OPERATIVE SWITCHPOD MANUAL.

REV 0

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

Summary

THE SET PACKAGE

Nella confezione troverete:

- ✓ 1 left switchpod board;
- ✓ 1 right switchpod board;
- ✓ 2 connectors with 4 pole for the CAN-BUS connection between the 2 switchpod boards and the voicebox
- ✓ 20 standard buttons with complete screen-printed labels

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 the 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 ⚠

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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

At last the buttons: those set on the switchpod, have been designed from the very beginning using 3D cad design, and later printed using an injection process of automotive ABS. The regular border, embossing of the surfaces, have been realized thinking about the aesthetics, the pleasure of the touch, and to the general appearance.

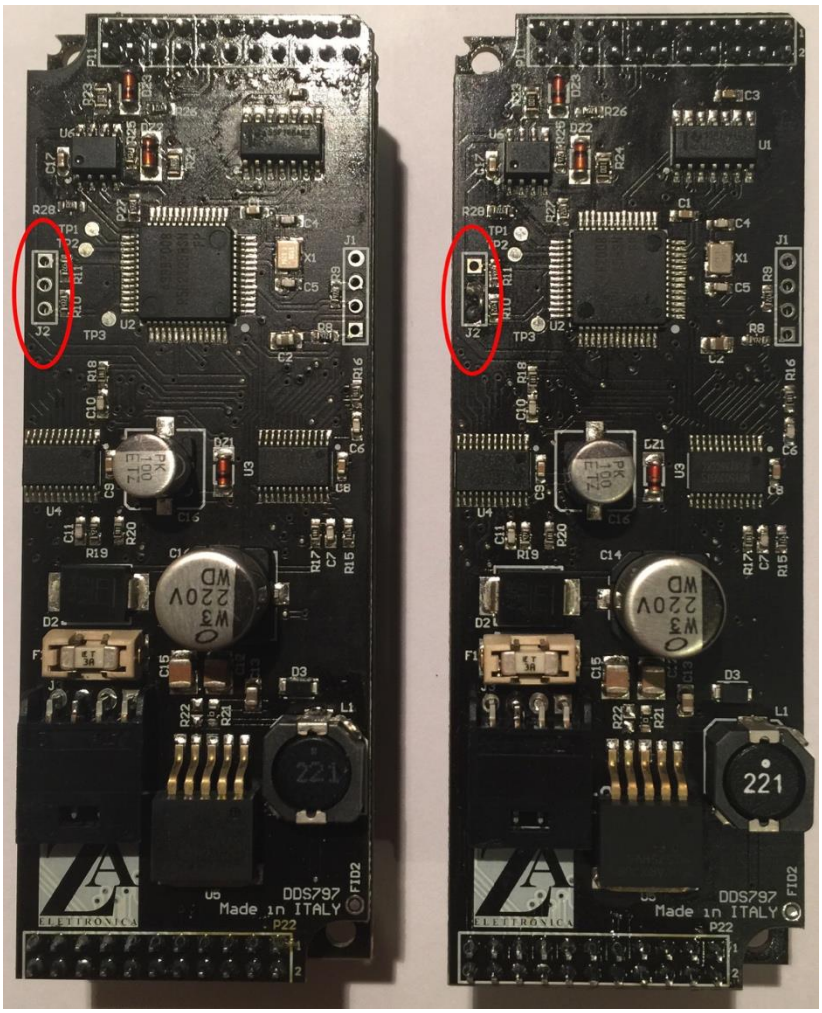
IDENTIFY THE RIGHT FROM THE LEFT SWITCHPOD LOOKING AT THE BACK SIDE

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

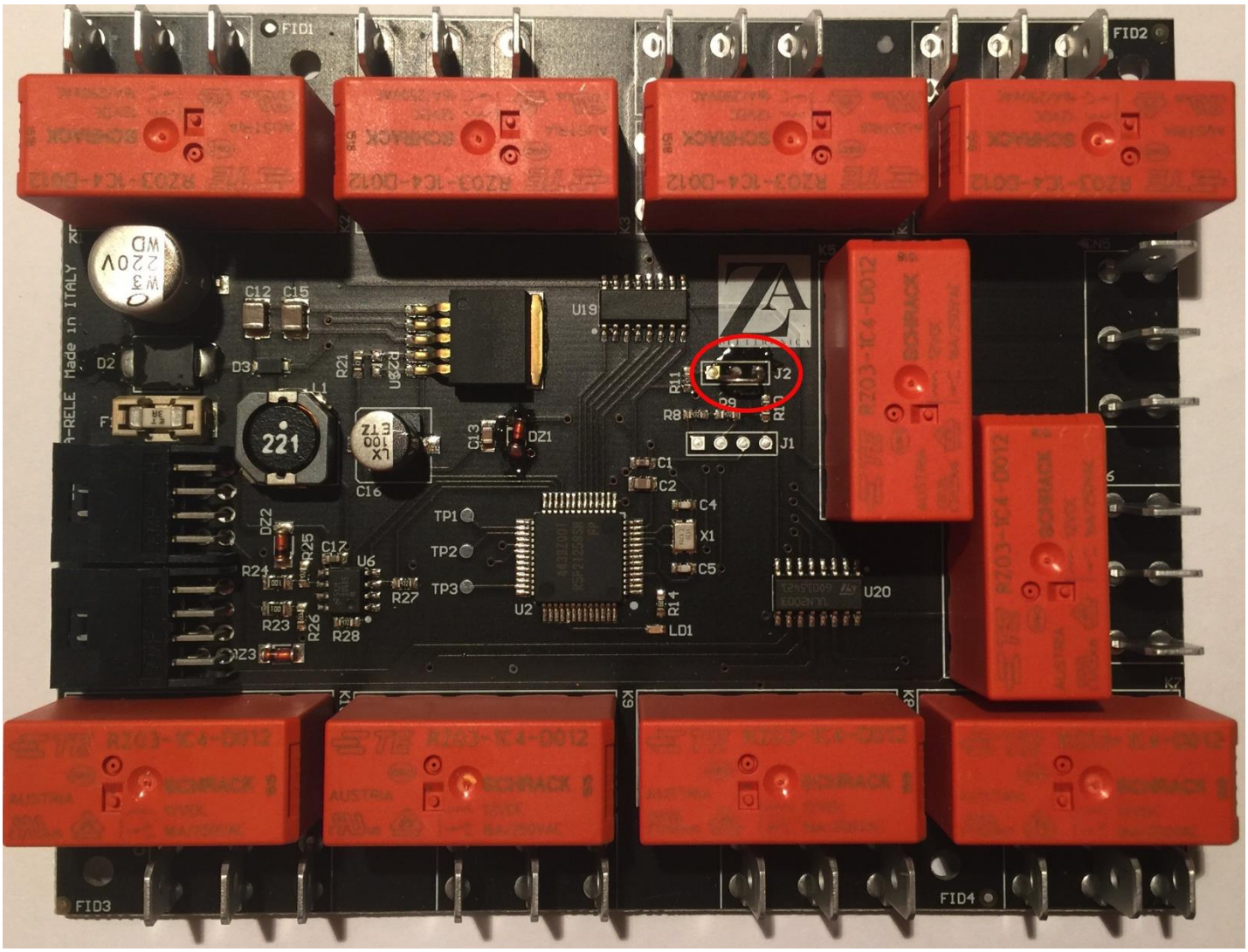
If you remove the buttons and you can't recognize the right switchpod from the left one, look at the back side

The electronics can identify if it's the right or left one, according to the presence of a soldered jumper between two poles in the "J2" pitch
If in the "J2" pitch the jumper is soldered between two poles, it's the right switchpod, otherwise it's the left one

The same is for the relay boards. For your reference take a look at these pictures
On the left you can see the back of the board with the unsoldered jumper, on the right image the jumper is soldered



Front of relay board with soldered jumper:



DISTINGUISH FROM THE RIGHT AND LEFT STANDARD SWITCHPODS AND THEIR NUMBERING

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 10 (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 11 to 20 (check the picture in the page)
- Each button is combined to its relay (if present). If you press button 1, will activate relay 1.

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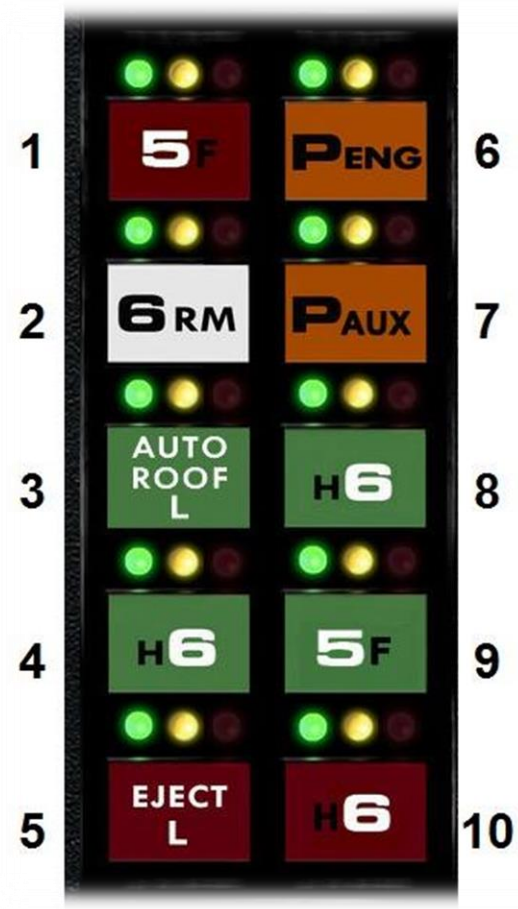
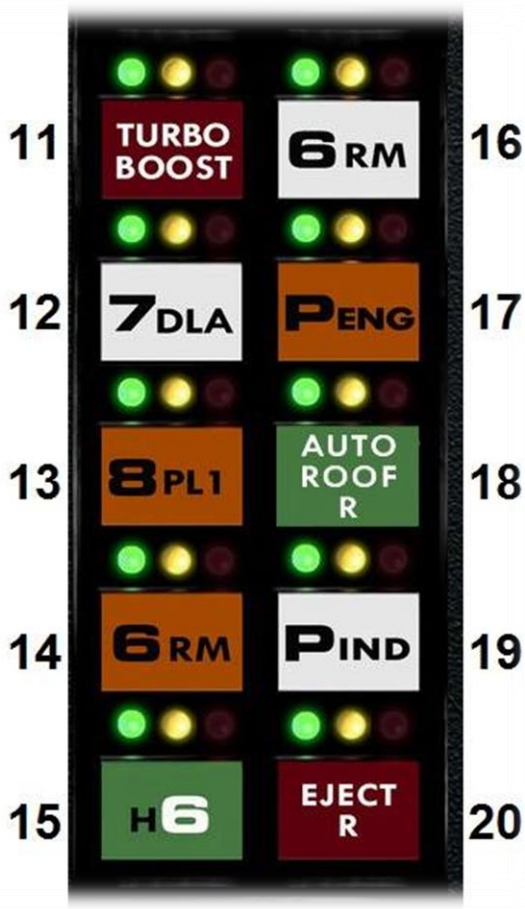
It's important you understand how numbers are combined to the buttons, to be used in the correct way combining sounds and relays (check the following section)

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.

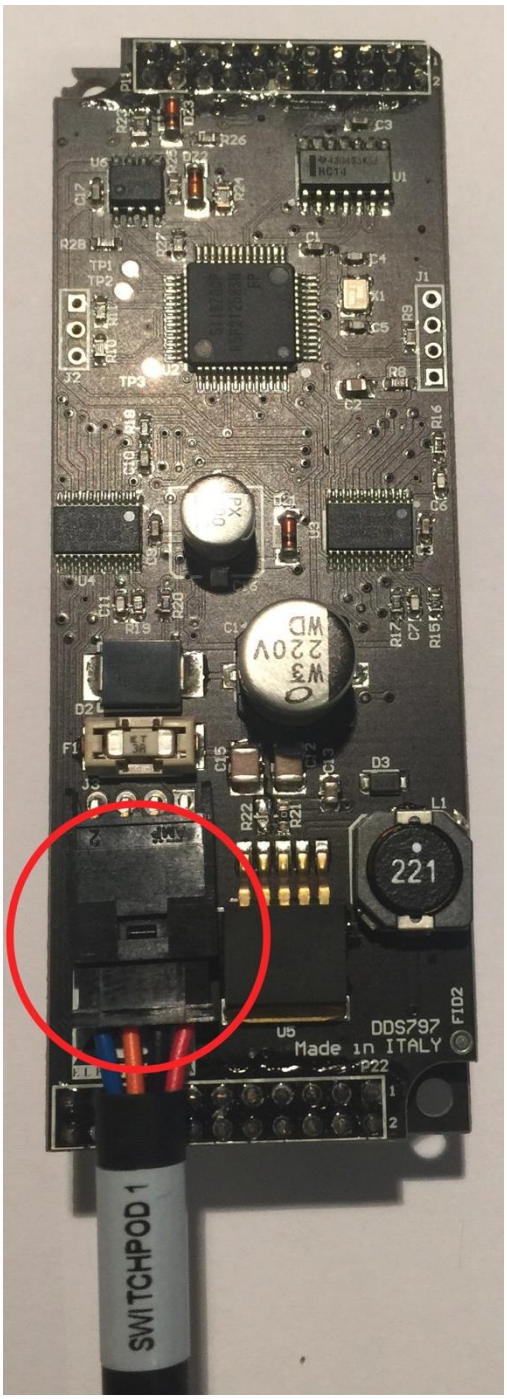
With the cable you can see in the following pictures the switchpods will talk automatically

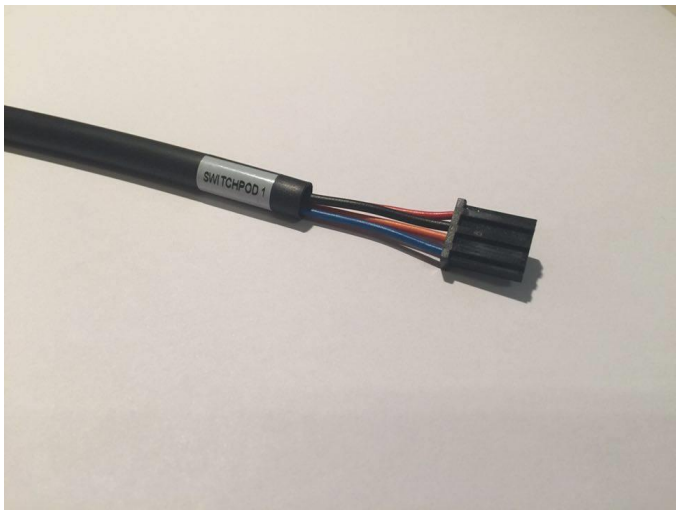
with ZA electronics. Just connect the cable in the specific place of the voicebox and of the switchpod. The connection order is not important. The electronics Itself can understand

which is the right and the left switchpod thanks to the jumper installed in the factory.

Looking the back of the board, you can see the only one connector on it, check here below circled in red.

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





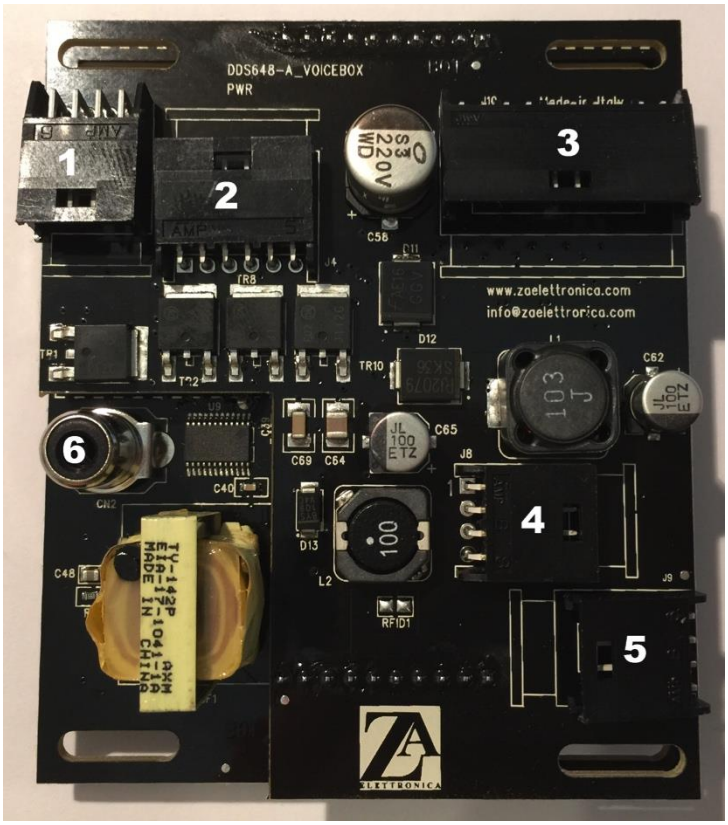
The switchpod will work correctly once connteced to the voicebox. Following you can see the scheme already seen in the electronics guide of the voicebox

CONNECTIONS TO THE VOICEBOX

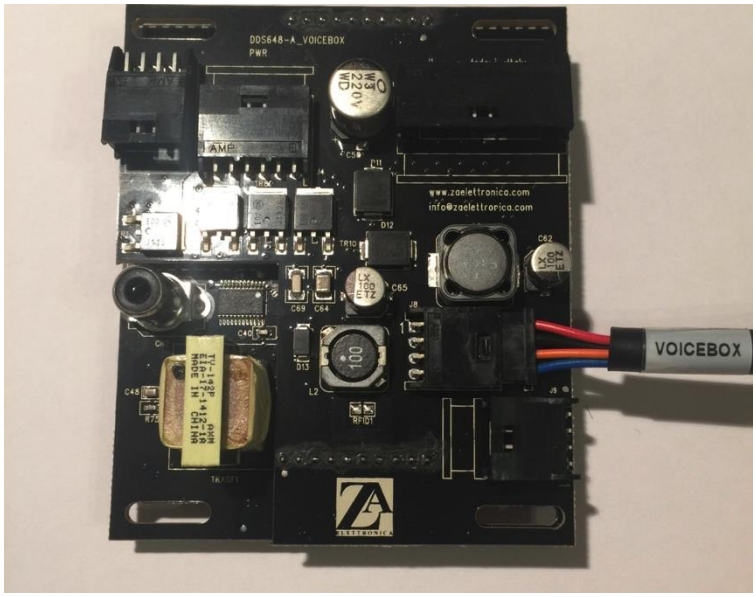
Looking the board on the back side, as picture below, we can see:

1. CAN-BUS CONNECTOR to be connected to the RPM board with the supplied 8 pin cable
2. CAN-BUS CONNECTOR to connect the COUNT DOWN with the supplied 6 pin cable
3. CAN-BUS CONNECTOR to be connected to MPH board with the supplied 10 pin cable
4. **CAN-BUS CONNECTOR for the left switchpod ZA ELETTRONICA, with the cable, supplied in the Switchpod kit**
5. **CAN-BUS CONNECTOR for the right switchpod ZA ELETTRONICA, with the cable, supplied in the Switchpod kit**
6. INPUT on standard RCA connector, to move the voice box V-METER, at the input of an audio signal (pc or other audio source)

The inputs where the supplied cables can be connected, will be of course the # 4 and 5, as per image below. The left or right order input does not matter, the electronics itself will recognize the right and left switchpods

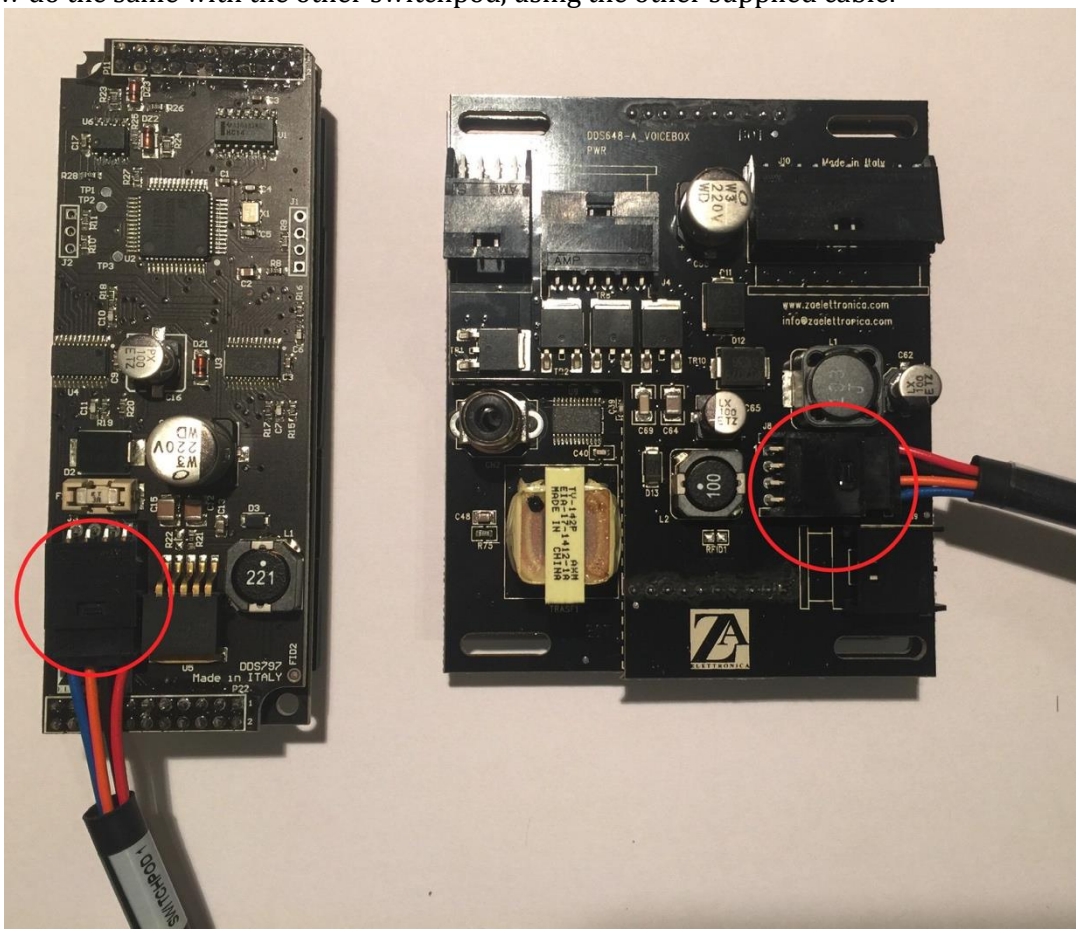


In the following picture, you can see a cable connected in the voicebox



Following an image of the two cables placed in their connectors.

Now do the same with the other switchpod, using the other supplied cable.



HOW LEDS WORK ON THE SWITCHPODS

When the electronics will be switched on, the switchpod is authomatically powered. There are 3 leds, one green, one yellow, one red.

The green and yellow leds, turns on and off with electronics, while the red one turns on just in 3 cases:

- Pressing the associated button, till its release
- During an MP3 file playback, till its end
- If associated to a relay of the optional board, the led will remain on, till the relay is on

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 014
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

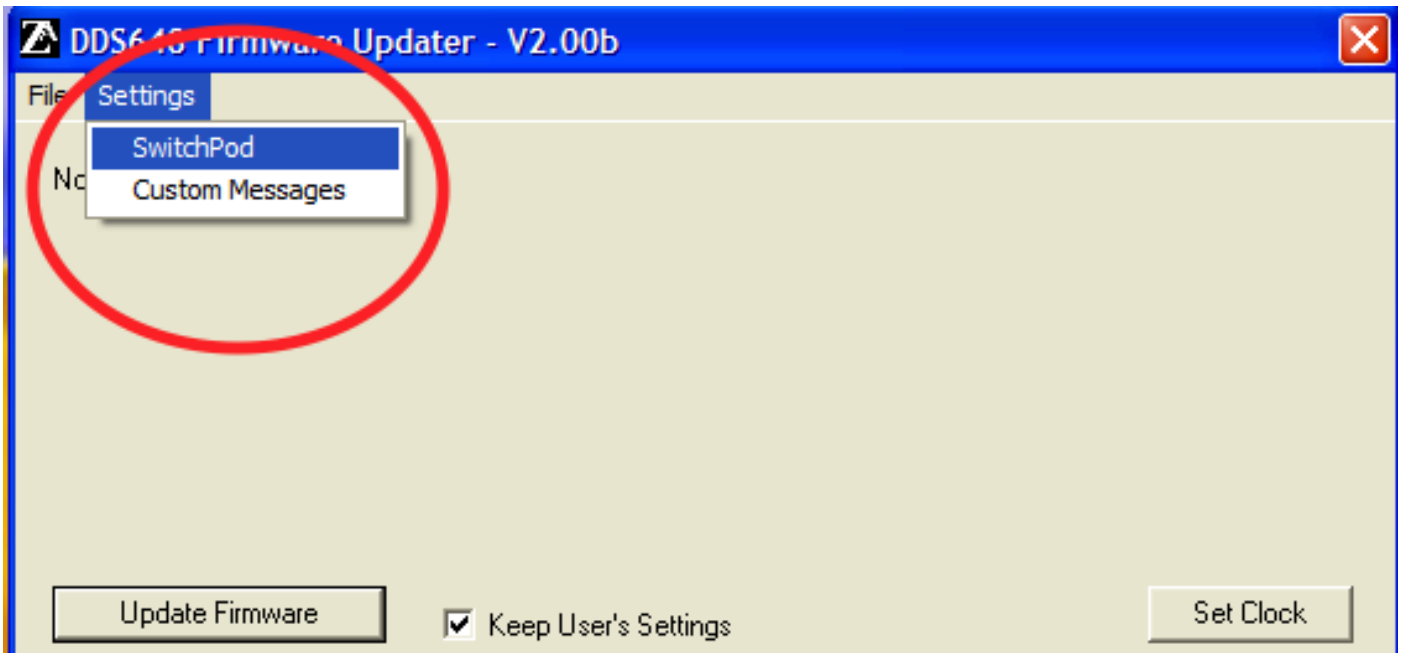
For safety, the WARNING events (over speeding, fuel reserve and so on) have the priority on the playback of the switchpod files, so when they happen, the playback is stopped and the warning message will be played.

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 11 to 20

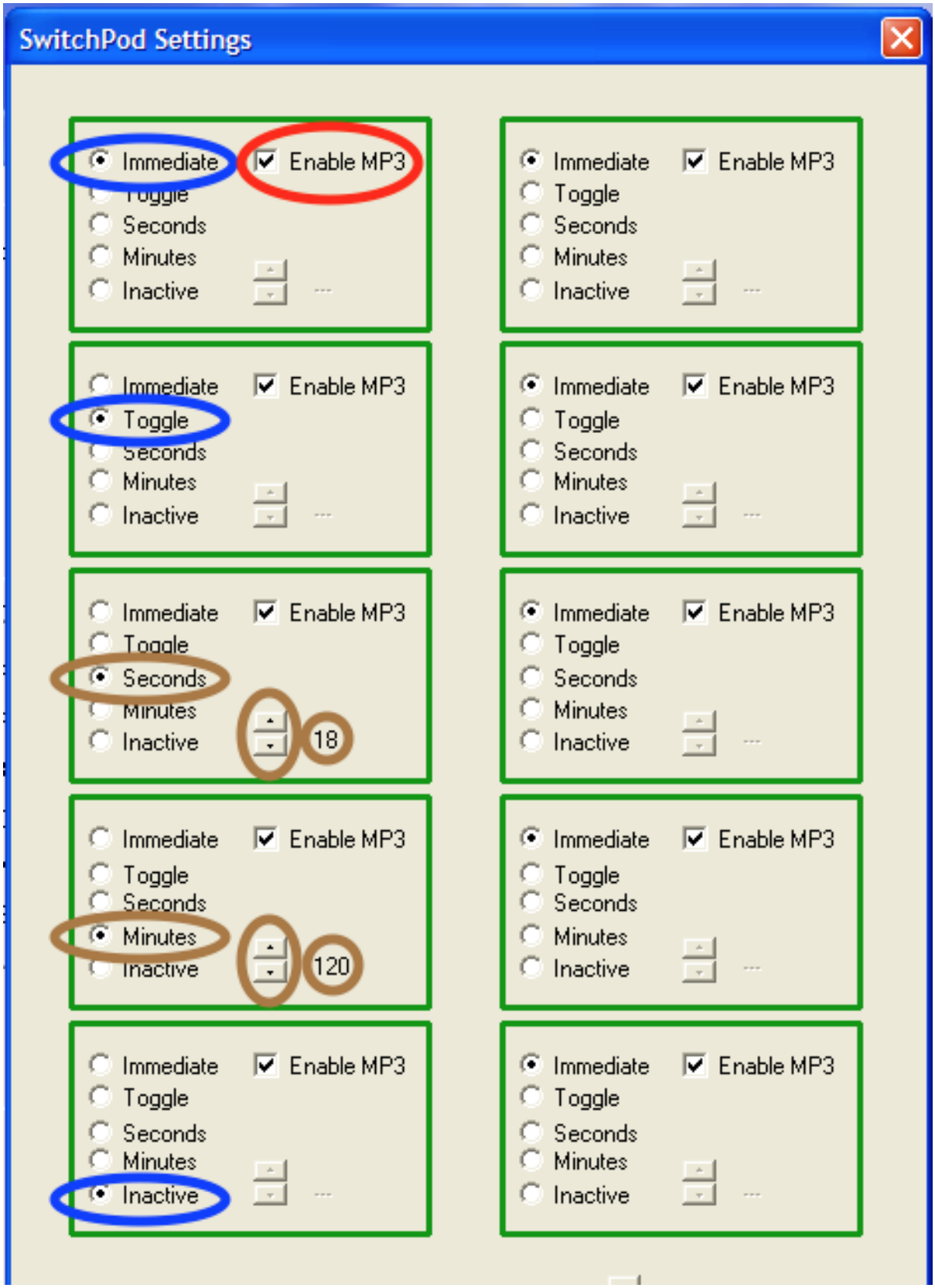
10. When the option “ENABLE MP3” is switched on, pushing the corresponding switchpod button, the file saved in the “02” folder will be played. In case it is switched off, pushing the switchpod button, a tone DTMF will be played. You can see this option in the following page circled in red.

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

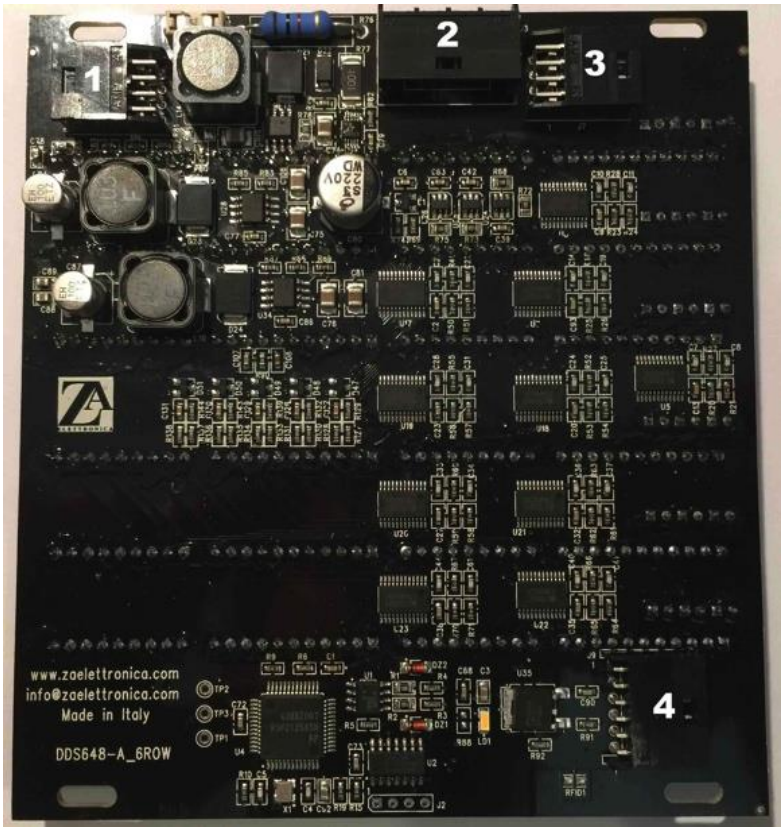
How to identify the relay boards?

- 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 next page 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

TECHNICAL DATA

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.