

Wireless Power Transmission Battery Charging For Smart Phone Controlled Unmanned Battery Operated Vehicle

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Abstract:- In this paper, wireless power transfer is used for charging a battery operated unmanned vehicle for the surveillance. This unmanned vehicle is operated using android smart phone application developed for the purpose. This project integrates two technologies: wireless power transfer and android technology. The working principle behind wireless power transmission is electromagnetic induction. Wireless power or wireless energy transmission is the transmission of electrical energy from a power source to an electrical load without man-made conductors. Wireless transmission is useful in cases where interconnecting wires are inconvenient, hazardous, or impossible.

Keywords: - *Wireless Power Transmitter, Electromagnetic Induction, mobility.*

I.INTRODUCTION

Power is very important component for all wired and wireless devices. Especially advantage of wireless device is surplus. main advantage of wireless is portable (i.e.;)mobility of the

devices are relay good. the major property which affects the mobility of the portable wireless devices is operating power. the devices which are operated in wireless mode required power two the times of wire operated devices so we have to relay on the battery back to operate the device. for the continuous battery backup we have to recharge the battery of the devices frequently. Recharging battery with the constant power source using a wire to the battery. but still we can wired battery charging for the wireless unmanned battery operated vehicle. Mobile phone and electric toothbrush battery chargers, and electrical power distribution transformers are examples of how this principle is used. Induction cookers use this method. The receiver must be directly adjacent to the transmitter or induction unit in order to efficiently couple.

II. BLOCK DIAGRAM

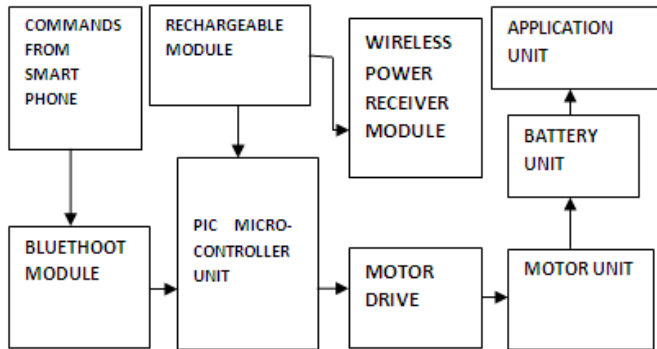


Fig-1

III. BLUETOOTH DEVICE

Bluetooth is a frequency hopping wireless communications technology. The Bluetooth device hops across the full 2.4 GHz Wi-Fi frequency band. This is easily seen in the scrolling spectrogram display, but more difficult to see in spectrum analyzer displays which show only frequency and amplitude information but limited time-domain information. Frequency Range 2402-2480 MHz Transmit Power. Bluetooth is a frequency hopping wireless communications technology, Bluetooth (FIG-1) is used for wireless communication through the transmitting signal. Bluetooth is used for my paper due to their less error probability inside the data transmission. Bluetooth is used for better data transmission and communication without any error.

IV. PIC MICROCONTROLLER

The PIC controller was used to offload the I/O the tasks from CPU to improve the overall performance of the system. General

Instruments converted their Microelectronics Division to Microchip Technology. PIC stands for Peripheral Interface Controller. The General Instruments used the acronyms Programmable Interface Controller and Programmable Intelligent.

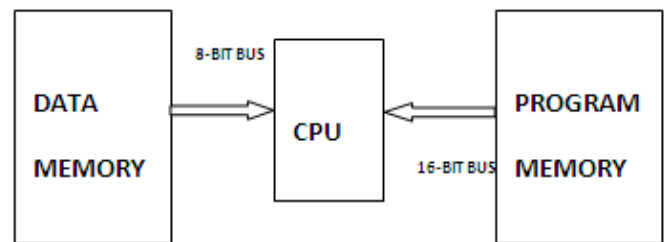


Fig-2

Pic Microcontroller is selected for my paper is due to their inexpensive single-chip. The most important feature is its capabilities of STORING and RUNNING a program. In this paper PORT A Pins are used because it is a 6-bit bidirectional port and it is used as both digital and analog input/output transmitting signal. In the PIC data memory and program memory are operated with 8& 16 bit buses (fig-2).

V. WIRELESS POWER RECIEVER TECHNIQUE

The functioning principle behind wireless power or wireless energy transmission is a process of electrical energy from power source to an electrical load without synthetic conductor. Wireless transmission is valuable in belongings where interconnecting wires, inconvenient, hazards are impossible. We know the electro dynamic induction function the electrical current flowing through a primary coil they can

create a magnetic field that acts as a secondary coil producing a current must be snug in order to achieve the high efficiency in the wireless power transmission. The primary and secondary circuit of a transformer are not directly connected. The act of an electrical transformer is the simplest form of wireless power transmission. In the primary and secondary coil the energy transfer takes place I& E sections through a process that process is known as mutual induction. mobile phone, battery charger and electrical power distribution are the samples of how this principle is used.

VI. PROCESS DRIVER

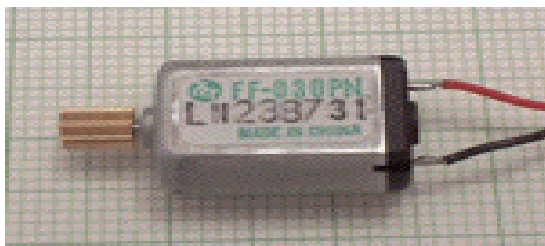


Fig-3

DC MOTOR

The DC Motor or Direct Current Motor to give it its full title, is the most commonly used actuator for producing continuous movement and whose speed of rotation can easily be controlled, making them ideal for use in applications where speed control, servo type control, and/or locating is required. A DC motor consists of two parts, a "Stator" which is the sedentary part and a "Rotor" which is the rotating part. The motors wound stator is an electromagnet which consists of electrical coils connected together in a circular configuration to produce a North-pole then a South-pole then a North-pole etc., stationary magnetic field system (as opposed to AC machines whose stator field continually

rotates with the applied frequency) with the current flowing within these field coils being known as the motor field current. The stators electromagnetic coils can be connected in series, parallel or both together (compound) with the armature. Series wound DC motor has the stator field windings connected in *series* with the armature while a shunt wound DC motor has the stator field windings connected in parallel with the armature as shown.

Series and Shunt Connected DC Motor

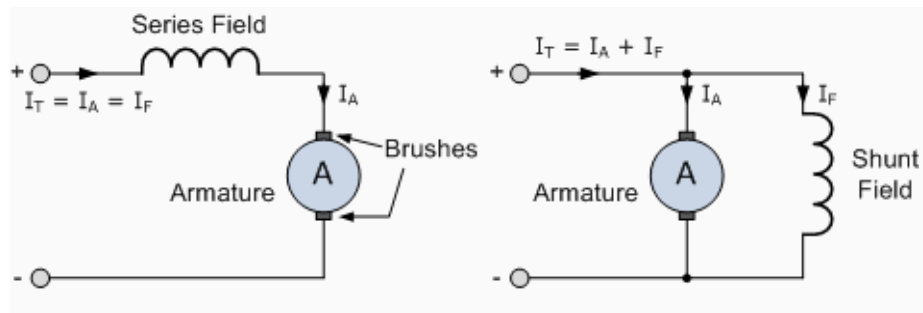


Fig-4

Fig-5

The rotor or armature of a DC machine consists of current carrying conductors connected together at one end to electrically isolated copper segments called the commutator. The commutator allows an electrical connection to be made via carbon brushes (hence the name "Brushed" motor) to an external power supply as the armature rotates. The magnetic field setup by the rotor tries to align itself with the stationary stator field causing the rotor to rotate on its axis, but cannot align itself due to commutation delays. The rotational speed of the motor is dependent on the strength of the rotors magnetic field and the more voltage that is applied to the motor the faster the rotor will rotate.

In any electric motor, operation is based on simple electromagnetism. A current-carrying conductor generates a magnetic field; when this is then placed in an external magnetic field, it will experience a force proportional to the

current in the conductor, and to the strength of the external magnetic field. As you are well aware of from playing with magnets as a kid, opposite (North and South) polarities attract, while like polarities (North and North, South and South) repel. The internal configuration of a DC motor is designed to harness the magnetic interaction between a current-carrying conductor and an external magnetic field to generate rotational motion. This is the operation of transmitter motor coil, the EMF which is produced by this coil will be transmitted to receiver coil through wireless.

VII. RECHARABLE UNIT BATTERY

A normal battery charger is a DC power supply source. It works using a transformer that's used to step down the AC mains input voltage to the required level as per the rating of the transformer. Same concept has been used for charging the battery of the unmanned vehicle. Here in this paper as we suggested a high frequency signal's power is converted and help us to charge the battery and a bridge rectifier can be used to configuration is in a battery charger to rectify the low voltage AC into DC which is further smoothed by a high value electrolytic capacitor.

VIII. CONCLUSION

In this paper, wireless battery charging unit for a specific application is designed for the purpose of Product commercialization. In future it is possible to add more applications to this technology, this wireless battery charger unit has to be improved in terms of distance between source and destination recharging unit, if distance of source and

destination recharging unit increases then the number of application also increases. Power dissipation is reduced from the power supply source unit. The amount of power transmitted in wireless has been increased with respect to size of the device. In the future it is possible to charge all battery operated devices in wireless technology.

IX. APPLICATION

In this paper the wireless battery charging technology has been implemented in unmanned battery operated vehicle which is controlled by a smart phone application. This same technology can be implement for battery operated wheel chair for special people, if the technology is implemented in wheel chair then it will very much helpful for special people to recharge the batteries in their wheel chair.

X. REFERENCE

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