EN2160-Electronic Design and Realization

(Identify) the specifications and extra features that you are going to implement.

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Project Name: Digital Volt-Amp meter

Description: Digital Volt-Amp meter is a device consisting of a digital voltmeter and a digital ammeter. This device is commonly used in electronic circuits and power systems to measure the voltage and current flowing through a component or circuit. In this project, I am going to build the Digital Volt-Amp meter without using any microcontroller. Here I am using a very popular IC for voltage/current measurement namely ICL7107/CS7107. ICL7107 is a 3.5-digit analog to digital converter (ADC) which consumes very low power. The IC has an internal circuit for driving four seven segment display to display the measured voltage/current.

Specifications of digital voltmeter:

1.Working voltage: DC5V

2.Working current: 35mA

3.Measuring accuracy: can be calibrated to get higher accuracy - 1%(±1digit)

4.Measuring range: divided into 3 grades:

- 0-2V gear Measuring small voltages
- 0-20V gear Measuring low and medium voltages
- 0-200V gear, measuring higher voltages

5.Display window size: 51*24mm

6.Display color: red

7.Operating temperatures: -15℃-70℃

Specifications of digital ammeter:

1.Working voltage: DC5V

2.Working current: 25mA

3.Measuring accuracy: can be calibrated to get higher accuracy - 1%(±1digit)

4.Measuring range: divided into 3 grades:

- 0-2A gear Measuring small currents-1mA resolution-1.999A
- 0-5A gear Measuring low and medium currents-10mA resolution- 9.99A

- 0-10A gear, measuring higher currents-100mA resolution-99.9A

5.Display window size: 51*24mm

6.Display color: red

7.Operating temperatures: -15℃-70℃

Extra Features: Rechargeable power supply to power the device.

- Here I am going to use a 1000mAh Li ion battery which can run the digital volt- amp meter for 12 hours. Once it runs out of juice, we can charge the Li ion battery using a micro-usb cable. Here we want to safely charge the Li ion battery and we want to step up the battery voltage (3.7V-4.2V) into 5V which is the operating voltage of the device.