

Digital Vinyl Record Player (NFC enabled)

 Josh

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Summary

Bring digital music back to the physical world with this record player that uses NFC to play your most love music!

[Hobby & Makers](#) > [Electronics](#)

Tags: [music](#) [motor](#) [stepper](#) [record](#) [vinyl](#)

A digital vinyl record player that uses NFC to play any song, album, or playlist. **This is a work in progress, an improved version is on its way. It is fully functional in its current state but not where I want it to be.**

This project came about for a number of reasons. I wanted a fun project to really get dug into CAD, I like the idea of having a physical way to select and play music, and I have a Bambu Lab printer that just works!

Hardware

1. 1x [D1 Mini](#) (I think I have a clone based on images of the real version, mounting changes depending on version as well)
2. 1x [ULN2003 stepper motor driver](#)
3. 1x [28BYJ-48 stepper motor](#)
4. 1x [PN532 v3 NFC reader and writer](#)
5. [NTAG213 NFC tags](#)

6. 3x V-wheels (Ender 3 compatible)

Software

1. Home Assistant
 1. ytube_music_player (HACS plugin)
 2. or any other streaming service you can find for Home Assistant
2. ESPHome

3D printed parts

1. 1x Player
2. 1x Deck
3. 1x Deck Holder
4. 1x Deck Gear
5. 3x Bearing Pin
6. Vinyl disks (upload coming soon, finalising NFC tag placement)

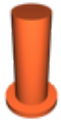
How it works

1. The D1 Mini is running ESPHome, which has code to stop and start the stepper motor, as well as code that communicates with the NFC reader.
2. The NFC reader scans an NFC tag in a fake vinyl record. The NFC tag is linked to an automation in Home Assistant.
3. The automation in Home Assistant triggers the stepper motor to spin and starts playing the music on a chosen speaker in my house.

Improvements required

1. Positioning of NFC reader to reliably read NFC tags (based on testing this seems to be fine for now)
2. Positioning of NFC tags to prevent duplicate trigger (based on testing this seems to be fine for now)
3. D1 Mini seems to have issues powering both the stepper motor and NFC reader
4. Physical pause button needs to be added to allow stopping the deck from spinning (nice to have but not necessary)
5. Deck is not 100% stable and makes an annoying plastic on plastic sound

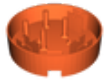
Model files



bearing-pin-v1-2024-01-16.stl



deck-gear-v1-2024-01-16.stl



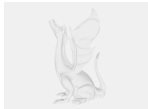
player-v2-2024-01-16.stl



deck-holder-v1-2024-01-16.stl



deck-v1-2024-01-16.stl



digital-vinyl-record-player.3mf

☐ Contains the 3x Bearing Pin, 1x Deck Gear, 1x Player, 1x Deck



digital-vinyl-record-player-tpu-topper.3mf

☐ Contains 1x Deck Holder, which should be printed in TPU

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