**Design Specifications**

1. Power adaptor input provision must be a part of the design.
2. Power stage should provide 5V supply for USB Programmer CP2102.
3. RS-485 transceiver requires 5V supply for operation.
4. MODBUS Half-duplex chip ISO3082 requires 5V supply for operation.
5. MCU ESP32 requires 3.3VDC power supply.
6. SIM7070G and A7600E 4G-LTE modules require power input of 3.8VDC.
7. Current consumption can peak at
   1. 1.5A (SIMCOM - GSM Max: 0.32A, GPRS: 0.63A, LTE: 0.56A)
   2. 0.4A (ESP32 Wi-Fi RF TX @ 20MHz)
   3. Total RF current consumption ~ 2.0A
   4. Power supply should be able to handle ~ 2.5A for full operation.
8. We must have surge protection and isolation at power supply input and output.
9. DC-DC convertors should be preferred over LDO to maximize efficiency of power stage.

**This translates to the following specification for our power stage.**

1. 220VAC Input - 5VDC Output @ 2.5A power adaptor
2. 5.0VDC, 3.8VDC, 3.3VDC output supplies
3. TVS diodes / ESD protection / Isolation