LAGOS SMART METER HACKATHON 2020.

TEAM SAPIO

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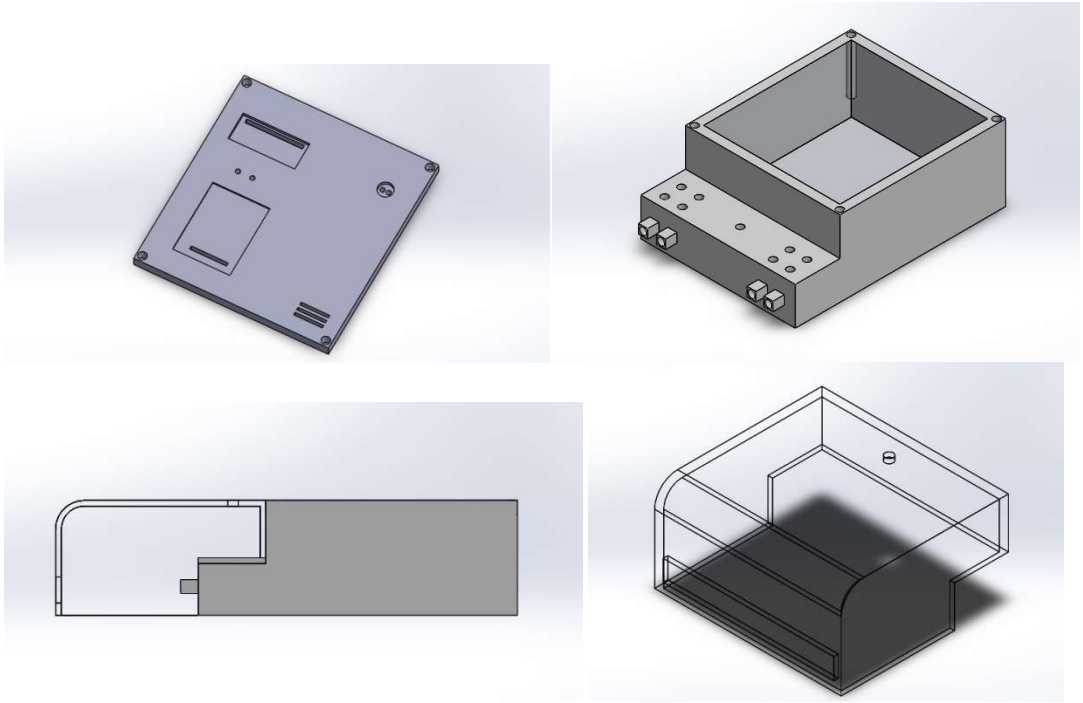
A BRIEF SUMMARY OF OUR SMART METER

We all know about electricity energy meters which are installed in our homes or offices to measure the electricity consumption. Every month, many of us get worried about the high electricity bill and we have to go take a look at the energy meter once in a while. But what if, we can monitor our electricity usage from anywhere in the world and get a SMS when our energy consumption reaches a certain threshold. Our smart meter has current and voltage sensors that will calculate the current and voltage respectively which will turn be used to get the value of power. The CT sensor also measures and records reverse current. The LCD will display energy consumed, energy remaining, voltage, current and the threshold value of the energy consumed. There are two LEDs (red and green); red is for when the energy is low and green is for when there's light. We also added a buzzer that can alert the occupants in the house that there is light and also when the energy left is low. For security, we added a tamper switch so that when the terminal cover is removed then the switch is going to be decompressed and send a signal to the server. After a specified time and the terminal cover isn't returned, the meter is going to auto shut-off. The relay is just going to become open so that light won't be entering the house (This will solve the issue of electricity theft). Also, when there is no more power to the meter, AT-mega328P will send a notification to the server that power is not being supplied to the meter anymore with the 5V auxiliary battery we added to our meter. This means that, the distribution company can actually check if there really is no power to the meter and discover if someone has tampered with the wires before connecting to the meters.

In addition, we added the function of being able to switch the meter off or on from anywhere on your mobile device. This can also help to have control over the amount of energy consumption in that house.

3D DIAGRAMS OF DEVICE/CASING



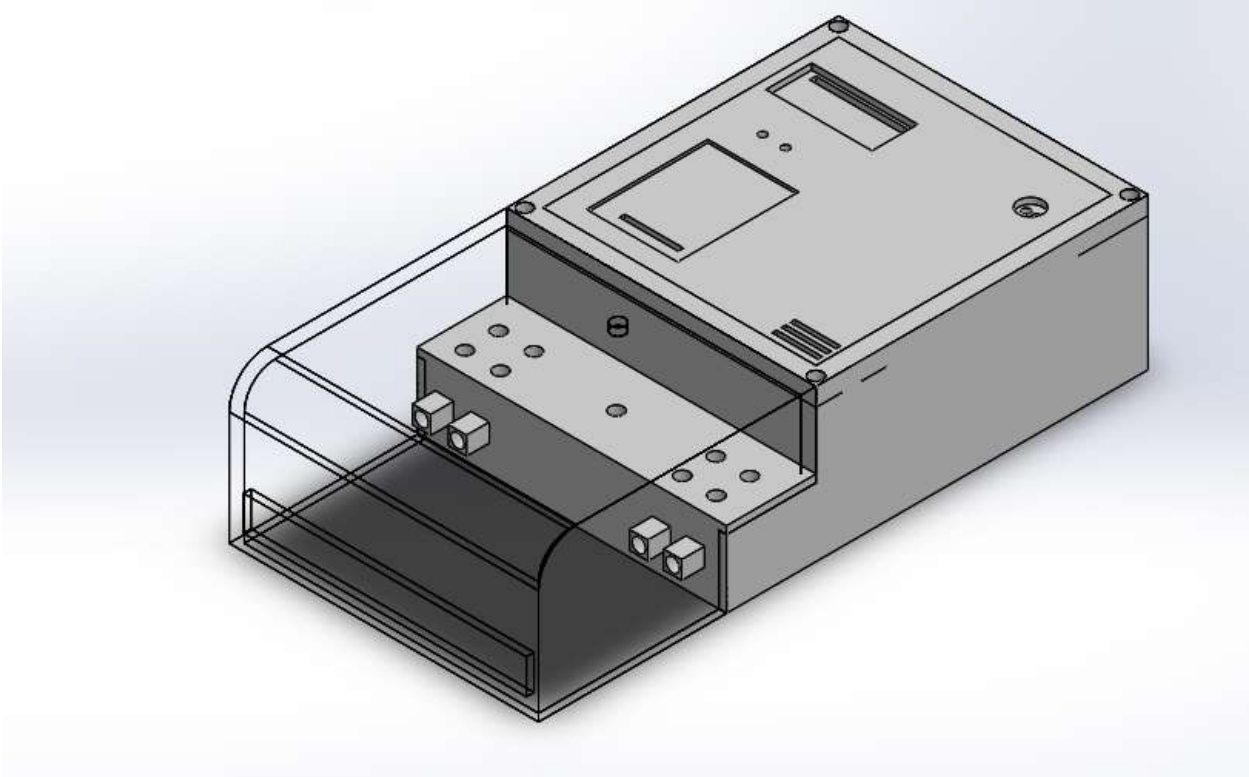


Fig. b: Assembly of the smart energy meter

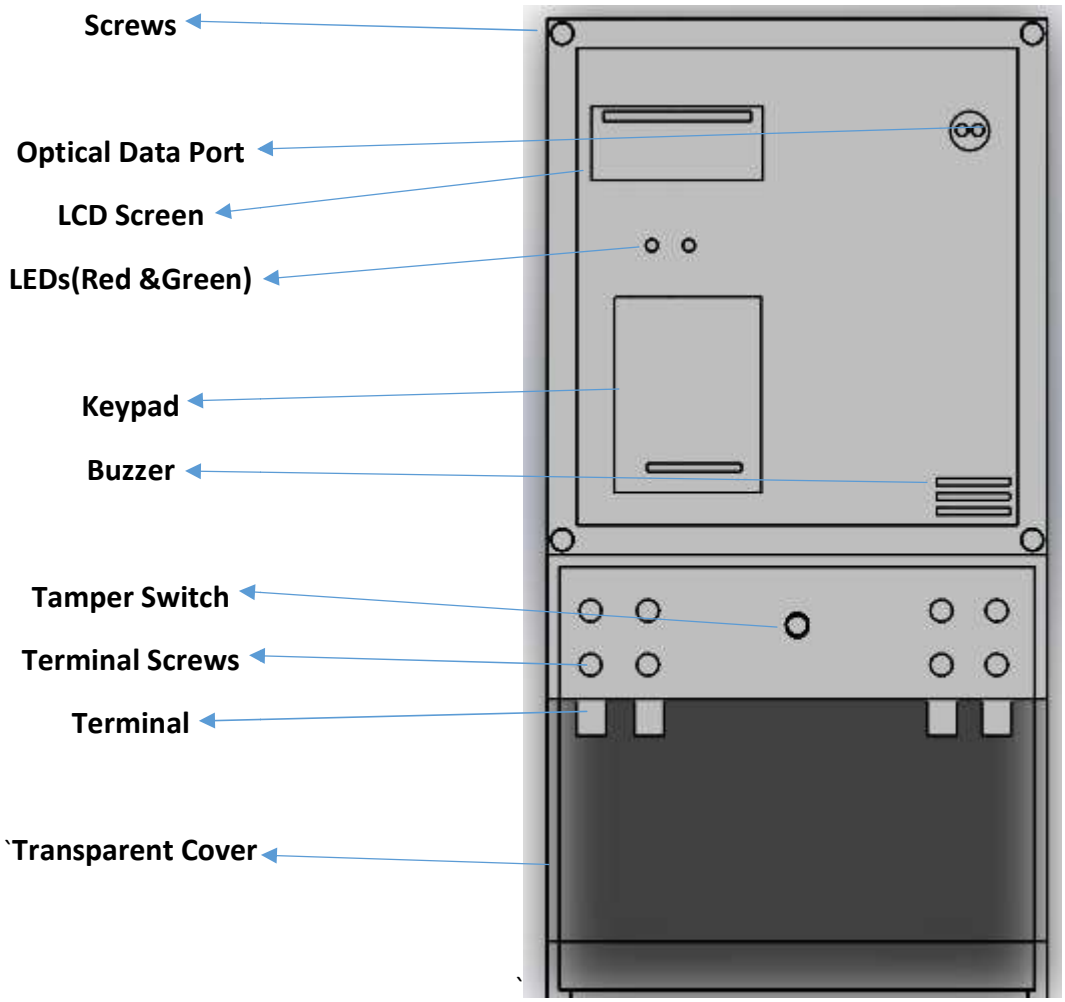


Fig c.: Labelled smart energy meter.

Instruction sets the device accepts as commands.	**Responses to be expected.**
01	Current available credit
02	Current Consumption Rate
03	Average daily consumption
04	Estimated days left
05	Last billed date
06	Last billed amount
07	Total Credit recharged
08	Total Credit used
09	Current Power
10	Meter Number
11	Supply group code
12	Tariff index
0000	Emergency code