

GRAVITATIONAL SENSOR SUPPORTED STEERABLE WI-FI MULTICHANNEL PERFORMER

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ABSTRACT - Gravitational sensor supported steerable Wi-Fi multichannel performer is a wireless communication. The novelty of the system comprises many prominent advantages for the widespread industrial field of experience, importance both core and auxiliary if we scale down the core sector appear before us as power, cement, fertilizer, petrochemical, nuclear etc. similarly the division of micro small sectors can find its prominent in space and food processing textiles along with even cottage sectors. The psychology, apprehension and friendliness now are being proposed through human machine interface depending upon the crucial application and government concern. The framework is architecture both locally and globally. Therefore the allocation simulation and all comet consoles are restricted as in one hand within the soft floor industry of a model industry network through direct cable communication mostly by using RS4854 and D-Link(data link) harmonic free cables but ones the requirement comes to activate high end protocols and product from a longer distance obviously takes help of launching advanced complimentary communication system. The selection and reliability under operation need to be strictly maintained for the further enhancing and smooth temporal data flow (traffic) from one to another or multiple there off.

KEYWORDS - gravitational sensor, prominent advantages, harmonic free cables.

INTRODUCTION

In the communication field, the most vibrant and fastest technological area has been occupied by the 'Wireless Communication' feature. The method of transmission of information from one point to other, nullifying use of any connection like wires, cables or any physical medium. Here at a limited distance, the information is transmitted from transmitter to receiver. Between few meters (like a T.V. Remote Control) to few thousand kilometers (Satellite Communication) the transmitter and receiver pair can be placed anywhere, and still a communication can be set up using the concept of wireless communication.

The proposed work has been chosen, named - Gravitational Sensor Supported Steerable Wi-Fi Multi-Channel Performer uses the notion of wireless communication for the transmission of the signal to perform various jobs. For this a gravitational sensor has been used employing the center zeroing concept. In a defined co-ordinate, we consider the waveform goes up from 0 position for positive impulse and down for negative impulse. Here in our project. the motor is at rest(0), when we provide positive impulse it turns clockwise and anti-clockwise for negative impulse. There are two ends which are modular in nature(module based, encapsulated) - the transmitter and the receiver.

The novelty of the system comprises many prominent widespread industrial field of experience, importance both core and ancillary. The psychology, apprehension and friendliness now are being projected through HMI (Human Machine Interface) depending upon the crucial application and governance concerned. The selection and reliability under operation need to be strictly maintained for

further enhancing and smooth temporal data flow(traffic) from one point to another or multiple there of artificial intelligence(AI),Machine Learning, Big Data Storage, computer storage, etc. Station to station networking comes friendly, all time interactive and reliable. Supply of power is easy and the benefit can be maximized - power claim justifies the both. So in future up gradation and establishment of other tasks in due course present this project before people as a ready solution.

OBJECTIVE AND SCOPE OF THE PROPOSED SYSTEM

The objective of this project is to design a wireless steerable robotics controller where a motor can be operated at a distance to perform various operations or tasks as per our requirement and necessity, interfaced with Wi-Fi. Using this system we can precisely monitor any machines through allocated license free ISM band. Two directional movements of machines coupled with gear wheels and free spindle network, will be functional through receiving, command the transmission handsets which are likely to be stationed at manager's cubicles or can be tagged with movable executives. Thus here we can see the communication between stations to station has become wireless, friendly and easier to interact. We have employed the use of high-tech embedded receiver and transmitter module and have successful planted those through some extraordinary sensors- gravitational sensors. The framework is architectural both locally and globally. It has very good scope in the near future in both core and ancillary industries. This system can be used in big industries like cement, fertilizer, petroleum, nuclear etc. as well in small industries like food processing, textile and even cottage industries. The biggest advantage of this project will be that motors can be operated without direct cable connections thus avoiding huge mess and cost giving easier space management and less maintenance fees respectively and in future it can give rise in employment.

METHODOLOGY

Our main target was to design a system where we could operate a steerable robotics at a distance just by controlling it from our hand thereby making it wireless. The project consists of two main parts - firstly the transmitter which uses license free ISM Band for transmission process, and secondly the receiver which will receive the transmitted signal. The main important components that have been used for making our project are the - RX-2B and TX-2B pairs, Gravitational Sensor, Micro strip Antenna and Relay. The framework is in such a way that the whole system can be manufactured both locally and globally.

In the transmitter part, a gravitational sensor has been used that will use the center zeroing concept for controlling the steerable robotics as per our requirement .When the transmitter is turned on with the help of rocker switch, the LED indicator turns on. This block gets a supply of 1.5V. Directing it towards the receiver module will send a transmission signal to it.

For the receiver end and other parts, the system gets its power supply of 240V in AC form as supplied to various households and industries. Step-down transformer and diode has been planted so that the voltage can be reduced to a much lower and safer value such that the other parts of the system can function properly. This DC power supply is then fed to the receiver part. The receiver as such on receiving the transmission signal via the micro strip antenna triggers the two relays which turns on the DC motor as per required. The relay that has been used by us is electrically isolated and magnetically coupled. The motor has been attached to a steerable gear wheel, which when rotates in clockwise or anticlockwise direction moves the free spindle. Thus the station to station networking becomes friendly, interactive and reliable.

GENERAL DESCRIPTION OF THE COMPONENTS

RX-2B/TX-2B pair - The TX-2B/RX-2B is a pair of CMOS LSTS designed for remote controlled motors applications. Five control keys for controlling the motions (i.e. Forward, backward, rightward, leftward and the turbo function) has been assigned to the pair. It has mid operating voltage range (VCC = 1.5~5.0 volt). Another important feature is low stand by current for TX-2B auto-power-off function can be generated.

GRAVITATIONAL SENSOR- The gravity sensor measures the acceleration effect of earth's gravity on the device enclosing the sensor. It is specially derived from the accelerometer. Where other sensors help to remove linear acceleration from the data. The gravity unit are in m/s^2 like the accelerometer, and they are measured along the X, Y and Z axis.

Gravity acceleration, that is earth's gravity pull, is essentially the source of trigger to the sensor.

MICRO STRIP ANTENNA - A micro strip antenna is also known as printed antenna. Usually means as antenna fabricated using micro strip techniques on a printed circuit board (PCB). It is a kind of internal antenna. They are mostly used at microwave frequencies. An individual micro strip antenna consists of a patch of metal foil of various shapes on the surface of the printed circuit board (PCB).

RELAY - A relay is a switch which electromechanically controls that is opens or closes a circuit. The device helps us in such a way that without any human intervention or involvement it can make or break contact with the help of signal in order to switch it ON or OFF.

ISM BAND - It is the designated radio frequency band reserved internationally for industrial, scientific and medical purposes. The devices using this spectrum band are limited to certain bounds of frequencies as it can cause disruption to radio communications using the same frequency by creating electromagnetic interference.

WORKING OF THE SYSTEM

The proposed work has been mainly divided into two parts - the transmitter module and the receiver module connected to other parts of the system. For the transmitter block which is to be kept in our hands, will be turned on using a rocker switch. A LED indicator has been placed so that it will indicate that the transmitter has been turned on. When the transmitter is turned on and aligned down to a particular direction, the gravitational sensor gets triggered and as such triggers the diode. Gravity acceleration, that is earth's gravity pull, is essentially the source of trigger to the sensor. The diode is placed in such a way that when the transmitter will be aligned down left or right then it will make the steerable gear wheel to rotate in a clockwise or anticlockwise way. Ultimately through the transmitter antenna a signal of frequency 49.860 MHz will be sent to the receiver.

AC voltage is supplied. The step down transformer (230V) lowers the voltage to a safer value and the diode changes it to DC form. The receiver is turned on using a rocker switch. Here we have used two relays. When the transmitter is tilted on the left, the left relay is triggered and when tilted right, the right one will be triggered. This ultimately triggers the two shell relays placed outside. The motor has been attached to a steerable gear which will rotate clockwise or anticlockwise as per the tilting of the transmitter and thus move the spindle.

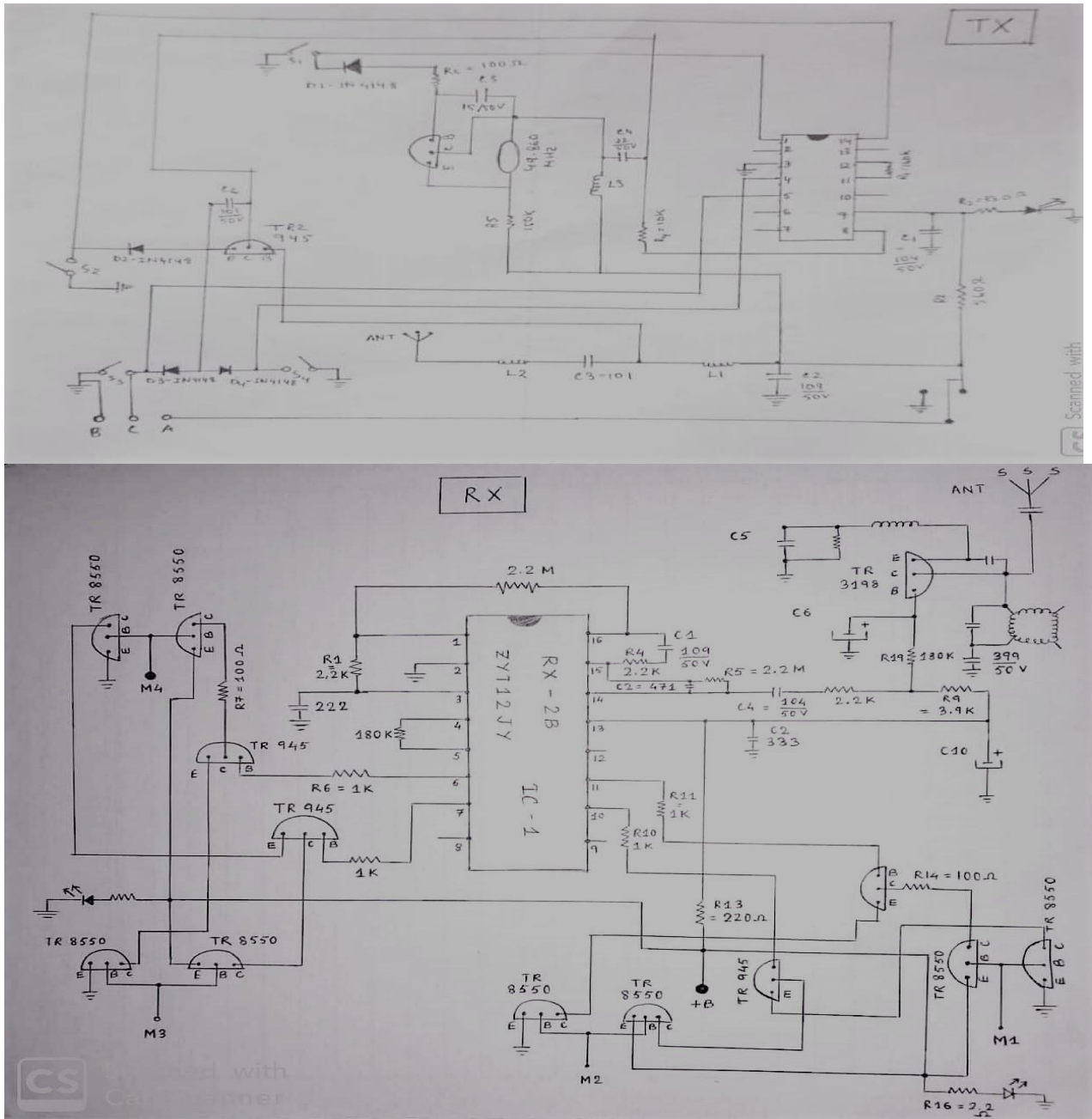


FIG 1 - CIRCUIT DIAGRAM OF THE PROPOSED SYSTEM

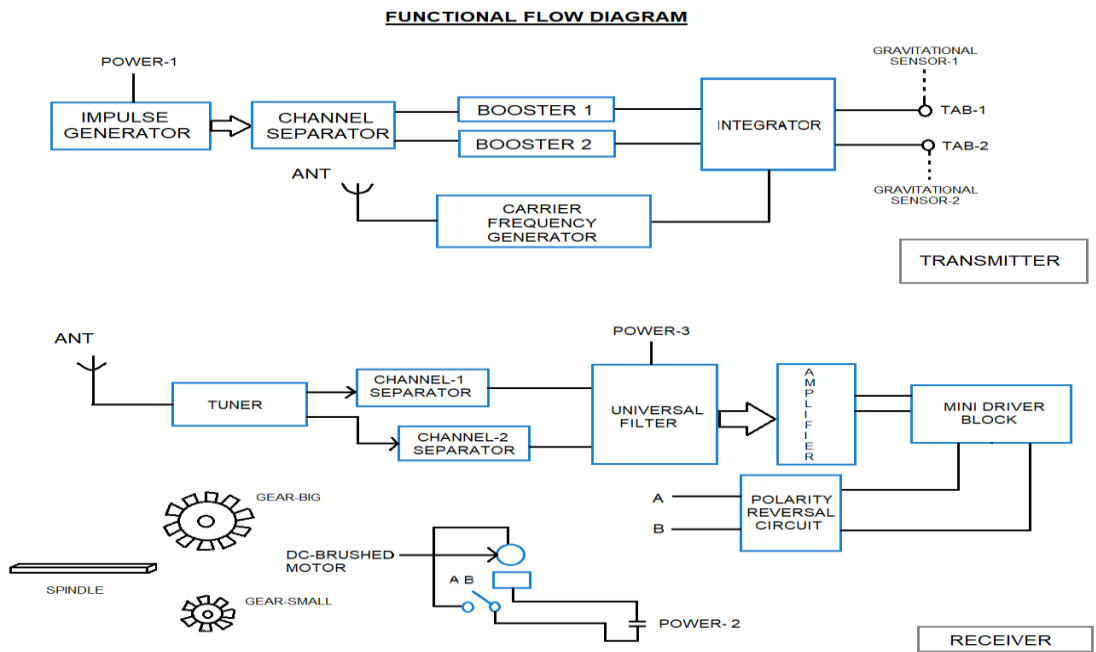


FIG 2 - FUNCTIONAL FLOW DIAGRAM



FIG 3 - PROTOTYPE OF THE PROPOSED SYSTEM

CONCLUSION

In this system ,when the remote is titled in the right side we see that the motor runs clockwise moving the horizontal block on left side . When the remote is titled left side we see that the motor runs anticlockwise moving the horizontal block on the right side. If the remote is kept still the block will be on rest. We can apply this domain in various industries. The complicated things can be monitored from a distance, where physical presence in prohibited or injurious to health. It can save many accidents. By this, a person can supervise many

operations at same time and at a distance without the need of operating a device by hand, thus making the system wireless which is our greatest advantage. This work is a small prototype of the idea which can be implemented on a large scale in various industries.

FUTURE SCOPE

1. By this technology space management can be done very easily. A high technology can be operated in a minimum space.
2. This is a wireless system. That means it can be operated without wires. So the maintenance cost will be low.
3. This can be used in both core industries like cement, petroleum, fertilizers and in ancillary industries like transporting warehousing and as well in small sectors like food processing, textile along with even cottage sectors.
4. Increasing the size of antenna and using more powerful gravitational sensors the operating distance can be increased.

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