1. **Temperature sensor**

Insert data sheet:

No need. External component.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

1. **Ultra-Sonic**

Insert data sheet:

No need. External component.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

1. **ESP**

Insert data sheet:

<https://www.handsontec.com/pdf_learn/esp8266-V10.pdf>

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

1. **Relay Module**

Insert data sheet:

<https://www.gearbest.com/relays/pp_219173.html>

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

1. **Motor Driver**

Insert data sheet:

<https://www.robotshop.com/media/files/pdf/datasheet-1182.pdf>

p.s: MS1 MS2 MS3: on ground

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

1. **Buck converter**

Insert data sheet:

<https://www.walmart.ca/en/ip/HW-514-5A-Constant-Voltage-Constant-Current-Step-down-Power-Supply-Module-With-USB-Port-Power-Bank-Conversion-Board/PRD636YZPPAV5SZ>

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

1. **Pins**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sensor** | **Signal Pin** | **Supply** | **Source** |
| Temp 1 | 22 | 5V, GND | Buck |
| Temp 2 | 23 | 5V, GND | Buck |
| Temp 3 | 24 | 5V, GND | Buck |
| Ultra-Sonic 1 | 25 Trigger  26 Echo | 5V, GND | Buck |
| Ultra-Sonic 2 | 27 Trigger  28 Echo | 5V, GND | Buck |
| Reserved sensor | 29 | 5V, GND | Buck |
| ESP | 19 RX  18 TX | 3.3 V , GND | Arduino |
| Relay Module 1 | 30 ->37 | 5V, GND | Buck |
| Relay Module 2 | 50-> 53, 10,11,12,13 | 5V, GND | Buck |
| Motor Driver 1 | 0 Step  1 Dir  49 -> ENABLE | 5V, GND  12V, GND | Buck |
| Motor Driver 2 | 2 Step  3 Dir  49 -> ENABLE | 5V, GND  12V, GND | Buck |
| Motor Driver 3 | 4 Step  5 Dir  49 -> ENABLE | 5V, GND  12V, GND | Buck |
| Motor Driver 4 | 6 Step  7 Dir  49 -> ENABLE | 5V, GND  12V, GND | Buck |

1. **Requirements**

* Protection Fuse will be added on input terminal, after calculating the Input current from all sensor
* Protection Fuse will be added separately for Arduino
* Operating Switch for Arduino
* Operating switch for the system
* Labels shall be added for each sensor
* Data cables shall be used to connect for sensor (polarized)
* Buck will be added on the same board (output to power distribution circuit via yellow Rosette)
* Board shall be green masked
* Indication LEDs (RED) shall be added one for each and labeled (Arduino, driver, system)
* Arduino shall be supplied by 12 V directly
* Motor drivers are connected to the same Enable pin (49).
* Motor drivers shall have 4 output pins to connect the stepper motor as referred to the datasheet.
* I was using CNC shield for the stepper module we need to build something like it and embedded in our system. <https://www.handsontec.com/dataspecs/cnc-3axis-shield.pdf>

Current design:

