

HARDWARE:

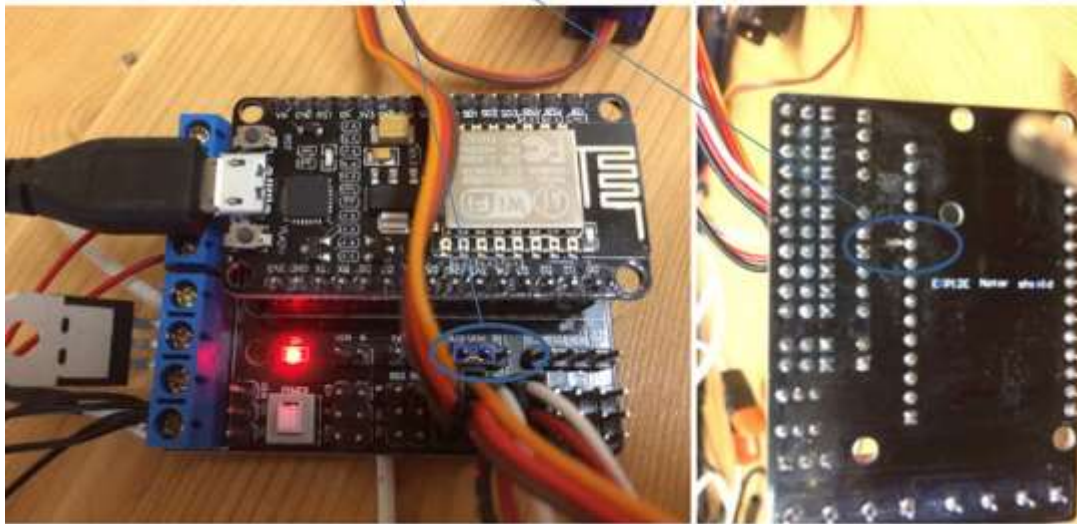
For Stationary decoders , you can use either a WEMOS D1 mini or NodeMCU. If using the NodeMCU, it can be very useful to use the NodeMCU Motor Shield. This adds a 293 motor driver and connects it to ports D1-D4. But you do not have to use it to drive motors. It works quite well as a lamp driver, but beware that the wiring to the 293 is not as simple as you might expect, so the ports cannot be used as 4 fully independent drivers. The main benefit of using the motor shield is that it provides all the D ports as pins in a standard RC type servo pinout, with a power supply (from NodeMCU 3.3V) and Gnd. This makes it easy to plug in sensors and servos. Because it uses 3.3V, you may wish to change the drive to these pins to 5V. This can be done fairly easily by cutting the link from the pins to the NodeMCU 3.3V output. This can be done either by cutting the track, or removing the pin from the NodeMCU 3.3V pin between D4 and D5 (On my boards, the other 3.3V pins on the NodeMCU were isolated).

To provide the 5V add a 7805 regulator, connected between V(motor) {which will be the power to the hardware} and V(in) {which is the power to the NodeMCU}. Then connect a jumper on the board to connect Vin and “V3V”. Check that the “V3V” on this pin is NOT connected to the board before applying any power.

Mods to use +5V on the 3 pin headers.

Cut the trace from the NodeMCU 3v3 line (sorry about poor photo)

Use a jumper to link the 3 pin header Vin and 3v3 pins



Mobile decoders

To use the Audio output you need the AdaFruit MAX98357 or similar board. Wiring connections are noted in the “globals” in the code (But may get moved): they are :

```
#ifdef _Audio //RX/D9, D8, and D4 pins are defined below
#define I2SDAC_DIN 9 // D9/rx used for both Audio types (Is drive to transistor base if NODAC)
#define I2SDAC_LRC 4 // D4 used because of default i2s settings (is i2s clock?)
#ifdef _AudioDAC
#define I2SDAC_CLK 8 // D8 used by DAC only
#endif
#endif
```

I have tried using D4 as a normal IO pin with AudioNODAC with some success, but have to fully tested all the options yet. I have seen a very fast clock on this pin so it is possible that the Audio code is still using it as a fast clock.

If using NODAC, I recommend adding a 1K resistor between D9/RX and the transistor base. This allows the USB link to work, so you can still upload programs/SPIFFS etc. – It will make a noise whilst uploading, but at least you know its working!