**ESP32\_THRUSTER\_CIRCUIT CONNECTION AND KICAD FILE**

**Circuit connection:**

**Esp32:**

* Connect VIN pin to 5V from the power source.
* Connect GND pin to -ive from the power source.

**Esp32 to A4988:**

* Connect 3V3 pin to the VDD of A4988.
* Connect GND pin to the GND of A4988.
* Connect 3V3 pin to the SLEEP & RESET pin of A4988.
* Connect the D19 pin to the DIR pin of A4988.
* Connect the D18 pin to the STEP pin of A4988.
* Connect the D21 pin to the ENABLE pin of A4988.

**A4988:**

* Connect the VMOT pin to 12V from the power source.
* Connect the GND pin to -ive pin from the power source.
* Connect the 1A, 1B, 2A, 2B coil pins to the Stepper motor.
* Remaining pins connect as it from the Esp32 to A4988 titled.

**BTS7096 H- Bridge to Esp32:**

* Connect the VCC pin to the 3V3 pin of the Esp32.
* Connect the GND pin to the GND pin of the Esp32.
* Connect the R\_EN & L\_EN pin to the 3V3 pin of the Esp32.
* Connect the RPWM pin to the D15 pin of the Esp32.
* Connect the LPWM pin to the D23 pin of the Esp32.

**BTS7096 H- Bridge:**

* Connect the Screw pins B+ and B- to the external power source for Eddy damper.
* Connect the Screw pins M+ and M- to the Eddy damper coil terminals.

**Relay module:**

* Connect the RELAY\_SIGNAL pin to the BASE of 2N2222A Transistor via 1k ohm Resistance to Esp32 pin of D22.
* Connect the EMITTER pin of 2N2222A Transistor to the GND pin of Esp32.
* Connect the COLLECTOR pin of 2N2222A Transistor to the Relay coil which is GND.
* Connect the VCC pin of Relay to VIN pin of Esp32.

**DC-DC Buck Boosters:**

* Two Buck Boosters has been used in this circuit.
* One buck booster is used as power source of Esp32 and Relay, it converts 12V DC to 5V DC.
* Another Buck Booster is used as power source for Eddy damper to increase the power of Eddy current, it connects in the B+ and B- pins of the BTS7096 H- Bridge module.

**Links:**

* The Code link is upload in the Github repository: <https://github.com/Spaceman-Craft-Private-Limited/Avionics/blob/1c2c8f235eef1a50a3d4c8d4f2fde9fde5429fe6/all_in_one-dmaper_repulsion.ino>
* The PCB Design link: <https://github.com/Spaceman-Craft-Private-Limited/Avionics>