

PAY E-CHARGER

Jeyashree.P
 B.Tech, III-yr,
 Department of ECE,
 Kalasalingam University.
 jeyshree30@gmail.com

Mohammad Fazil.K
 B.Tech, III-yr,
 Department of ECE,
 Kalasalingam University.
 samsop5151@gmail.com

Indira Rajeswari.R
 B.Tech, III-yr,
 Department of ECE,
 Kalasalingam University.
 indirarajeswari80563@gmail.com

ABSTRACT

The coin based mobile charger developed in this paper is providing a unique service to the rural public where grid power is not available for partial/full day time. The people who live in urban area use more sophisticated mobile phone with good battery capacity that is lasting for several hours, but the rural people uses mobiles that require frequent charging. Most of the times battery becomes flat in the middle of the conversation due to insufficient charging, probably that means the inconvenient situation. In order to solve all the above mentioned problems, the coin based mobile charger has been designed. When the mobile phones need to be charged, the user has to plug in the charger pin and a coin should be inserted. For every coin insertion, the mobile phone will be charged for almost 10min as designed in the controller. A suitable microcontroller has been programmed for controlling the entire system.

Keywords

Solar panel, Rechargeable Battery, Coin sensor, 89c51 Microcontroller, Arduino, Relay, LCD.

1. INTRODUCTION

In many countries the grid power is not available for few hours on daily basis especially in semi urban & rural areas where mobile phones are essential for communication. In order to overcome that ‘pay e-charger’ indeed a great need in crucial time. This is the smart coin based mobile charger system that charges our mobile charging system that charges our mobile for particular amount of time. If a valid coin is found it signals the microcontroller & it starts supplying power to the mobile phone. The system itself starts monitoring the amount of charging to be provided. The program that set in the controller runs accordingly and the countdown starts at the last 30 seconds. The microcontroller starts reverse countdown timer to display the charging time. If the user inserts another coin in that time or early before, the microcontroller adds the time to current remaining charging time & starts reverse countdown. This can be used for mobile charging at public places.

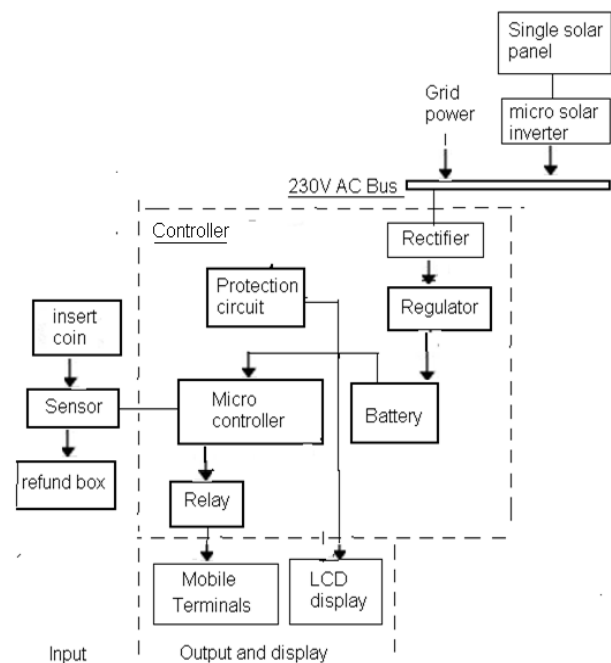


Fig.1. Block diagram of PAY E-CHARGER

2. COMPONENTS OF HARDWARE SYSTEM

2.1 Liquid crystal display:

LCD is used to display the instructions to the user & it will also display the countdown of time. It shows how much charging should be required and amount of time the mobile will be charged.

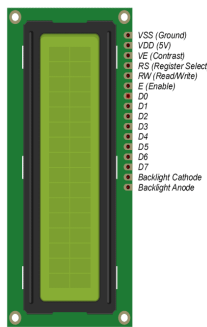


Fig 2: LCD

2.2 Relay

The relay is used as a switch for the system.



Fig 3: Relay

2.3 Power supply

Power supply is main component of the circuit. Power supply is provided to microcontroller and other device from direct ac lines or from AC to DC adapter. 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.

2.4 Microcontroller

In this system, Atmel 89c51 microcontroller is used. IC 16F877x is used. . By combining a versatile 8-bit CPU with Flash on a monolithic chip, the Atmel AT89C51 is a powerful microcomputer which provides a highly flexible and cost effective solution to many embedded control applications.

2.5 Coin sensor

The sensor which senses coin by using the thickness, diameter and fall time of the coins to identify them and it's fully programmable only for particular type of coins. After programming the coin profile, simply read the serial output of the coin sensor and it will tell you the value of each coin as they're inserted.

3. METHODOLOGY

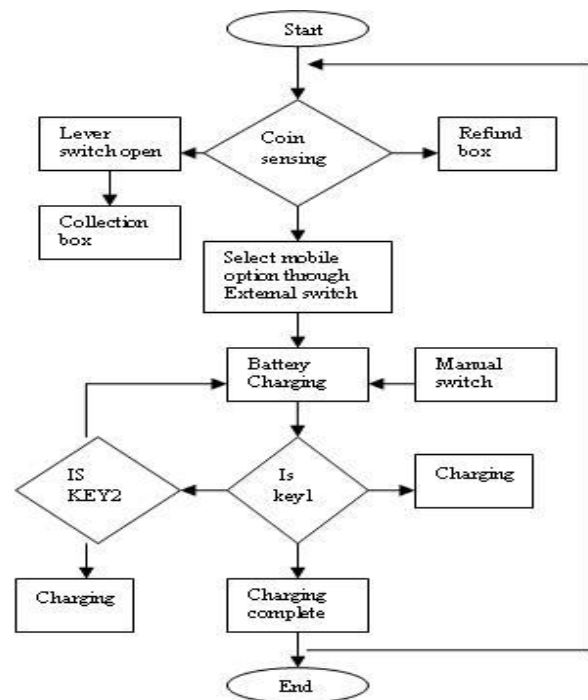


Fig 4: flow chart of for the Coin Based Universal Mobile Battery Charger

3.1. 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.
- 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.

3.2. Controller

- This section acts according to the input signal from the sensor circuit.
- Coin accepted or rejected is based on the diameter of the coin.
- This invokes microcontroller along with LCD interface displays the selection of mobile option and charge the mobile for a particular duration of time.

3.3. Output and Display

- The LCD displays all the information when required.
- When the mobile battery is connected, it displays “Insert Coin”.
- While charging it displays “Charging” and at the end of charging cycle it displays “Charge completed”.

A method of charging mobile batteries of different manufactures has been designed and developed whenever required. This project is very useful in today's life. Because now days the necessity of communication is very important, so every person having cell phone but every time we cannot carry charger with us. When we are going for long travel we may forget to carry cell phone charger. This project is used to help the people by coin based charger. Also now days because use of internet and smart phones, this kind of project is very useful. Conventional grid power is used for mobile charging hence project is low cost. In

future, instead of coin based method finger print based mobile charge will be implemented.

4. ACKNOWLEDGMENTS

Our sincere thanks to the experts who have contributed towards development of the paper.

5. REFERENCES

- [1] S .Banu Prathap, R.Priyanka, G.Guna, Dr.Sujatha “coin based cell phone charger” International Journal of Engineering Research & Technology (IJERT) ISSN: 2278-0181 Volume 2, Issue 3 (March 2013).
- [2] M.S.Varadarajan, “Coin Based Universal Mobile Battery Charger” IOSR Journal of Engineering (IOSRJEN) ISSN: 2250-3021 Volume 2, Issue 6 (June 2012).
- [3] Aparna D. Pawar, “Coin Based Solar Mobile Charger” International Journal of Engineering and Technical Research (IJETR) ISSN: 2321-0869, Volume-3, Issue-5, May 2015.
- [4] 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.
- [5] A Hefner, A. Magdaleno, “Cell Phone Charger for the DC House Project”, California Polytechnic State University, 2012.
- [6] “The 8051 Microcontroller and Embedded Systems : Using Assembly and C” by Muhammad Ali Mazidi