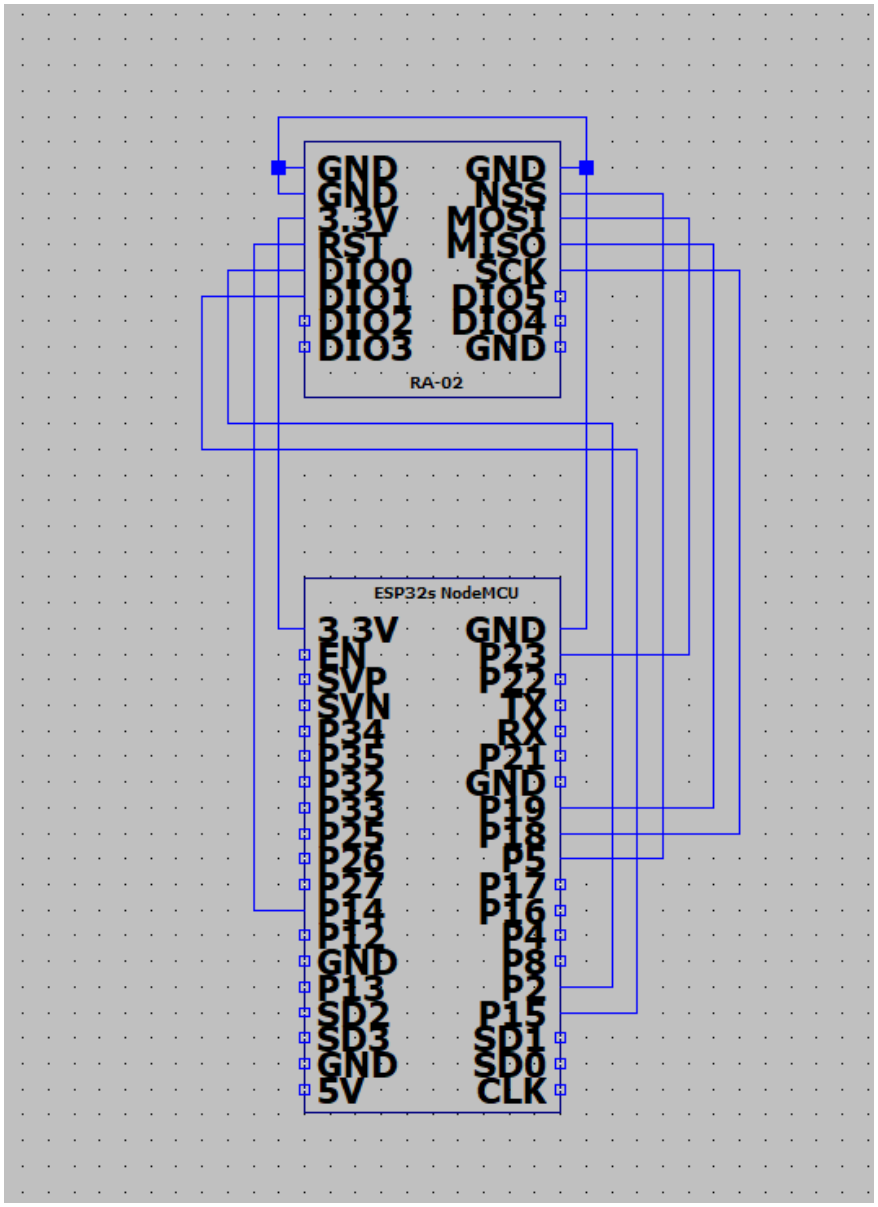
LoRa CubeSat Ground station and sensing end node deployment Guide

By Matthew Thorburn

Hardware configuration:

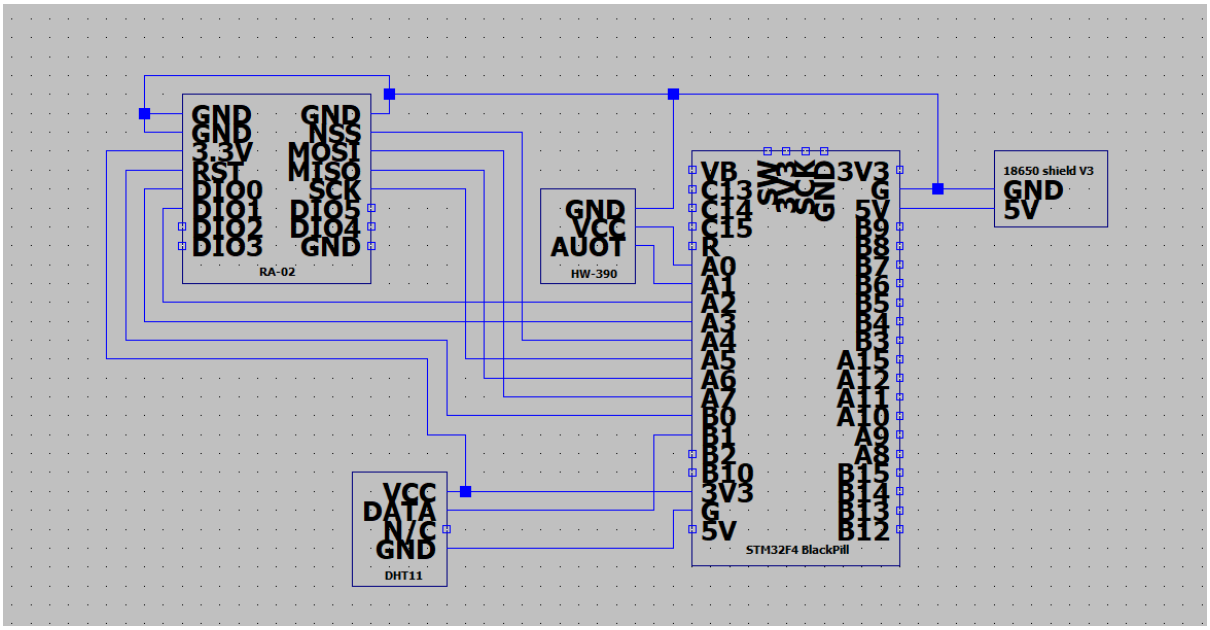
The hardware configurations necessary for the ground station and end node are found below.

Ground station



All relevant connection between the ESP32 and Ra-02 have been shown on the circuit diagram.

Ground station



All relevant connections between the stm32 and the ra-02, DHT11, HW-390 and battery have been shown on the circuit diagram.

Software configuration:

To connect the esp32 to the Arduino Ide follow this guide: https://randomnerdtutorials.com/installing-the-esp32-board-in-arduino-ide-windows-instructions/

To connect the STM32f4 to the Arduino Ide follow this guide: https://blog.hobbycomponents.com/?p=758

After the microcontrollers have been connected to the Arduino IDE, they are ready for code to be flashed onto the. Please ensure that the code compiles successfully before attempted to flash onto the device.

A quarter wave ground plane antenna is recommended for the ground station and a construction guide can be found at: https://www.element14.com/community/community/project14/rf/blog/2020/01/11/building-a-poor-man-s-quarter-wave-433mhz-antenna-antenna-s-construction

TinyGS configuration:

If the user wants to use the TinyGS software the install guide can be found at: https://github.com/G4lile0/tinyGS/wiki/Quick-Start

And the following board configuration can be used: {"name":"[433] Name","aADDR":60,"oSDA":0,"oSCL":0,"oRST":0,"pBut":0,"led":25,"radio":1,"lNSS":5,"lDIO0":2,"lDIO1":15,"lBUSSY":0,"lRST":14,"lMISO":19,"lMOSI":23,"lSCK":18,"lTCXOV":0.0}