dkMOD

Delorean RF Player

USER MANUAL

VERSION 1

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Foreword

The Delorean RF Player is an electronic board which has been designed in order to extend the functionalities of the Delorean 1:8 model from Eaglemoss.

The objectives of this device are to:

- Enable **remote control** of the Delorean electronic devices,
- Add a remotely controlled **mp3 player**, that can play your musics and sentences
- Add a **sequencer mode,** to enable recording and playing of commands timely with your favorite song

Delorean RF Player has been developed to be plug and play. All functionalities are accessible using the remote control and the on-board push button (for advance configuration) so that it is useable by everyone without any programming such as Arduino.

This document presents the device characteristics and then gives all the instructions you need to connect and use the Delorean RF Player.

Characteristics

Electrical characteristics

Power supply:	4V to 5V
Maximum current:	xx mA
Idle current:	xx mA

RF characteristics

Frequency:	433MHz
Remote power supply:	2x AAA batteries (not included)
RF controller compatibility:	most commercial remote (PT2262 / EV1527 / etc)

MP3 player characteristics

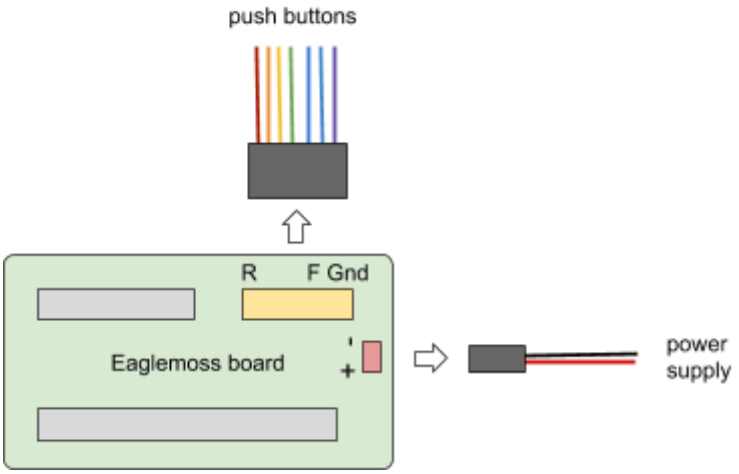
On-board amplifier:	3W
Speaker impedance:	4-8 ohms
Output to external amplifier:	Jack 3.5mm
SD-card support:	FAT16 / FAT32
SD-card size:	32GB maximum
Number of files:	up to 3000 songs + 3000 advertisements

Sequencer characteristics

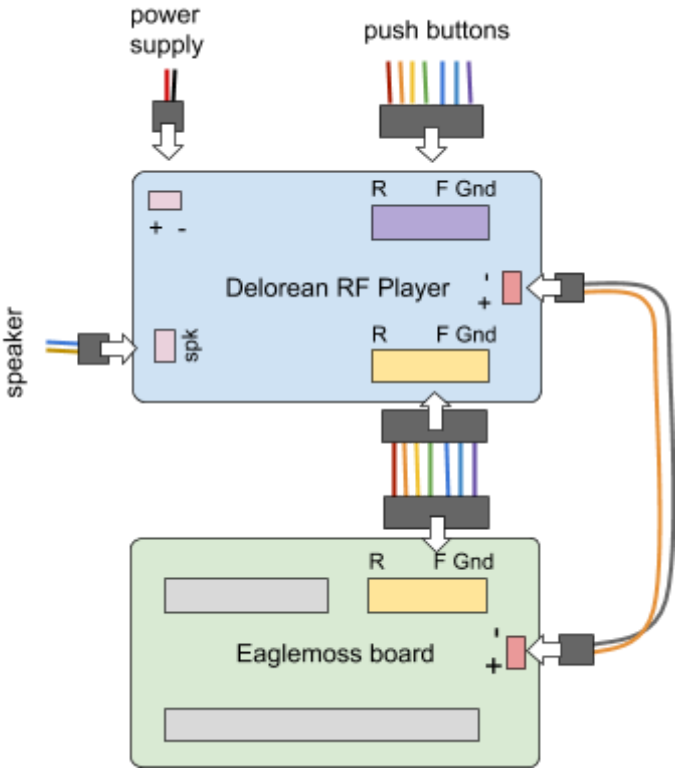
Recording duration:	> 10min
Recordable actions:	> 300

Device wiring

- First, unplug the connectors to power supply and to Eaglemoss push buttons.

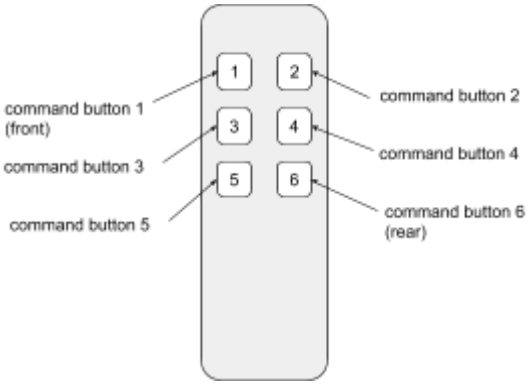


- Then, make connections between Delorean RF Player and Eaglemoss board as shown below. Plug power supply at last.



Remote functions

Short pushes (about 0.5 sec) enable to control the 6 Eaglemoss commands. While long pushes (held down about 1 sec) give access to the other functionalities.

<table>
<tr>
<td> 
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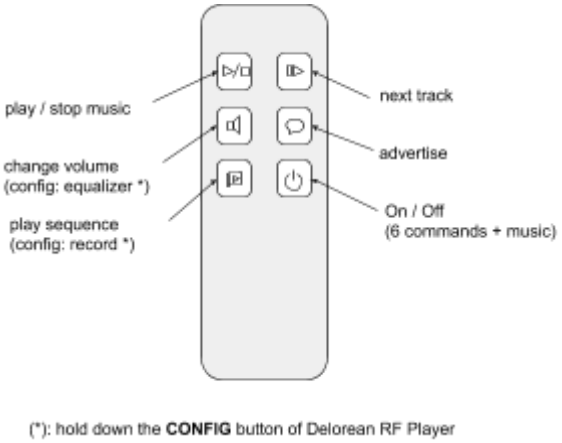
<td> 
</td>
</tr>
<tr>
<td>Short push (~0.5 sec)</td>
<td>Long push (~1 sec)</td>
</tr>
</table>

The timing for short push and long push are given for the provided remote.

For other remote, timing might varies a bit. If long pushes are not well understood by the RF Player, please try with fully charged remote battery.

Remote Learning mode

RF controller and its remote control are pre-programmed so that all is plug & play.

However, if you want to use your own remote or in case of a part replacement, the remote might be paired again to the RF player. A learning mode has been implemented in the RF controller software so that you can do it easily.

In order to pair a remote to the RF player, please follow these steps:

1. Hold down the **CONFIG** button
2. Press the **RESET** button, (**CONFIG** held down)
3. When LED starts blinking, release **CONFIG** button
4. After LED stops blinking, hold down your first remote button for 1 or 2 seconds
   NB: LED blinks 5 times slowly if pairing is successful, else it blinks 10 times quickly
5. Repeat the operation for the 5 other buttons

Sequencer mode

A sequencer mode has been developed so that anyone can make is own sequence of lightnings (controlled by the 6 Eaglemoss buttons) accompanied with music, without writing a single line of code.

First, you will need to record your own sequence by following these steps:

1. Play the music you want for your sequence using remote button 1 and 2,
   (stop player if you don't want any music)
2. Hold down the **CONFIG** button
3. Long-press remote button 5
4. When LED starts blinking, release **CONFIG** button, you are know in the recorder mode
5. The music will restart from beginning, and you can now play with the Eaglemoss buttons to enabled/disabled your devices timely with the music
6. Press the **CONFIG** button, to stop recording
7. Now you can play your sequence any time by long-press remote button 5 !

The sequencer can record up to 300 actions on a duration of 10 minutes.
A minimum delay of 0.1 second is needed between two consecutive actions.

Note that while sequence is played, other RF commands are not available. End of sequence will be indicated by LED blinking.

SD-Card format

SD-Card must be formatted in FAT16 or FAT32.

SD card file system must be as follows:

- SD card root: YOUR_SD_CARD_NAME
  - Folder: **ADVERT**
    - Up to 3000 files named as:
      0001.mp3, **0002.mp3**, …
      or 0001.wav, 0002.wav, …
  - Folder: **MP3**
    - Up to 3000 files named as:
      0001.mp3, **0002.mp3**, …
      or 0001.wav, 0002.wav, …

The files put in ADVERT folder are for advertising (might be sentences of your choice).
The files put in MP3 folder for the default playlist of the player.

SD card file system with some mp3 sample files is shown at the following address: https://github.com/henrio-net/dkmod-delorean/tree/master/sd-card

For mac users, be aware that the presence of hidden files in the SD card can bring some problems. To check if hidden files are present in it, you can display them in Finder by holding down Cmd + Shift + . (dot), then delete them if need be. Repeating the keyboard shortcut will hide the files back. Make this manipulation at your own risk.

Source code

Delorean RF Player is based on the ATMEGA328P microcontroller and is Arduino compatible.

The software is under GNU v3 License and can be found at the following address: https://github.com/henrio-net/dkmod-delorean/tree/master/code

People who wants to customize the code must pay attention to the mode of the pins in contact with eaglemoss buttons, as changing them could cause short-circuit and damage those pins.