

# Coin Based Universal Mobile Battery Charger

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**Abstract-** We all know this era is mobile phone era. Almost 70-80 percent people having mobile phone. Communication is more important in all fields. Today's smart phone having much more facilities, due to that facilities mobile phone required more charging. Sometimes our call may cut in mid-way due to lack of charging. This system gives charging to that mobile phone which need immediate charging. Once we connect the mobile to charging slot we required to put the coins in this system. After inserting coin it will compare with database, and if the coin insertion is exact then mobile will charge. This charging system is depend on the solar. Using solar panel the sun energy (photons) is converted into electrons (current). We know much of sun energy is wasted on earth and we need to use that energy. That's why in this system use the solar energy.

Index Terms-Adapters, Battery Charger, Mobile Phones, Microcontroller, Solar Panel.

## 1. INTRODUCTION

The coin-based mobile battery charger developed in this paper is providing a unique service to the rural public where grid power is not available for partial/full daytime and a source of revenue for site providers. The coin-based mobile battery charger can be quickly and easily installed outside any business premises.

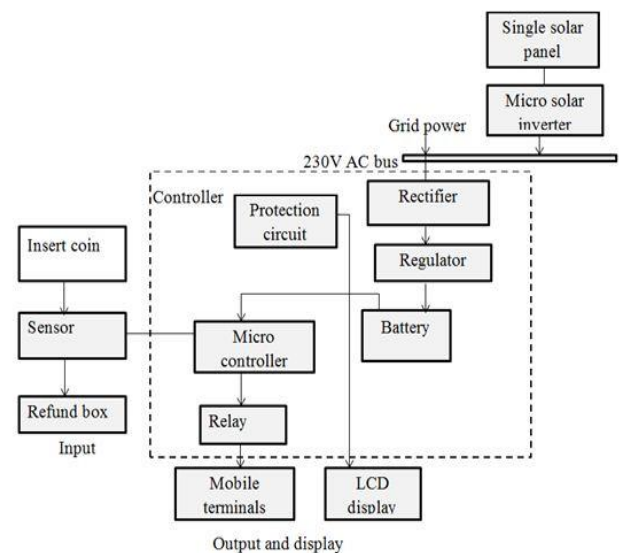
The mobile phone market is a vast industry, and has spread into rural areas as a essential means of communication. While the urban population use more sophisticated mobiles with good power batteries lasting for several days.

## 2. ARCHITECTURE OF PROPOSED SYSTEM

The coin-based mobile battery chargers are designed to solve this problem. The user has to plug the mobile phone into one of the adapters and insert a coin the phone will then be given a micro-pulse for charging. It does not bring a mobile from 'dead' to fully charged state.

Using microcontroller 89C52 family for controlling the coin sensor using leaf switch. The power is given from solar photovoltaic panel with required circuitry for the regulated supply using 7805 regulator from battery the USB cable is given as output for mobiles.

A suitable microcontroller is programmed for all the controlling applications. The source for charging is obtained from direct power grid and solar energy in case of non-availability of grid power.



## 3. SYSTEM SPECIFICATIONS

### MCU 8051:

In this IC 89C51 is used, which is also an MCU 8051 family package. In our project a microcontroller IC plays a very important role. In which it is used as intermediating device between human and machine. All the input devices are connected to output through this microcontroller.

**PORT P1 (Pins 1 to 8):** The port P1 is a general purpose input/output port which can be used for a variety of interfacing tasks. The other ports P0, P2 and P3 have dual roles or additional functions associated with them based upon the context of their usage.

**PORT P3 (Pins 10 to 17):** PORT P3 acts as a normal IO port, but Port P3 has additional functions such as, serial transmit

and receive pins, 2 external interrupt pins, 2 external counter inputs, read and write pins for memory access.

**PORT P2 (pins 21 to 28):** PORT P2 can also be used as a general purpose 8 bit port when no external memory is present, but if external memory access is required then PORT P2 will act as an address bus in conjunction with PORT P0 to access external memory. PORT P2 acts as A8-A15.

**PORT P0 (pins 32 to 39):** PORT P0 can be used as a general purpose 8 bit port when no external memory is present, but if external memory access is required then PORT P0 acts as a multiplexed address and data bus that can be used to access external memory in conjunction with PORT P2. P0 acts as AD0-AD7

**Input Stage**

The mobile battery charger starts charging a mobile connected to it when a coin is inserted at the coin insertion slot at the input stage. The type of coin and the size will be displayed at the LCD display for the user so as to ensure correct coin insertion. Any other coin, if inserted in the slot will be returned to refund box. A sensor attached to the coin insertion slot accepts the coin into the battery charging unit and start charging the mobile battery for a specific period controlled by the software of the microcontroller. The sensor is an IR sensor. The resistance of the sensor decreases when IR (infrared) light falls on it. A good sensor will have near zero resistance in presence of light and a very large resistance in absence of light. When the coin obstruct the IR light falling on a sensor, it sends a pulse to the control unit authorizing the start of charging the mobile battery connected to the device. Two IR sensors are used for positive authentication of the charging process.

**Power**

The salient feature of the universal mobile battery charger is that it draws power from the solar energy during the day time for charging the internal battery of the controller. Only if additional power is required, then the grid power is used. A solar micro inverter has been designed for supplying 230v, 50Hz so that both grid power and the solar power are connected in parallel with a switch to changeover from one to the other.

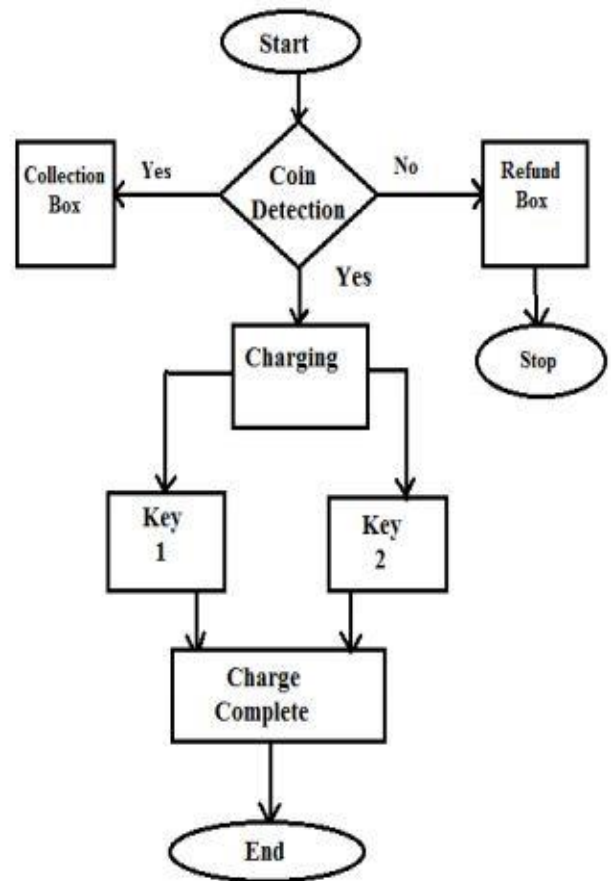
**Table:Charging Requirement Of Mobile Batteries**

No.	Type of Mobile	Charging (Maximum) Voltage(V)	Charging (Maximum) Current(Ah)
1	Nokia	4.8	1500
2	LG	5.5	2100
3	HTC	5.5	1800
4	Panasonic	3.7	1200
5	Black Berry	3.7	1300
6	Samsung	5.7	3400
7	Sony	4.8	900

**4. ALGORITHM FOR COIN BASED SOLAR MOBILE CHARGER**

Flow diagram of this system is as shown in figure 4. And steps of the algorithm as shown bellow.

- 1) Start
- 2) Enter the coin
- 3) Once enter the coin it shows coin is correct
- 4) If coin is not exact then on LCD display"please insert the exact coin
- 5) If coin is exact then charge your mobile phone
- 6) End



**Fig. 4. Flow Chart Of Coin Based Mobile Charger.**

**5. EXPERIMENTAL RESULT**

This one is the complete coin based mobile charger. Which is totally depending on solar hence it is more useful in today's life. This system effectively receives maximum energy from sun towards earth rotation. only one drawback is that it will not used in all night because sun energy is not available. But some percent of battery will charge so that for some time this charging system can use.

**6. FUTURE SCOPE**

As we know this system is depend on the solar energy so it is effective, like mobile phone this system is also used for television in future. Also we can use solar energy for other home as well as industrial purpose.

**7. CONCLUSION**

In this paper, a novel method of charging mobile batteries of different manufacturers using solar power has been designed and developed for rural and remote areas where the grid power is not available all the time. The mobile communication has become a necessity even in rural areas and this device is useful for charging mobile batteries.

#### REFERENCES

1. Pulvirenti, F. Milazzo, P. Ursino, R, Charger power switch for mobile phones, Analog and Mixed IC Design, 1997. Proceedings. 1997 2nd IEEE-CAS Region 8 Workshop ,12-13 Sep 1997, Pg 97 - 100.
2. Pastre, M. Krummenacher, F. Robortella, R. Simon-Vermot, R. Kayal, M. Ecole Polytech. Fed. de Lausanne, Lausanne, A fully integrated solar battery charger Circuits and Systems and TAISA Conference, 2009. NEWCAS-TAISA '09. Joint IEEE North-East Workshop
3. , Barth, H. Schaeper, C. Schmidla, T. Nordmann, H. Kiel, M. van der Broeck, H. Yurdagel, Y. Wieczorek, C. Hecht, F. Sauer, D.U., Development of a universal adaptive battery charger as an educational project ,Power Electronics Specialists Conference, 2008. PESC 2008. IEEE , 15-19 June 2008, Pg 1839 – 1845.
4. Bedford, B. D.; Hoft, R. G. et al. (1964). Principles of Inverter Circuits. New York: John Wiley & Sons, 1964 5. Weidong Xiao, William G. Dunford, Patrick r. Palmer and Antoin.