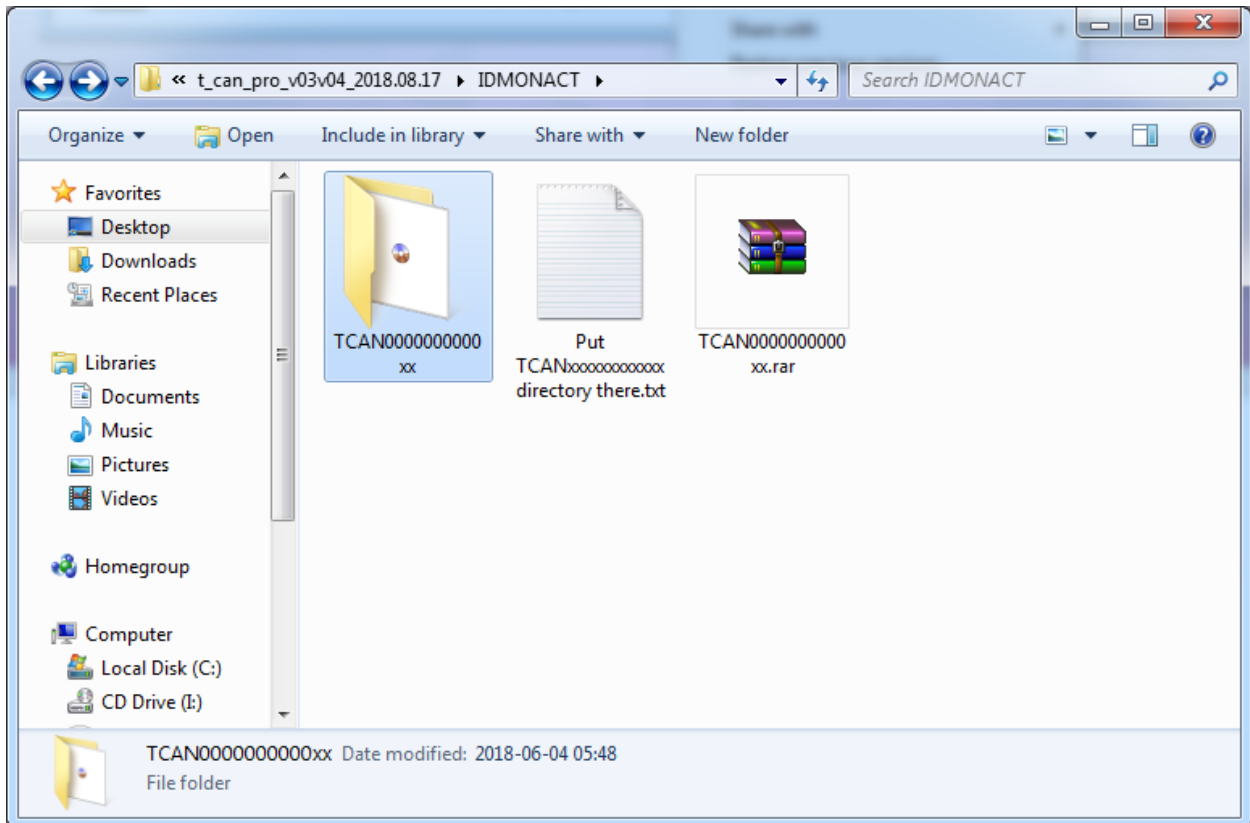
visualization for better understanding, step by step



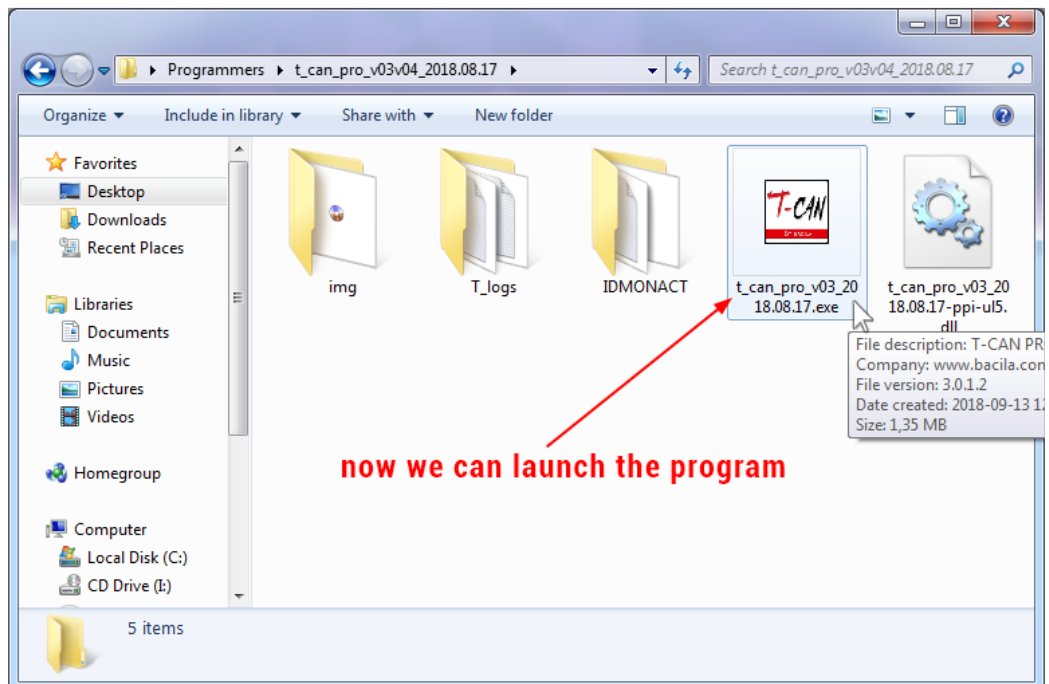
just drag and drop RAR archive file to IDMONACT folder





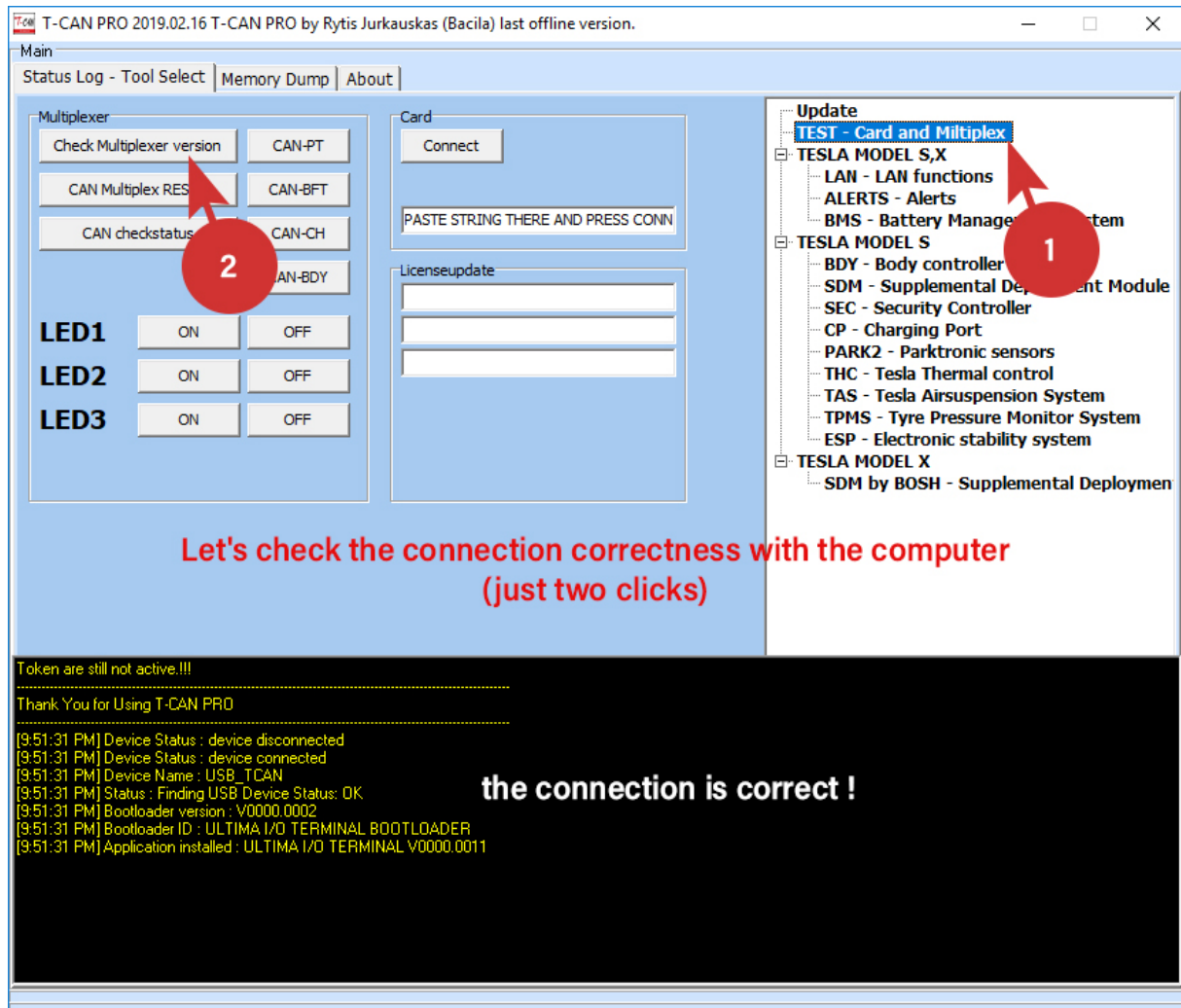


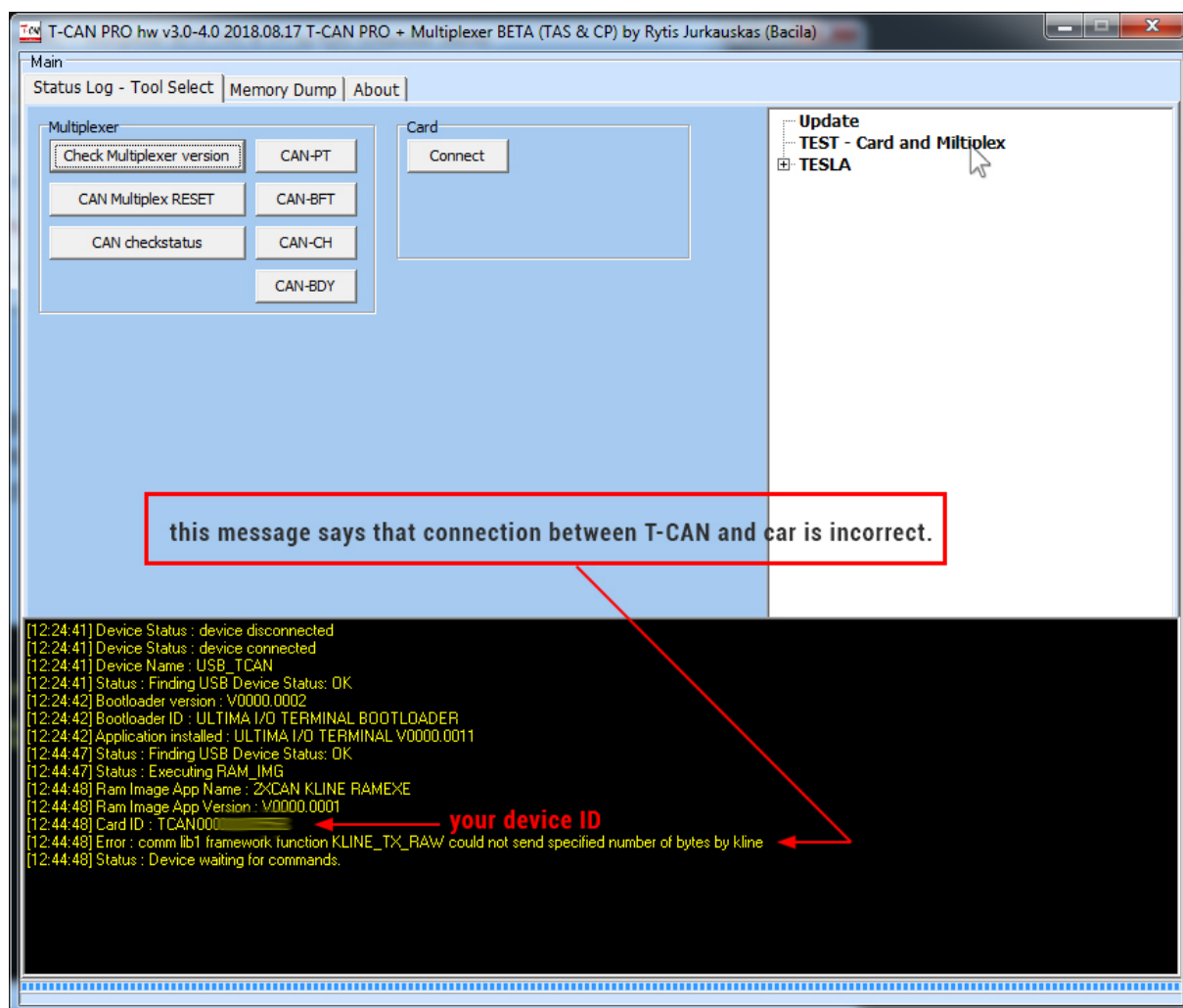
now you can connect the T-CAN PRO to your PC/laptop  
and run executable file



## The First Test

Please attached T-CAN to TESLA car now



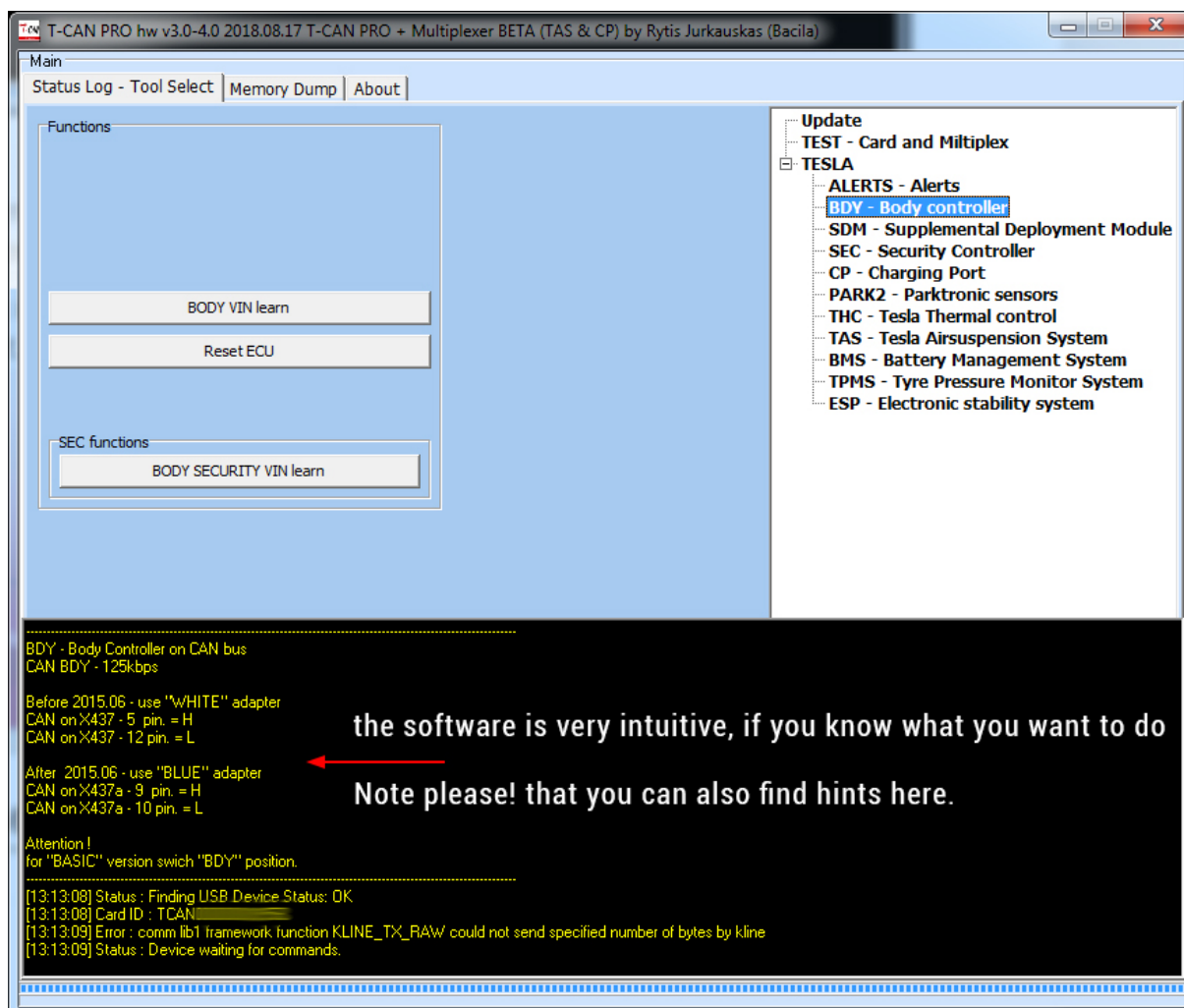


The Error shown above says that the connection between the T-CAN PRO diagnostic tool and the car is incorrect.

Check if the plug is loose and is properly plugged into the diagnostic socket.



the software is very intuitive



the software is going to be constantly developed, so in the future version you supposed to get more useful information and changes build in

## Airbag ECU Crash Data Resetting

Once an air bag has been deployed, whether via a malfunction of a vehicle's sensors or in a collision, most manufacturers recommend that they be replaced. Replacing air bags ensures that a driver's vehicle remains road-legal and safe for the driver and passengers alike.

However, replacing an air bag alone often isn't enough, when deployed, an air bag trips sensors and springs, and these must usually be replaced alongside the bag. These ancillary parts can greatly raise the cost of an air bag replacement.

But sometimes isn't enough, it's not everything, when you replace all the above mentioned parts, it turns out that you need to erase the information about accident from the computer's memory. Now comes T-CAN Tool to help us, because we are talking about the TESLA model S here.

In some countries, erasing data airbag crash without changing air bag assembly is not legal.

So, we highly recommend to replacing car's entire air bag assembly.

So before using the method given below, you must ensure that it is legal in your country.

*Remember that you do everything at your own risk !*

How it looks Tesla SRS airbag control module and where is located ?



Pictures are illustrative and may change over the years

The airbag module is located in the front of the tunnel, under the dashboard, right on the side of the pedals as you see on the picture below.



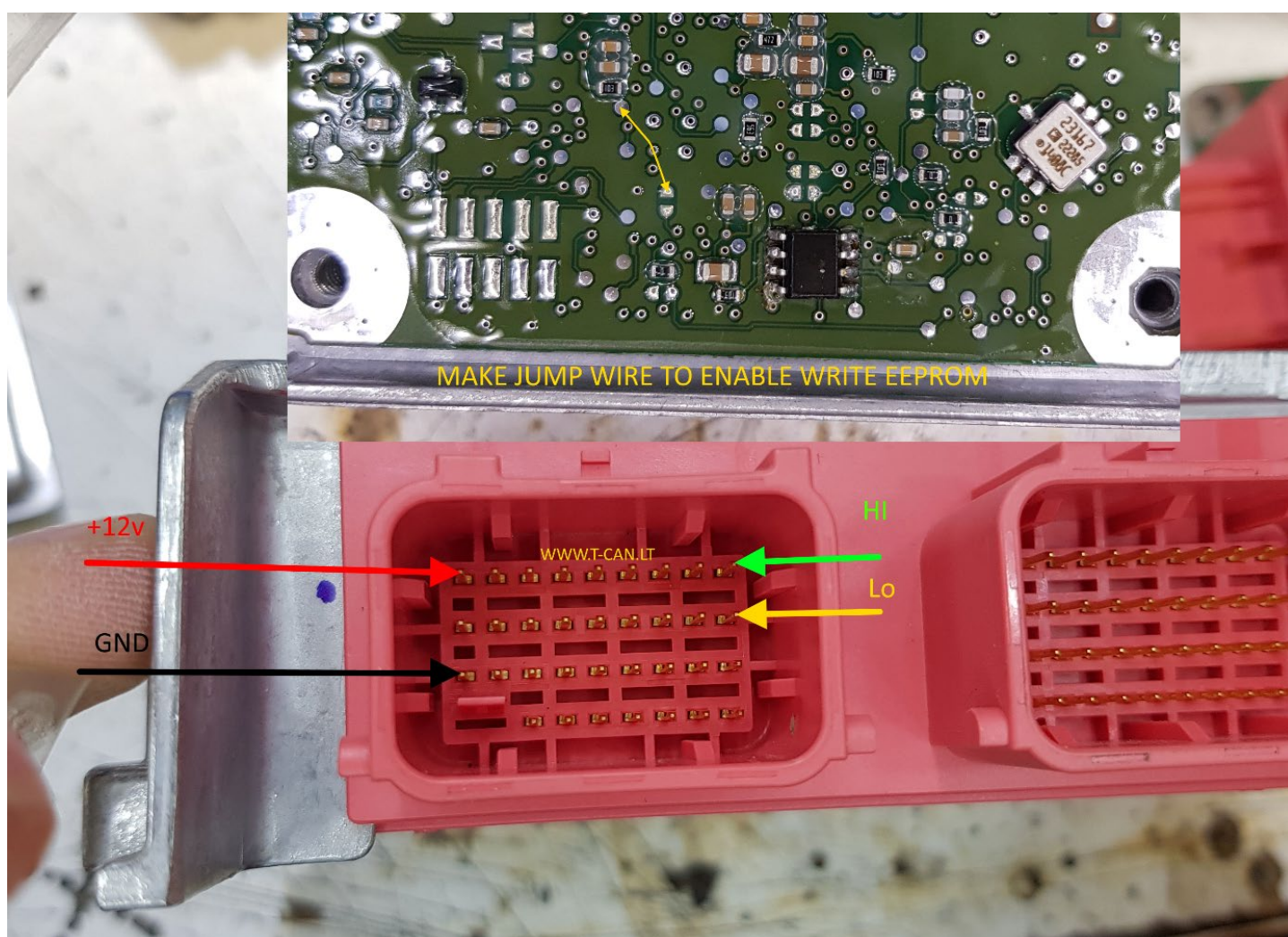
There is no matter what version you own  
of T-CAN PRO interface (HW03, HW04, HW05 or or newer)  
you will be able to Reset Airbag Crash Data

**TESLA S with connector x437 and x437A – on the bench**  
**TESLA X,3 with connector x437A – by diagnostic port or on the bench**

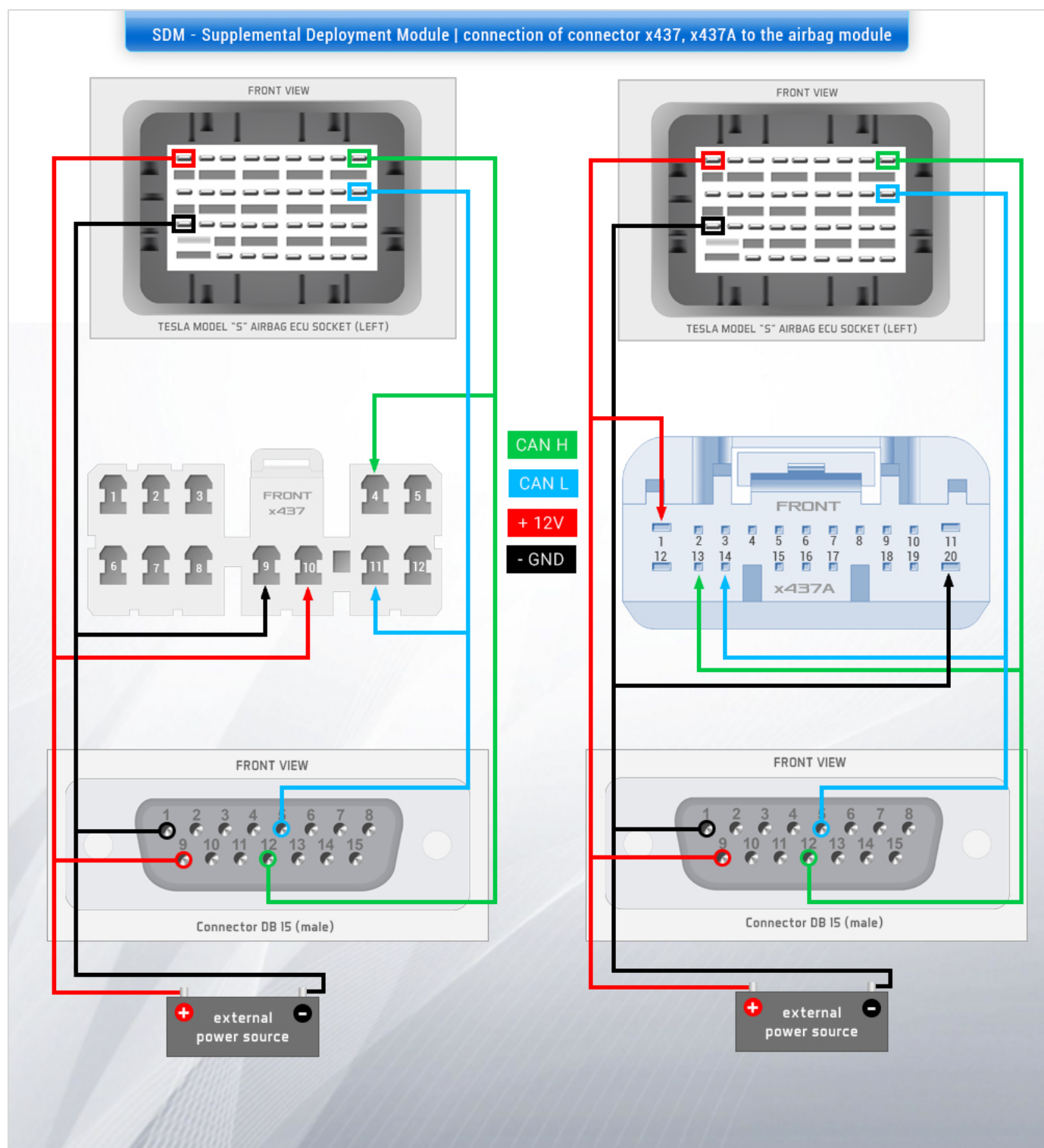


## SRS - TESLA MODEL S

- 1) Remove Air Bag Control Module from the car and open it.
- 2) Connect T-CAN PRO to the module according the photo as shown in the following and don't forget about to soldering jumper wire to enable write EEPROM. (wiring diagram can be find on next page)



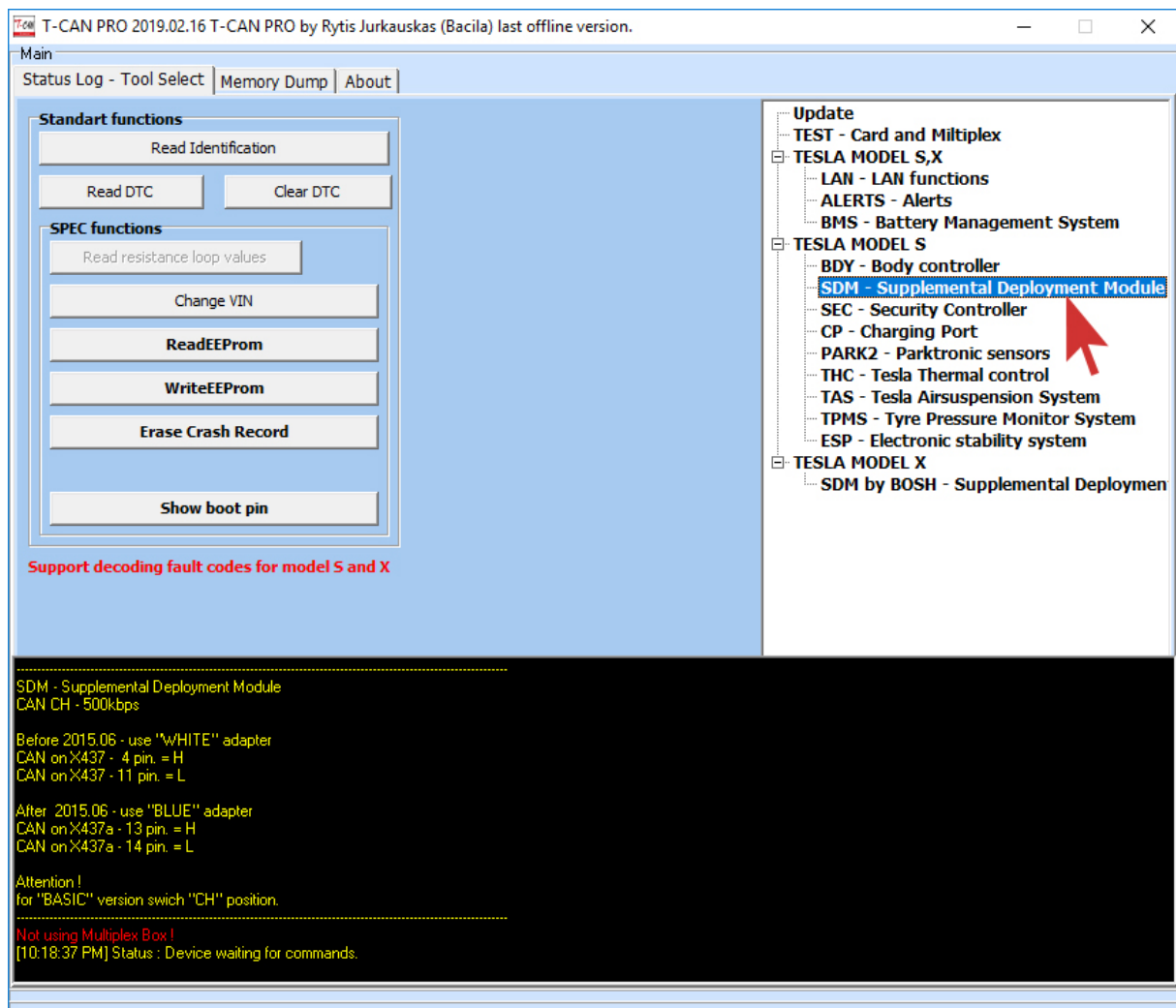
## How to connect T-CAN PRO with Airbag Module on the bench using x437 and x437A connector ?



for all Tesla cars S, X

if the connection between the car and T-CAN is established, we can go to the software

As you can see, some of the useful information can be found in the program's dialog box but regarding making connection between T-CAN PRO and AirBag Module, means connection with omitting Multiplexer !!! .. doesn't apply hw 04 and above



Now you are able to: Read and Clear Diagnostic Trouble Codes (DTC) faults, Clear Crash log and Restart ECU.



Just example: T-CAN PRO while reading the EEPROM memory

T-CAN PRO hw v3.0-4.0 2018.09.21 T-CAN PRO + Multiplexer BETA by Rytis Jurkauskas (Bacila)

Main

Status Log - Tool Select Memory Dump About

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	0123456789ABCDEF
0x000	0C	00	00	00	00	00	80	28	44	54	97	20	20	00	00	00	..... (DT. ....
0x010	00	00	00	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	.....
0x020	FF	FF	FF	FF	AA	72	4C	54	97	58	41	4B	31	34	31	31	..... rLT.XAK1411
0x030	32	36	31	52	46	56	30	31	FF	FF	FF	FF	FF	FF	FF	FF	261RFV01.....
0x040	55	AA	55	FF	FF	FF	CF	00	30	03	01	80	EE	AA	89	36	U.U.....0.....6
0x050	00	00	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	.....
0x060	21	84	10	02	08	21	80	10	00	00	49	08	00	84	10	02	!.....!.....I.....
0x070	08	21	08	09	00	00	42	C0	09	10	00	00	00	00	00	00	.!.....B.....
0x080	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....
0x090	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....
0x0A0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....
0x0B0	00	00	00	00	00	00	00	00	00	00	49	0A	61	05	4C	E1	.....I.a.L.
0x0C0	5B	05	77	C2	A4	04	F9	46	CC	04	59	09	C9	04	F5	1C	[.w....F..Y.....
0x0D0	C9	04	74	42	01	04	74	42	AF	00	21	84	10	02	08	21	..tB..tB..!.....!
0x0E0	80	10	00	00	49	08	00	84	10	02	08	21	08	08	00	A0	....I.....!.....
0x0F0	43	E0	EB	19	00	00	00	00	80	00	00	00	00	00	00	00	C.....
0x100	00	16	7D	11	01	00	37	16	CC	00	AD	0B	FF	FF	FF	FF	..}...7.....
0x110	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	.....
0x120	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	.....
0x130	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	.....
0x140	31	30	33	32	32	32	34	2D	30	30	2D	41	00	00	00	00	1032224-00-A....
0x150	35	50	44	53	41	31	48	32	34	45	46	50	36	35	35	36	5V1S41H24FF06556

[11:09:50 PM] Status : Waiting For Commands  
 [11:09:50 PM] Status : Device waiting for commands.  
 [11:10:03 PM] Status : Finding USB Device Status: OK  
 [11:10:03 PM] ID : TCAN00000000  
 [11:10:03 PM] Status : Connecting by CAN...CONNECTED  
 [11:10:03 PM] Status : Reading VIN...DONE  
 [11:10:58 PM] Status : Connecting by CAN...CONNECTED  
 [11:10:58 PM] Status : Gaining security access...DONE  
 [11:10:58 PM] Status : Writing VIN...DONE  
 [11:10:58 PM] Status : Waiting For Commands  
 [11:10:58 PM] Status : Device waiting for commands.  
 [11:11:02 PM] Status : Finding USB Device Status: OK  
 [11:11:03 PM] ID : TCAN00000000  
 [11:11:03 PM] Status : Connecting by CAN...CONNECTED  
 [11:11:03 PM] Status : Gaining security access...DONE  
 [11:11:15 PM] Status : Reading EEPROM...DONE  
 [11:11:15 PM] Status : Waiting For Commands  
 [11:11:15 PM] Status : Device waiting for commands.

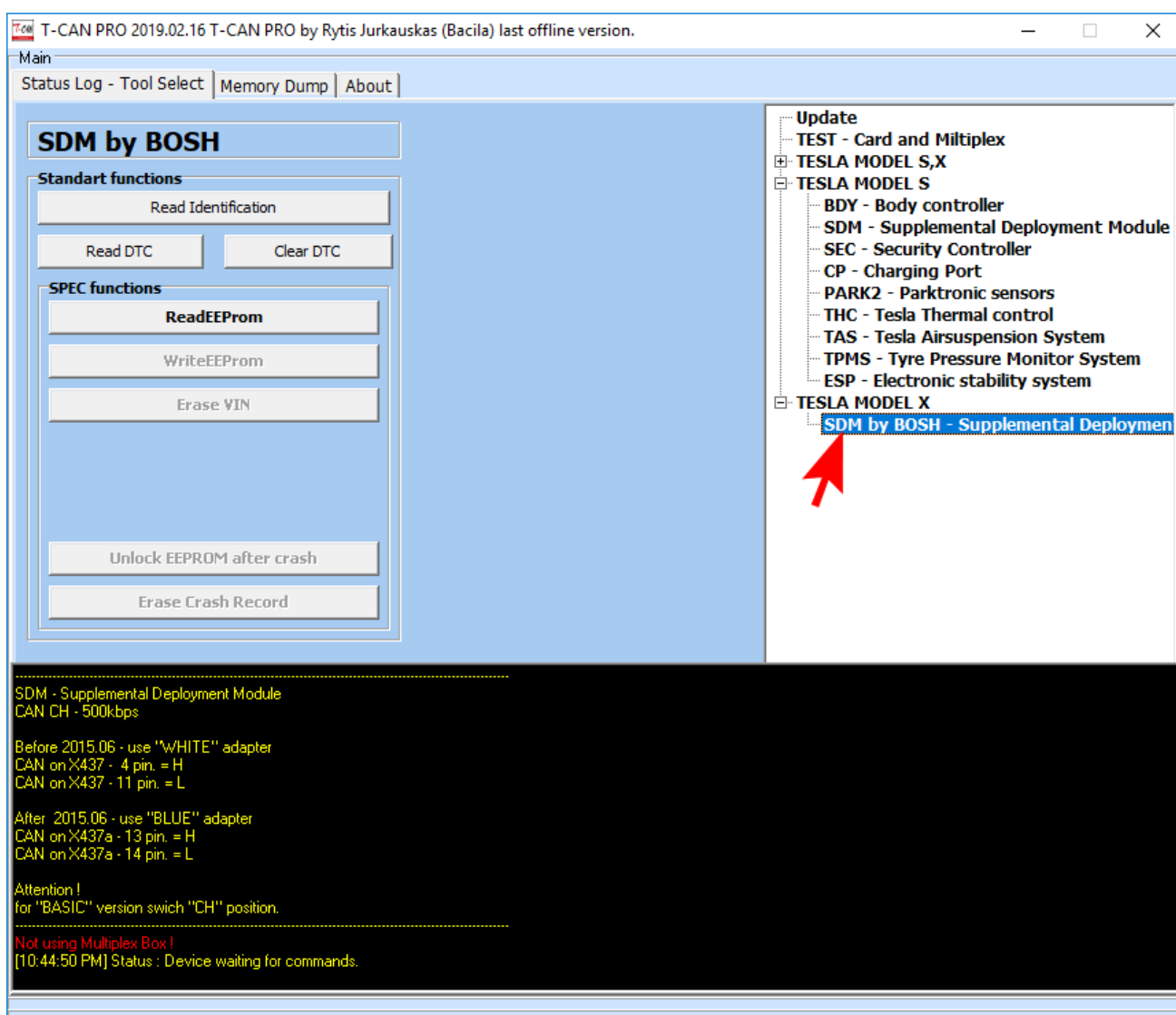


## SRS - TESLA MODEL X

- 1) You do not have to remove Air Bag Control Module from the car and open that.
- 2) Just simply Connect T-CAN PRO to the module and click *Read EEPROM & Erase Crash Record*.



In some circumstances, you may receive a message the Airbag Module is LOCKED, then please press *Unlock EEPROM after crash*

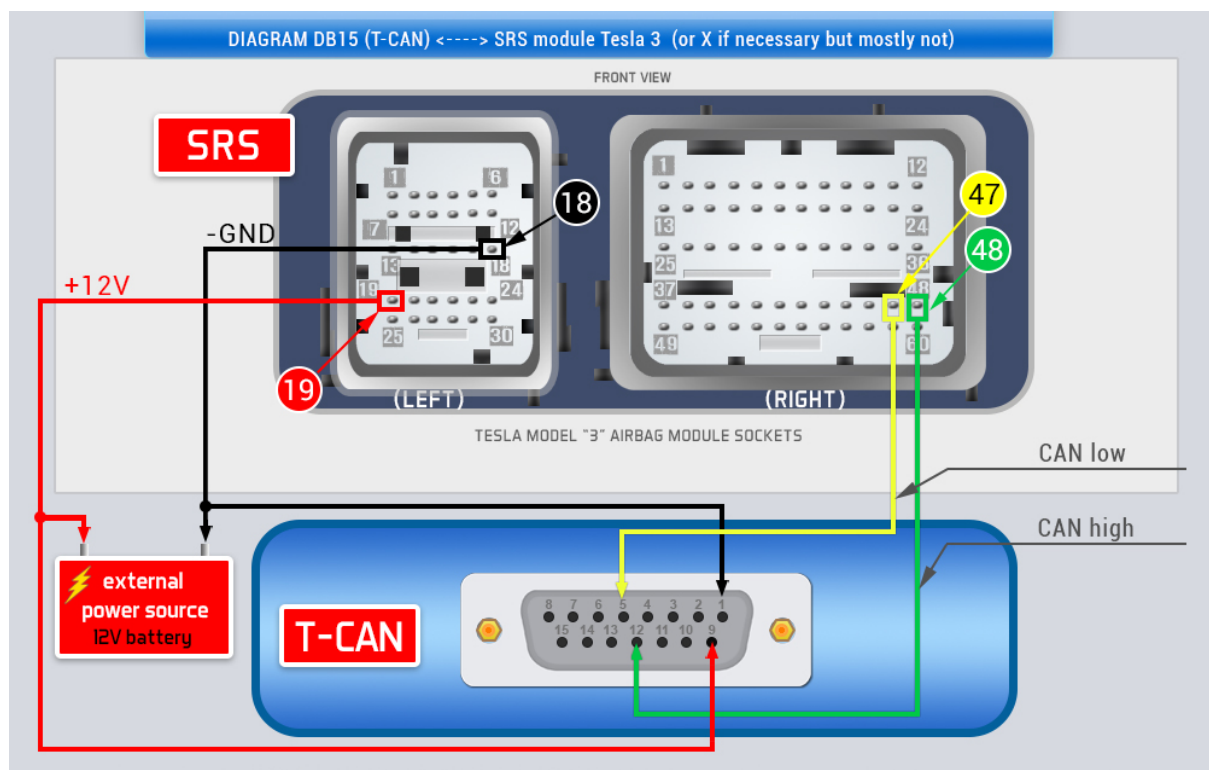
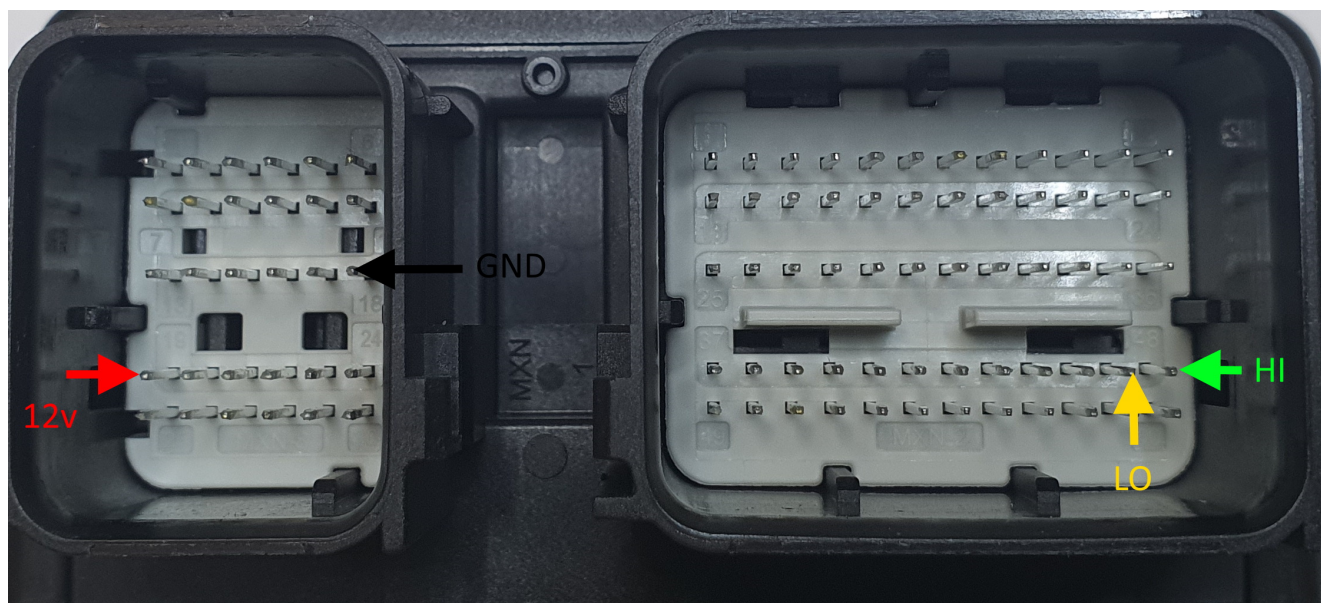


How to connect T-CAN PRO with TESLA Model 3 Bosch Airbag Module on the bench using wiring connector done by self.



the airbag module may vary in model 3 or X

In some circumstances you have to take out SRS module and finished work on the bench. The following pinout will be very helpful.



## How to use the T-CAN PRO with TESLA Model 3, X when you Erasing Crash from Bosch Airbag Module.

Similar as with all cars once an air bag has been deployed, whether via a malfunction of a vehicle's sensors or in a collision, most manufacturers recommend that they be replaced. Replacing air bags ensures that a driver's vehicle remains road-legal and safe for the driver and passengers alike.

However, replacing an air bag alone often is not enough, when deployed, an air bag trips sensors and springs, and these must usually be replaced alongside the bag. These ancillary parts can greatly raise the cost of an air bag replacement.

But sometimes it is not enough, when you replace all the above mentioned parts, it turns out that you need to erase the information about accident from the car computer's memory. Now comes T-CAN Tool to help us.

### ***NOTICE!***

In some countries, erasing data airbag crash without changing air bag assembly is not legal.


So, we highly recommend to replacing car's entire air bag assembly.

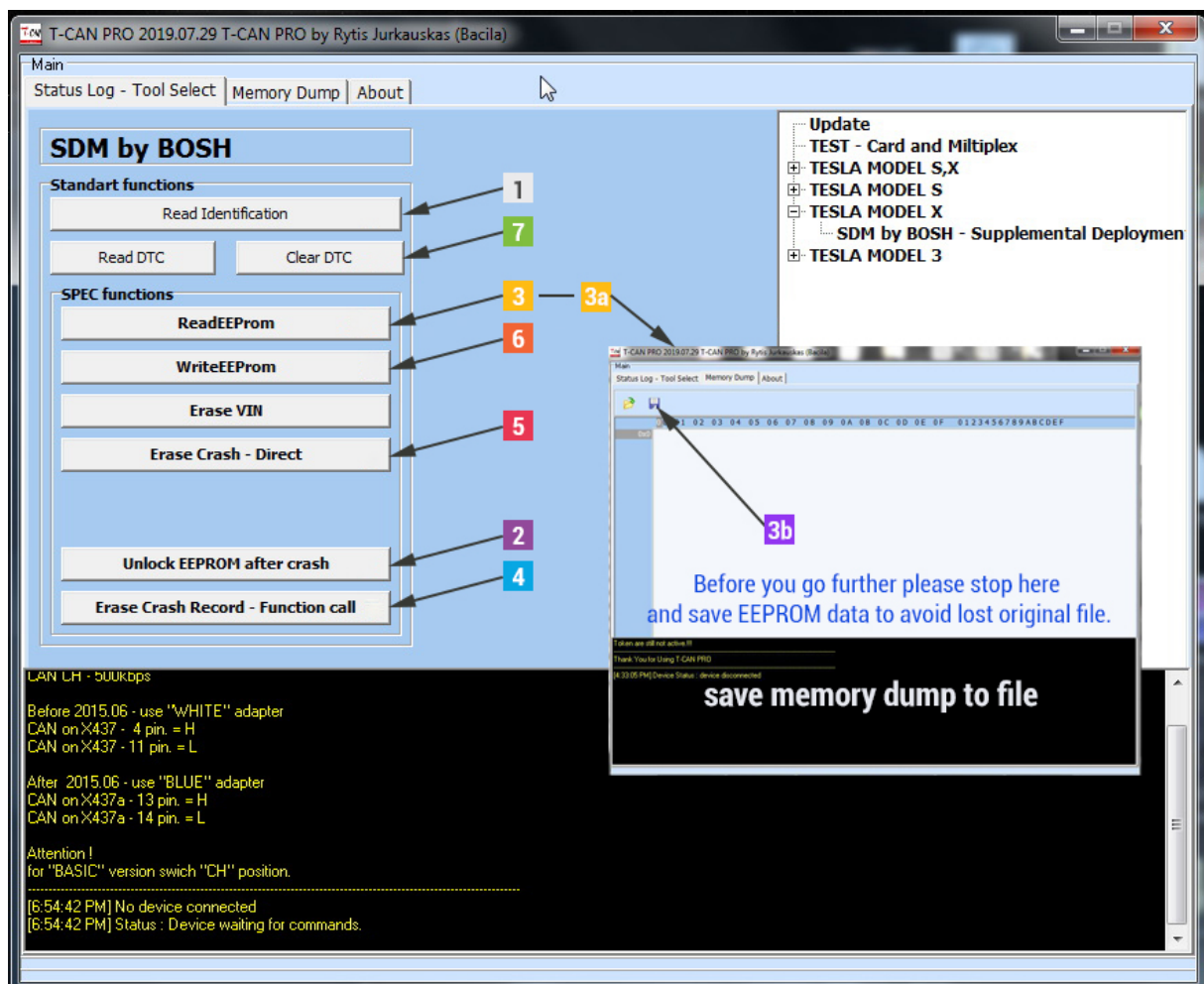
So before using the method given below, you must ensure that it is legal in your country.

*Remember that you do everything at your own risk !*

Make sure you have the latest version of the software.

Go to TESLA MODULE 3 or X - SDM by BOSCH function and click following:

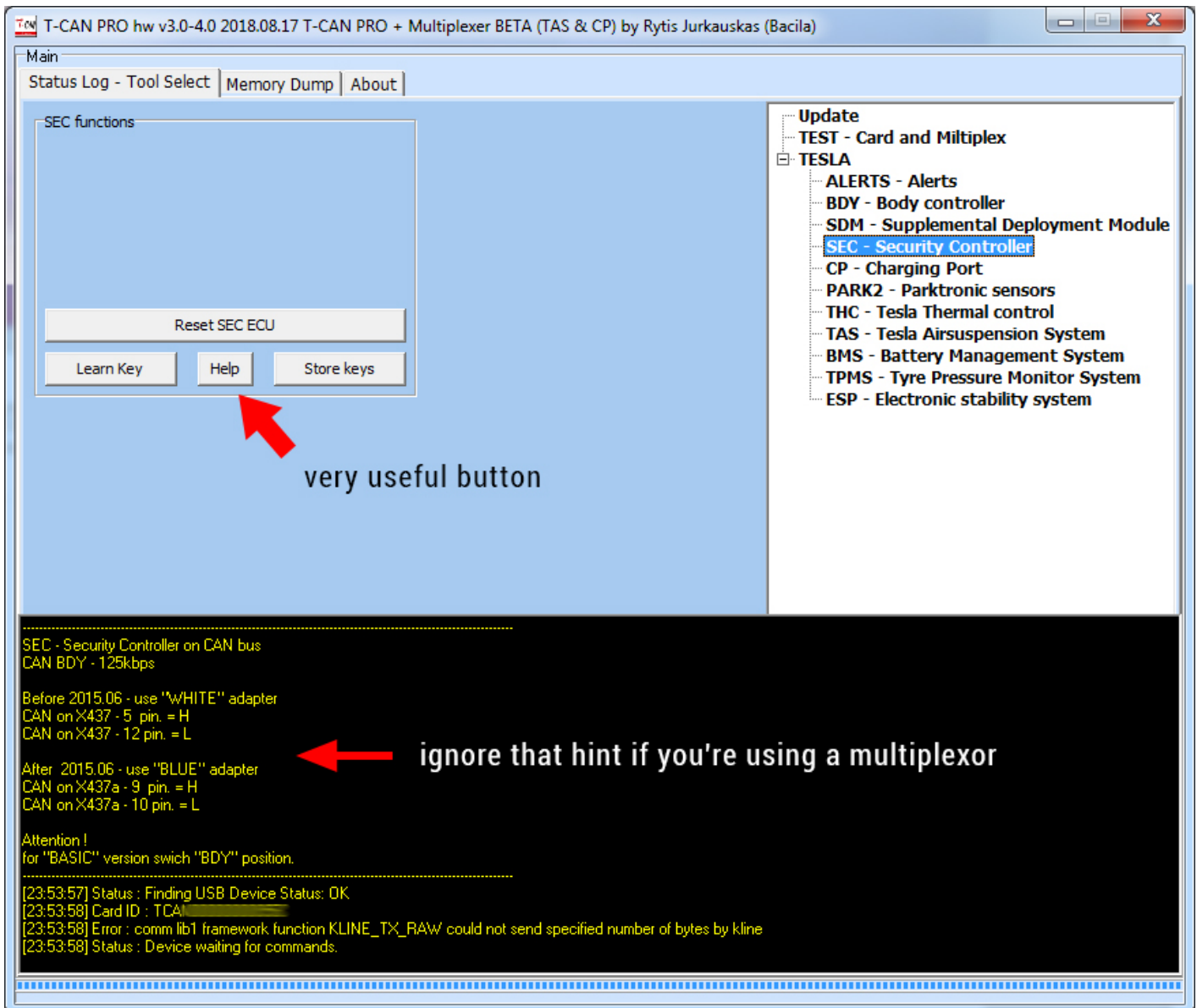
1. Read Identification
2. Unlock EEPROM after crash
3. Read EEPROM
  - 3a) click the top tab "Memory Dump"
  - 3b) when you see HEX Editor please click the symbol  to save the original contents of EEPROM memory to a \*.BIN file just in case.
4. Now you can Erase Crash Record from the airbag module.
5. Erase Crash – Direct
6. Write changes
7. At the end please Clear DTC



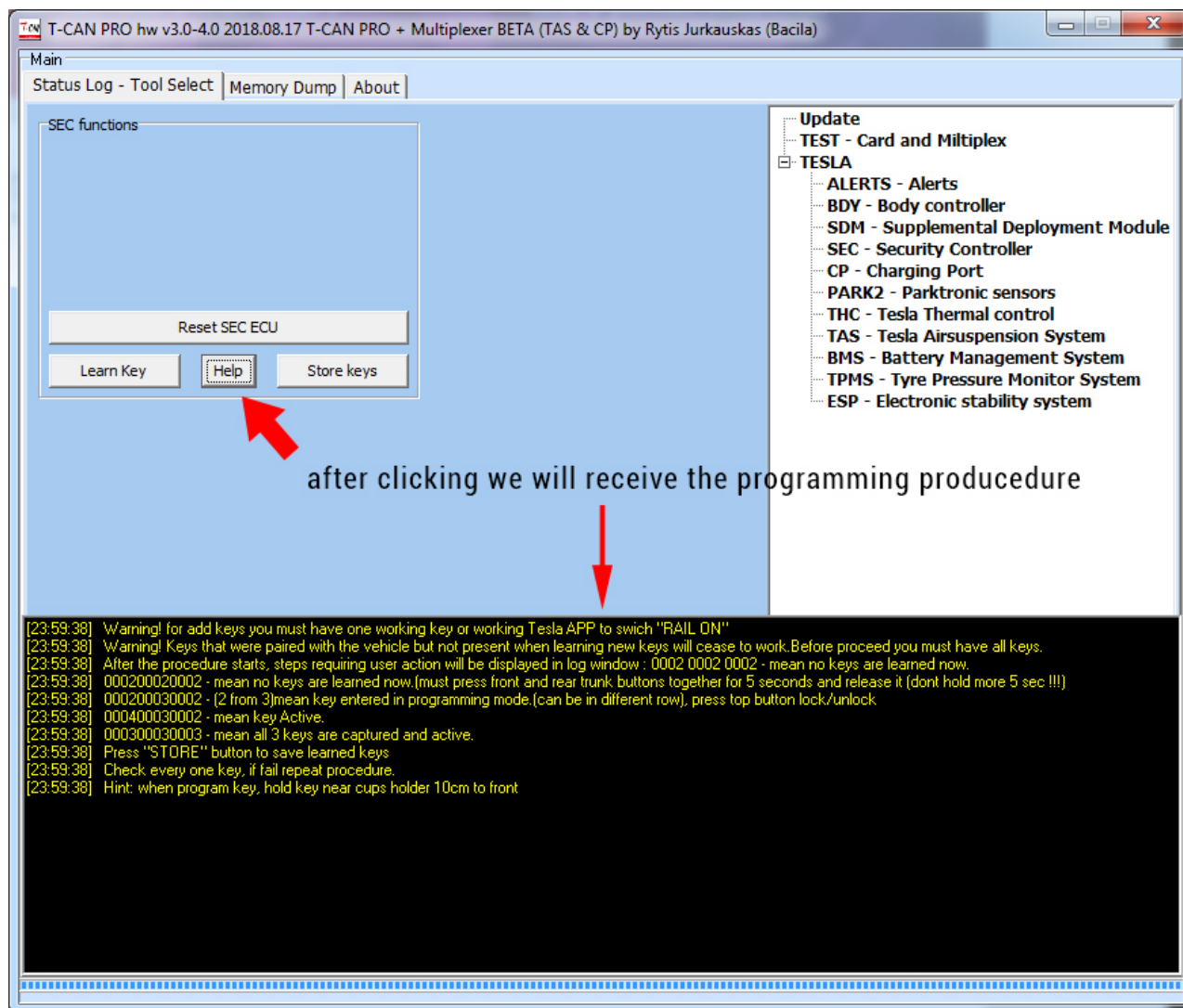


## Adding and learning keys (key-fob)

To add or learning keys, follow the instructions in the program dialog box.



Click on the HELP button to get the programming procedure



```
[23:59:38] Warning! for add keys you must have one working key or working Tesla APP to switch "RAIL ON"
[23:59:38] Warning! Keys that were paired with the vehicle but not present when learning new keys will cease to work. Before proceed you must have all keys.
[23:59:38] After the procedure starts, steps requiring user action will be displayed in log window : 0002 0002 0002 - mean no keys are learned now.
[23:59:38] 000200020002 - mean no keys are learned now.(must press front and rear trunk buttons together for 5 seconds and release it (dont hold more 5 sec !!!)
[23:59:38] 000200030002 - (2 from 3)mean key entered in programming mode.(can be in different row), press top button lock/unlock
[23:59:38] 000400030002 - mean key Active.
[23:59:38] 000300030003 - mean all 3 keys are captured and active.
[23:59:38] Press "STORE" button to save learned keys
[23:59:38] Check every one key, if fail repeat procedure.
[23:59:38] Hint: when program key, hold key near cups holder 10cm to front
```

The PFD manual going to be modified and updated  
in accordance with T-CAN PRO development



Please feel free to contact us for any clarification

*T-CAN* by [www.t-can.it](http://www.t-can.it)

[info@bacila.com](mailto:info@bacila.com)

Distributor *PREMIUM Tools24*

[info@premium-tools24.com](mailto:info@premium-tools24.com)

<https://premium-tools24.com>