INSTALLATION MANUAL.

01/october/2024

info@zaelettronica.com

FOREWORD

Thanks for choosing ZA ELETTRONICA as the electronic manufacturer for your replica.

I'm sure that your choice will be paid back by mutual satisfactions. I have invested a lot of time and resources along with my team on research and development, but your feedback on this product may help me to improve it, since i have the aspiration to make it become the market benchmark.

Therefore i would like, if possible, to receive your suggestions; they will be considered and eventually integrated in future free firmware developments.

Send your suggestions to info@zaelettronica.com including your invoice number.

Thank you for your cooperation and enjoy your manual!

Alessandro Zagni

Tables of Content

CONTENT OF THE SET

What you'll find in the box:

- ✓ 1 COMPASS board;
- ✓ 1 MPH board;
- ✓ 1 RPM board;
- ✓ 1 VOICEBOX board;
- ✓ 1 POWER board;
- ✓ 2 switchpods units;
- ✓ 1 integrated keypad with connector that gets connected to the POWER board;
- ✓ 1 DIODE board;
- ✓ Automotive cables kit for electronic set and swithcpods;
- ✓ Overlays installed.

ATTENTION:

BEFORE PROCEEDING TO POWER UP THESE ELECTRONICS CAREFULLY READ AND UNDERSTAND THIS MANUAL.

CONTACT QUALIFIED PERSONELL TO PERFORM THIS INSTALLATION! WE DECLINE ANY RESPONSABILITY FOR A NON CORRECT INSTALLATION AND POSSIBLE DAMAGES TO YOUR CAR.

THESE ELECTRONICS, EVEN IF SIMILAR TO OR BETTER OF THE ORIGINAL EQUIPMENT OF YOUR CAR UNDER SOME ASPECTS, ARE INTENDED TO BE USED OUT OF PUBLIC ROADS. WE DECLINE ANY RESPONSABILITY FOR NONCOMPLIANCE WITH THIS RULE.

⚠ **DO NOT CONNECT/DISCONNECT THE CONNECTORS OF THE BOARDS WHEN THE BOARDS ARE POWERED. DANGER OF DAMAGE** ⚠

⚠ **ATTENTION: USE A SEPARATE SPEACKER ONLY FOR OUTPUT AUDIO FROM MP3 PALYERS!** ⚠

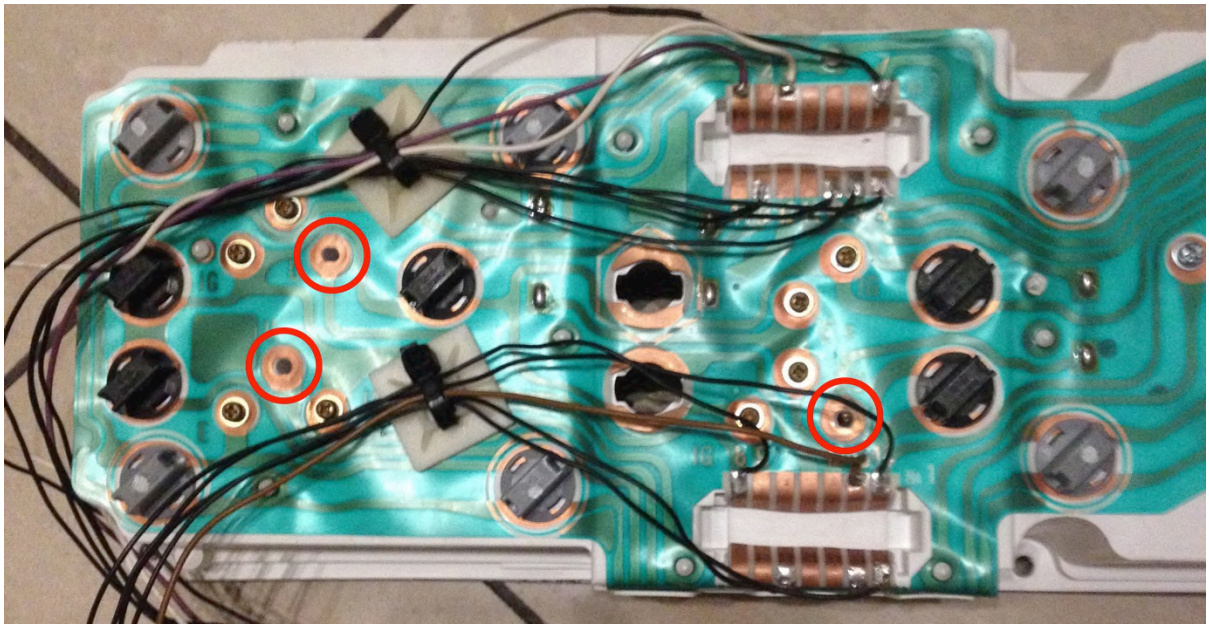
SIGNAL CONNECTIONS

First of all you should make sure that all the gauges in your car are working properly before removing the cluster. If a gauge is broken it is possible that the signal is still passing through; but if the gauge is good and the signal is not passing through you won't get any reading with the new electronics.

Having said that **you have to proceed removing the screws from three of the ohm gauges you're going to use, which are Engine Temperature, Oil pressure and Fuel.**

Tachometer and Speedometer **must** be left in place the way the are. Below a picture of the back of a 1989 original cluster

⚠ATTENTION: You have to remove the screws circled in RED



⚠ATTENTION: IF YOU DO NOT REMOVE THE MENTIONED SCREWS THE READING OF THE SIGNALS WILL BE COMPROMISED AND THE READING NOT CORRECT.

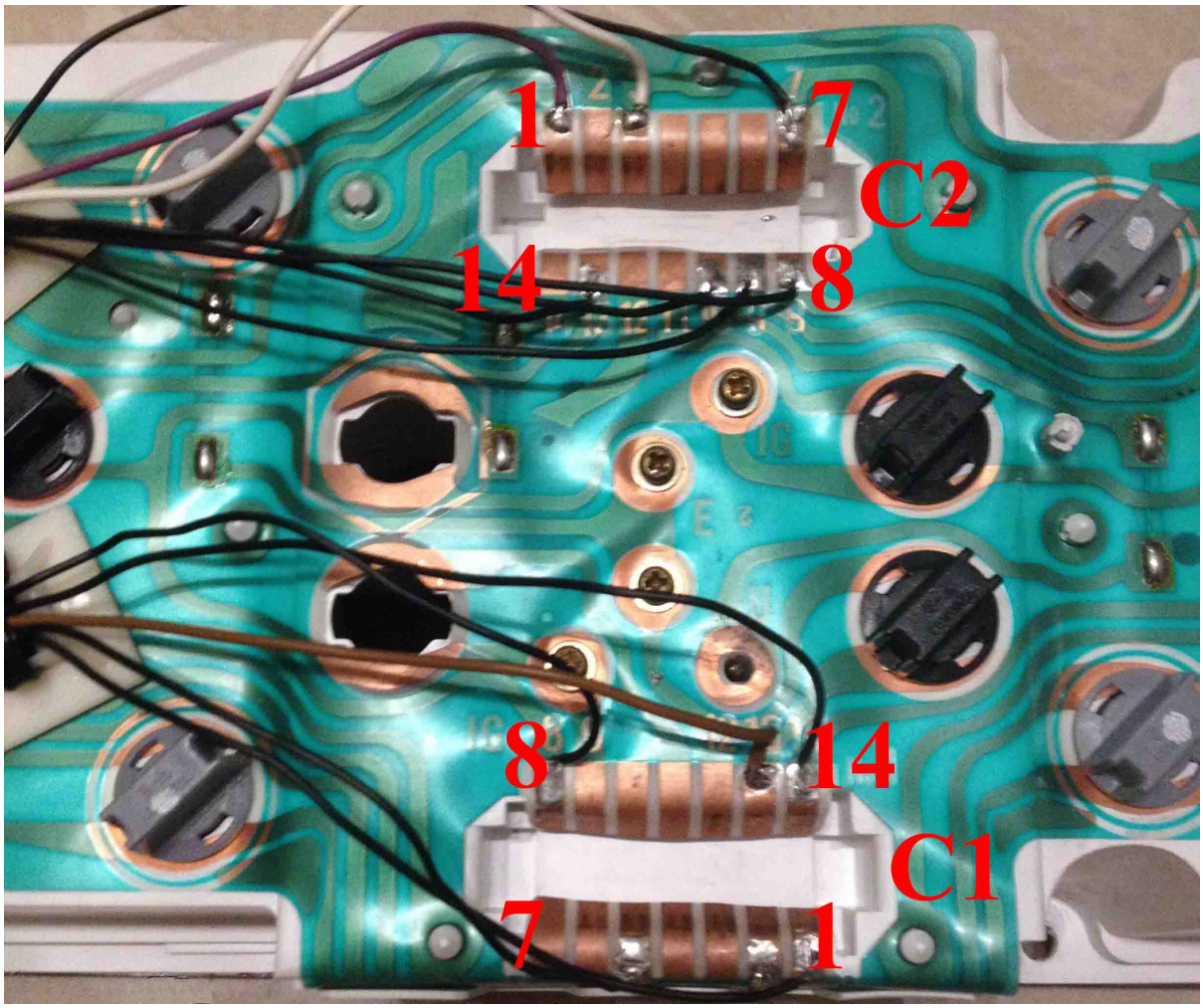
I suggest to use a multi way connector to connect/disconnect cables very easily.

⚠ATTENTION: DO NOT USE TERMINAL STRIPS TO CONNECT THE WIRES! VIBRATIONS CAUSED BY THE CAR MAY GET THE SCREWS LOSE! USE SOME CRIMP-ON OR JUST SOLDER.

The soldering spots you see in the picture were made directly on the top part of the connector area; that requires some skills with the solder iron to avoid damages to the original PCB. If you are unsure of your skills ask an expert to help you.

Difference between the original cluster '82-'86 and later '86:

If for all the cars from 1986 up you just have to remove the screws indicated in the picture above, **in earlier models you have to phisically remove the gauges**; infact there are no screws holding the gauges to the cluster, they're simply held by some metal clips. So you have to remove the gauges by removing the front part of the cluster first, then extract the gauges manually.
Speedometer and tachometer must be left in place.



CONNECTOR 1 (C1):

1 – RPM (TACHOMETER)
2 – GROUND (GND)
3 – LIGHTS (DIMMER)
4 – SECURITY (VATS LIGHT)
5 – ENGINE TEMP.
6 – NOT USED
7 – NOT USED
8 – OIL PRESS.
9 – INJECTION (IF AVAILABLE)
10 – NOT USED
11 – NOT USED
12 – GROUND (GND)
13 – BELTS (LIGHT)
14 – MPH/KMH (SPEEDOMETER)

CONNECTOR 2 (C2):

1 – HANDBRAKE (LIGHT)
2 – GROUND (GND)
3 – LIGHTS (DIMMER)
4 – NOT USED
5 – NOT USED
6 – NOT USED
7 – LEFT TURN SIGNAL (LIGHT)
8 – HIGH BEAMS (LIGHT)
9 – RIGHT TURN SIGNAL (LIGHT)
10 – FUEL
11 – NOT USED
12 – NOT USED
13 – SERVICE ENGINE SOON (LIGHT)
14 – SHIFT (LIGHT)

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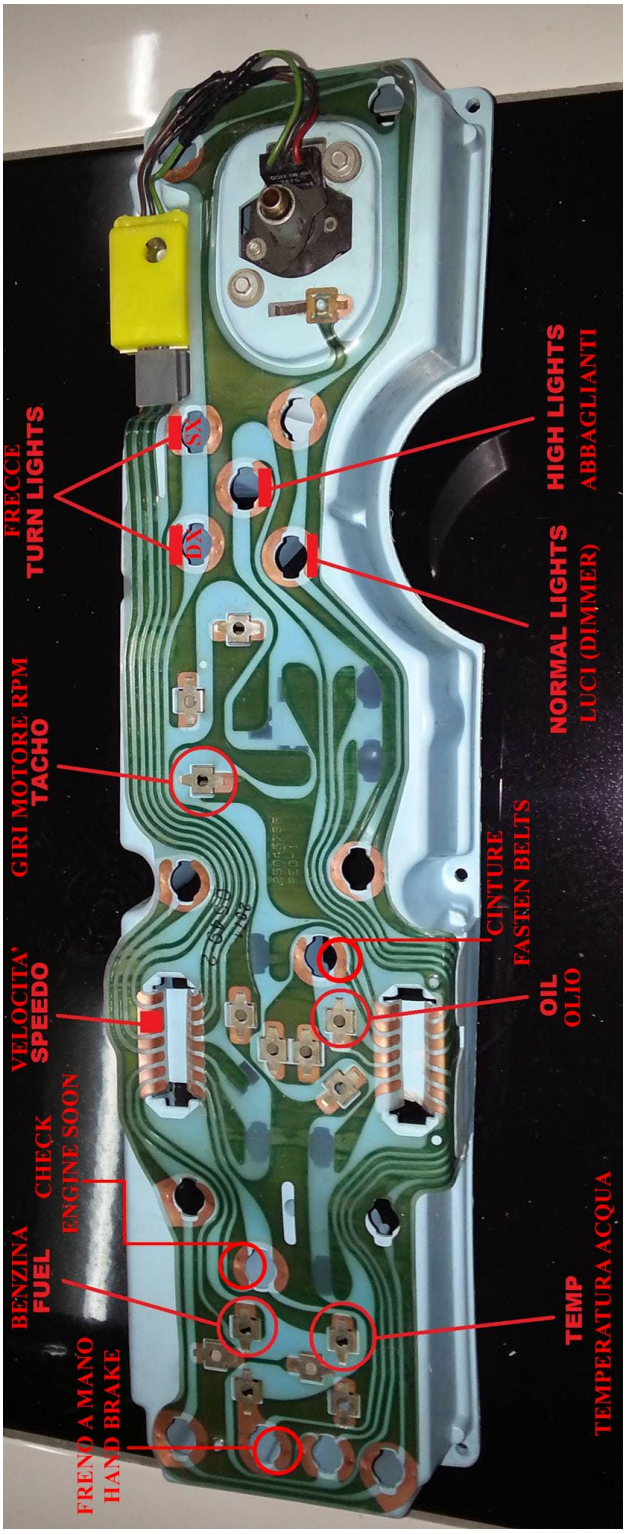
If you don't have a signal transductor on the back of your cluster (yellow little box below) you'll have to use an external one, like the cyberdine 8901. It's very easy to find. Please refer to the cyberdine datasheet to find the speed signal wire (the cyberdine has three wires: +12V, ground (GND) and signal) and connect that to the correct pin (#14) of the new electronics in the 24 ways connector.

⚠REMOVE ENGINE TEMP, OIL PRESS, FUEL AND VOLT GAUGES FROM THE CLUSTER⚠



RPM BOARD PINOUT

The pinout below specifies wire by wire their source and their use. Verify more than once you didn't make mistakes in soldering/nomenclature of the single signal wires. **If there are wires that you're not using close the top part with some heat shrink tubing to prevent shorts with the ground of the car.**
Wires are divided by signal types and tied together to prevent mistkes.
You can count the single pins starting from pin 1 on the top right of the connector.

⚠ **Attention: for the correct operation of the electronics it is very important that all the connections below are made, expecially lights and signals. The mandatory connections are marked with a star *.**
A missing connection may be interpreted as a warning light reporting it in the message center.

Cables numbering and ID of cables

To make the identification of the cable easier we added ID numbers during the production. Besides indicating where to connect the cables (es. Voicebox <-> mph) numbers help this operation to be completed quicker. Here the correspondence between numbers and cables

DESCRIPTION			NUMBERS
SNS (sensor for compass)	↔	CMP (compass)	1
CMP (compass)	↔	MPH (speedometer)	2
MPH (speedometer)	↔	VBX (voicebox)	3
VBX (voicebox)	↔	CDOWN (countdown)	4
VBX (voicebox)	↔	RPM	5
RPM	↔	PWR (where there are PANP)	6
RPM	↔	SIGNAL (shift, belts arrows…)	7
RPM	↔	PWR(fuel, oil, egt, rpm, mph)	8
PWR	↔	KEYBOARD	9

RPM 12 ways Power/Inputs/Outputs (WIRE ID AND COLORS)

Pin	WIRE ID	DESCRIPTION
1,2,3	A	+12 POWER [IN] (BATTERY, RED)
4,5,6,7	B	Ground (Battery BLACK)
8	C	Fuel input (GREEN) * (resistive 10 – 90 ohm to ground)
9	C	Oil Press input (ORANGE) * (resistive 10 – 90 ohm to ground)
10	C	Engine Temp input (BLUE) * (resistive 1300 – 60 ohm to ground)
11	C	RPM input (WHITE) *
12	C	SPEED input (PURPLE) *

RPM 8 ways Inputs LIGHTS (WIRE COLORS)

Pin:	DESCRIPTION (all inputs are +12 volts)
1	Shift (GRAY) (+12 volt **renameable**)
2	Belts (BROWN)
3	Service Engine Soon (GREEN)
4	High Beams (BLUE)
5	Left Turn Signal (PINK)
6	Right Turn Signal (ORANGE)
7	Hand brake (PURPLE)
8	Light dimming (WHITE)

⚠ATTENTION: Check your connections several times; a wrong wiring may cause serious damages to the electronics!

ELECTRONICS POWER UP

When the electronics are all connected to the power no LED will turn on, they'll be in a standby mode waiting for the signal of the POWER button of the PANP. If the previous instructions have been followed in the right way the electronics will turn on pressing the POWER button.

Pressing the button POWER one more time the electronics will go back in standby, waiting for the POWER signal again.

Therefore pressing the POWER button does not turn the electronics off, it simply puts them in standby.

It is advised to connect the main power feed on the ignition to prevent any chance of levaing the electronics connected for long periods when the car is not used. This to avoid any unwanted battery drain. If left in standby even if the consumption is a few milliampere/hour it is possible to drain the battery in a few days.

Feeding the electronics with the ignition positive you'll make sure that everything is disconnected once the key is removed from the ignition cylinder.

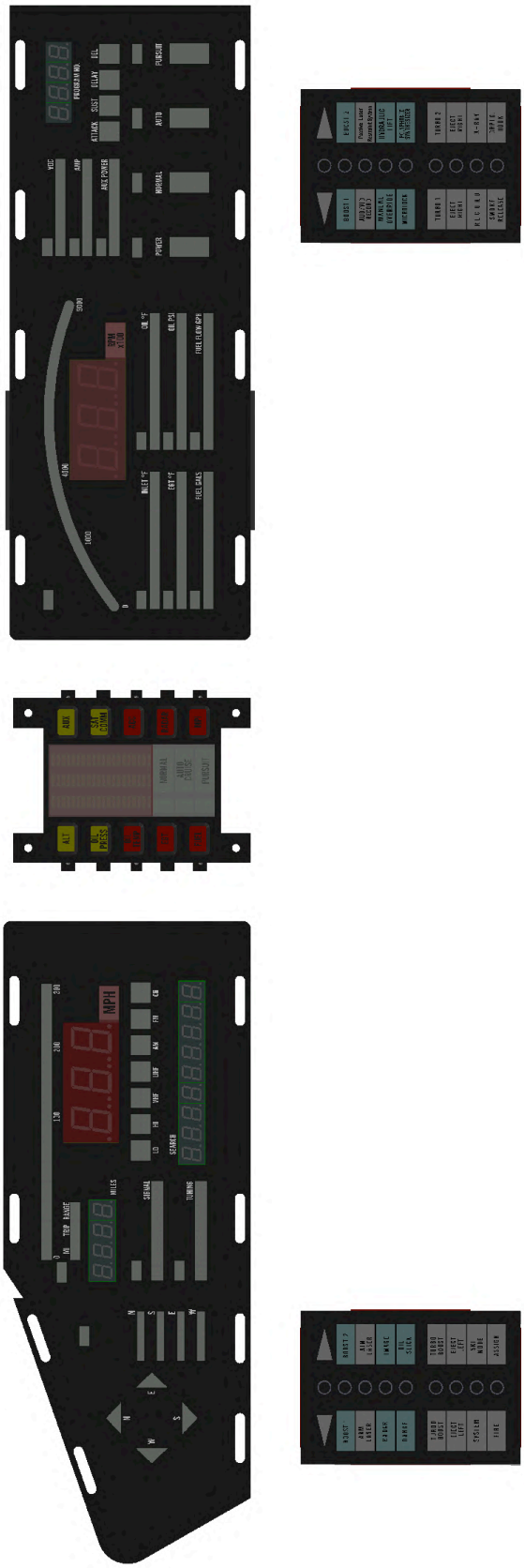
How this boards are made?

This product you purchased is the result of years of research and development. To ensure continuity in production and quick availability of materials, I have decided to produce all LEDs in SMD format.

This guarantees a long lifespan for the LEDs, and through laser-cut overlays and calibrated diffusers, we have managed to achieve the same visual result that was obtained with traditional components used by all electronics manufacturers up to now.

In these images, you can see how they were created.

⚠ ATTENTION: DON'T TRY TO DISASSEMBLY THE PCB BOARD FROM OTHER LAYERS. IF YOU NEED ASSISTANCE, REFER ONLY TO US.



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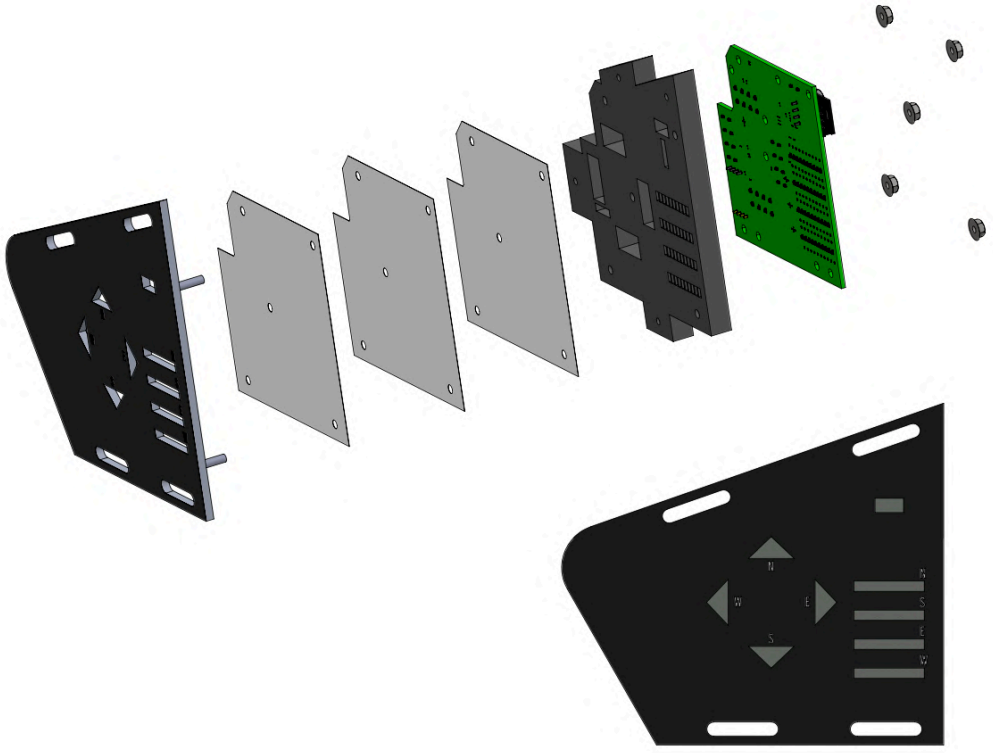
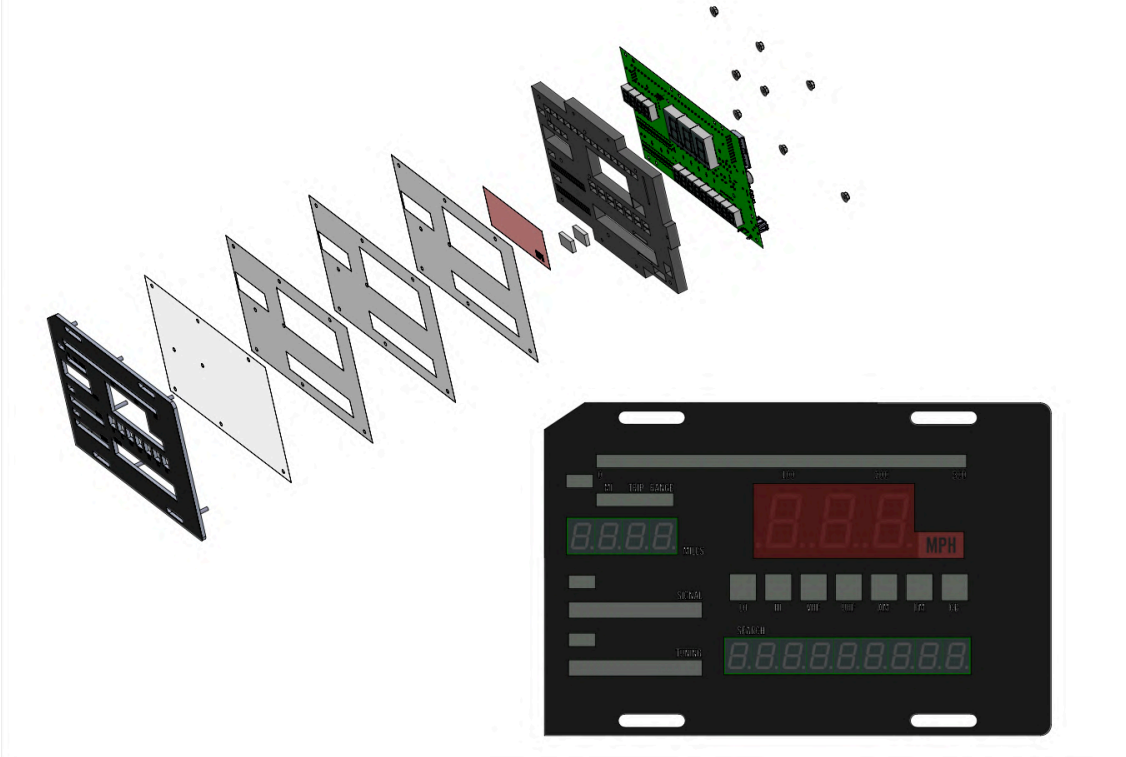
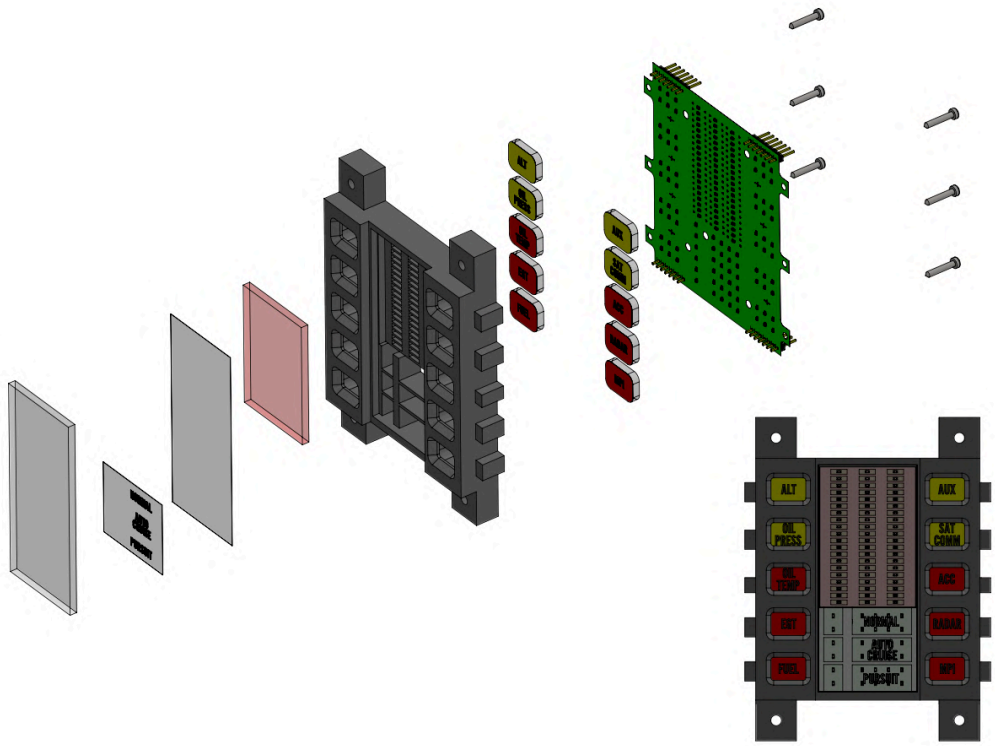
COMPASS



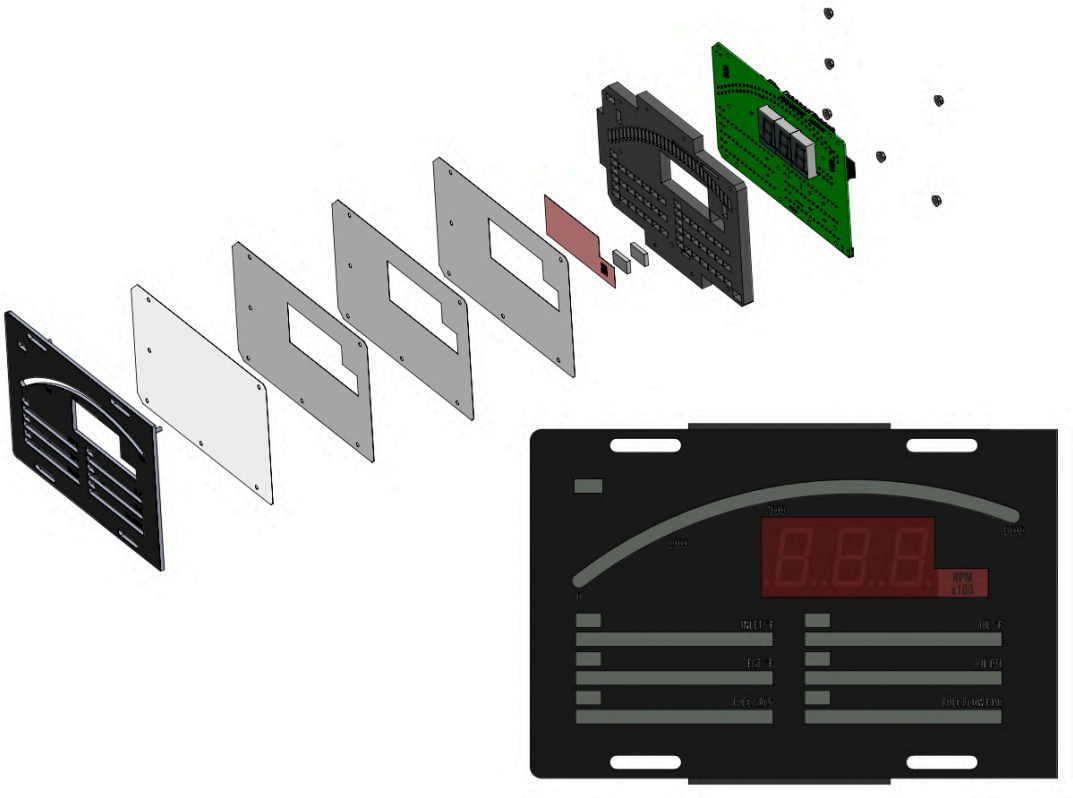
SPEEDOMETER

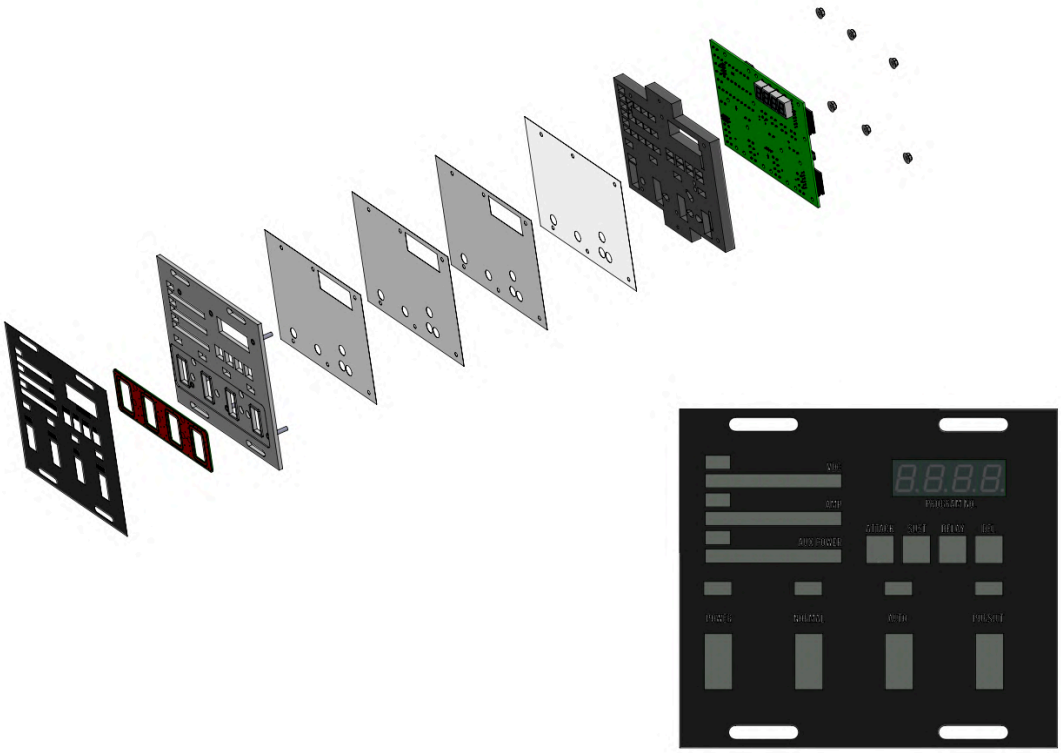


VOICEBOX



RPM



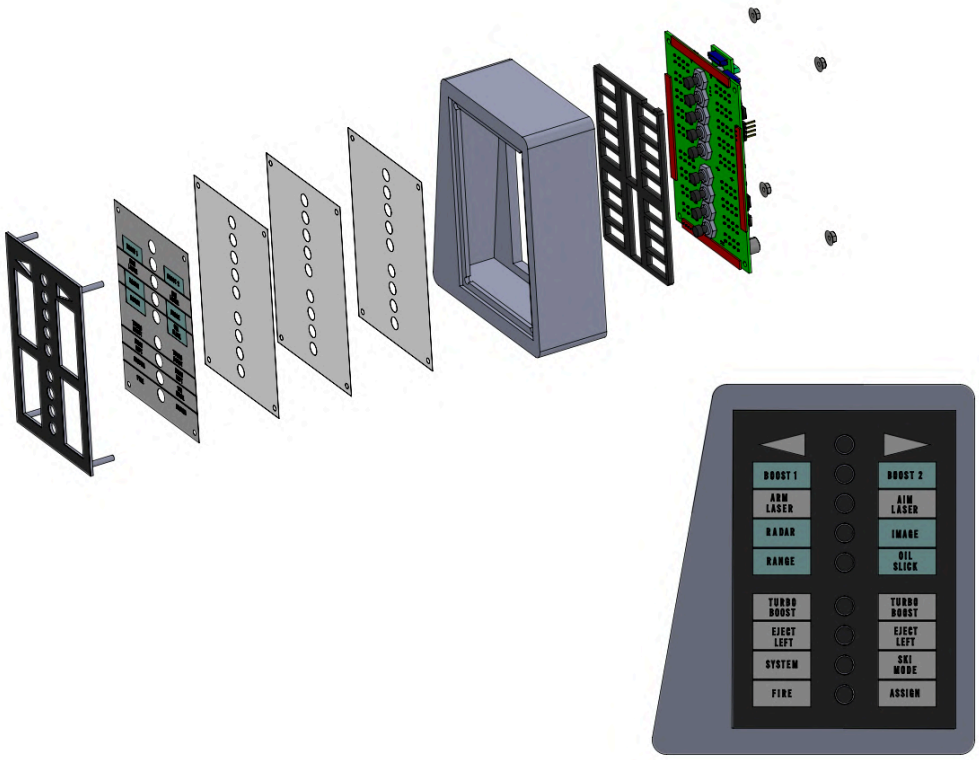


As you can see, it's important to follow this assembly layout.

This is, infact, the correct schema you need to use for install your switchpod unit, into your fiberglass switchpod.

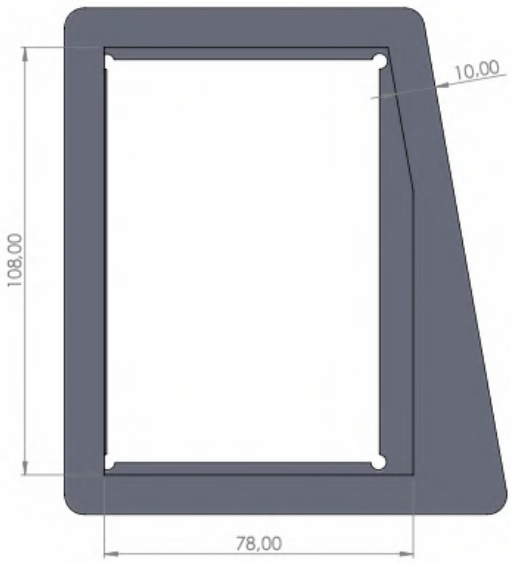
The printed circuit board should be placed inside your fiberglass switchpod along with the plastic support. From the front, you'll need to insert the diffusers, the labels, and the overlay, securing everything with the nuts provided.

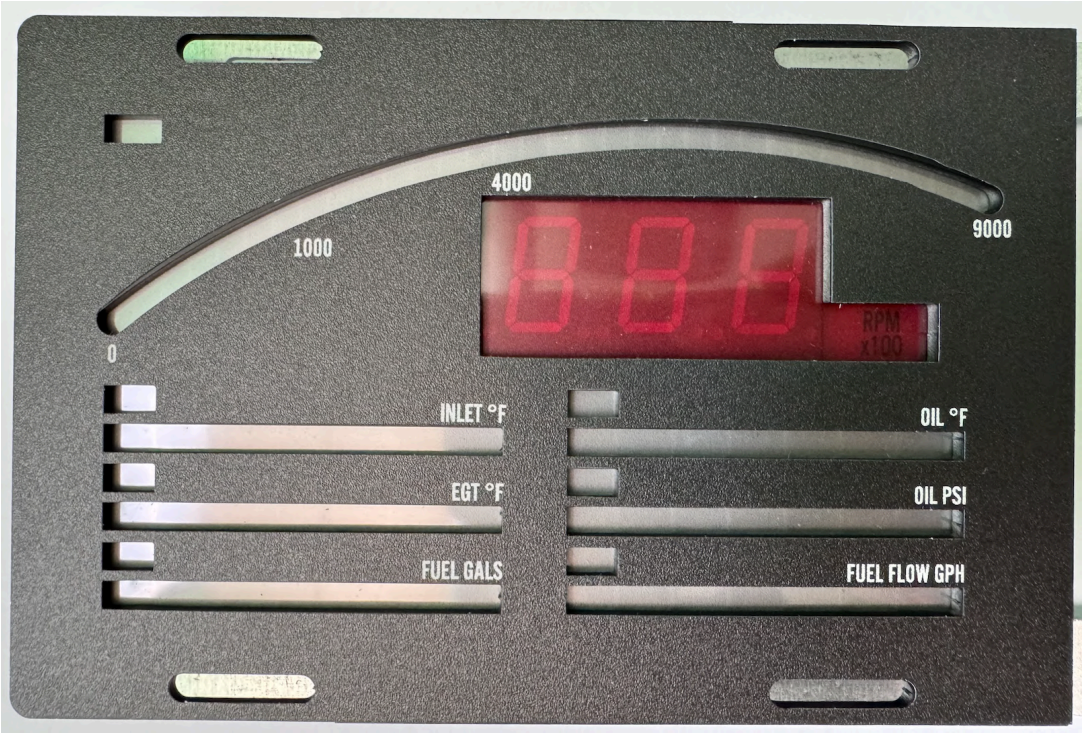
⚠ ATTENTION: Please be careful not to over-tighten the bolts, or you risk damaging the printed circuit board.



For a easy reference, here the measuraments of pods area on fiberglass

Measure are in mm.





INFORMATION ABOUT BAR LEDS on this board:

- INLET °F → Random
- EGT °F → EGT Temperature*
  - ✓ *If you see the whole red LED bar lit that means that the coolant is overheating. Stop your car immediately.
- FUEL GALS → FUEL Level*
  - ✓ *The fuel level has been calibrated in a way to avoid continuous level changing during the regular operation of the car. The reading is made 100 times per second but the average is spread in 5 minutes. This way the LED indicator doesn't go crazy on every turn like the original gauge.
- OIL°F → Random
- OIL PSI → OIL Pressure
- FUEL FLOW → Fuel Flow (estimated fuel consumption)

This is the main board, called RPM for easy reference.

On this board we have:

- Power and signal input connectors on the back side;
- Revolutions Per Minute ;
- Fuel level
- Coolant temperature
- Oil pressure
- USB socket for firmware updates;
- Smd main fuse.

On this board all the signals from the original cluster are processed by the microprocessor which then process them converting the analogic data into a digital algorithm shown on the electronic displays of these electronics. Let's see the details.

In the red 7-segment displays the RPMs are shown. Only the thousands and the hunderds are shown. To get the exact value you'll have to multiply the value by 100.
For instance if the display shows 012 the engine is spinning at 012x100 = 1200 RPMs.
There's also an which moves simultanously with the revolutions of the engine.

Depending on what engine is installed on your car you need to set up the electronics choosing between 3 different options: 4, 6, 8 depending on the number of cylinders of your engine.

The values of:

- Coolant temp. (RPM board)
- Oil pres. (RPM board)
- Fuel (RPM board
- Speed (MPH)

have all been calibrated from the factory ed shouldn't require any other adjustments. If further adjustments are required check the "trim section" on this manual.

Also the coolant temperature can be shown (in numeric mode) on the "message center" of the MPH board;

⚠ ATTENTION: a wrong calibration from the user leads to a wrong reading in the message center.

All the values can be seen real time on the message center menue (A MODE) to find out more check pace 19 of this manual.

For the oil pressure instead the red zone is completely normal and indicates no malfunctions at all, the whole bar will be used from the first to the last LED exactly as it happens on the analogic gauge. This value can be seen real time on the message center menu as well.

The firmware upgrade is an easy and immediate solution for new future function implementations. For this operation check the firmware update section of this manual.

⚠ ATTENTION: CHECK CAREFULLY THE WIRINGS AND THE ACCURACY OF THE SIGNALS BEFORE CONNECTING THE ELECTRONIC BOARD!

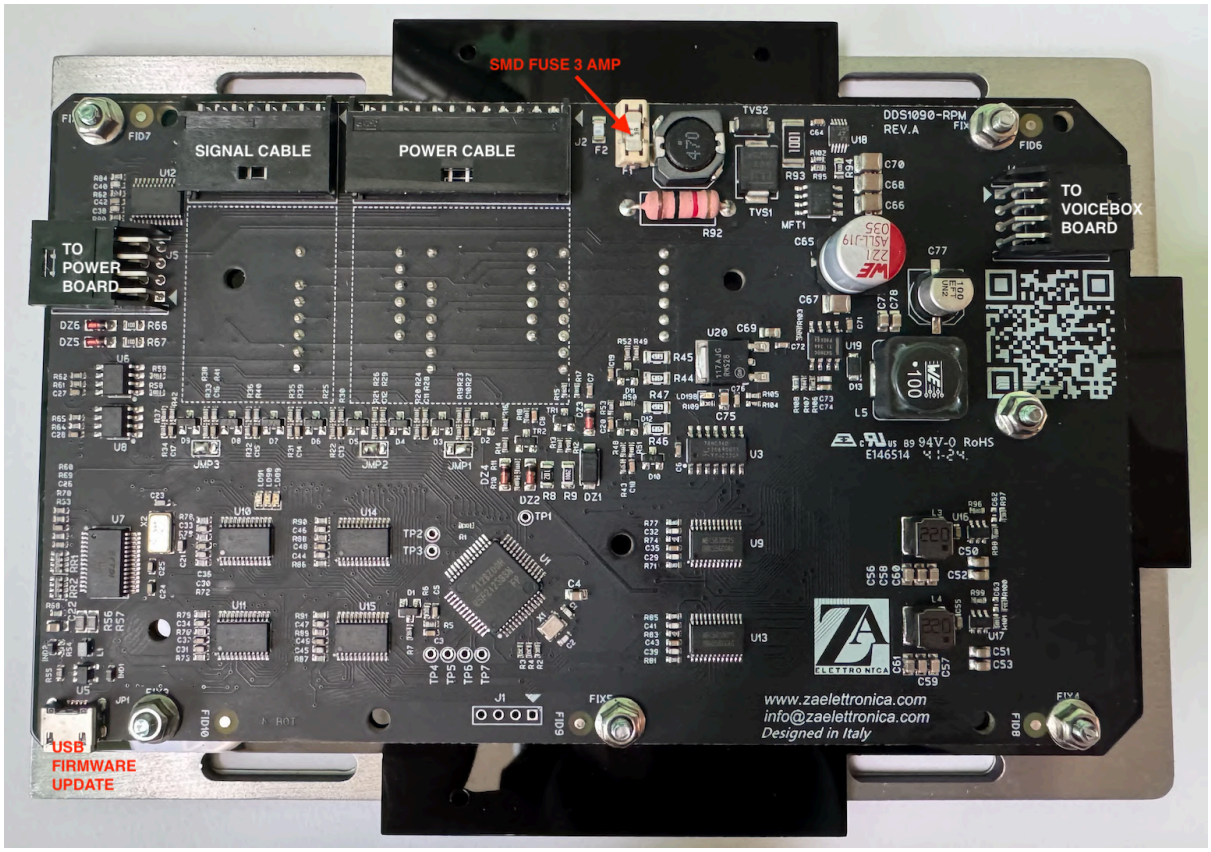
⚠ DANGER OF DAMAGE! ⚠

RPM BOARD CONNECTIONS:

On the backside of the RPM there are 4 type MODU 2 connectors, 2 on the sides and 2 in the center.
Watching the board on the backside, as in the photo below, we have (refer to the numbers on the photo):

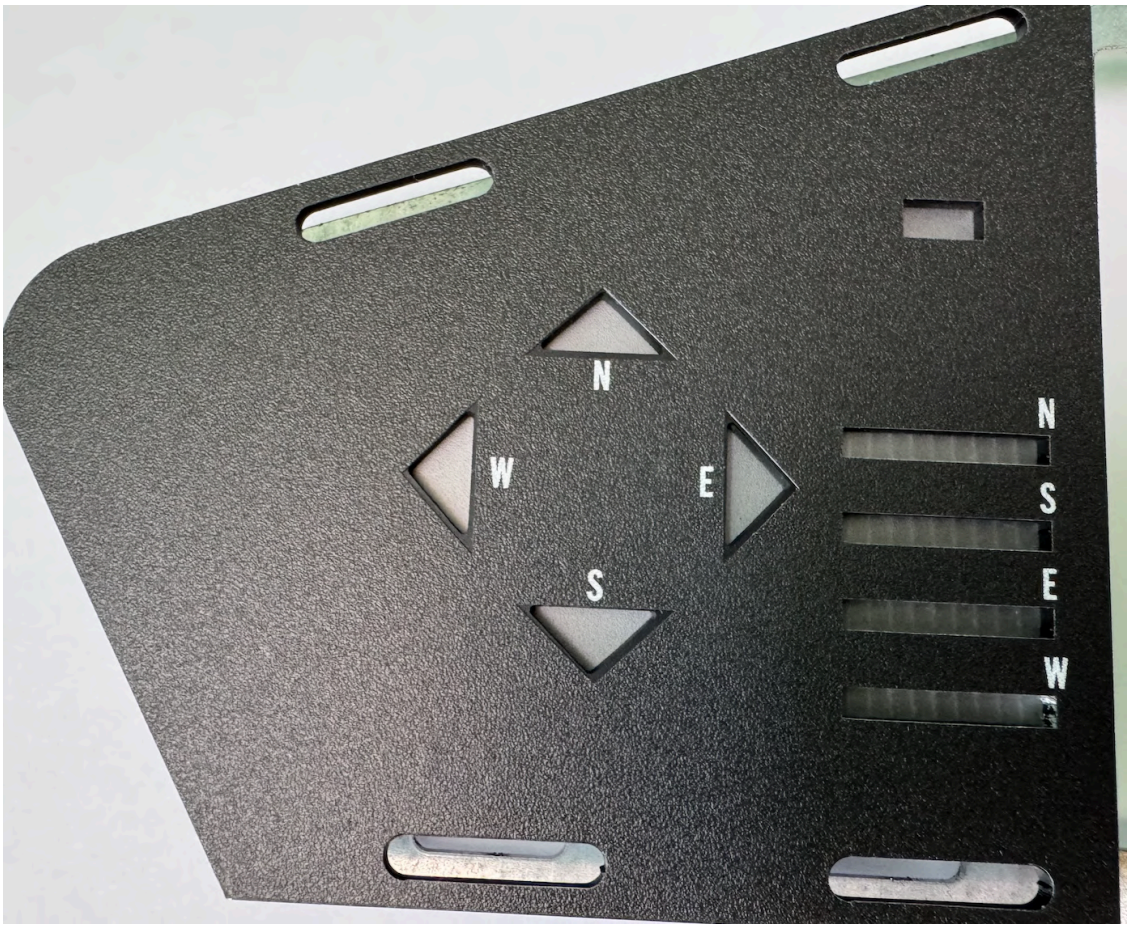
- CAN-BUS CONNECTOR that connects the POWER board
- CAN-BUS CONNECTOR "SIGNAL" for the cars sensors
- CAN-BUS CONNECTOR "POWER" for the cars sensors
- CAN-BUS CONNECTOR that connects to the VOICEBOX board
- MICRO USB CONNECTOR for firmware update
- SMD fuse 3 amp
- Micro usb connector for firmware update.

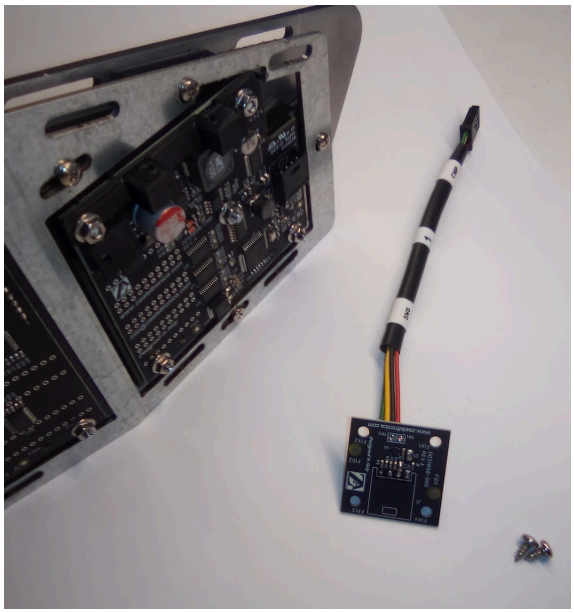
It is impossible to exchange the connectors and the connection way since they are different one from the other.



COMPASS BOARD

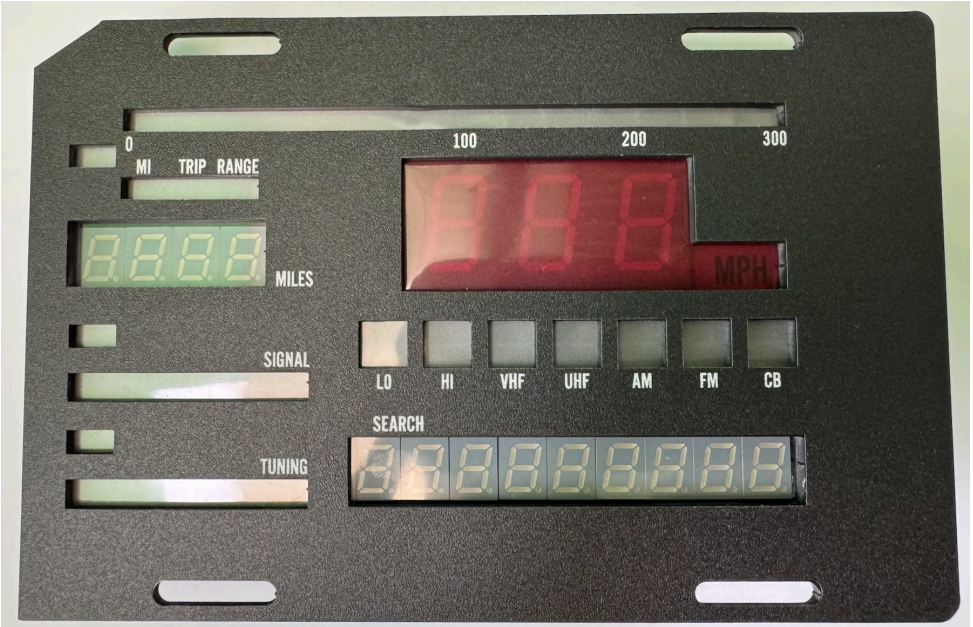
This board is designed to show the direction of your car. No calibration are necessary, simply plug in the sensor in the modu 2 connector.





What you need to do now is install the direction detection unit onto the appropriate bracket using the screws provided in the kit. It is extremely important that you follow the position as shown in this photo. This small board has a "direction".

Pay close attention to how it is mounted in the photo below and do the same!



INFORMATION ABOUT LEDS on this board:

MI/TRIP/RANGE → the yellow led go on cyclically and show, in the "MILES" dispay, this information :

- MI → Km/Mi total
- TRIP → Km/Mi partial
- RANGE → Fuel

Other bars:

- SIGNAL → Fuel Level
- TUNING → Km/Mi left before oil change or ZA scanner status mode

LO → GREEN LED: Left turning signal ON. RED LED: NO left turning signal

HI → GREEN LED: NO handbrake. RED LED: handbrake ON.

VHF → GREEN LED: dimmer ON. RED LED: NO dimmer.
GREEN+RED: HIGH BEAMS

UHF → GREEN LED: NO service engine soon. RED LED: SERVICE ENGINE SOON ON.

AM → GREEN LED: Seat Belt ON RED LED: HANDBRAKE ON.

FM → GREEN LED: NO shift signal. RED LED: Shift signal ON.

CB → GREEN LED: Right turning signal ON. RED LED: NO Right turning signal.

SEARCH DISPLAY:

In mode A show information of your car (miles, fuel %, egt); In mode C show the numbers like in the movie

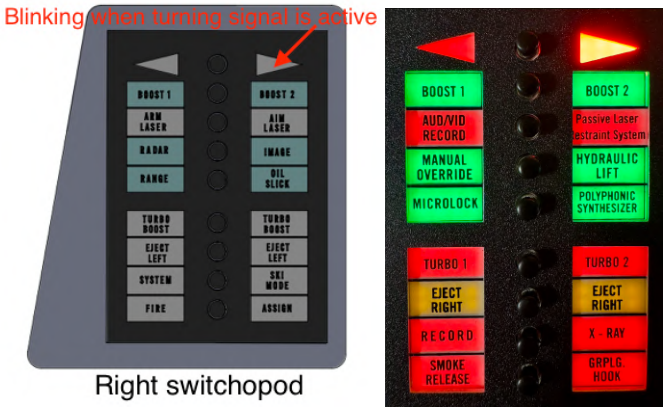
PLEASE NOTE:
If NO turning lights are active, LO and CB are RED.

If the LEFT turning light is activated → LO blinking GREEN and CB IS DARK (NO LEDS ON)

If the RIGHT turning light is activated → CB blinking GREEN and LO IS DARK (NO LEDS ON)

If both are turning light (HAZARD) active, LO and CB blinking GREEN

The turning signal led, is also showed on the first led of the switchpod unit. Please refer at the below picture as example.



Right switchopod

The MPH board is maybe more complex under the engineering profile compared to the other boards. It has a microprocessor too that cooperates with the one on the RPM board. Informations are exchanged with a CAN-BUS protocol.

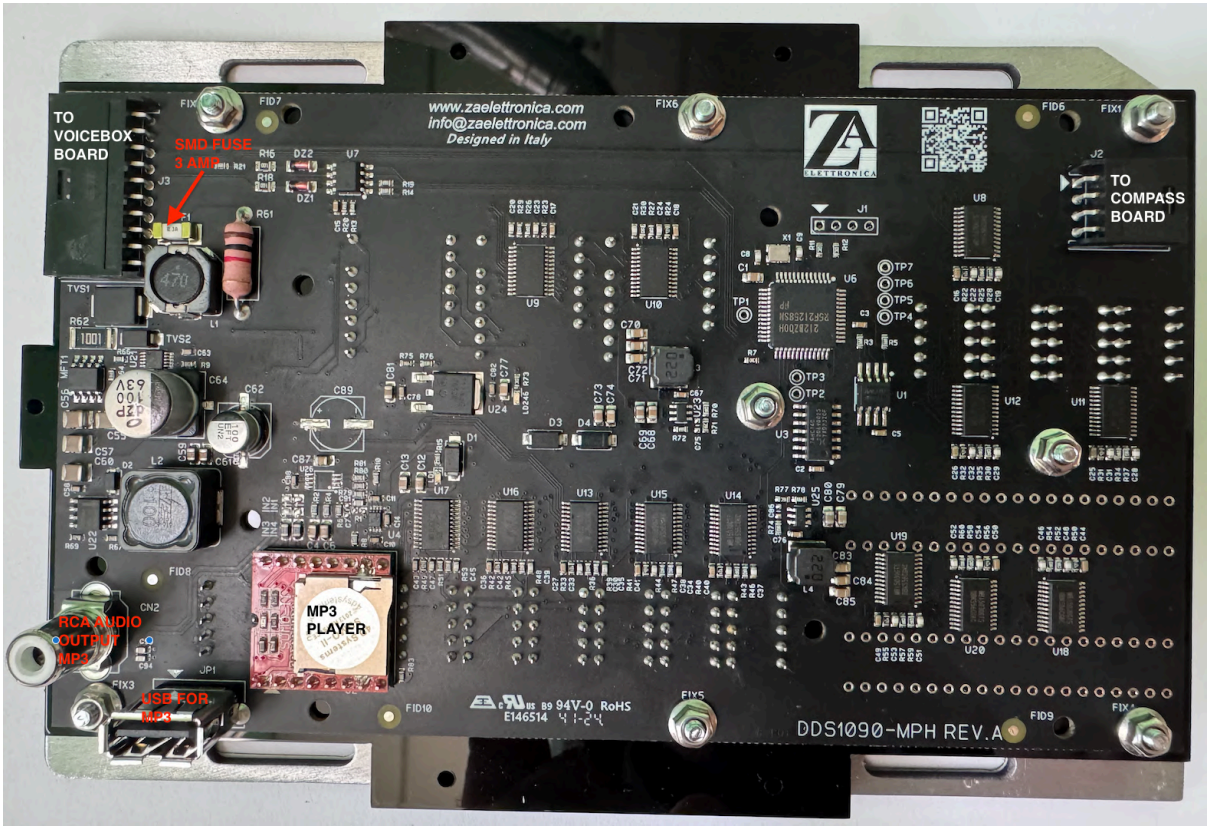
In this board we have:

- A mp3 player with a slot for an external memory;
- An RCA connector for audio output;
- Speed indicator;
- Turning signal light, running lights, hi-beam light;
- Trip meter;

The horizontal bar lights up progressively when the speed increases or decreases. The three 7 segment red displays instead give the speed value in KM/H or MPH depending by the setup configuration in the menu.
These electronics is precisely calibrated by the factory. However it is possible to tune the calibration for custom needs. For this procedure please check the trim section on this manual. These electronics has a maximum speed to 300 (both KM/H and MPH). This is to match the bar along with the speed.

To reset the odometer press and hold the PURSUIT button of the PANP for 10 seconds.

MPH BOARD CONNECTIONS



Looking at the board on the back side like in the picture we will have:

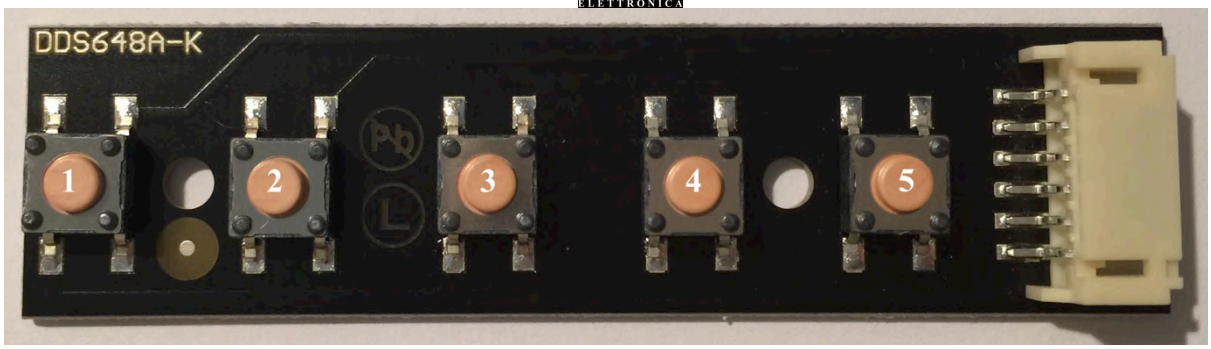
- CAN-BUS CONNECTOR to voicebox board;
- CAN-BUS CONNECTOR to compass board;
- Smd fuse;
- a USB socket for a standard flash drive containing the mp3 sounds;
- SD card slot for the MP3 player
- RCA connector to connect **a standard 4 ohm 3 WATT speaker** for the MP3 player reproduction; the voicebox will light up automatically during the sound reproduction.
- Voice Box connection using the appropriate harness included in the box.

⚠ ATTENTION: USE A SEPARATE SPEACKER ONLY FOR OUTPUT AUDIO FROM MP3 PALYERS! DON'T CONNECT IN PARALLEL WITH OTHER SOURCE, OR YOU DAMAGE MP3⚠

MESSAGE CENTER

This is the part we're proud the most. We can read total ML (or KM), the percentage of available fuel, coolant temperature (°F or °C), oil pressure and even oil change alerts. Since you can't keep looking at all the gauges while driving the display also works as a "warning monitor".

The little keypad in the box (TO CONNECT TO THE POWER BOARD) has 5 buttons for the following functions (when not used in menu mode shown later).



BUTTON		***FUNCTION***
[1]	***=***	***NOT USED, reserved to go into the menu;***
[2]	***=***	***Cancels repetitive warnings, until next power up of the system;***
[3]	***=***	***Steps back of one message;***
[4]	***=***	***Stops the message. If pressed twice it steps to the next message;***
[5]	***=***	***Switches from Mode A to Mode B/restarts the loop (when interrupted)***

Mode B (show)

Phrases from the show will appear, (selectable with button [5]), with an automatic loop; to block them press button [4].

Every time a button is pressed ([4] forward, [3] backward) the phrases will step up/down of one single step but it won't reactivate the loop

However in case of emergency warning message will appear (mode C).

Mode A (Car Values)

It is the default mode. If you are in another mode it is possible to activate it pressing button [5] displaying the values described below in an automatic loop; to hold the view of a shown value press button [4].

Every time a button is pressed ([4] forward, [3] backward) the phrases will step up/down of one single step but it won't reactivate the loop.

To reactivate the sequence press button [5].

MODE A VALUES:

EGT:

It is shown in °F or °C depending the settings in CAR_SETTINGS.
If the temperature is below 40°C it'll show the message "EGT COLD".
Es.: "EGT 90"

VBATT:

Shown in Volt with one decimal, es. 13.5V.
The calculation considers the presence of the general protection diode. If you power up the electronics without the diode the value will be 0.7V redundant.
Es.: "VBATT 13.5V"

FUEL:

Shown as percentage, 0% - 100%

Es.: “FUEL 100%"

OIL (pressure):
It shows numbers from 3 to 99; if the value is beyond 99 it’ll show the message “OIL HIGH P”. It shows the measuring unit after the value to make sure it is pressure.
Es.: “OIL 30 PSI”..

OIL (service):
It indicates the Miles or the KM left before performing an oil change previously set. It is identified with the suffix “SRV” and the value set (which decreases while running on the road)
Es.: “SRV -15000" → means that there are 15.000 Miles or KM left (depending by the unit choosen at the beginning) for the SERVICE. When the SERVICE is PAST DUE, the little minus symbol in front of the number – will disappear, and the Miles or Km (depending by the unit choosen at the beginning) will start to increase after reaching the SERVICE mileage.

Odometer:
It shows the total mileage of the car. Limited to 10 numbers. No decimals present.
Es.: “ML 0.000.000”.

Mode C (emergency/warning)

The message appears when the event occurs the unit has been programmed for. If you turn your turning light on for instance in the message center it’ll be shown an appropriate message. All the warning messages will disappear as soon as the problem is fixed and doesn’t return for a certain number of seconds. Therefore it is normal to have a little delay, for instance, when the turning light gets disengaged.

To avoid the message to appear press button [2].

⚠ ATTENTION: Pressing button [2] to avoid warning messages, the electronics will ignore them till successive power up. ⚠
In case of more warning messages at the same time they will be shown in sequence.
Messages available are:

a. Fuel level below the level set by the user
b. Coolant temperature over the level set by the user
c. Handbrake
d. Shift light ON
e. Fasten belts
f. Service Engine soon
g. High Beam
h. LH turning light arrow
i. RH turning light arrow
j. HAZARD

And all this happens while you do nothing, these electronics manage priorities automatically.

Some signals have the "programmable polarity" through the menu, and are ignored if the motor is turned off (to avoid the appearance of them, with ZAelettronica's set powered on, but original

dashboard turned off) and these are:

- HandBrake
- Service Engine
- Shift

It is possible that the word HANDBRAKE appears for a few seconds after the engine has been shut off. That is perfectly normal. That word will turn off as soon as the engine terminates its revolutions and the display of the tachometer shows 00.

MP3 PLAYER

On the back side of the MPH board there's a MP3 player used by the electronics to play phrases during some events.
All the MP3 files must be stored in a directory called "01" (zero, one in numbers).

Inside that directory each file must have an ID name composed by three numbers in the first three characters, the rest of the name is not important. The extension is ".mp3".

This is the number list:

```
000 = DTMF_0            // The complete DTMF tone set uses numbers from 000 to 014
001 = DTMF_1
002 = DTMF_2
003 = DTMF_3
004 = DTMF_4
005 = DTMF_5
006 = DTMF_6
007 = DTMF_7
008 = DTMF_8
009 = DTMF_9
010 = DTMF_BUSY
011 = DTMF_DIAL
012 = DTMF_POUND
013 = DTMF_RINGBACK
014 = DTMF_STAR

015 = POWERON           // Startup DTMF sequence
016 = MOVIEOFF          // MOVIE power off track
017 = PRESENTAZ         // introduction track (after the startup sequence)
[... space available for future effects]

100 = MESSAGE_SPEED     // Message for speed limit warning
101 = MESSAGE_TEMP      // Message for overheating
102 = MESSAGE_RPM       // Message for over revving
103 = MESSAGE_FUEL      // Message for low fuel level
[... space available for other messages]

110 = SILENCE           // a half of a second silence track (mandatory)
```

Example of file names, only the first three caracters (numbers) are important, the others can be customized:

015_DTMF-poweron.mp3
016_movie_poweroff.mp3
100_message_speed.mp3
101_message_temp.mp3
102_message_rpm.mp3
103_message_fuel.mp3
110_silence.mp3

⚠ ATTENTION: DO NOT CHANGE OR REMOVE THE FIRST THREE CHARACTERS (NUMBERS) OR THE MP3 PLAYER WILL NOT WORK ⚠

info@zaelettronica.com

ELECTRONICS MENU

ZA Elettronica, decided to eliminate trim-pot tune ups for a matter of practicality and seriousness.
This because:

1. Trim-pots tend to decalibrate and loose efficiency on a long term period;
2. Calibration of those trim-pots once the dash is completely installed gets tricky.

Therefore the choice fell on software based calibration settings.

To do so it is necessary to go into the MENU mode pressing button [1] on the keypad for 3 seconds. A good spot for the keypad normally is under the curved area below the shifter knob, or under the cluster area. Due to its reduced size the installation shouldn't be a problem.

Buttons recalls (number between brackets es. [1]) refer to the keypad.
Menu is in english language.

Browsing the menu:

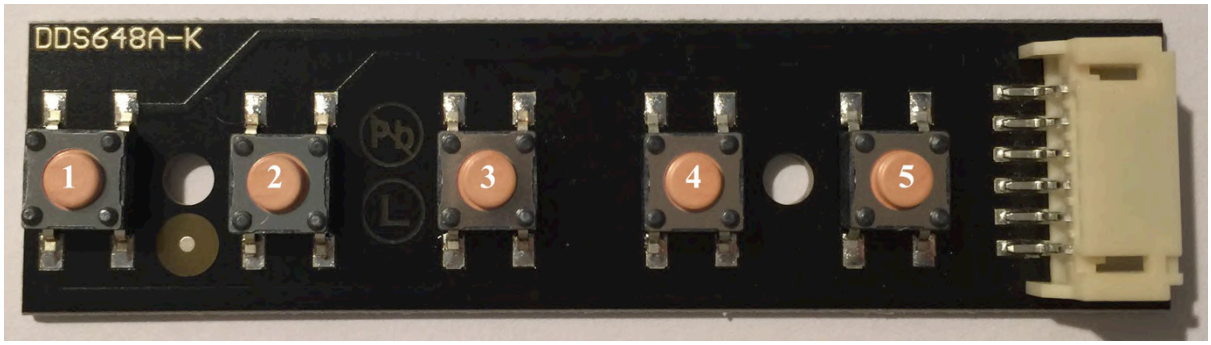
Programming the electronics is done using the keypad. The menus of these electronics may be easy or FATHER – SON.
A few examples:

EASY MENU → VALUE adjustable through + or –

FATHER MENU >
SON MENU 1 → VALUE adjustable through + or –

SON MENU 2 → VALUE adjustable through + or –

The electronics set up is performed using the keypad included in the box.
There are 5 buttons available and they have the following functionality (depending on the menu you're into):



BUTTON		***FUNCTION***
[1]	=	***menu access***
[2]	=	***"+" or UP***
[3]	=	***"-" or DOWN***
[4]	=	***exit***
[5]	=	***NOT USED IN THIS MODE. Reserved for A/B mode.***

- Pressing [1] for 3 seconds the first voice of the menu appears;
- Pressing buttons [2] and [3] you can choose the voice of the menu to adjust;
- When the desired voice is shown, pressing [1] one more time allows adjusting (parameter flashes);
- Buttons [2] and [4] now adjust the parameter;
- To confirm the adjustment press button [1];
- Once done it is possible to regulate another prameter using buttons [2] and [3];
- Button [4] instead returns to the previous menu.
- Press [4] until you're in mode A or B. The RPM board will blink to confirm that the settings have been saved.

If the parameter you are in is a "father menu", indicated by a little arrow on the right side of the voice, presing [1] takes you into a corresponding lower menu level.
Pressing [4] takes you back to the previous level (if pressed once again, being on a main level, it closes the menu).

⚠ATTENTION: Savings happen only when the main menu is closed using button [4] ⚠

PRESENTATION OF KITT AT THE STARTUP

These electronics reproduce an mp3 file at the startup typically associated to the car introduction. Such option can be enabled or disabled by the user.
Pressing button [1] the word PRESEN and the factory setting appear. Press [1] to get into the adjusting mode, the factory setting will flash (press [2] to skip this setting).
Use buttons [2] and [3] to change the options (ON and OFF).
Press [1] to confirm the choice. The voice PRESEN appears again with the option chosen by the user.

POWER ON SETTINGS ("ON")

There's no unique start-up sequence in the show. Some of the fans prefer to see the whole dash on when they press the POWER button while the voicebox and countdown perform the sequence; others prefer to have the sequence first and only at the end see the rest of the dash coming on. Any decision would have affected part of the users so I decided to include both the sequences in this menu.

Pressing [2] from the previous selection the voice PON and its factory setting will appear.
Press [1] to adjust. ([2] to skip this) The factory setting will flash.
Use buttons [2] and [3] to scroll the options CLASS or FAST
CLASS: Will perform the countdown sequence first and then the rest of the electronics
FAST: the whole dash will come on while voicebox and countdown are performing the sequence.
PRESS [1] to confirm your choice. Voice PON appears again with the option chosen by the user.

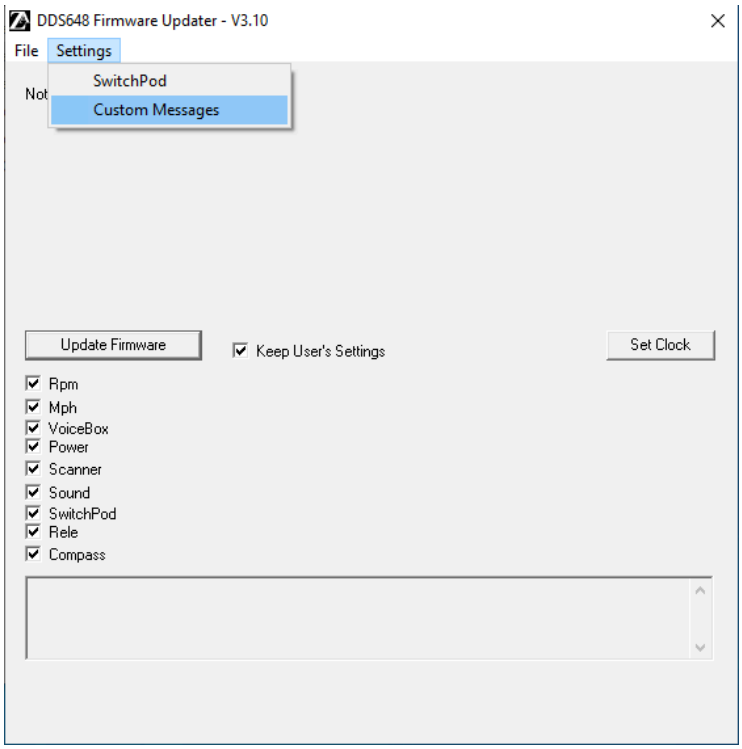
MENU "ONMSG"

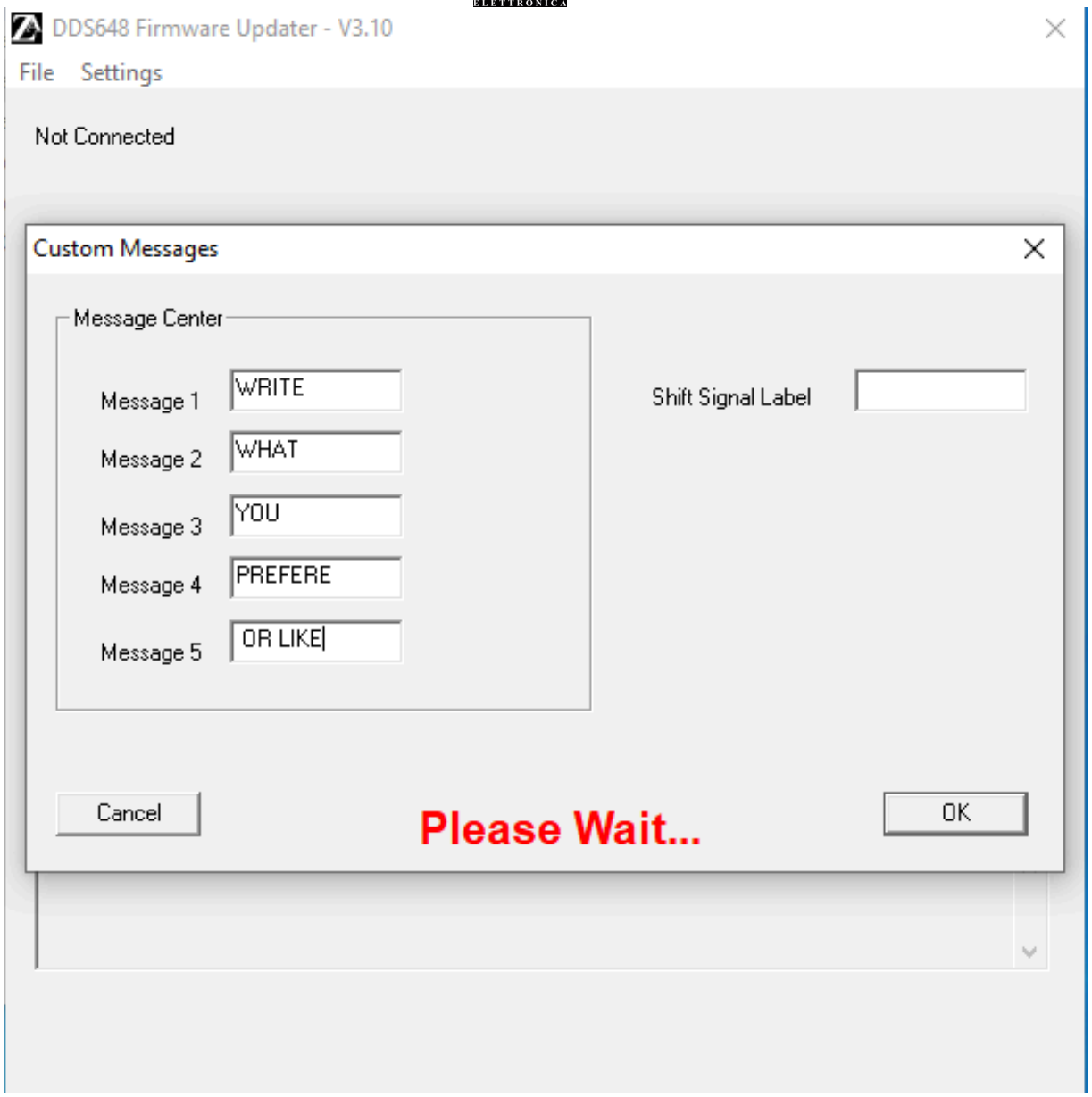
To select personal/standard welcome message. If you have added on custom message a personal phrase, you can display on message center at start up sequence. Of course if you choose this welcome message, you can't see the original one.

'NO' = no message on startup;

'USR' = Reproduce the welcome message = scrolling messages that can be defined by user.

Open firmware update software, connect the USB cable, and then open "settings menu", click on CUSTOM MESSAGE, then type on the 5 windows your text, press ok and wait that the writing message is showed





POWER OFF SETTINGS ("OFF")

ZA ELETTRONICA electronics has two power off modes:

1. Like in the show from the episode 13 on season 4 (killer K.I.T.T) (default)
2. ON/OFF

Pressing [2] from the previous selection the voice POFF and its factory setting will appear.
Press [1] to adjust. ([2] to skip this) The factory setting will flash.
Use buttons [2] and [3] to scroll the options CLASSIC (mode 2) or MOVIE (mode 1).
PRESS [1] to confirm your choice. Voice POFF appears again with the option chosen by the user.

SPEED SETTINGS FOR SWITCHING FROM AUTO-NORMAL TO PURSUIT ON VOICEBOX AND PANP BUTTONS ("PURS")

Pressing [2] from the previous selection the voice PURS and its factory setting will appear.
Press [1] to adjust. ([2] to skip this) The factory setting will flash.
Use buttons [2] and [3] to adjust the speed you desire the voicebox (and PANP buttons) automatically switch from NORMAL/AUTO to PURSUIT.
As soon as the speed of the car goes below the chosen value the electronics will automatically switch it back to the previous status.
PRESS [1] to confirm your choice. Voice PURS appears again with the option chosen by the user.

MP3 EVENTS SETTINGS ("WARNINGS")

In this menu it is possible to set up the values that engage the mp3 files. This is the first FATHER-SON menu.
Pressing [2] from the previous selection the MP3 WARNINGS> voice will appear
Press [1] to get in the lower level menu (son menu).
([2] to skip the selection without modifications and to go to the next lower level menu)

In the message center the SPEED voice will appear
This setting is necessary to set the speed limit MP3 warning message.
Press [1] to adjust, factory value will flash.
Use buttons [2] and [3] to choose the desired value.
Press [1] to confirm the choice.
Press [2] to step forward.

In the message center the RPM voice will appear
This setting is necessary to set the rev limit MP3 warning message.
Press [1] to adjust, factory value will flash.
Use buttons [2] and [3] to choose the desired value.
Press [1] to confirm the choice.
Press [2] to step forward.

In the message center the TEMP voice will appear
This setting is necessary to set the temperature limit MP3 warning message.
Press [1] to adjust, factory value will flash.
Use buttons [2] and [3] to choose the desired value.
Press [1] to confirm the choice.
Press [2] to step forward.

In the message center the FUEL voice will appear
This setting is necessary to set the fuel capacity limit MP3 warning message.
Press [1] to adjust, the led bar above the odometer display will show the adjusted value instead of the real fuel reading to show to the user the exact led setopoint.
Use buttons [2] and [3] to choose the desired value.
Press [1] to confirm the choice.
Press [2] to step forward, back to SPEED settings
Press [4] to step out of the son menu. MP3 WARNINGS > will appear again

TIME SETTING ("TIME")

Having pressed [2] from the previous selection, the TIME voice will appear along with the actual time.
Press [1] to adjust. ([2] to skip this) The factory setting will flash.
Use buttons [2] and [3] to adjust the time. If held they will make the minutes scroll faster.
Seconds will be set to 00 the moment you close the menu.
Confirm your choice with [1].
Press [1] to confirm your choice. The voice TIME along with the actual time appears again.

LED DIMMING SETTING ("DIMMER")

Indipensable at night this setting allows the dimming of all the LEDs of all the boards including the voicebox and turns off the countdown lights when you turn your car lights on.
Having pressed [2] from the previous selection, the DIMMER > voice will appear.
Press [1] to access the son menu. ([2] to skip this and step to the next menu) the VALUE voice and the factory value will flash.
Press [1] to adjust. ([2] to skip this) The factory setting will flash.
Use buttons [2] and [3] to choose the desired value.
The values go from 1 to 10; 10 represents the MAXIMUM brightness, 1 is the MINIMUM. Below value 3 only the RPM and MPH boards remain lit, all the other boards will turn off so that only the important car information are shown. In this mode the voicebox V-meter will still be active.
Press [1] to confirm.
Press [2] and COUNT DOWN will appear along with the factory settings.
Press [1] and you can choose between two options:

1. ON leaves the countdown lights on even if the dash is dimmed,
2. OFF turns it off.

Use buttons [2] and [3] to choose the desired value.
Press [1] to confirm the choice.
Press [4] to close the son menu. DIMMER voice appears again.

OIL CHANGE SETTINGS ("OIL CHNG")

Having pressed [2] from the previous selection, the OIL CHNG > voice will appear.
Press [1] to adjust. ([2] to skip this) The factory setting will flash.
Use buttons [2] and [3] to choose the desired value.
Press [1] to confirm.
When the SERVICE is past due (km and miles are made over the desired distance) the OIL light on the voicebox will flash; this will happen until the reset procedure is performed (next step).

OIL CHANGE RESET ("CLEAR")

Press [2], the voice CLEAR will appear
Press [1] to confirm, the option will now blink.

Use [2] and [3] to choose YES or NO.
Choosing YES and confirming with [1] the value is reset to the previous chosen setting.
Press [4] to close the son menu. OIL CHNG voice appears again.

VOICE BOX V-METER CALIBRATING. ("VOICEBOX")

If desired it is possible to change the amplitude of the voicebox v-meter (picture 2 page 34). This "father" menu has two "sons" menu to regulate the amplitude of the voice box depending on the separate inputs (MP3 or AUX, this last one normally reserved to the computer or to an external speaker), lets see 2two firsr

Having pressed [2] from the previous selection, the VOICE BOX > voice will appear.
Press [1] to adjust. ([2] to skip this) The voice MP3 VOL and the set value will appear
Use buttons [2] and [3] to regulate the MP3 volume.
Values go from 1 to 20, where 1 is the quietest and 20 in loudest.
Press [1] to confirm.

Press [2] to step forward and the voice MP3 LEV with the value will appear.
Press [1] to adjust. ([2] to skip this)
Use buttons [2] and [3] to regulate the amplitude of the voicebox v-meter move when used for audio warnings.
Values go from 1 to 10, where 1 is the minimum and 10 is the maximum.
Press [1] to confirm.

Press [2] to step forward and the voice AUX LEV with the value will appear.
Press [1] to adjust in the son menu. ([2] to skip this)
Use buttons [2] and [3] to regulate the amplitude of the voicebox v-meter move when used for auxiliary audio source.
Press [1] to confirm. AUX LEV appears again

VOICEBOX MODE

This electronic set has the function to setup the identity of the voicebox choosing from KITT or KARR. The voicebox will act accordingly to the identity choosen (Attention, the bars will change only the movement not the color), and also in PILOT MODE (also if is a specific function of season ½)

Press [2] to advance in the menu and MODE will show up with a preset value
Press [1] to enter in the submenu to change the value. ([2] to go ahead without changes)
Use buttons [2] and [3] to change the values of the width of th v meter of the voicebox
Press [1] to select the value desidered. MODE will show up with the new value
Press [4] to exit the submenu, VOICEBOX> will show up

RANDOM BARS – SCAN SPEED (“RND BARS”)

The scan speed of the bars of the leds in the boards, can be set as you like. Only the bars which do not have specific function can be changed.

SCAN SPEED

Since it has been pressed in the previous selection button [2], the RND BARS> menu will show up;
Press [1] to enter the submenu ([2] to go ahead without changes), the menu SPEED and the set value will show up.
Press [1] and the predefined value will start blinking (2 to go ahead without changes).
Use button [2] and [3] to change to the desired value.

Below value 12, all the ROWS will remain lighted without any scan, this like it has been seen in some episodes of the series.
You can verify your choice in real time. Press [1] to confirm the value of your choice.

Advises on how the electronic set “thinks”
Speed is a value directly proportional (the low numbers correspond to a low speed). The values are from 11 the lowest to a max of 77.
The meaning of the ten and unit value are the following:

- *The ten value (from 1 to 7) affects the random sequence of the bars*
- *The unit value (from 1 to 7) affects the base speed on which the random sequence acts on*

For example if you select value 71 the random bars act very differently (sometimes very slow, some times very fast). If you select 17 the bars will act pretty fast but randomization will be insignificant (speed will be constant).
Both speeds sum together, so also with 17 the speed will not be very high.

SWITCHPOD MENU ("SWPOD")

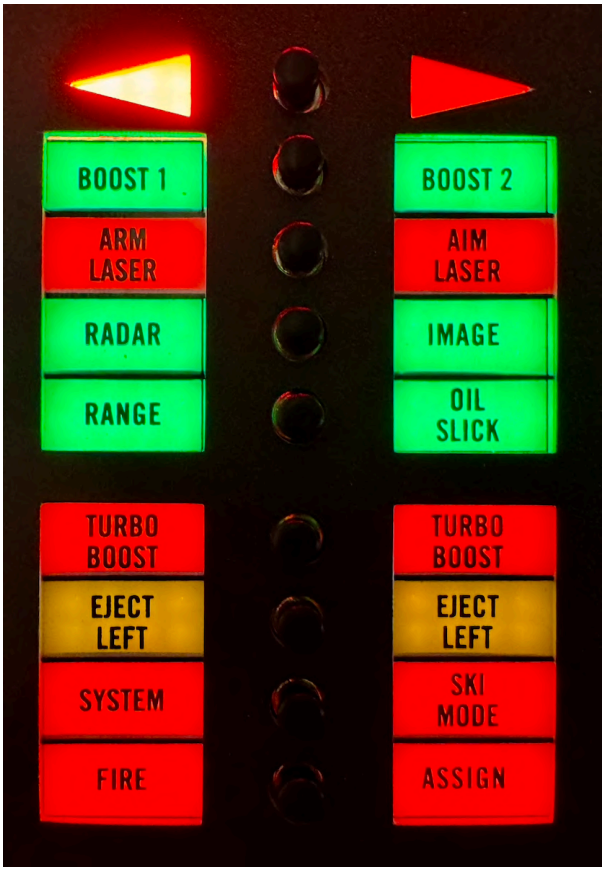
This menu is used to select the function desired for each switchpod button (relè, Mp3, both, none).

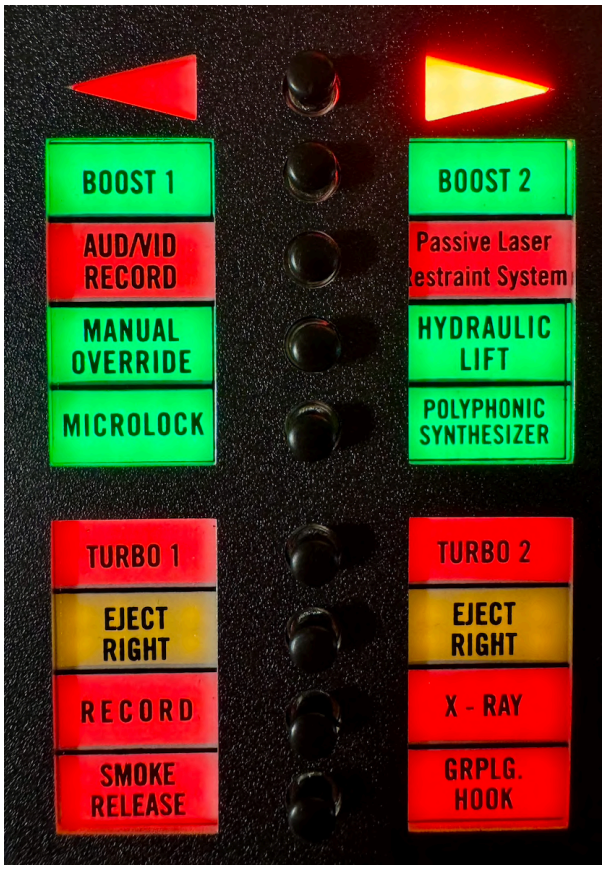
After pressing button [2] from the previous selection, SWPOD> will show up
Press [1] to enter the submenu (Press [2] to go ahead to the next submenu without changes)
SW01 will show up (it refers to button 1 on the top left of the left switchpod SW20 will be the last button in the bottom right of the right switchpod - **look the picture below** -)
Press [1] to change value and the predefined value will flash. Use buttons [2] and [3] to change values which are:

- Only Mp3
- Only Relè
- Relè + mp3
- None (reproduces a random dmtf tone)

Repeat the operation for each button. You can also use the firmware updater program (recommended) to select the function of each switchpod button. With the firmware updater program you can also decide how the relè works.

Look at the left switchpod, the left side (1st vertical section)
Boost 1 is button 1, arm laser sisbutton 2, Radar is button 3 … fire is button 8.
On the right side of left switchpod, we have:
Boost 2 is button 9, aim laser is button 10, image is button 11… assign is button 16.





ENABLE/DISABLE V METER FOR PODS SOUND

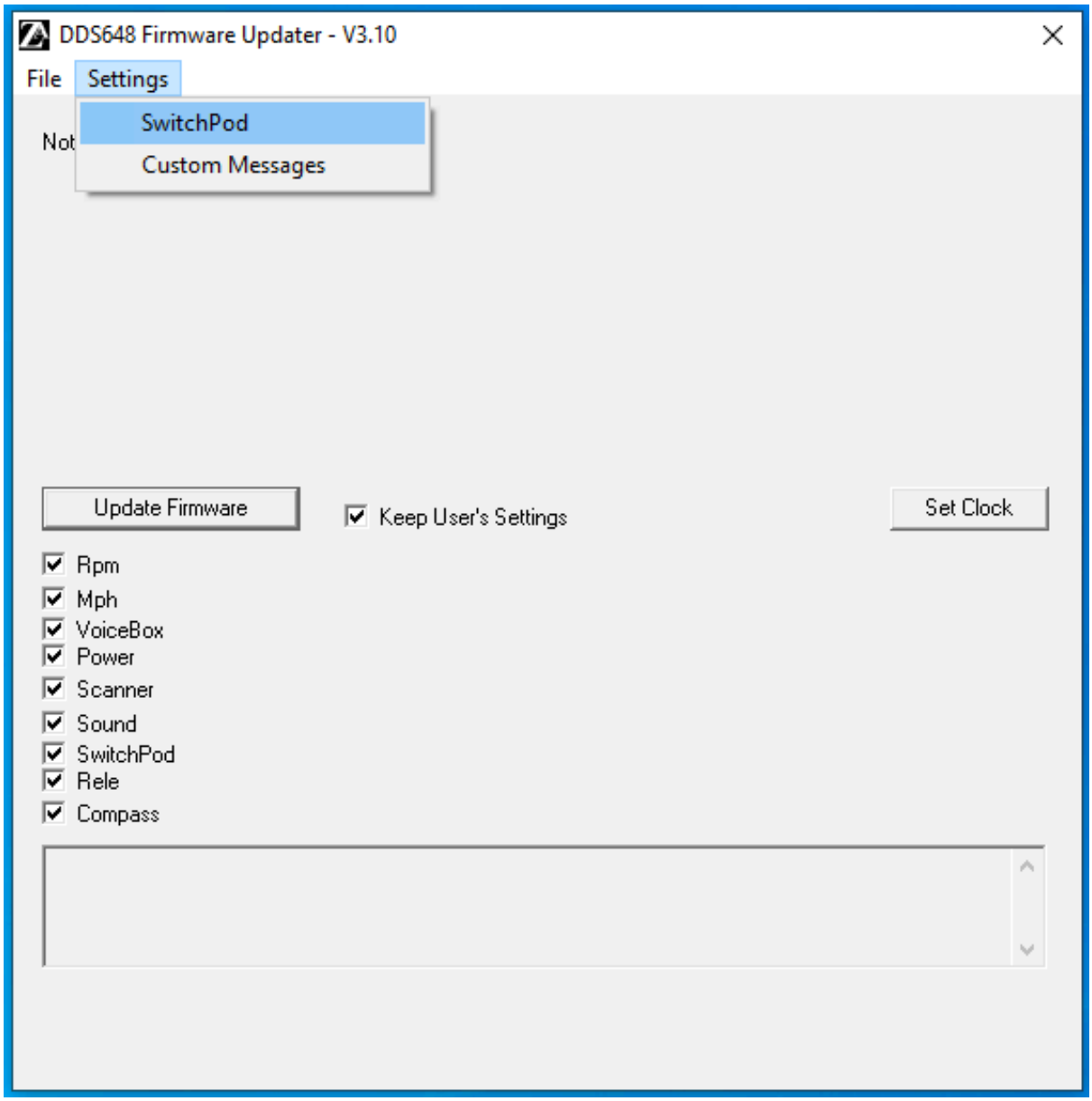
This function is used to have v-meter movement also when you press pods buttons.

Open firmware update software, connect the cable, and then open “settings menu”, click on switchpod, wait that your pods are recognized by the system (below on the windows you will see switchpod 1), and then choice for each buttons if you want v-meter movement or not (see picture below. **in the picture there are *“Please wait”* because no switchpods are connected when the photo is taked**).

Press ok and wait that the writing message is showed

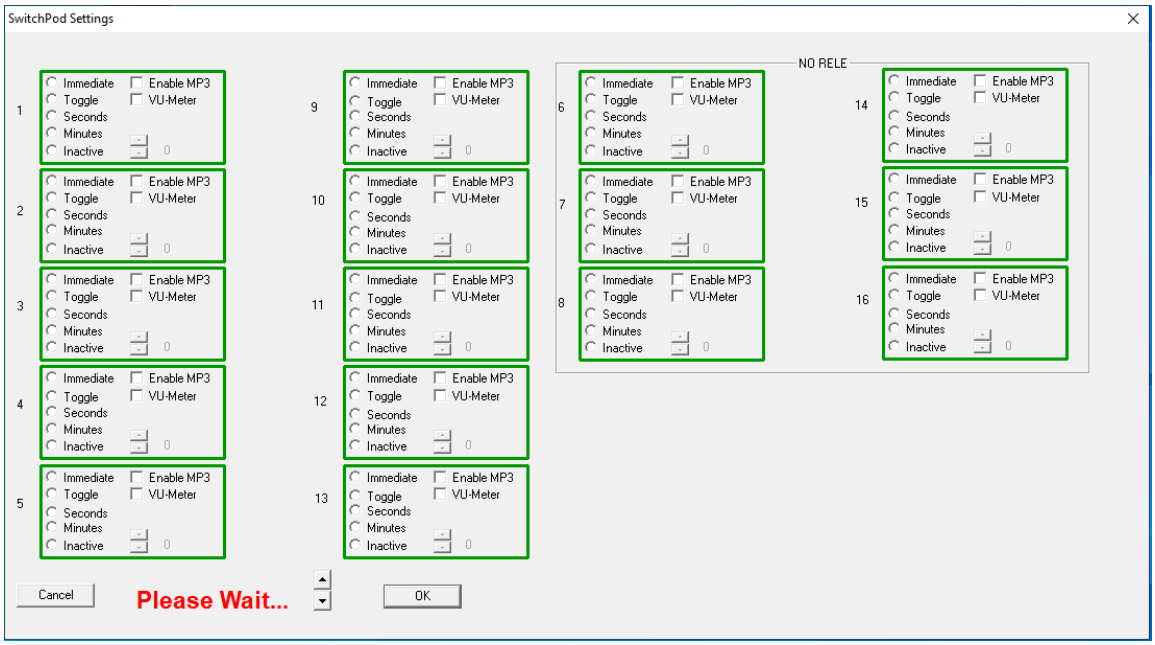
Repeat for swithcpod 2 if desired.

Please take a look on the next page pictures



The numbers 1, 2, 3 … 16 rappresent the disposition of buttons on your pods unit.

On the right side of this schema there are last below buttons; buttons 6, 7, 8, 14, 15 16 and on the other side of pods 22, 23, 24, 30, 31, 32 aren't associated to any relay boards.



VIRTUAL TRIM-POTS: ("TRIMMERS")

ZA ELETTRONICA performs a factory adjustment, **we discourage any modifications.**

SPEEDOMETER.

Having pressed [2] from the previous selection, the TRIMMERS > voice will appear.
Press [1] to access the son menu. ([2] to skip this and step to the next menu).
The SPEED voice and the factory value will appear.
Press [1] again to adjust. ([2] to skip this) The factory setting will flash.
Use buttons [2] and [3] to choose the desired value. Compared to the factory settings a positive adjustment will show the symbol "+" while a negative adjustment will show the symbol "-".

FUEL

Having pressed [2] from the previous selection, the FUEL voice will appear.
Press [1] to access the son menu. ([2] to skip this and step to the next menu).
The SPEED voice and the factory value will appear.
Press [1] again to adjust. ([2] to skip this) The factory setting will flash.
Use buttons [2] and [3] to choose the desired value. Compared to the factory settings a positive adjustment will show the symbol "+" while a negative adjustment will show the symbol "-".

OIL

Having pressed [2] from the previous selection, the OIL voice will appear.
Press [1] to access the son menu. ([2] to skip this and step to the next menu).
The SPEED voice and the factory value will appear.
Press [1] again to adjust. ([2] to skip this) The factory setting will flash.
Use buttons [2] and [3] to choose the desired value. Compared to the factory settings a positive adjustment will show the symbol "+" while a negative adjustment will show the symbol "-".

COOLANT

Having pressed [2] from the previous selection, the EGT voice will appear.
Press [1] to access the son menu. ([2] to skip this and step to the next menu).
The SPEED voice and the factory value will appear.
Press [1] again to adjust. ([2] to skip this) The factory setting will flash.
Use buttons [2] and [3] to choose the desired value. Compared to the factory settings a positive adjustment will show the symbol "+" while a negative adjustment will show the symbol "-".

BATTERY VOLTMETER

Having pressed [2] from the previous selection, the VBATT voice will appear.
Press [1] to access the son menu. ([2] to skip this and step to the next menu).
The SPEED voice and the factory value will appear.
Press [1] again to adjust. ([2] to skip this) The factory setting will flash.
Use buttons [2] and [3] to choose the desired value. Compared to the factory settings a positive adjustment will show the symbol "+" while a negative adjustment will show the symbol "-".

Press [4] to go back to the father menu, the TRIMMERS > voice will appear again.

CAR SETUP: ("CAR SETUP")

In this menu it is possible to set up the general info of the car, like the number of cylinders and the units of measurements. Here we have a father menu and three sons.
Having pressed [2] from the previous selection the voice CAR SETUP > will appear.
Press [1] to access the son menus.

UNITS OF MEASUREMENTS SETTINGS

Having pressed [1] from the previous selection the voice SPEED with the factory value will appear.
Press [1] to adjust. ([2] to skip this), the factory value will flash.
Use [1] and [2] to select the desired options (kmh or mph)
Press [1] to confirm. The voice SPEED will appear again.

USE OF CYBERDYNE 8901

ZAelettronica uses the same original parameter of the car to calculate the run distance, hence 4.000 ppm (pulses per mile). Some vehicles earlier than 1985 do not have any digital transductors, they simply have a steel cable coming straight from the transmission that goes directly in the cluster. Those users are forced to use a sending unit called CYBERDYNE 8901 (http://www.summitracing.com/int/parts/cyb-8901/overview/). This unit is calibrated on 8.000 ppm. With this menu the electronics set on 8.000 ppm adapting to the new signal.

Having pressed [2] from the previous selection, the SENSOR voice and the factory value will appear.
Press [1] to adjust. ([2] to skip this) The factory value will flash.
Use buttons [2] and [3] to select STD or CYB OR VSS.
STD is the setting to use normally WITHOUT che Cyberdyne unit.
CYB is the setting to use with the Cyberdyne.
VSS is the setting to use with the signal from yellow box behind original speedometer
Press [1] to confirm CYB. The word SENSOR will appear again.

VSS (YELLOW BOX) VALUES FOR SPEED (82-84 with cruise control);

The electronic set, use this signal to give the speed value, without any other external source. For use this solution, be sure that the yellow box, used for cruise control options, works propertly

Having pressed [2] from the previous selection, the SENSOR voice and the factory value will appear.
Press [1] to adjust. ([2] to skip this) The factory value will flash.
Use buttons [2] and [3] to select STD or CYB OR VSS.
STD is the setting to use normally WITHOUT che Cyberdyne unit.
CYB is the setting to use with the Cyberdyne.
VSS is the setting to use with the signal from yellow box behind original speedometer
Press [1] to confirm VSS. The word SENSOR will appear again

ENGINE SETTINGS

Having pressed [2] from the previous selection the voice CYLIND with the factory value will appear.
Press [1] to adjust. ([2] to skip this), the factory value will flash.
Use [1] and [2] to select the desired options 4, 6, 8.
Press [1] to confirm. The voice CYLIND will appear again.

COOLANT SETTINGS

Having pressed [2] from the previous selection the voice TEMP with the factory value will appear.
Press [1] to adjust. ([2] to skip this), the factory value will flash.
Use [1] and [2] to select the desired options °C or °F,
Press [1] to confirm. The voice TEMP will appear again.

DISPLAY SETTINGS

In some episodes of the show we can see that the numbers 6 and 9 on the display are missing the top (or bottom) segment.
With this menu you can decide whether you want to show those numbers with or without that segment.
Having pressed [2] from the previous selection the voice DISPLAY with the factory value will appear.
Press [1] to adjust. ([2] to skip this), the factory value will flash.
Use [1] and [2] to select the desired option, 6 and 9 with or without the segment.
Press [1] to confirm. The voice DISPLAY will appear again.

CLUSTER LIGHTS SETTINGS

Despite all the cars have the same cluster it may be necessary to invert the logic of some signals. Said logic can be managed with this menu. The standard values are already set from the factory. We discourage any modifications.

SHIFT LIGHT SETTINGS

Having pressed [2] from the previous selection the voice S_SHIFT with the factory value will appear.
Press [1] to adjust. ([2] to skip this), the factory value will flash.
Use [1] and [2] to select the desired options HI or LO.
Press [1] to confirm. The voice S_SHIFT will appear again.

SERVICE ENGINE SOON SETTINGS

Having pressed [2] from the previous selection the voice S_ENG with the factory value will appear.
Press [1] to adjust. ([2] to skip this), the factory value will flash.
Use [1] and [2] to select the desired options HI or LO.
Press [1] to confirm. The voice S_ENG will appear again.

HANDBRAKE SETTINGS

Having pressed [2] from the previous selection the voice S_HANDBB with the factory value will appear.
Press [1] to adjust. ([2] to skip this), the factory value will flash.

Use [1] and [2] to select the desired options HI or LO.
Press [1] to confirm. The voice S_HANDBB will appear again.

SETTING TOTAL KM OR MI

These electronics really count the distance that your car runs.
We found extremely usefull to show the real miles of your car.
We advise to write down the miles from your cluster before the installation of the dash.
Before doing that make sure if it is calculated in MILES or KILOMETERS.
If the car shows Miles and you want to use Kilometers (or vice versa) it is advised to set the unit of measurement in the same unit of the car. Then change the value that your car is showing on the cluster and in the end change again the unit of measurement matching your preferred criteria.

Having pressed [2] from the previous selection KM or MI (depending of the unit of measurement set previously) with the factory value (000.000) will appear.
Press [1] to adjust. ([2] to skip this), the factory value will flash.
Use [2] and [3] to modify the value. Holding the button will fast forward.
Press [1] to confirm. The voice KM or MI will appear again with the new set value.

Press [4] to go back to the father menu, the CAR SETUP > voice will appear again.

DEMO MODES:

There are 3 different demo modes.

To activate this function press PANP NORMAL button for 5 seconds any other press changes the demo mode. To exit, press auto for 5 seconds.

DEMO 1: red leds on MPH speedometer are on, also RPM leds arc are on.

DEMO 2: All led moves like randomly.

DEMO 3: This demo simulating a real driving experience! During this demo the speedometer, tachometer, coolant and fuel moves, warning message are played. Is pretty cool for a demonstration at a car show.

RANDOM PHRASES:

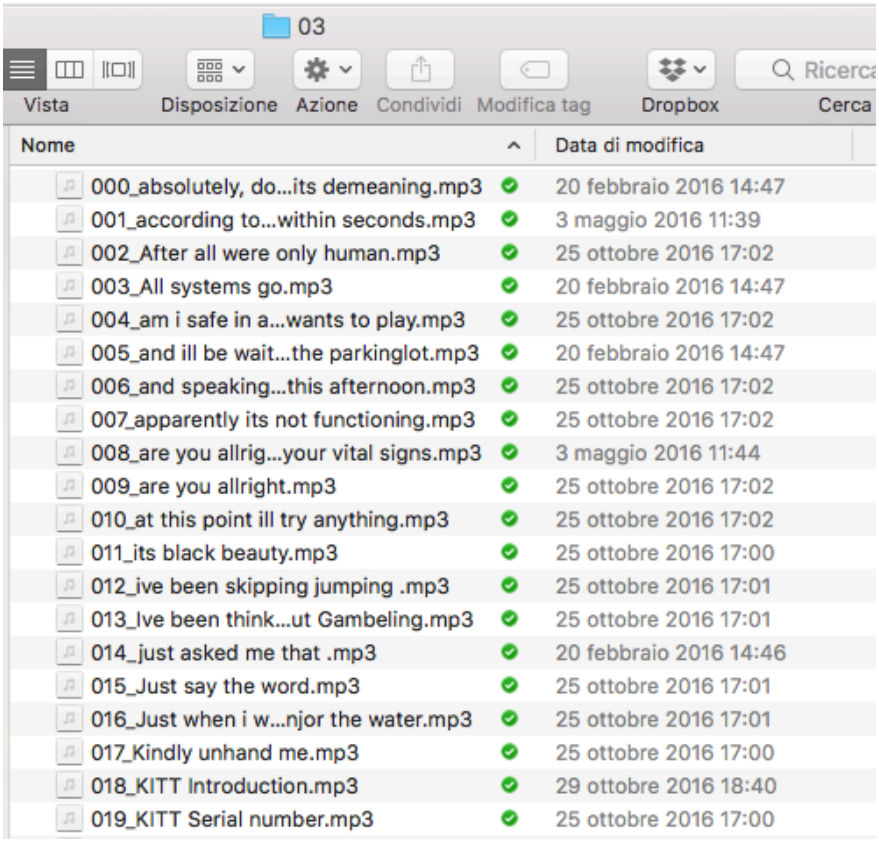
To activate this function, please press PANP AUTO button for 5 seconds. User can decide the seconds from files, when PANP NORMAL button is pressed in random phrases mode.

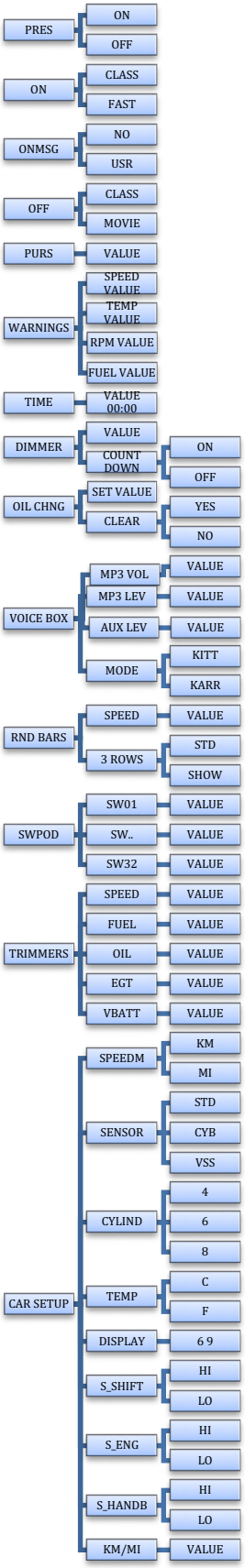
For this function, please add on the usb pen drive or SD card, a NEW folder called 03 (zero three).

On this folder add your preferred files (max 128 files).

The schema is always the same used for folder 01. Start from 001_yournamefile.mp3 and you can end end with 128_yournamefile.mp3.

Please take a look at the picture below for a example:





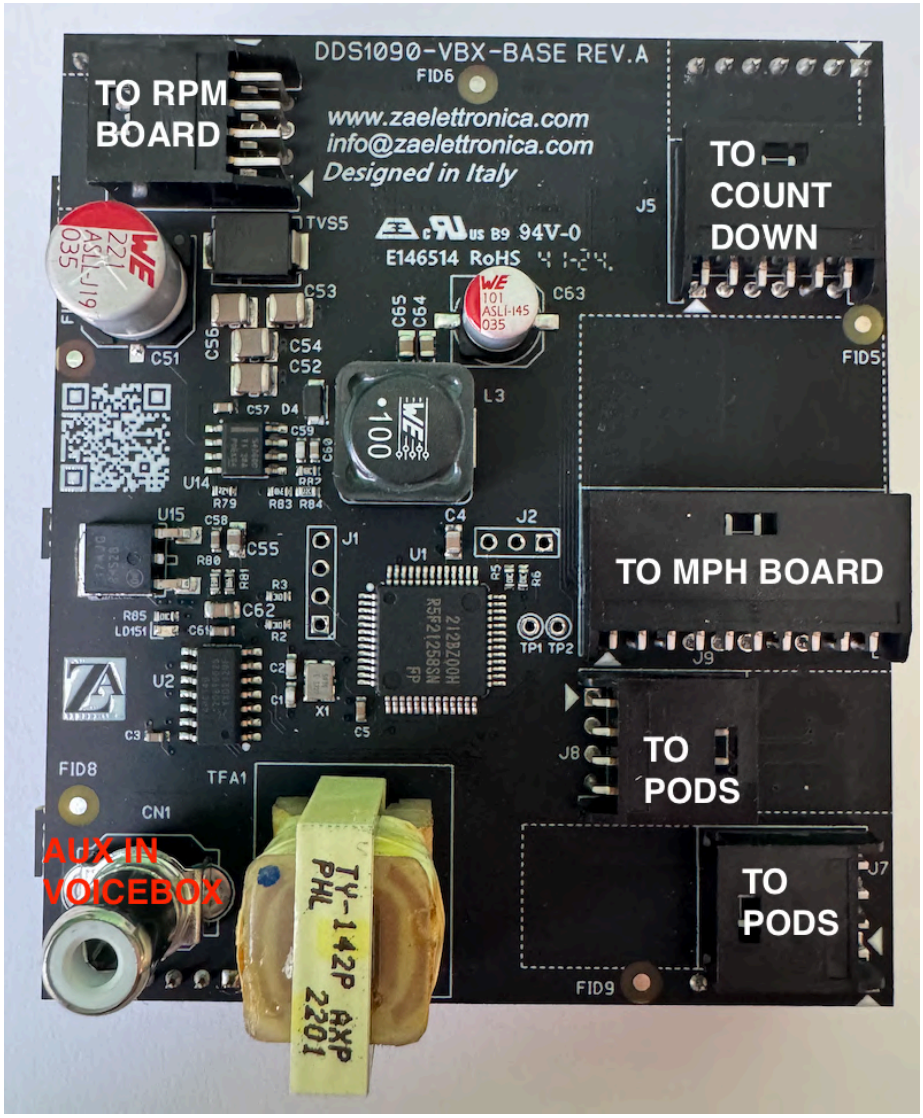
info@zaelettronica.com

The ZA Elettronica Voicebox has been designed to be used only with the 3D bezel made by ZA ELETTRONICA. And is included in the set.

The voicebox is made by two boards in a sandwich structure, one called CPU which performs the data elaboration, the other one called PWR where the power management takes place and all the CAN-BUS signals arrive.

VOICEBOX CONNECTIONS ON THE BOARD

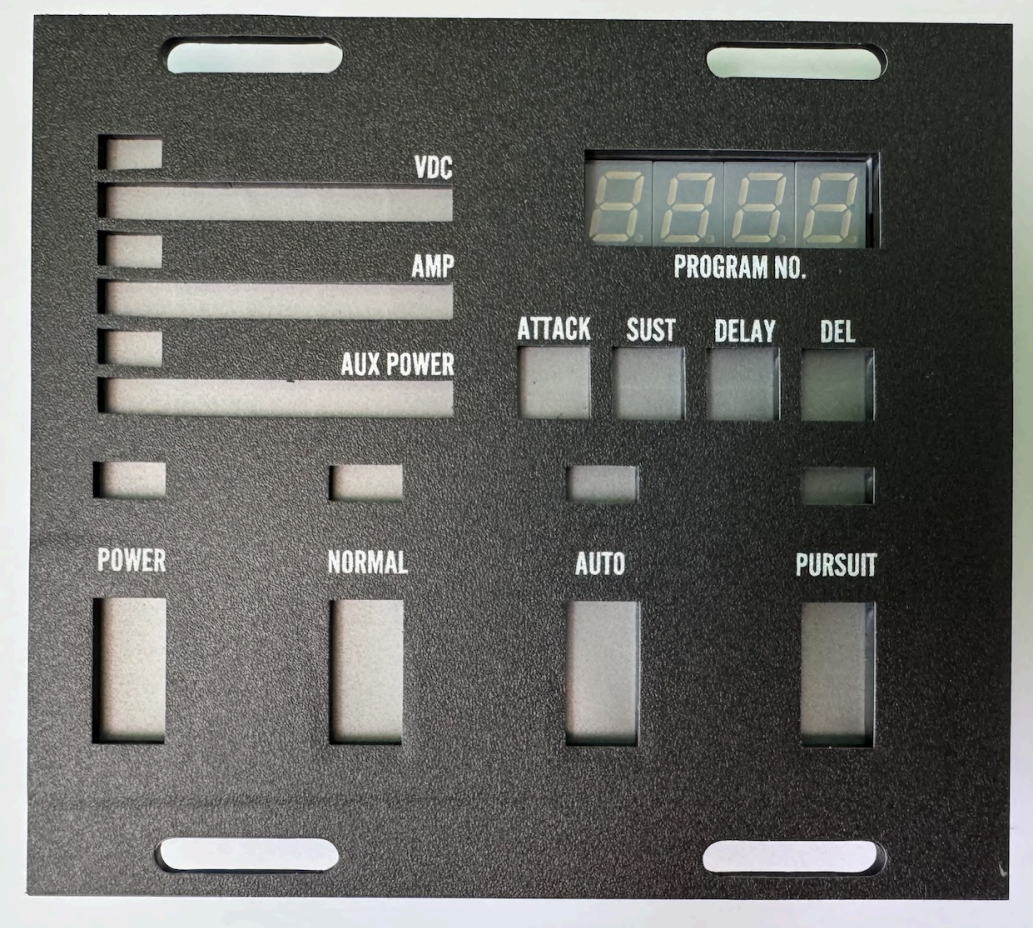
Looking at the board on the back side, like in the picture on the side, you'll have different MODU2 connectors. Refer to the photo for a quick reference.



COUNTDOWN - VOICE BOX CONNECTIONS

With the harness included it is possible to drive the lights of the voicebox.

COLOR CABLE	DESCRIPTION
PINK	+12 VOLT (common for all)
ORANGE	GND (GROUND) LAMP 1 (POWER)
GREEN	GND (GROUND) LAMP 2 (MIN RPM)
WHITE	GND (GROUND) LAMP 3 (FUEL ON)
BLUE	GND (GROUND) LAMP 4 (IGNITORS)



This board required many hours of research and development.
In the past, other manufacturers resorted to external buttons to manage PANP commands, or the pressure required was imprecise.

ZA Elettronica's standards are quite different.

We started by designing the board with a capacitive touch panel from the outset; this way, simply placing your thumb or index finger on the button outline will immediately activate the function (power, auto, normal, or pursuit).

No more guessing the right position, no more external buttons.

Everything is as it should be!

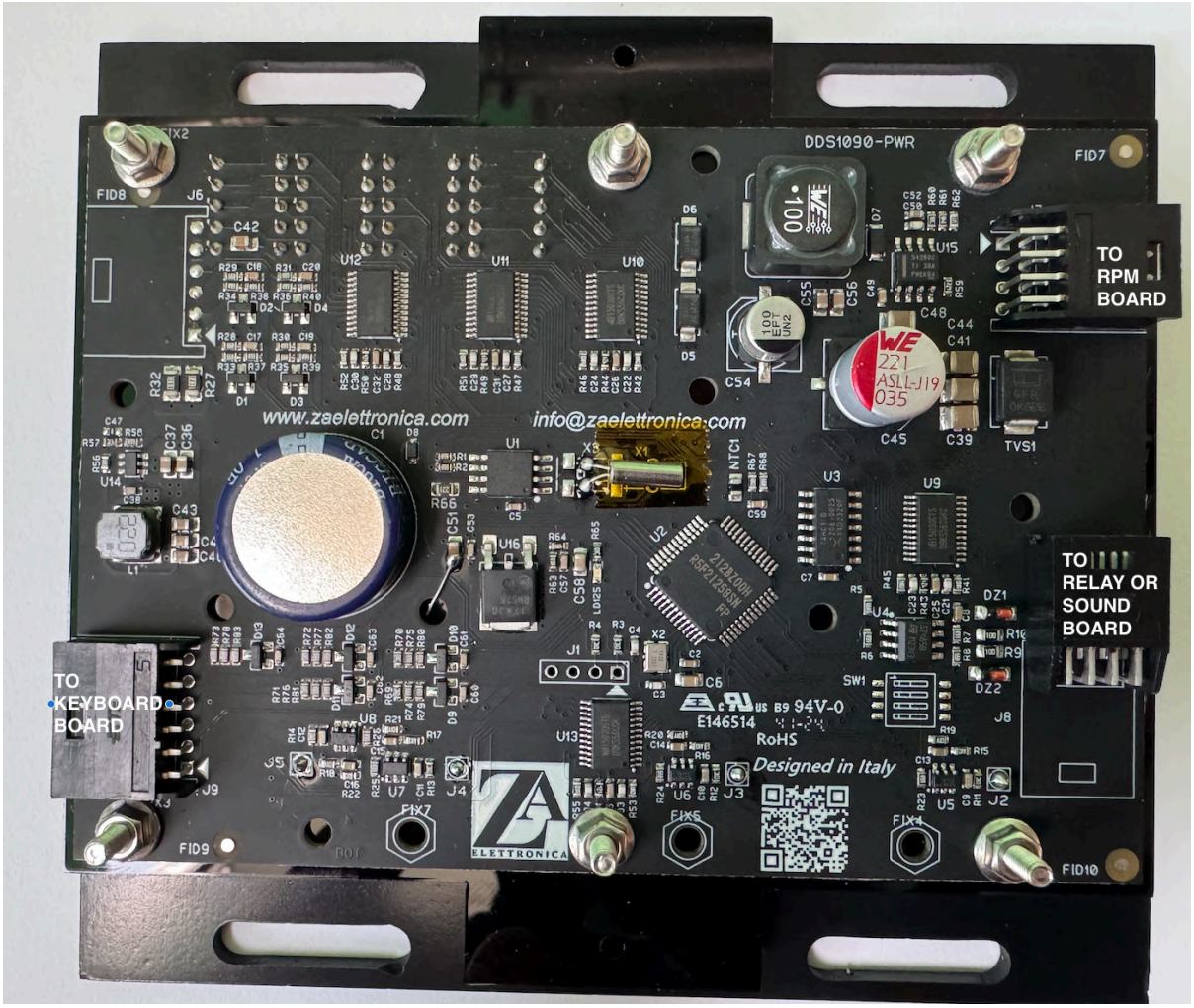
In this boards we found this functions:

- PANP BUTTONS (as explained);
- PROGRAM NO. → Clock;
- VDC → Battery (car) Voltage: 1 led= 10 Volts -- 5 leds = 14 Volts;
- AMP → Random leds;
- AUX POWER → Mp3 Volume level. Each led is 2/10 of max volume;
- ATTACK/SUST → Random leds;
- DELAY/DEL → Random leds.

POWER BOARD CONNECTIONS

Looking at the board on the back side, like in the picture on the side, you'll have (refer to the numbers in the picture):

- CAN-BUS CONNECTOR for SCANNER & SOUND MODULE OR RELAY BOARDS;
- CAN-BUS CONNECTOR to connect to the RPM board with the cable included in the box;
- CAN-BUS CONNECTOR to connect ZA ELETTRONICA integrated Keypad.



DIODE BASED BOARD PROTECTION

To avoid damages to the boards caused by polarity inversion (swiching + with -) the kit comes with an extra board to install prior the power supply. Even if every single board is equipped with a fixable fuse it is advised to install this board on the main power inlet along with a 3A fuse.

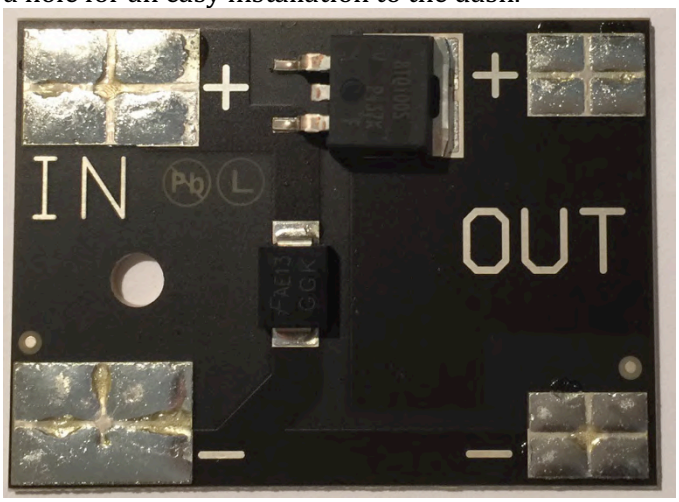
As you clearly see in the picture, the installation needs to be done with a soldering iron, making sure to solder the wires in the right way paying attention to:

INLET wires

OUTLET wires.

The INLET wires are the ones coming from the battery of the car to the inside of the dash (the ones that require the fuse mentioned above), while the OUTLET wires are the ones feeding the electronics included in this kit.

The board also has a hole for an easy installation to the dash.



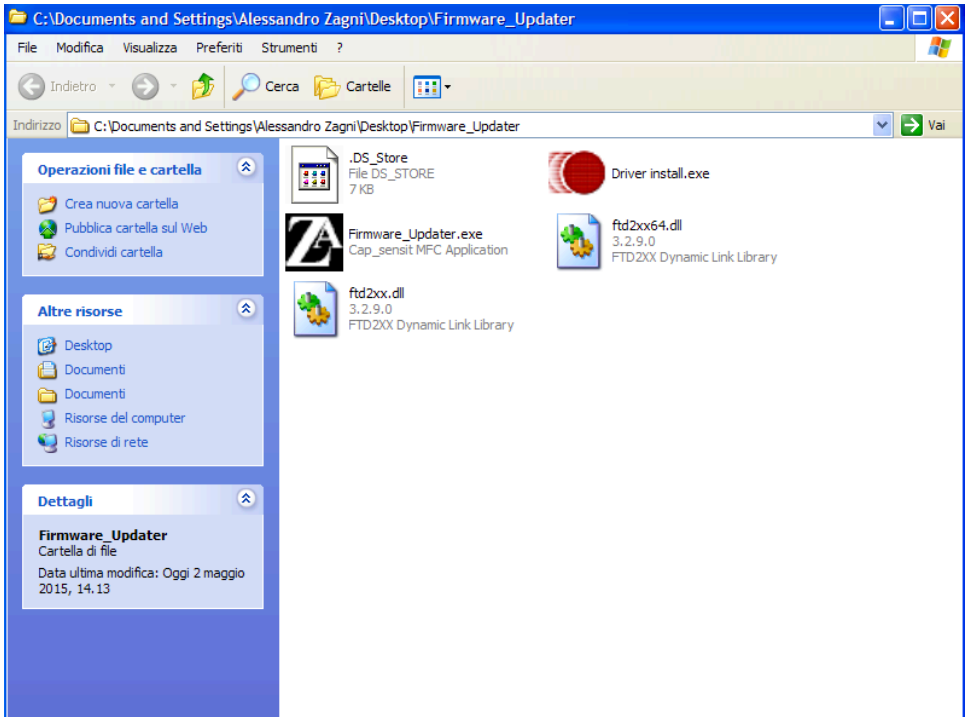
USB FIRMWARE UPGRADE

Ideas come alive from needs. These electronics came alive for my needs. It is totally expandable. In the future it may be possible to have firmware upgrades to achieve new functions or to fix bugs and errors that could occur.

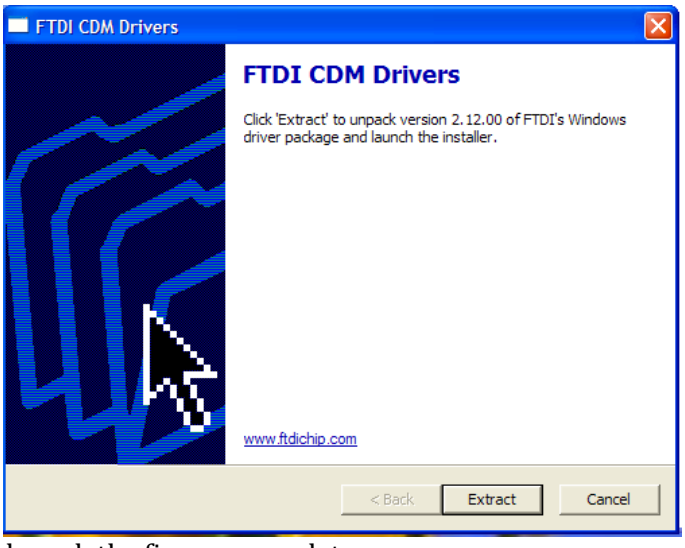
All that is free.

INSTALL FIRMWARE UPDATER ON PC

Go to the website www.zaelettronica.com and add to the cart the firmware update software. Is free.
Extract file, then copy in to your desktop

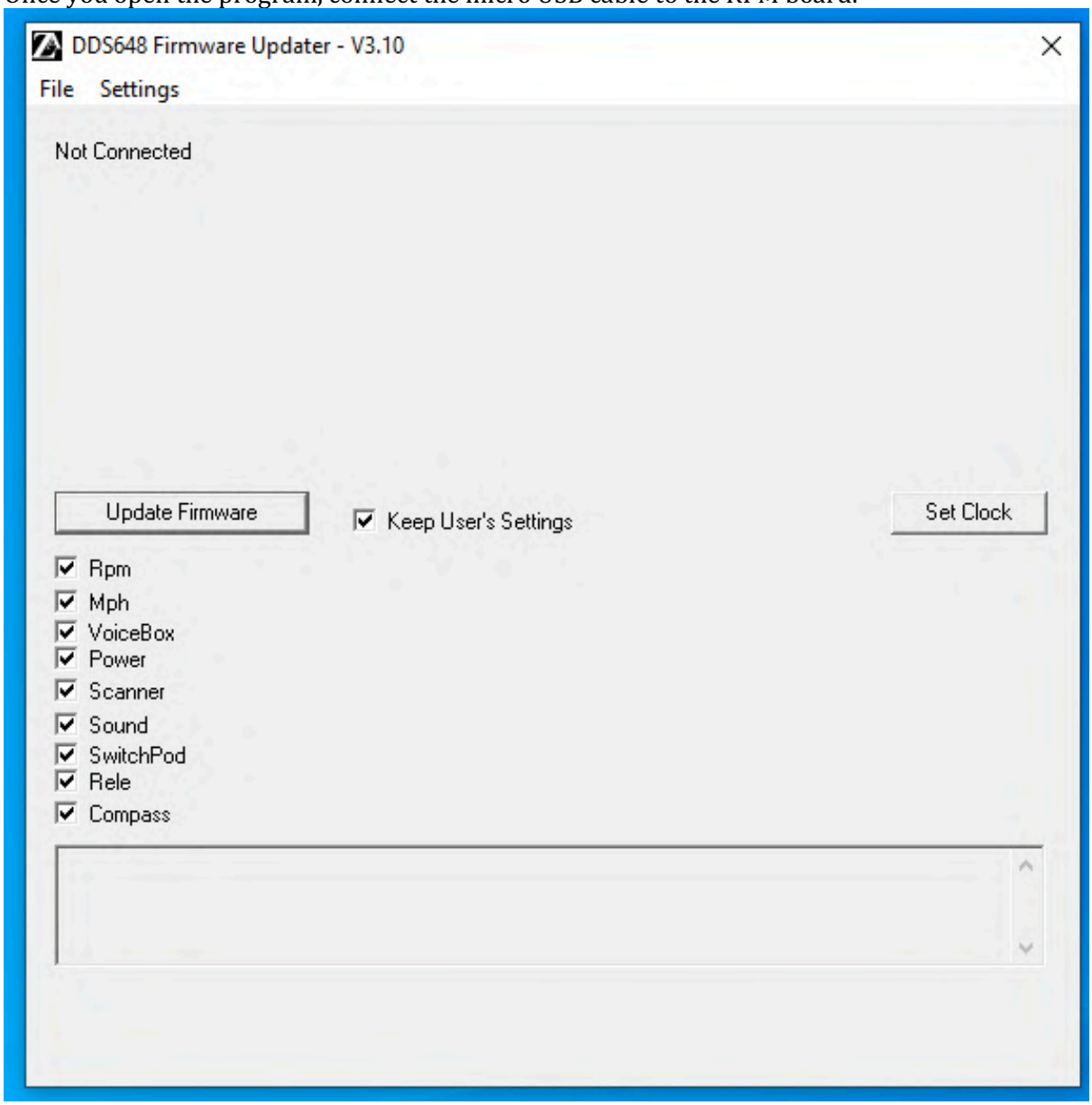


Run the installation file and install drivers, follow the signs.



After this procedure, launch the firmware updater.exe.

Once you open the program, connect the micro USB cable to the RPM board.



Wait the message: USB CONNECTED.

To upgrade the card, press UPDATE FIRMWARE.
This opens a folder where you have to choose the files to upload. For convenience, the folder opens in the same folder, FIRMWARE UPDATER, that you have on your desktop.
We suggest to save the updates in the same folder.

Once you choose the file, you'll notice that next to the text with RPM, MPH, VBOX and ROWS bars, appear that will move from red to green to indicate the progress of the procedure. Electronics, however, will be lit in sequence some LED confirming that the boards you are updating.

When finished updating the firmware in the box below you will see "VERY WELL DONE." You can now disconnect the USB cable to resume normal operation of the boards.

CLOCK SET function: it is used to set the time of your computer even in electronics.

PERSONALIZED PHRASES

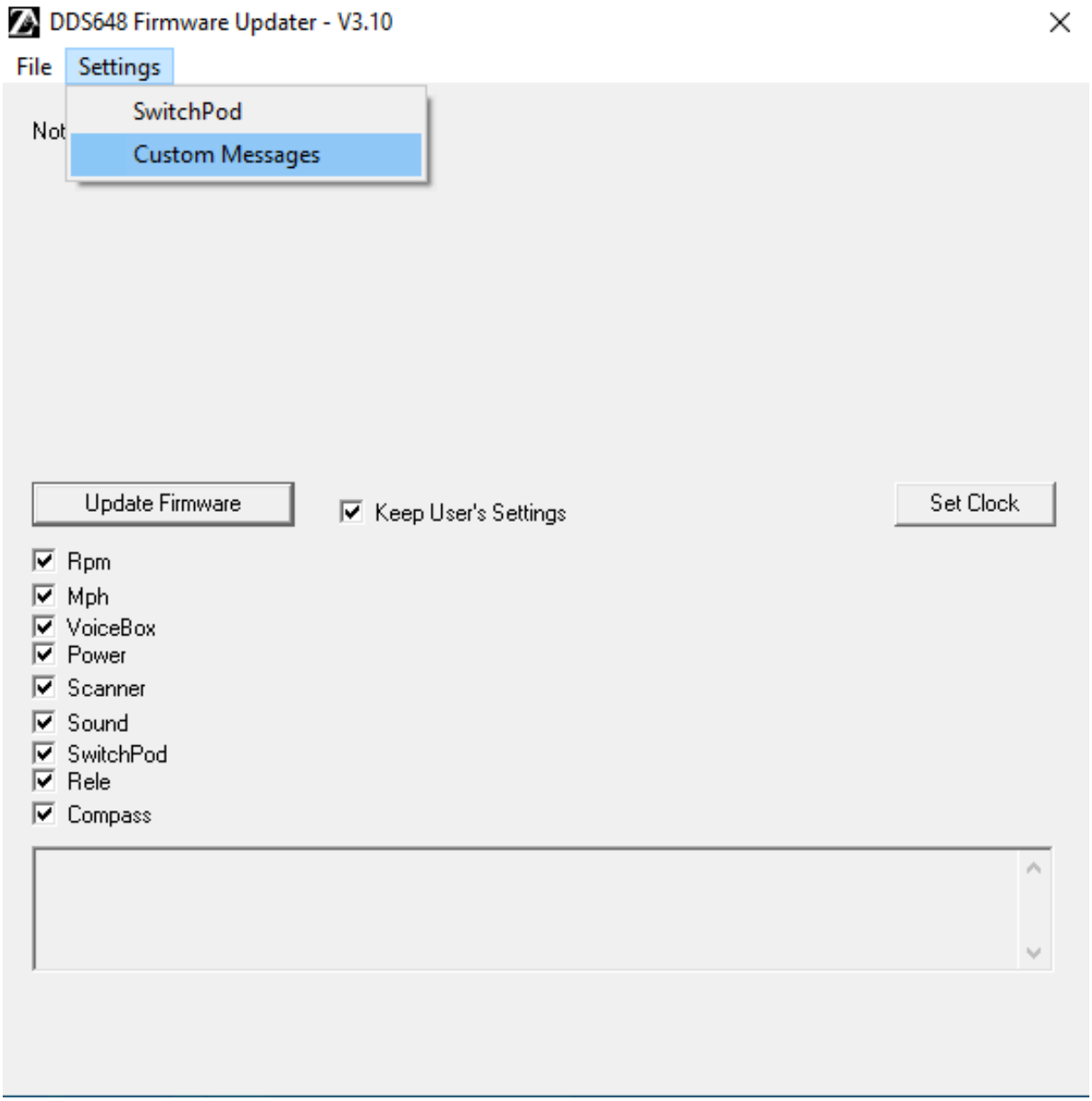
Because the Shift signal (refer to schema at page 12 of this manual) is not used by all cars, we have made it renameable as you like and shown in the message center.

USE ALWAYS A SIGNAL ACTIVATED BY A + 12Volts

It has been also introduced the function to have 5 personalized phrases (these phrases will show up as first in mode CAR VALUE – B)

To program these 5 phrases it is necessary to connect the electronic set to the computer with the usb cable and wait till the program reconizes the set. (you should have already installed the drivers as shown in the previous section).

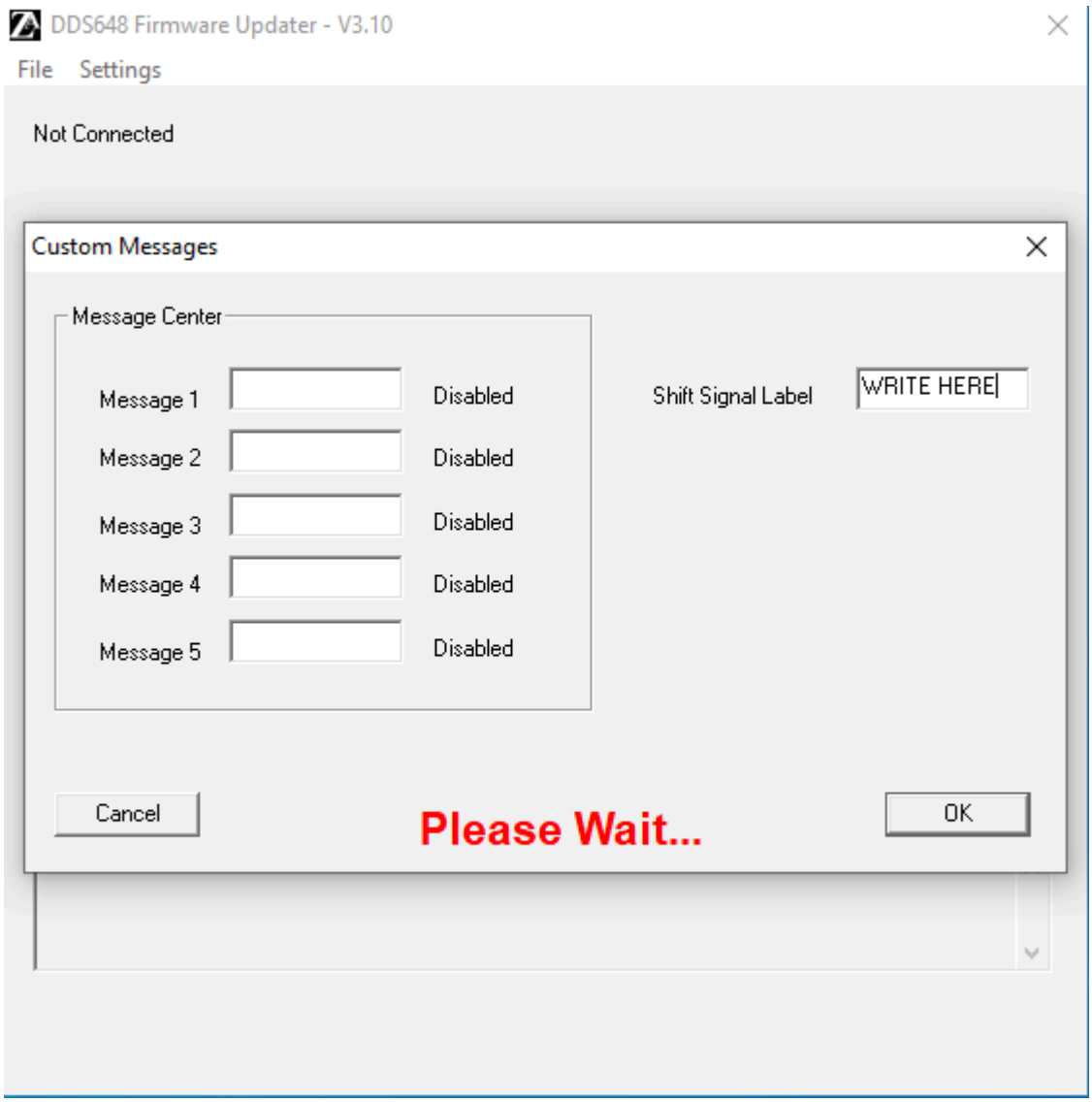
1. Executed "Firmware updater"
2. Click on the "Settings" button
3. Click "Custom Messages"



At this point a window will open where you can write your 5 custom phrases that will appear in the message center when in mode “Car Value B” (see page 21 of this manual)
Also in this window you can write the custom phrases instead of the SHIFT message.

Once written with your custom phrases, press “OK” button to update the boards with your personlized settings. A success message will appear once done.

The system by default finds the boards settings so for example you have previously selected a word in “Message 1” at the next connection of the set to the pc, this will show up. To disable the phrases you can leave the message box blank.
It is not possible to leave the SHIFT box blank. If nothing is written the system will automatically show SHIFT again.



ATTENTION

For MP3 player, use a RCA connector to connect
a standard 4 ohm - 3 WATT speaker
for the MP3 player reproduction;

PLEASE USE A SEPARATE SPEAKER FOR THE OUTPUT AUDIO FROM MP3 PLAYER!

DON'T CONNECT MP3 OUTPUT IN PARALLEL WITH OTHER SOURCES OR USE IT AS "IN-LINE" FOR AMPLIFICATOR, OR YOUR MP3 WILL BE BROKEN!

info@zaelettronica.com

OPERATIVE SWITCHPOD MANUAL season 3/4

THE SET PACKAGE

The packacage is composed of:

- ✓ 1 left switchpod board with labels;
- ✓ 1 right switchpod board with labels;
- ✓ 2 connectors with 4 pole for the CAN-BUS connection between the 2 switchpod boards and the voicebox.

Optional parts

- ✓ 1 10 rele board combined with the right switchpod (if ordered);
- ✓ 1 10 rele board combined with the left switchpod (if ordered);
- ✓ 1 8 pole connector for the connection between the 6rows <-> rele; (available only the the rele boards);
- ✓ 1 8 pole connector for the connection between rele 1 <-> rele 2; (available only with the rele boards);
- ✓ 1 8 pole connector named EXTENISON RELE which can be used either from the 6rows <-> rele or with the rele 1 <-> rele 2 boards.

  It is an extension to be used when the relay boards are far from the dashboard (available only with the relay boards)

- ✓ 18 extra buttons, to complete all the possible combinations saw in the tv Series (if ordered).

ATTENTION:

BEFORE SWITCHING ON THE ELECTRONICS, READ CAREFULLY THIS MANUAL.

CONTACT QUALIFIED PERSONNEL TO DO THE INSTALLATION PROPERLY!

NO RESPONSABILITY IS ASSUMED IN CASE OF ONCORRECT INSTALLATION AND POSSIBLE DAMAGES CAUSED TO THE CAR.

This electronic, even if close, or even better, of the original one of the car, is to be used on private roads.

No responsibility is assumed in case this rule will not be observed

⚠Attention: do not connect/disconnect the board connectors when they are powered, danger of damages ⚠

info@zaelettronica.com

Incipit

This part of the Replica, has been studied with special attention so that the buttons can be used in an innovative way. So on each switchpod board an indipendent CPU has been installed. It dialogues through the already proven CAN-BUS system that manages the electronics

thanks to this net, they have been designed from the beginning to be interfaced to the MP3 player inside the board, this way no other resources are necessary, to reproduce an MP3 file pressing the button.

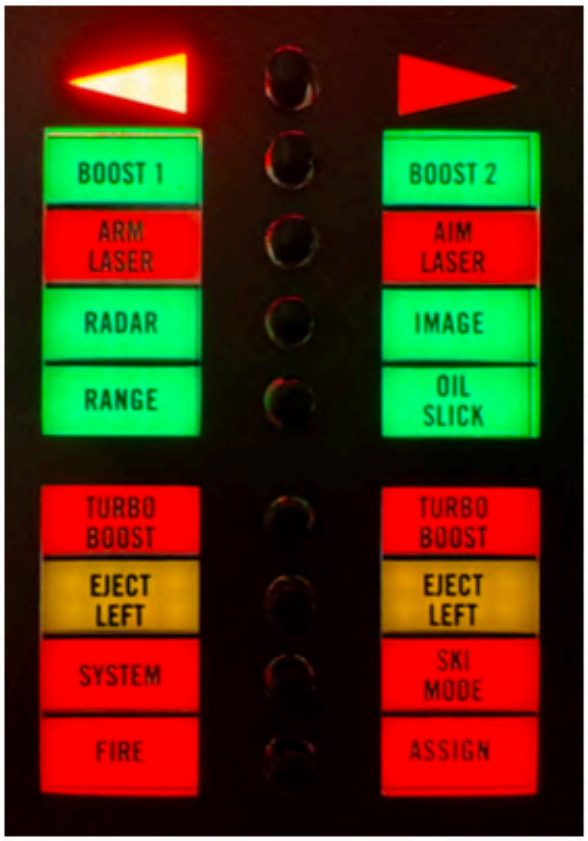
The buttons alone are just aesthetics. Matching the reproduction of a sound to the pressure of a button was not enough for me, I think it's useful matching each button to a real function. So, using the electronics CAN-BUS net, with my team, we have built 2 boards with 10 relays each, so that each button can be matched (in addition to a sound reproduced by the MP3 player) to a real action through the relay boards

I also know, that each Replica owner, prefers using the functions for differents seconds, minutes or even hours, through our FIRMWARE UPDATER program, it's possible to decide for each single button a specific kind of action, as we will see later

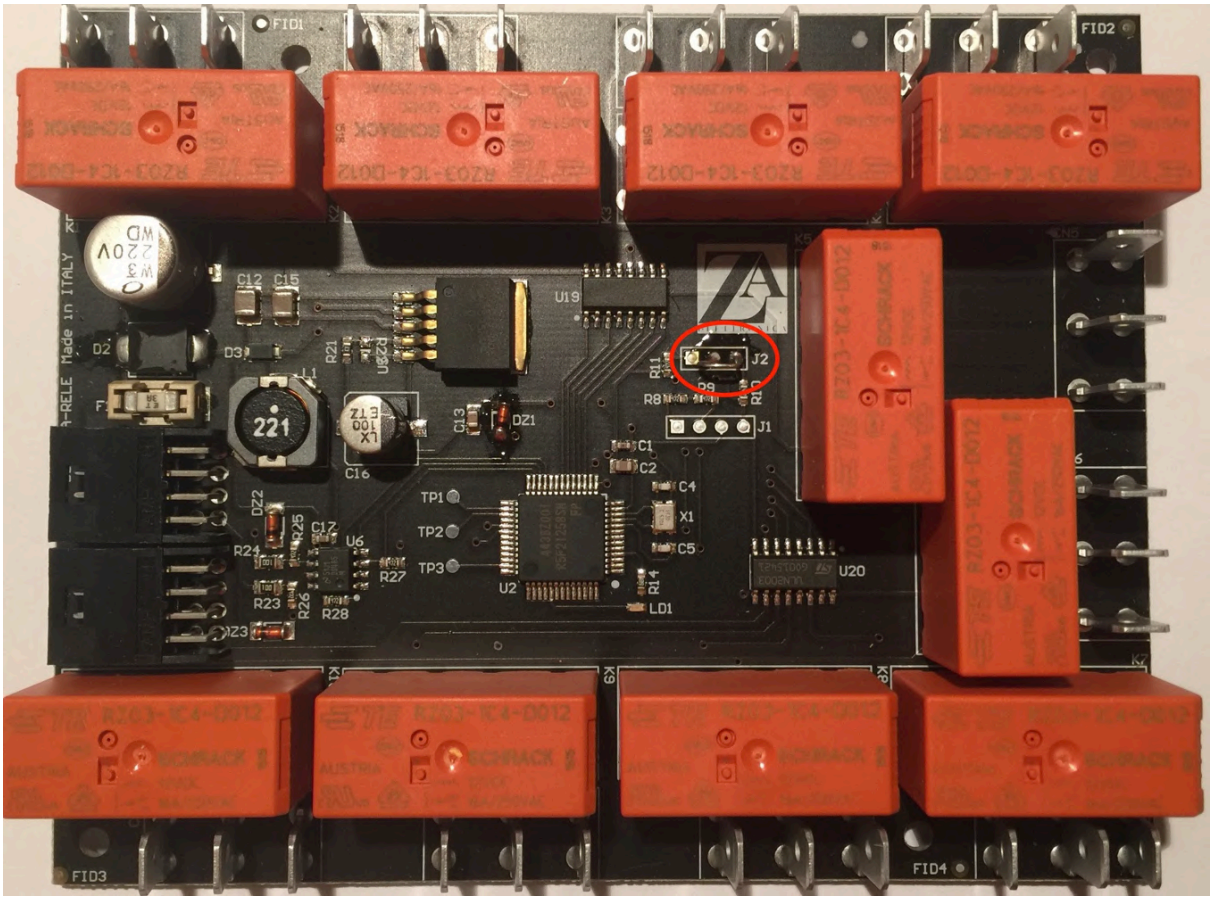
Your switchpods are assembled in factory, and arrive to you ready to be installed, already identified as right and left.

They have a switch behind the pcb. PLEASE DON'T TOUCH IT.

As you can see, is easy find left and right side: look at the Eject section button!



Front of relay board with soldered jumper:



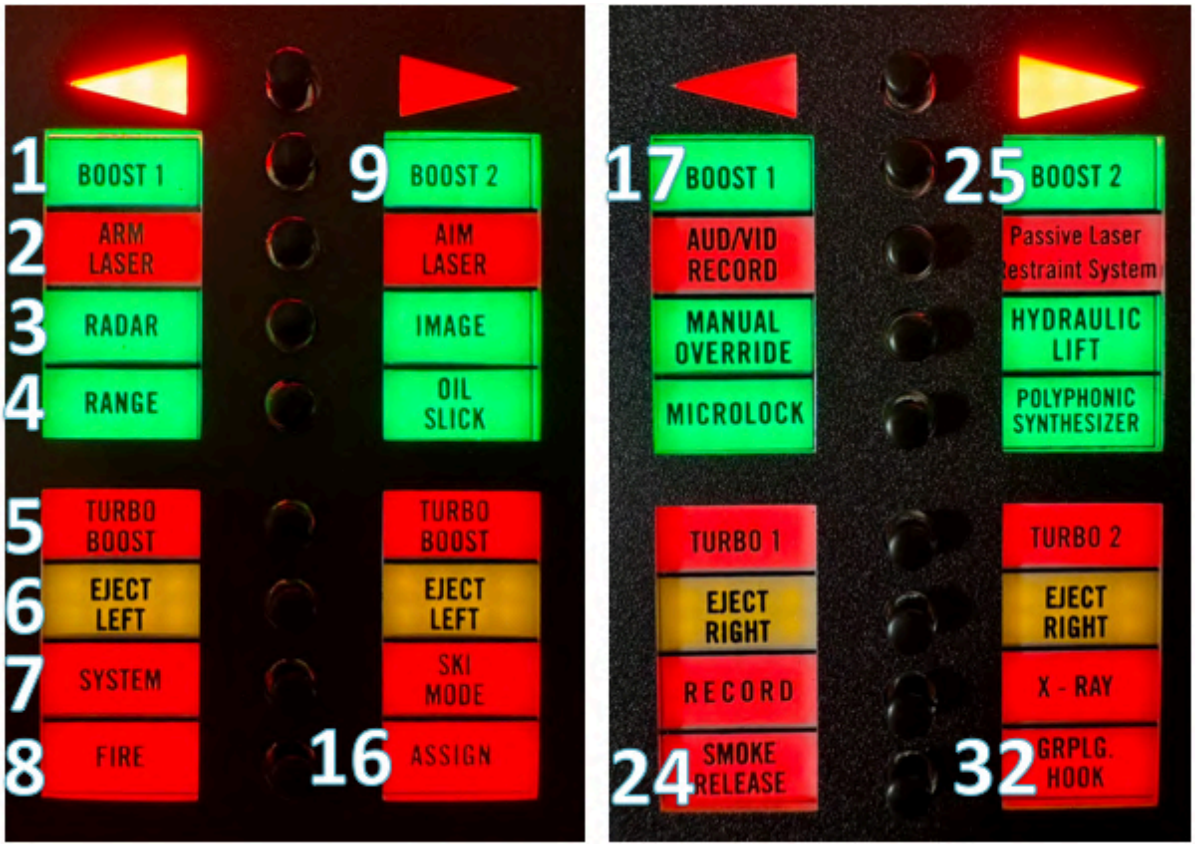
How can you identify the switchpods?

- The Left switchpod is the one on the left of the steering wheel, sitting at the driver's seat, and it is numbered from 1 to 16 (check the picture in the page)
- The Right switchpod is the one on the right of the steering wheel, sitting at the driver's seat, and it is numbered from 17 to 32 (check the picture in the page)
- Each button is combined to its relay (if present). If you press button 1, will activate relay 1.
- Look at the left switchpod, the left side (1st vertical section):
  - Boost 1 is button 1, arm laser is button 2, Radar is button 3 ... fire is button 8.
- On the right side of left switchpod, we have:
  - Boost 2 is button 9, aim laser is button 10, image is button 11... assign is button 16

It's important you understand how numbers are combined to the buttons, to be used in the correct way combining sounds and relays (check the following section)

Check the following picture to better understand

Left Switchpod **Right Switchpod**



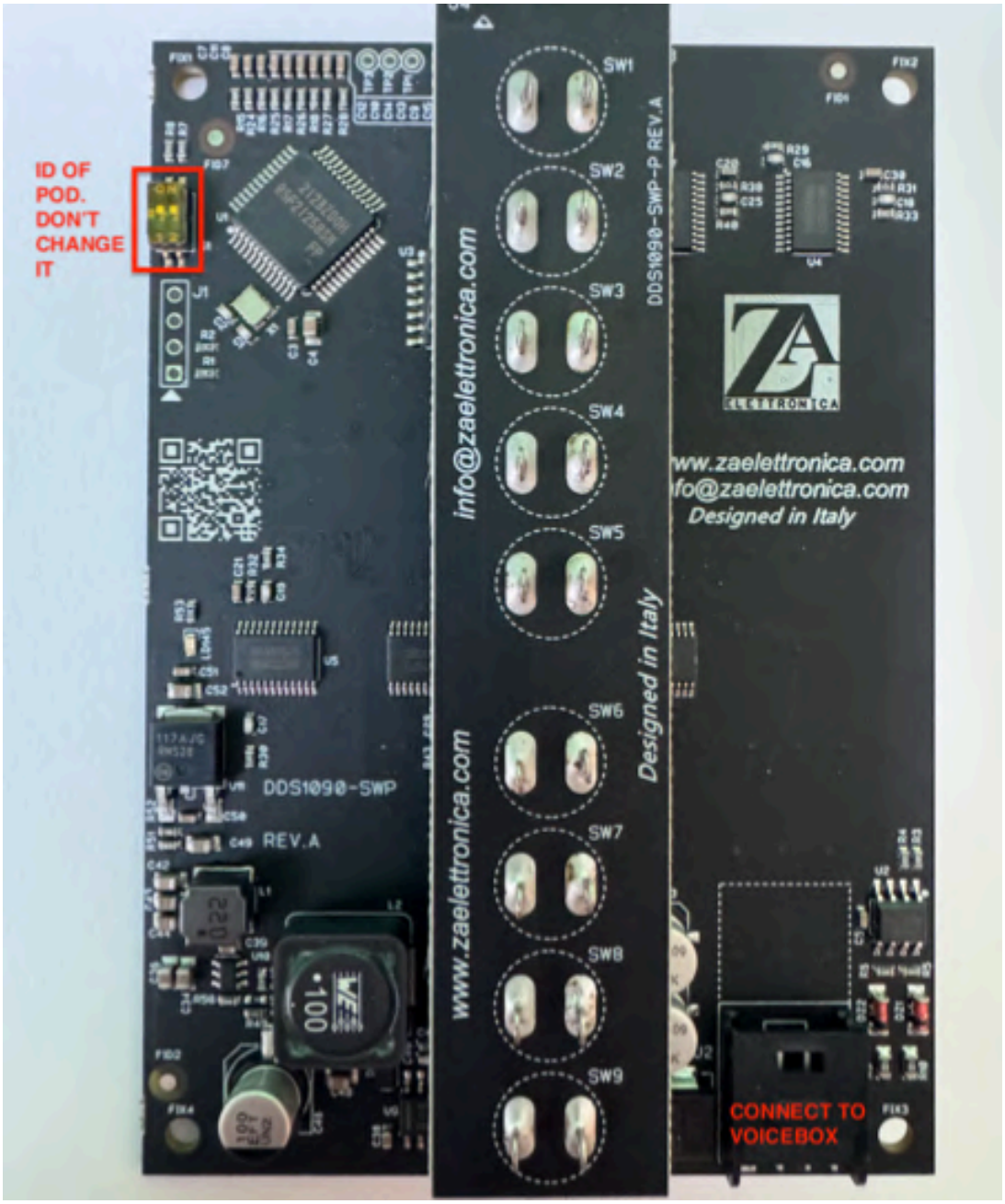
CONNECTION BETWEEN SWITCHPOD AND ELECTRONICS SET

As for the other boards, also the switchpod units have modu 2 connectors to be connected to the electronics.

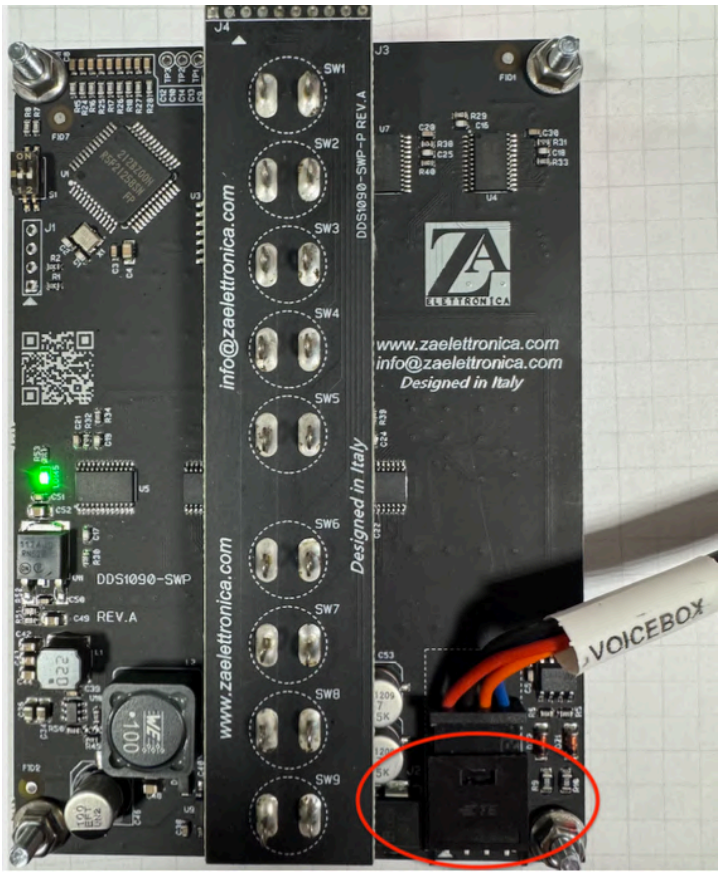
As seen in the electronics manual, the voicebox has been planned for this connection from the very beginning.

With the cable you can see in the following pictures the switchpods will talk automatically

with ZA electronics. Just connect the cable in the specific place of the voicebox and of the switchpod. The connection order is not important. The electronics Itself can understand which is the right and the left switchpod thanks to the jumper installed in the factory.

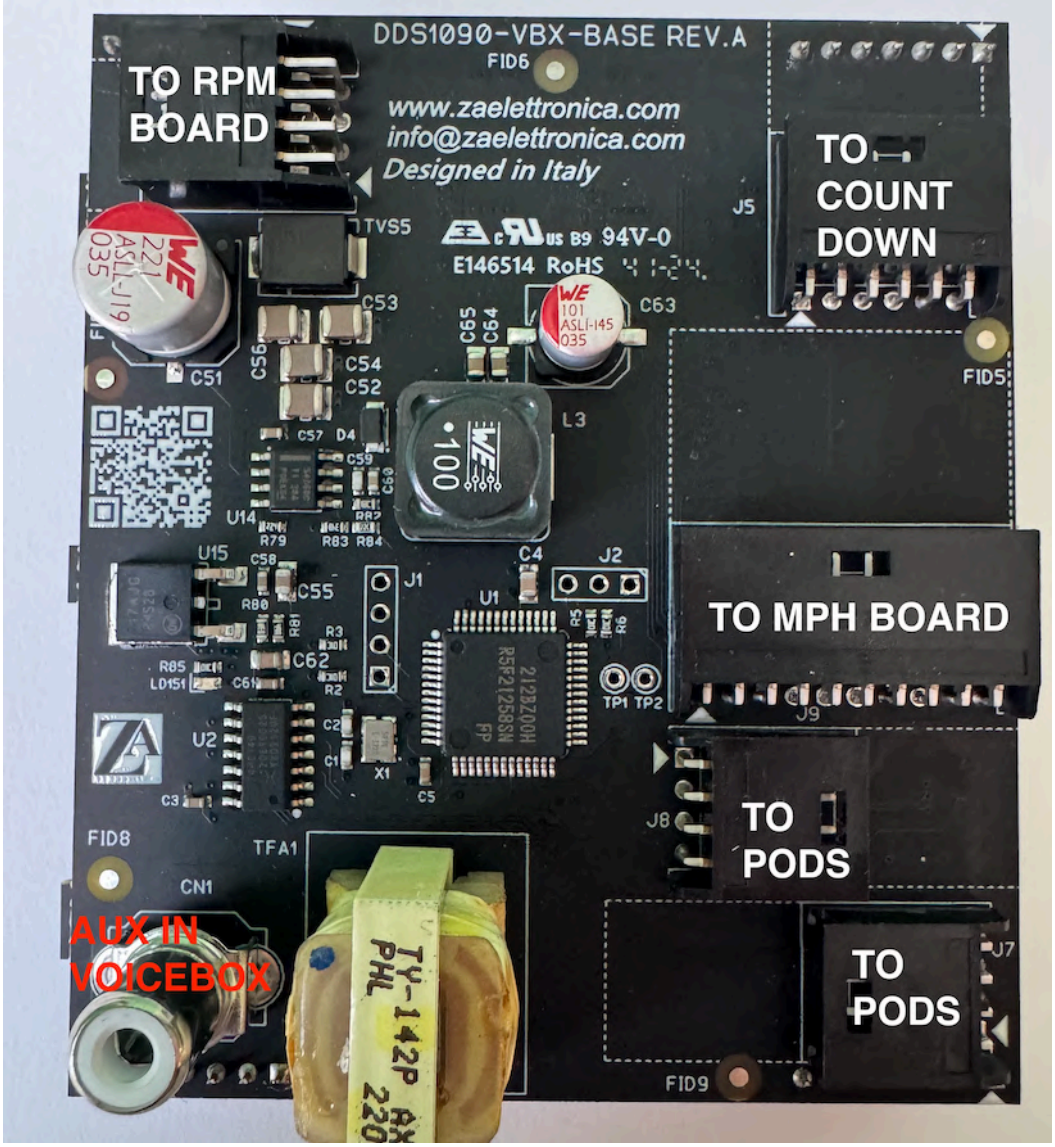


Once found the connector on the switchpod, plug the supplied cable in the connector, as shown below:



The switchpod will work correctly once connteced to the voicebox. Following you can see the scheme already seen in the electronics guide of the voicebox

Looking at the board on the back side, like in the picture on the side, you'll have different MODU2 connectors. Refer to the photo for a quick reference.



HOW LEDS WORK ON THE SWITCHPODS

When the electronics will be switched on, the switchpod is authomatically powered.

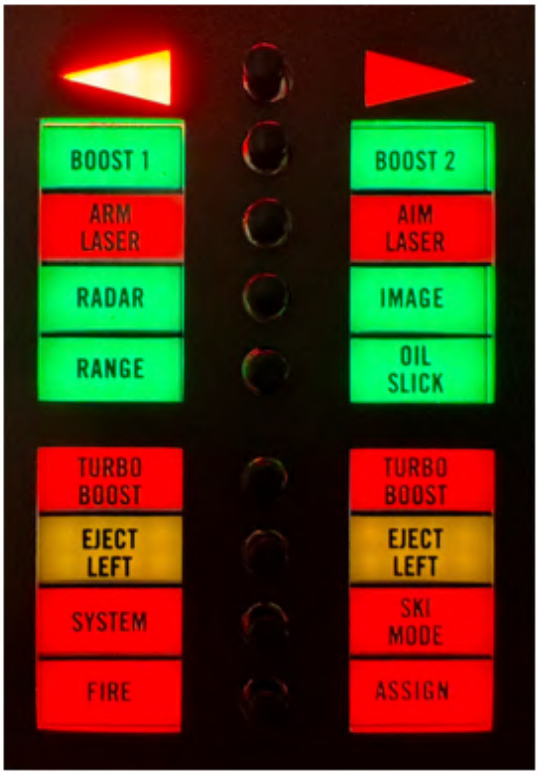
Our switchpod unit can perform various functions, such as emitting sounds and performing actions (when connected to our relay board), OR SIMPLY STAY ON.

To do this, you need to press **the central button** on the switchpod.

This button can operate both the right and left sides. To select the desired side, simply press the first button at the top (the one in the middle of red arrows), and the illuminated arrow will indicate which side of the switchpod has been selected. Each button press will turn that side on or off.

Proceed as follows:

1. Identify the first button at the top of each switchpod (it has no text, only a symbol of an arrow pointing either right or left).
2. Check which arrow is illuminated. By default, the outer arrows are always lit, as seen in the TV series. If you want to change sides, press the central button.
3. Example: For the left switchpod (see photo), each press of the buttons will activate the left side. If you want to activate the right side on the left switchpod, you need to press the first button (the one with the red arrows mentioned in step 1), and the right arrow of the left switchpod will light up. Now, every press will activate the inner side of the switchpod. The same rule applies for turning them off.



PLAYBACK OF THE MP3 SOUNDS

This feature characterizes these switchpods from the ones of the competitors. Pushing the button, one file , previously saved in the 02 folder from the user, will be reproduced

An MP3 player is placed on the back of the MPH board, it is used by the electronics to play phrases in case of special events and also for the press of the switchpod buttons

The MP3 player files, must all be saved in a folder called "02" (zero, two in numbers) Inside this folder, each file must be called with a three digits identification number in the first 3 characters, the rest of the name is irrelevant. The extension is ".mp3"

The numbering sequence is:

100.MP3 = DTMF_0 // complete set of DTMF tones use codes from 000 to 011
101.MP3 = DTMF_1
102.MP3 = DTMF_2
103.MP3 = DTMF_3
104.MP3 = DTMF_4
105.MP3 = DTMF_5
106.MP3 = DTMF_6
107.MP3 = DTMF_7
108.MP3 = DTMF_8
109.MP3 = DTMF_9
110.MP3 = DTMF_BUSY
111.MP3 = DTMF_DIAL

01.MP3 = BUTTON 1 SWITCHPOD
02.MP3 = BUTTON 2 SWITCHPOD
…
020.MP3 = BUTTON 20 SWITCHPOD

⚠ Attention: do not change or cancel the first three characters ⚠ (numbers) or the MP3 player will not work!

Let's use for example the 01 button of the switchpod

We have seen that the file 01.mp3 must be saved in the fold "02", to be reproduced pressing the button

The file playback can be enabled by:

- Menu of the Electronics (to switch on / off the MP3 and /or relay)
- Firmware updater (recommended option, since complete of all options, easier and immediate)

In case the file is not present in the "02" folder, or playback is disabled, when pushing the button a random DTMF file will be played, since they are also saved in the "02" folder

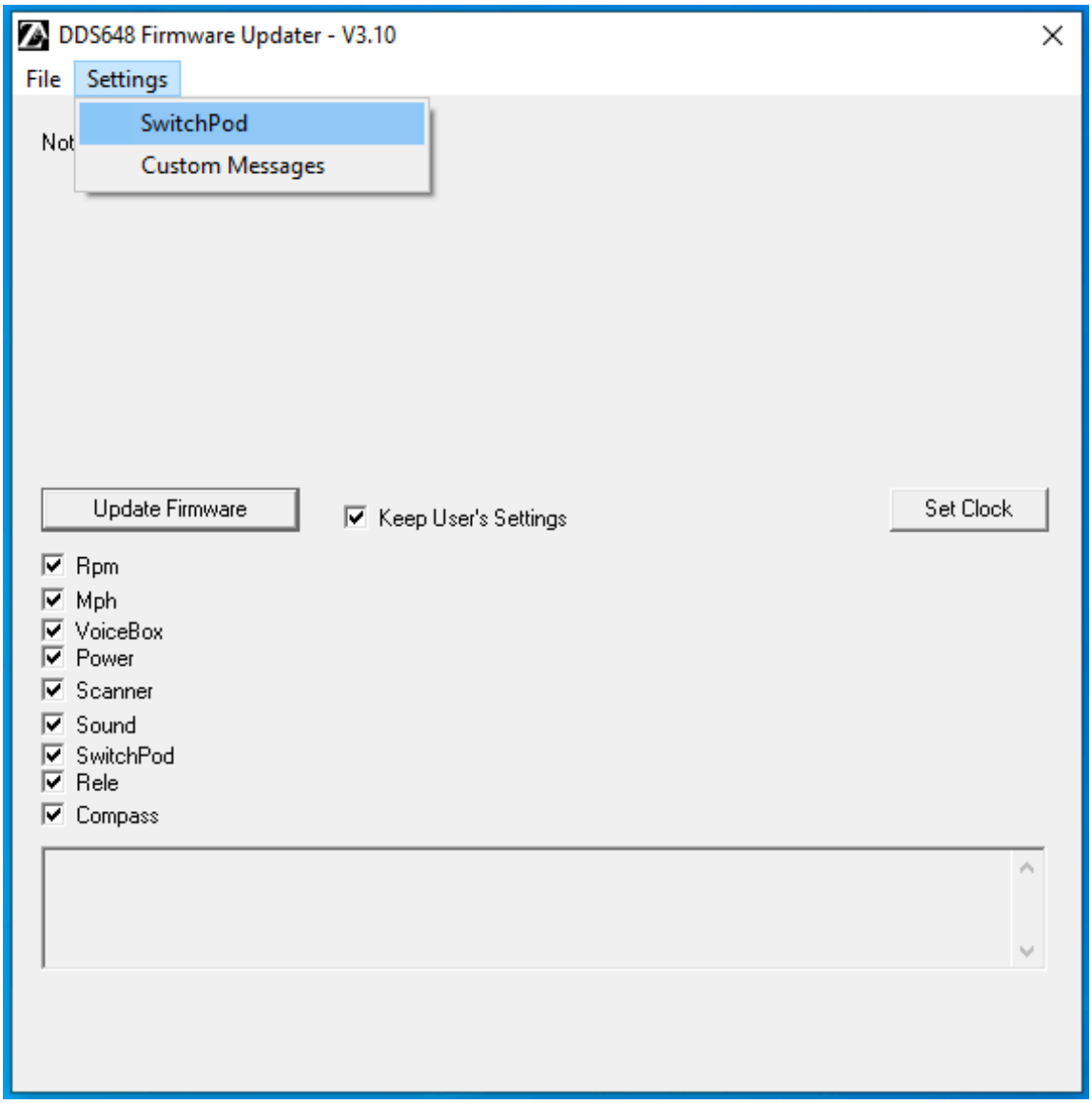
For safety, the WARNING events (over speeding, fuel reserve and so on) have the priority on the playback of the switchpod files, so when they happen, the playback is stopped and the warning message will be played.

BUTTON CONFIGURATION THROUGH FIRMWARE UPDATER

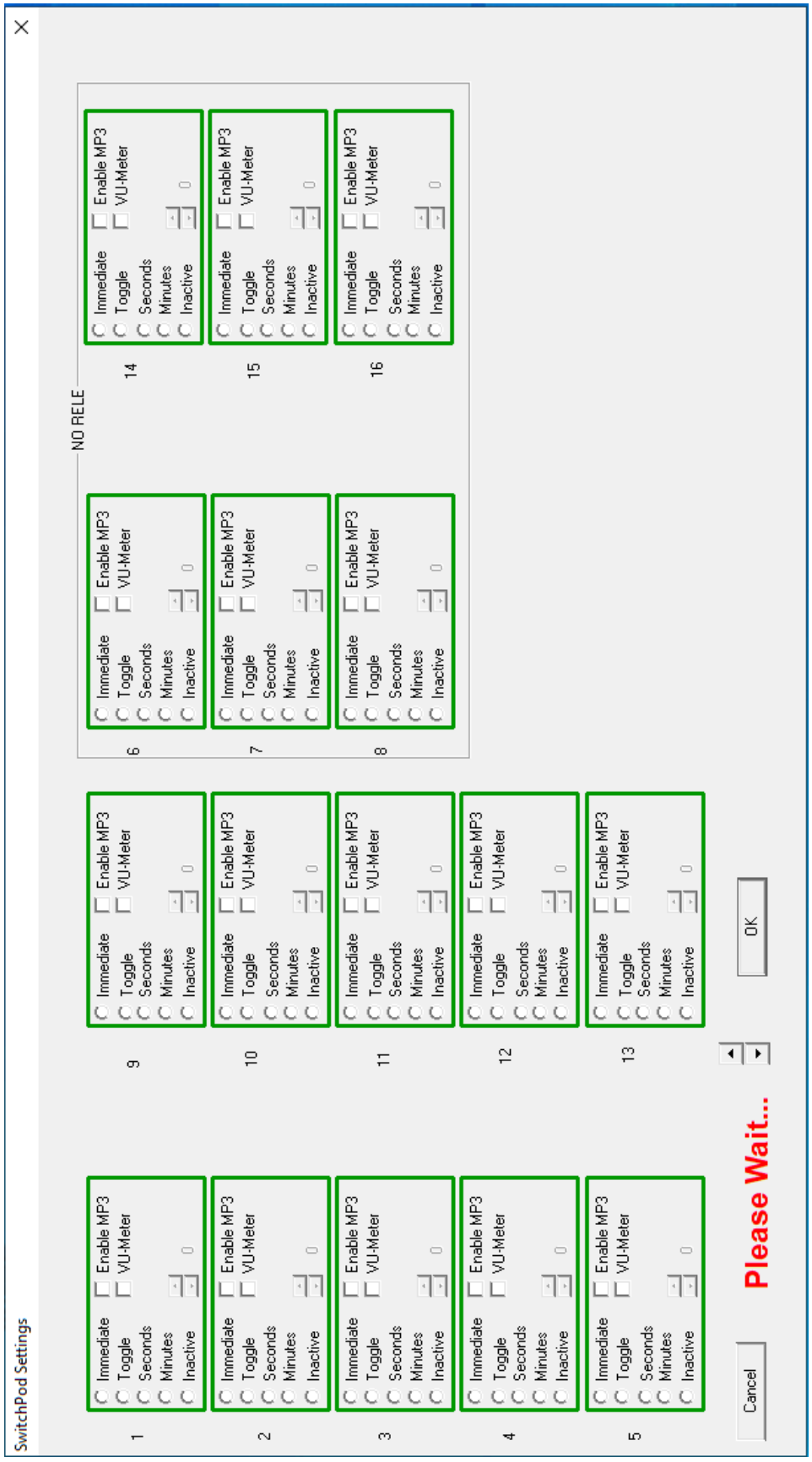
To make the programming of the single buttons the easiest possible, a simple and immediate interface has been created, using an option of the swithpod menu:

following, the steps for the programming by firmware updater:

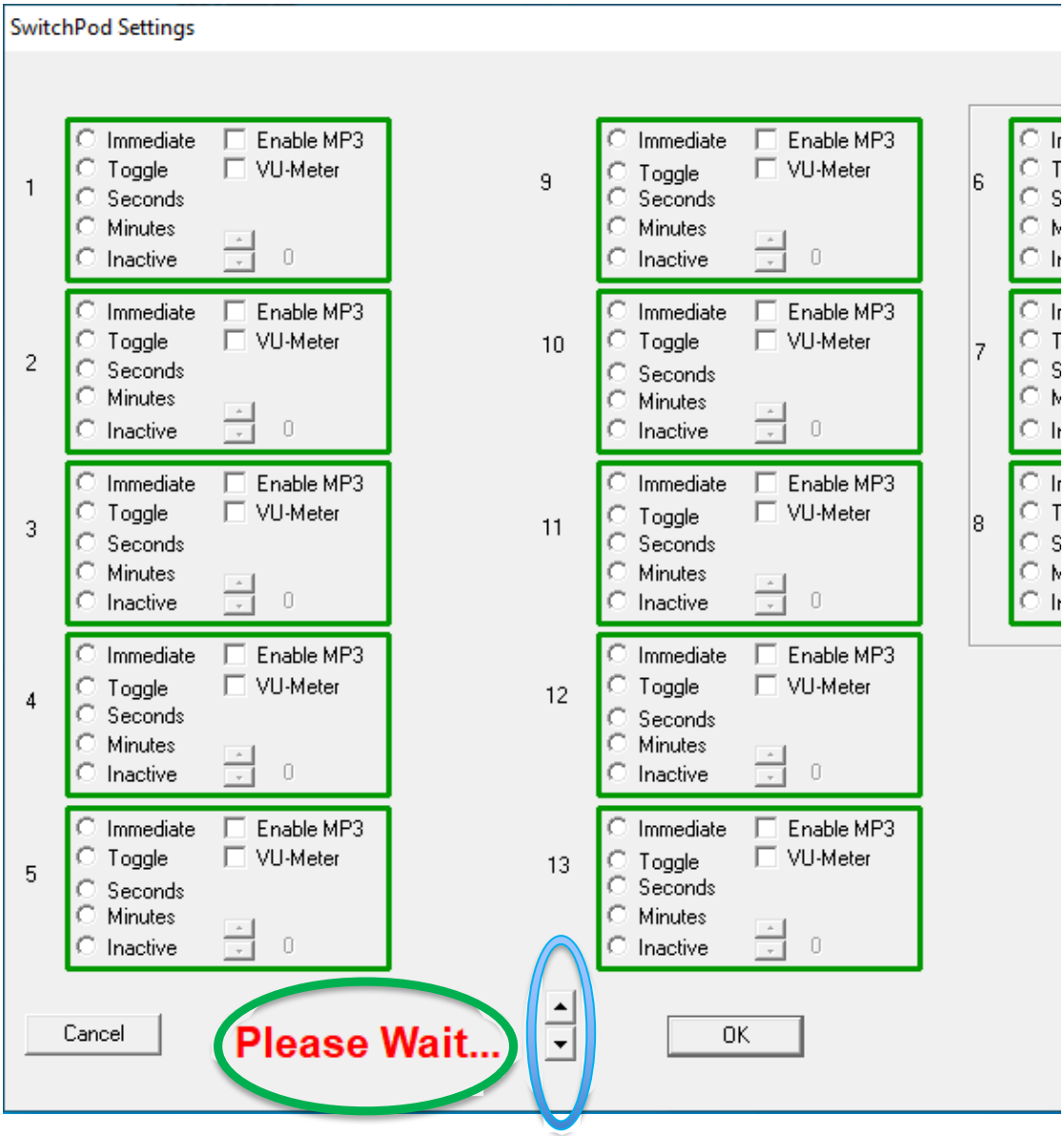
1. Be sure that the switchpods are connected to the voicebox with the supplied cables
2. Connect, if present, the relay boards
3. Switch on the pc, and connect it to the electronics using the micro USB cable, placed in the RPM board
4. Run the Firmware updater program
5. Wait for the message CONNECTED and the electronics data
6. With the mouse click on SETTINGS: click on SWITCHPOD option (check the following picture):



7. Now you will see the switchpod menu, as follows:



8. In few seconds, the electronics will recognize the switchpod units by the CAN-BUS net and the message “Please Wait” (circled in green in the following picture) will change to “switchpod 1”. To move to “Switchpod 2”, please use the arrow keys as shown in the blue circle below.



9. The numbering is the same of the switchpod buttons. To make it easier I indicated the buttons numbering in the same way for the “switchpod 2” there will be the buttons from 17 to 32

10. When the option “ENABLE MP3” is switched on, pushing the corresponding switchpod button, the file saved in the “02” folder will be played. In case it is switched off, pushing the switchpod button, a tone DTMF will be played. You can see this option in the following page circled in red.

The following feature indicated below, can be used just with ZAELETTRONICA relay boards. Those features are connected to the activity of each relay. The relay boards can be added also later, it’s not necessary buying them immediately. The electronics recognize them as soon as they will be connected

11. Each button can be programmed so that, if associated to its relay board, the relay can work this way:

- **Immediate** (as blue circled in the picture), it works just when the button is pressed
- **Toggle** (as blue circled in the picture), at the first pressure/release the relay stays on, and at the following pressure/release it will be off
- **Timed** (divided in SECONDS and MINUTES in the picture), the relay will stay on for a period of time decided by the user, then turns off. The minutes or seconds can be set using the brown circled arrow keys. The set value will appear next to the arrow keys and can be set by the user from 1 to 120 (seconds or minutes depending on the decided option)
- **Inactive**, the relay will not be switched on pressing the button

In the following picture, please check what explained in point 10 and 11

12. Once decided the desired options for the switchpod buttons, push the OK button.

A message will confirm the set of the desired values

THE RELAY BOARDS

As explained, the relay boards are optional, and can let you control as you wish the accessories to be powered

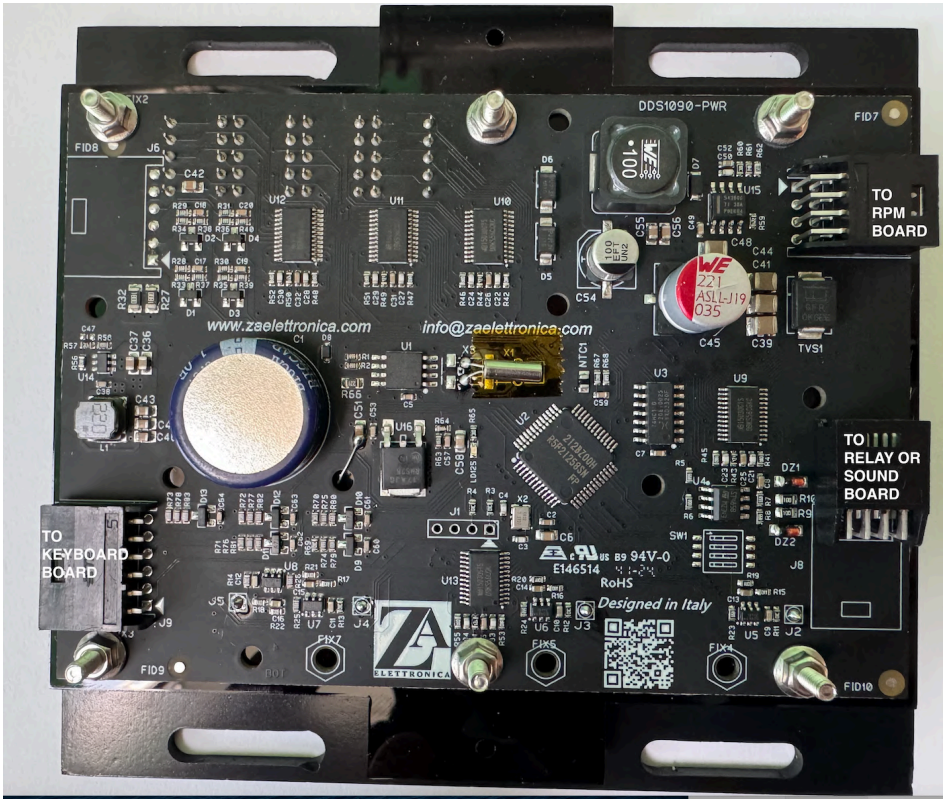
How to identify the relay boards?

- The left relay board is the one associated to the left switchpod (placed on the left of the steering wheel, sitting at the driver's seat), and it is numbered as the switchpod from 1 to 10 (check the picture in the page)

- The right relay board is the one associated to the right switchpod (placed on the right of the steering wheel, sitting at the driver's seat), and it is numbered as the switchpod from 11 to 20 (check the picture in the page)

CONNECTIONS

The connection of the relay board to the rest of the electronics is by the connector 1 (check the picture), now free, in the 6 rows board



In the box of the relay boards three cables are supplied:

- ✓ 8 pole connector for the connection between the 6 row <-> relay boards
- ✓ 8 pole connector for the connection between the relay 1 <-> relay 2 boards
- ✓ 1 8 pole connector called EXTENSION RELAY that can be used both between the 6 row <-> relay boards and between the relay 1 <-> relay 2 boards

  It is an "extension" when the relay boards are used far from the dashboard

The cable labeled "6 rows <-> relay boards" is also used in season 1/2. When the cables are redone, the label will be "6 rows/power," but you might still receive the cable labeled "6 rows <-> relay boards."

ENABLE/DISABLE V METER FOR PODS SOUND

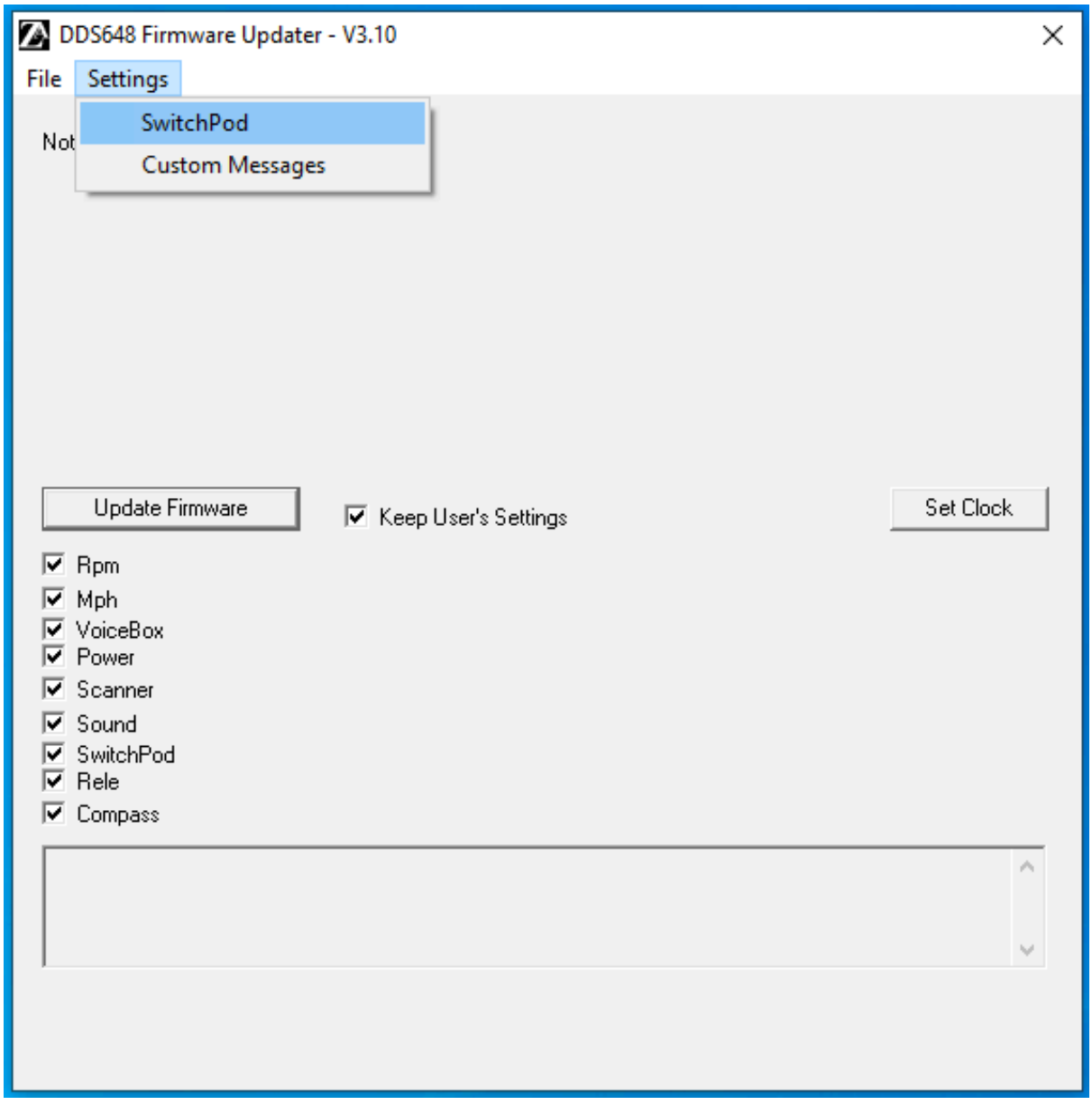
This function is used to have v-meter movement also when you press pods buttons.

Open firmware update software, connect the cable, and then open “settings menu”, click on switchpod, wait that your pods are recognized by the system (below on the windows you will see switchpod 1), and then choice for each buttons if you want v-meter movement or not (see picture below. **in the picture there are *“Please wait”* because no switchpods are connected when the photo is taked**).

Press ok and wait that the writing message is showed

Repeat for swithcpod 2 if desired.

Please take a look on the next page pictures



info@zaelettronica.com

Each relay can be used till 10 ampere current with a 12 volt electrical voltage. For higher power, we suggest an high voltage external relay

For each relay, 3 “faston” connectors are supplied, to connect easier your electrical devices. They are identified as follows:

- C: COMMON
- NC: NORMALLY CLOSE
- NO: NORMALY OPEN

ATTENTION:

Protect the back side of the relay boards and the fastons, using special precautions (spacers, sponge supports, heat shrinks and so on), to avoid possible damages caused by the contact of the relay with metal objects!

The relay board of right side, have the same layout, but the relay numbering will go from 11 to 20.