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REMOTELY CONTROLLED ROBOTIC BOAT

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ABSTRACT: *This project is a prototype boat that can travel in water. This robot is powered by 9V rechargeable battery. The direction of the robot can be controlled by an RF remote. This can be moved forward and reverse direction using geared motors of 60RPM. Also this robot can take sharp turnings towards left and right directions. In this project we are using LPC2148, DC Geared motors, RF Technology; L293D H-Bridge is used to drive the geared DC motor. A high sensitive camera is also interfaced to capture the surrounding things and also to transmit to the remote place. The RF modules used here are STT-433 MHz Transmitter, STR-433 MHz Receiver, HT12E RF Encoder and HT12D RF Decoder. The three switches are interfaced to the RF transmitter through RF Encoder. The encoder continuously reads the status of the switches, passes the data to the RF transmitter and the transmitter transmits the data.*

KEYWORDS –: RF module, LPC2148, DC Motor.

I. INTRODUCTION

In our Daily life many people travel in boat. Sometime any atmospheric problem are occurred like landscape, tsunami etc. that time people can't be communicate for their safety purpose we are implement wireless controlled robotic boat to travel in water. This project is done using RF technology for audio and video transmission as well as reception**.** Robot is powered by 9V rechargeable battery. The direction of the robot can be controlled by an RF remote. This can be moved forward and reverse direction. Also this robot can take sharp turnings towards left and right directions. There are various type of recent technology are being implemented such as experiments in robotic boat localization in

Oct. 2007, RF based wireless robot control. This circuit utilizes the RF module (TX/Rx) for making a wireless remote, which could be used to drive an output from a distant place. RF module, as the name suggests, uses radio frequency to send signals. These Signals are transmitted at a particular frequency and a baud rate. A receiver can receive these signals only if it is configured for that frequency. A four channel encoder/decoder pair has also been used in this

system. The input signals, at the transmitter side, are taken through four switches while the outputs are monitored on a set of four LEDs corresponding to each input switch. The circuit can be used for designing Remote Appliance Control system. The outputs from the receiver can drive corresponding relays connected to any household appliance.

II. LITERATURE SURVEY

- History of Robotics

  This history of robotics is intertwined with the histories of technology, science and thebasic principle of progress. Technology used in computing, electricity, even pneumaticsand hydraulics can all be considered a part of the history of robotics. The timeline presented is therefore far from complete. Robotics currently represents one of mankind's greatest accomplishments and is the single greatest attempt of mankind to produce an artificial, sentient being. It is only in recent years that manufacturers are making robotics increasingly available and attainable to the general public. The focus of this timeline is to provide the reader with a general overview of robotics (with a focus more on mobile robots) and to give an appreciation for the inventors and innovators in this field who have helped robotics to become what it is today.

- What is robotics?

Robot is a programmable mechanical device that can perform tasks and interact with its environment, without the aid of human interaction. Robotics is the science and technology behind the design, manufacturing and application of robots.

- What is RF?

Radio frequency (RF) is a frequency or rate of oscillation within the range of about 3 Hz to 300 GHz This range corresponds to frequency of alternating current electrical signals used to produce and detect radio waves.Electrical currents that oscillate at RF have special properties not shared by direct current signals. One such property is the ease with which it can ionize air to create a conductive path through air. This property is exploited by 'high frequency' units used in electric arc welding. Another special property is an electromagnetic force that drives the RF current to the surface of conductors, known as the skin effect.

III. BLOCK DIAGRAM & WORKING

Initially considering the entire system, we come across two different section, namely, transmitter section and receiver section.

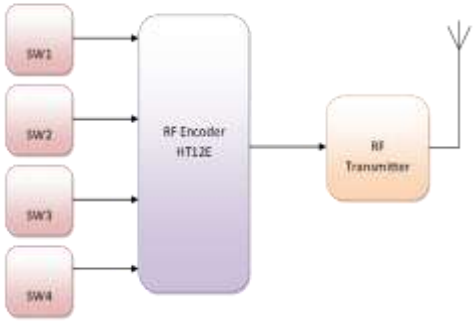

Fig.1.1: Block Diagram of Transmitter

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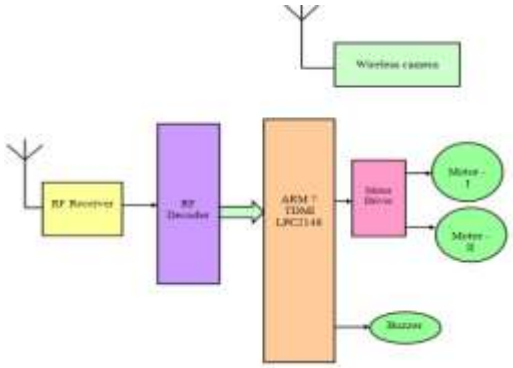

Fig.1.2: Block Diagram of Receiver

In transmitter part a data encoder and RF transmitter is used. In transmitter section consist four push buttons to run the robot; these four buttons are connected with encoder with respect to ground. When will press any button encoder will get a digital low signal and then applied this signal serially to RF transmitter. The encoder IC HT12E encodes data or signal or converting into serial form and then sends this signal by using RF transmitter into the environment. At the receiver end we have used RF receiver to receive data or signal and then applied HT12D decoder. This decoder IC converts the received serial data to parallel and then send these decoded signals to motor drive IC. According to received data robots runs by using two dc motor in forward, reverse, left, right and stop direction.

Table1.1: Push buttons moving direction

Push buttons	Moving direction
First	Left
Second	Right
Third	Forward
Four	Backward
Not button pressed	Stop

A. Transmitter section: The RF transmitterSTT-433 is ideal for remote control applications where low cost and longer range is required. The transmitter operates from a1.5-12V supply, making it ideal for battery-powered applications. The transmitter employs a SAW-stabilized oscillator, ensuring accurate frequency control for best range performance. The manufacturing-friendly SIP style package and low-cost make the STT-433 suitable for high volume applications.

Fig.1.3: RF transmitter stt-433

GND: Transmitter ground. Connect to ground plane

DATA: Digital data input. This input is CMOS compatible and should be driven with CMOS level inputs

VCC: Operating voltage for the transmitter. VCC should be bypassed with a .01uF ceramic capacitor and filtered with a 4.7uF tantalum capacitor. Noise on the power supply will degrade transmitter noise performance.

ANT: 50 ohm antenna output. The antenna port impedance affects output power and harmonic emissions. Antenna can be single core wire of approximately 17cm length or PCBtrace antenna.

B. Receiver section

The data is received by the RF receiver from the antenna pin and this data is available on the data pins.

Two Data pins are provided in the receiver module. Thus this data can be used for further applications.

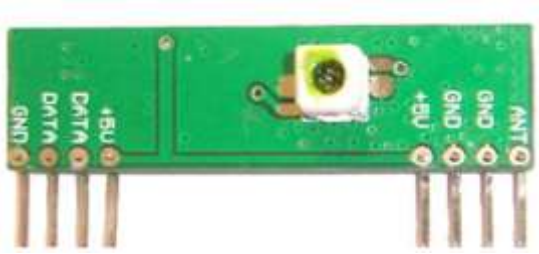

Fig.1.4: RF receiver str-433 MHz

ANT: Antenna input.

GND: Receiver Ground. Connect to ground plane.

VCC (5V): VCC pins are electrically connected and provide operating voltage for the receiver. VCC can be applied to either or both. VCC should be bypassed with a .1µF ceramic capacitor. Noise on the power supply will degrade receiver sensitivity.

DATA: Digital data output.

IV. ADVANTAGES

- Not blocked by common materials: It can penetrate most solids and pass through walls.
- Longer range.
- It is not sensitive to the light.
- It is not much sensitive to the environmental changes and weather conditions.

V. CONCLUSION

As there are number of wireless technologies are available having different features, applications and limitations. From above analysis we conclude that it will be very useful if we use RF technology for wireless communication. These sources are easily available now days hence our proposed system become more cost effective and economical. Our proposed system will use oceanic research centers application for interfacing RF module & controller.

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