Analysis on Inclusive Power Bank for Smart Home System

N.V.Andrews, K.Ribana

Abstract: The Universal power holder is fundamentally produced for workstation which is compact as like the versatile power bank which need at present situations. It is extremely helpful to individuals who are on the whole utilizing PC/telephone without charging condition in broad daylight places. This has been made by the segments of the Lithium particle batteries with changes, male to male link and the appropriate ports. The greatest yield voltage of the power holder is 14-18V. As we need more effectiveness so the batteries are part up into two bits, with two sets of sequential associated lithium particle batteries .Thus the yield is accomplished from the power holder for the workstation and cell phone. We will utilize charger to charge for our cell phone.

Index Terms: charging convention, control holder, mass ingestion, Multi-Voltage, particle batteries.

I. INTRODUCTION

The rechargeable battery or battery charger is a device which is used to store the energy. The electric current is used to store the energy in a subordinate cell of a battery.

The battery charger should be based on the size of the battery and which kind of battery is used while it is charging. If the battery is overcharged (i.e., kept charging after the battery has been completely charged) a few types of battery will have an ability to tolerate the overcharging. Based on the battery type the battery can be recharged by connecting to either stable voltage supply or stable current supply. When the battery is fully charged make sure that the charger is disconnected.

Some basic charger should be disconnected manually. A few kind of battery may require some fixed time to charge and then it will be turned off. For these type of batteries set a timer or remainder to turn off the charger when the charging process is completed. Other battery types may cause the damage to battery if it is overcharged.

The lifetime of the battery may be reduced or the battery is burst out because of overheating. So it is better to avoid overcharging in order to increase your battery lifetime. Either the temperature sensing circuit or voltage sensing circuit is used in a charger to maintain the current or voltage applied into it. The microprocessor and controller will recognize the Charging state and it helps to disconnect the charger.

A stream charger gives a generally little measure of current, sufficiently just to neutralize self-release of a battery that is inactive for quite a while. A few kind of battery may not have the trickle charging capacity. If a battery does not have trickle charge capacity may harms the battery. Lithium-acid batteries had the trickle charging capacity in nature at the last part of charging process. Li-ion technology does not have safe trickle charger so it may cause damage to the battery or it will make the battery to explode.

Moderate battery chargers should require few hours to finish a charge. High rate charger or fast charger will have more capacity to charge fast and these chargers will be more tolerable than some kind of battery. The high rate charger should be observed periodically to avoid overcharging. This type of chargers can be used in the electric vehicles. Establishing these types of charger and providing support to this charger is an problem in implementation of electric vehicles.

II. EXISTING SYSTEM

A. Basic charger

Figure 1: Basic mobile charger

Constant Direct current source or the pulsated current direct source is used to charge the basic chargers. The basic charger may be depends either on charging time or battery charge may not alter the output of the charger. The basic chargers are generally not expansive but this charger may have tradeoffs. Usually this type of chargers requires more time to charge the battery since these batteries are at safer charging speed. If the charger is overheated the basic charger will be damaged. The constant current source or the constant voltage source is supplied to the basic charger.

Basic Alternating current-fueled battery chargers for the most part have a lot higher swell current as well as swell voltage than different sorts of battery chargers since they were cheaply structured and constructed. For the most part,

Revised Manuscript Received on April 12, 2019 .

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while the swell current was inside a battery producer suggested dimension, the swell voltage should likewise be fine inside the prescribed dimension. Most extreme swell current given to a regular 12 V 100 Ah valve-regulated lead-acid battery is 5 amps. For whatever length of time that the swell current isn't inordinate (above 3 to multiple era the battery producer prescribed dimension), the normal existence of a swell charged -regulated lead-acid battery must be inside 3% for the life of a steady Direct Current-charged battery.

B.Quick charger

The quick charger has the control circuit which makes the battery to charge as much as fast. This kind of chargers will not affect the cells present in a battery. Each cell in the quick charger will have individual control circuit. This control circuit is an inbuilt one.

The quick charger will have the cooling fan to maintain the temperature level of a battery. This cooling fan provides the safe level charging. Nickel-Metal hydride battery is used in the quick charger. If the nickel-metal hydride battery does not have the special control circuit then the quick charger is able to act as whole night standard charger.

C.Bulk-absorption- float stage charger

The three stages of a battery can be applied by knowing the charging state and battery condition. In order to speed up the charging time and allowing the battery to charge continuous the intelligent charger is used.

Let us assumes that the electric-vehicle battery should be sealed at 25°C. Bulk stage is the first stage in 3 stage charger. In this stage 80% of a battery will gets charge by keeping the current as constant with increasing voltage. Based on the battery capacity the charger will gets charged and the battery should not increase up more than 125°F. In the next stage (i.e., absorption sage) the remaining 20%of the battery will be charged by keeping voltage constant with decreasing current. This stage is also known as equalization stage. On the off chance that the battery won't hold a charge or the current does not drop after the normal energize time; the battery may have some perpetual sulphation.

The third stage is the float stage. The float arrange is the place the charge voltage is diminished to between 13.0 VDC and 13.8 VDC and held steady, while the current is decreased to under 1% of battery limit. This mode can be utilized to keep up a completely charged battery inconclusively.

D.Wireless charger

Electromagnetic induction is used in wireless charger to charge the battery.

Figure 2: Wireless charger

The battery should contain the electrical gadget that receives the electromagnetic energy from the charging location. The electrical gadget is also used to store the energy in a battery. The energy is stored in a battery even there is no metal contact among the charger and battery. The wireless batteries are used in electric tooth brushes and additional electronic gadgets used in restroom. Since it is a wireless charger there is no wide electrical contact. Currently the wireless phone uses the wireless charger to charge their batteries.

E.Intelligent charger

The smart charger is different from smart battery. The smart battery has chip which is used to know the character and condition of a battery. The battery management system is built in the smart battery and this charger can be used in electronic gadgets like personal computer. The smart charger will operate on the basis of smart battery information. Hence all the required information is stored in the smart battery pack.

Some smart chargers are intended to charge:

- "Smart" batteries with inside insurance or supervision or the board hardware.
- "Dumb" batteries, which come up short on any inside electronic hardware.

This battery will maintain the temperature, voltage and the current source. The intelligent batteries are charged as much as fast upto 85% and then it will switch to tickle charging state. This charger will have maximum capacity to store the energy for many hours.

Figure 3: Example of double A and triple A batteries

F.Cell phone charger

The chargers used to charge the cell phone are not a charger they are just like the power adapters. The power adapter will provide the power source to the charger circuit built in the cell phone. Previously used cell phone charger had large range of Direct Current connectors and voltages were not matched with the manufacture mobiles.

The clients who are using the common charging booths should have the ability to cross the reference adapter along with the gadgets product. This will also have the separate charging parameter which helps the charger to supply the power from charger to mobile battery. The database driven system is build in various charging booths.

The man-made charger is available in our electronic shops. These types of charger will have electrical generators with some extension cords. A special kind of dynamo charger is used in French which can be used by one hand. And the solar charger is also available to charge the mobile which is a portable one so that it is easy for transportation.

G.Power banks

Generally the power banks are most convenient one. These power banks will have the inbuilt battery which is used to supply the power to electronic gadgets through Universal Serial Bus port. This power bank is not only used to charge the mobile phones it is also used to charge the lights and fans. The electronic gadgets will use the USB power supply to charge the devices.

There is a control circuits in power banks which is used to charge the battery and also converts the battery voltage to 5.0V since the USB port will supplies only 5.0V. A few chargers for cells such as 18650s and 26650 can likewise fill in as a power bank. The power bank are the unique device which stores the electrical energy in its inbuilt battery and later it is used to charge the electronic gadgets like cell phone, laptop, tablets etc. because of this power banks the electronic gadgets will increase their life time.

The main advantage of this power bank is compact one so it is easy to carry. One more advantage is that if the cells in the battery are dead this power bank will refresh the cells first instead of recharging.

The power bank skilled to charge a workstation needs to supply the USB standard charging port as well as (or just) a DC yield port, or a work in power inverter with an AC outlet. Generally they have in their name a "multi-voltage convenient charger". I will say if the convenient power bank can charger for Surface 3 Pro, a large portion of them are able to control (energize) a PC battery also. Here are a few examples: Surface Pro 3 External Battery – Options and Accessories, Extend Your Surface Pro 3 Battery Life.

III. WORKING

The Universal power holder is mostly produced for workstation just as the cell phone. This has been made by the parts of the 10 Lithium particle batteries, with 2-changes, male to male link and the reasonable ports. The greatest yield voltage of the power holder is moderate. As we need more effectiveness so the 10 batteries are part up into two segments, with two sets of five sequential associated lithium particle batteries .Thus the yield is accomplished from the power holder for the PC charging reason.

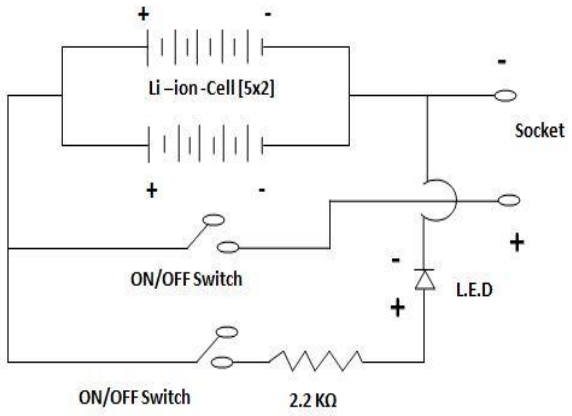

Figure 4: Graphical Representation of Power Bank

IV. RESULTS AND DISCUSSIONS

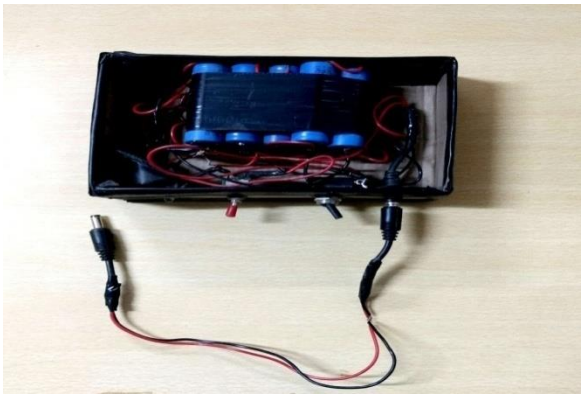

Figure 5: Demo setup of Universal power holder

Table 1: Efficience comparision with other present devices

Product	Output voltage	Produced output Current	Cost (Approx)
Device 1 from market	18V	32000mAh	RS: 16000
Device 2 from market	20V	40000mAh	RS: 19000
Device 3 from market	16V	26000 mAh	RS: 14000
Universal power holder(our device)	18V	20000mAh	RS: 6000

This circuit furnishes the greatest power yield with less measure of battery use. With two sets of five sequential associated lithium particle batteries permits the standard current stream which is more affordable. To contrast and other market general power bank, Pilot Pro Monster Capacity Multi-Voltage Portable Charger which conveys 32000mAh with the expense of 15000 rupees and Extra Pro

Super Capacity Portable External Battery Charger that conveys 40000mAh with the expense of two hundred dollars. Be that as it may, we made the power keep money with the measure of 2000 Rupees very financially.

V. CONCLUSION

This plan will help in decreasing in general expense of the gadget and furthermore help individuals by loosening up the need of telephone chargers and PC chargers. It will be useful throughout the days, as, the speed and headways in telephones are at an exponential rate which diminishes the charge of telephones enormously. This will likewise demonstrate accommodating to the recently rising wearable electronic devices as, the size and power rating is perfect for that utilization too. Subsequently it tends to be inferred that the power banks have altered from battery telephone case to general power keeps money with different ports, smaller plans, and programmed identification of info. The power bank helps in giving the backup capacity to the versatile and tablet gadgets, managing the issues of quick battery depleting, giving the compactness of activities, charging the gadgets rapidly, and keeping unblemished the gadget.

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