

# Coin Based Mobile Charger Using Solar Panel, RFID

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## Abstract –

Mobile phones play's an important role in present communication world as well as day to day life. This paper describes mobile charger using solar panel system based on coin and RFID module. The mobile phone business is currently worth billions of Dollars supports of most no. of features in your mobile phone with several OS. There are increasing large numbers of Android user which requires more battery supply. So to operate these mobile phones public charging needed & it should be useful to public. This design is based on AVR ATMEGA16, a 40 pin microcontroller with LCD displays showing the actual time left. During the time period, a relay output is latched.

This can be used at Hotels, Conference centers, Exhibition halls, service offices, Shopping malls, Airports, Train terminals. So that the mobile phone users can reactivate a low battery or dead battery by simply plug in & charging for one rupee.

**Index Terms—** Solar Panel, LCD Display, ATMEGA16 Microcontroller, RFID, Coin Box.

## I. INTRODUCTION

In many developing countries, the Grid power supply is not available for several hours on daily basis. Specially in Semi Urban & rural areas where the cell phones are essential communication device. So we use solar panel to charge battery with coin detecting mechanism, microcontroller, RFID, charging circuit and different phone sockets. The coin based charger is similar like a vending machine for charging cell phones, the user has to plug in the phone into one of the adapters and insert the coin for charging at constant current for a definite time period. Coin detecting mechanism is used to detect when user insert the coin, this will detect the coin and sent a corresponding signal to signal conditioning unit which converts the incoming signal into square pulse and then given to microcontroller.

The microcontroller used is ATMEGA16 which is a type of reprogrammable microcontroller programmed. Driver circuit consists of relay, which acts as a switch to turn ON and turn OFF. The relay output is directly given to the mobile charger pin. The different mobile charger requires different size pins.

The solar power application to battery charging has been studied properly. Solar chargers convert light energy into DC current for a range of voltage that can be used for charging the battery. They are generally portable but can also be mounted as per required place. In this design of coin based mobile charger is a fixed solar panel of size 18 cell, 37WP is used to charge the battery upto maximum 2.0 amp in bright sun light. Development of a coin based universal mobile battery charger based on main power and solar power is discussed and this is primarily for rural areas where the mobiles are basic needs for communication and the main power is not available all the time.

## I. BLOCK DIAGRAM

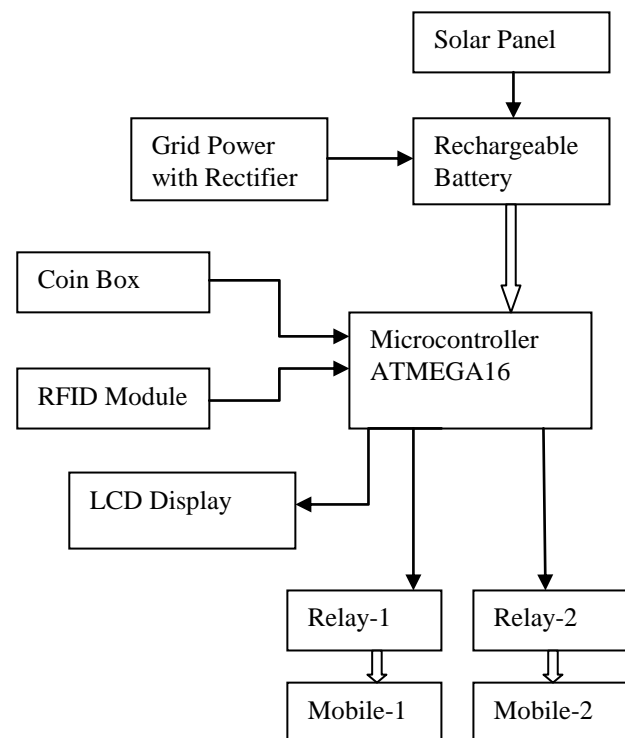


Fig 2: Block Diagram

### Block diagram description-

Above block diagram shows the Coin Based Mobile Charger using Solar Panel and RFID.

#### POWER SUPPLY – SOLAR PANEL-

To provide power supply regularly, we use Solar Panel, DC Power Supply, Battery. Solar Panel provide DC power supply which is given to charge the rechargeable battery of 12V and DC power supply which is from Grid supply provides DC 12V to charge the battery. Means here we use two standby power supply.

#### INPUT –

In this when a coin is inserted in a coin box which is made up of one transmitter and receiver. When the interruption occurs in the sensor mechanism then command signal will be send to the microcontroller.

RFID can be used if we don't have coin or requires long time period of charging. RFID is a radio frequency identification used electro-magnetic energy as a medium for communication. The basic components, reader and transponder are connected to microcontroller. Transponder is a radio transmitter and receiver. When the transponder receives a signal from reader unit, it responds by transmitting its unique identification code.

#### CONTROLLER –

Microcontroller works only when the command receives from RFID or coin box. LCD Display will shows the timer in reverse counting. Controller gives command signal to relay switch ON or OFF.

#### OUTPUT –

The supply from relay given to the mobile charger pin. The charger will be ON only when the coin is inserted or RFID card swap. It gives 4.8V & 1500 mA power to the mobile battery.

## II. ALGORITHM

1. Start
2. Insert a coin.
3. Detect coin..
4. Swap RFID card
- 5 Gives the command to the microcontroller.
6. Send supply to relay switch ON/OFF.
7. Relay provide supply to mobile charger pin .
8. Mobile charging will start.
9. After completing charging message will displayed on LCD.
10. Stop.

## III. CONCLUSION

Thus we have worked on the project coin based mobile charger as per above algorithm and block diagram shown. The algorithm consists of ten steps.

## IV. RESULT

In this paper we represent mobile battery charging using solar power for rural & remote areas where the Grid power supply is unavailable. This paper is very useful in day to day life because now-a-days every person wants to connected with each other. But every time we can not carry charger with us or we may forget to carry mobile charger for long drive then this device is very useful.

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