

RF Based Robot

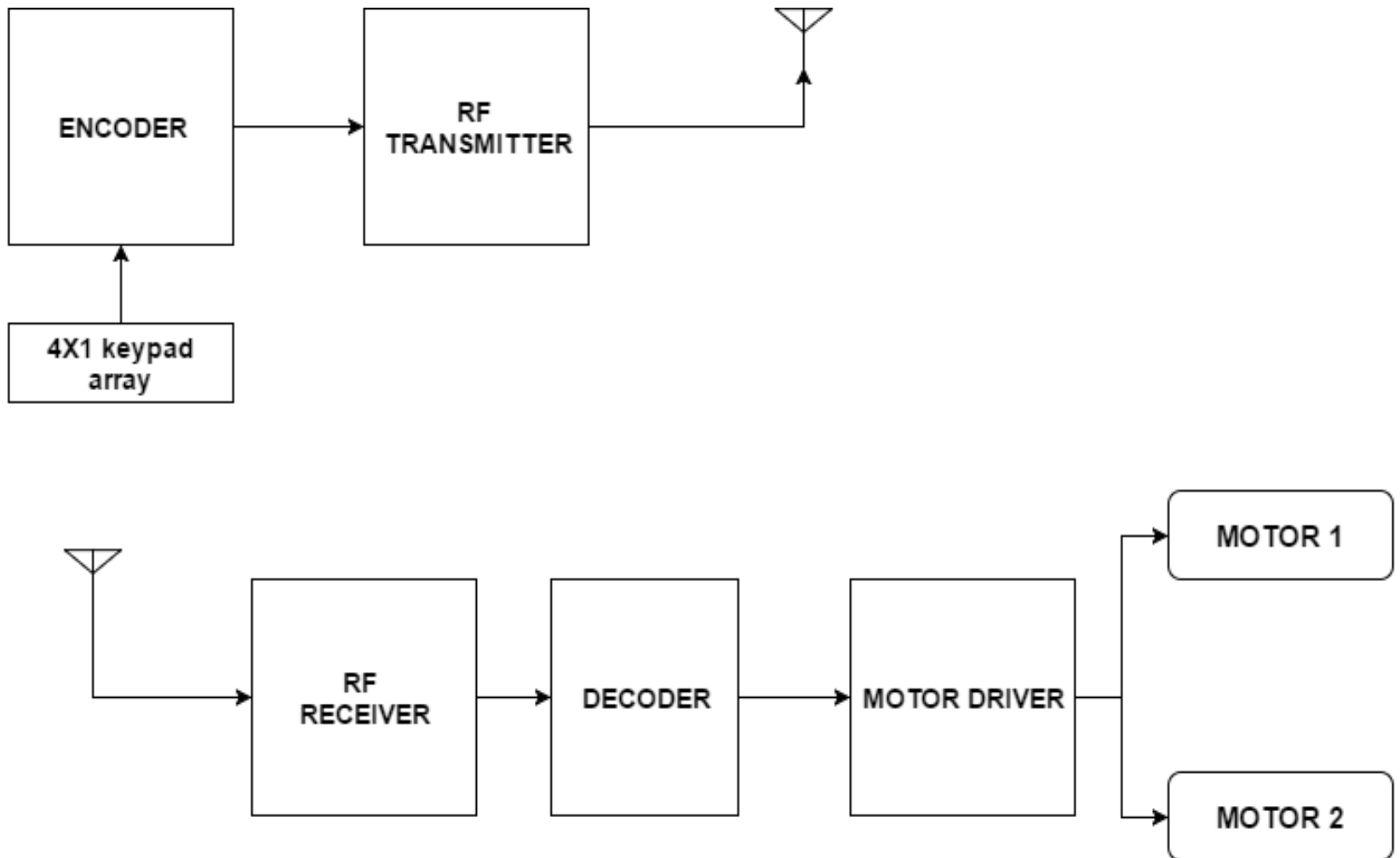
Overview

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Introduction

- Robots reduces human efforts
- RF robots are controlled wirelessly at a frequency of 434 MHz
- Allows maximum range of 200 meters.
- RF transmitter has an encoder IC and RF receiver has a decoder IC.

Block Diagram



Hardware Requirements

- RF transmitter TLP434A with encoder HT12E
- RF receiver RLP434A with decoder HT12D
- Motor driver IC
- DC Motor
- Power Supply

RF transmitter TLP434A with encoder HT12E



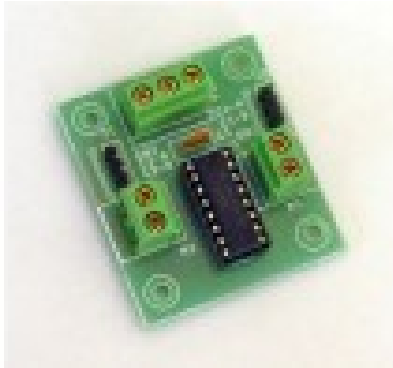
- Uses ASK (Amplitude Shift Keying) modulation
- HT12E converts the parallel inputs into serial output.
- Active low transmission enable

RF receiver RLP434A with decoder HT12D



- Uses ASK demodulation
- The chosen pair of encoder/decoder should have same number of addresses and data format.
- HT12D converts the serial input into parallel outputs.

Motor Driver IC



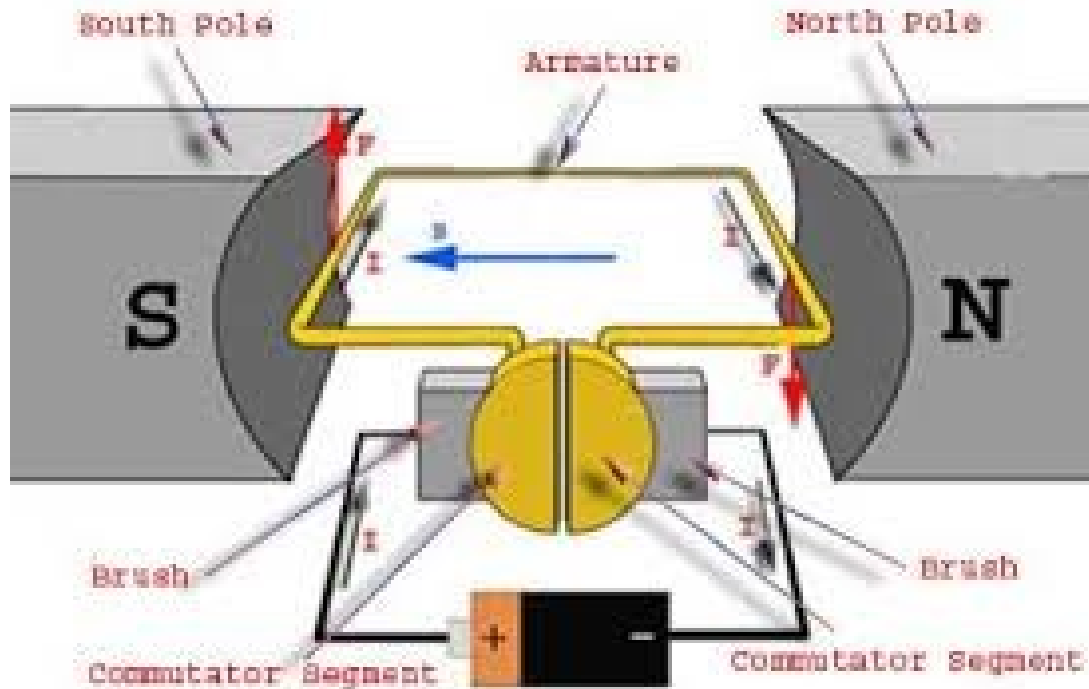
- This Motor Driver Board is designed to Work with L293D IC.
- This can control 2 DC Motors, their direction using control lines and their speed using PWM.

DC Motor

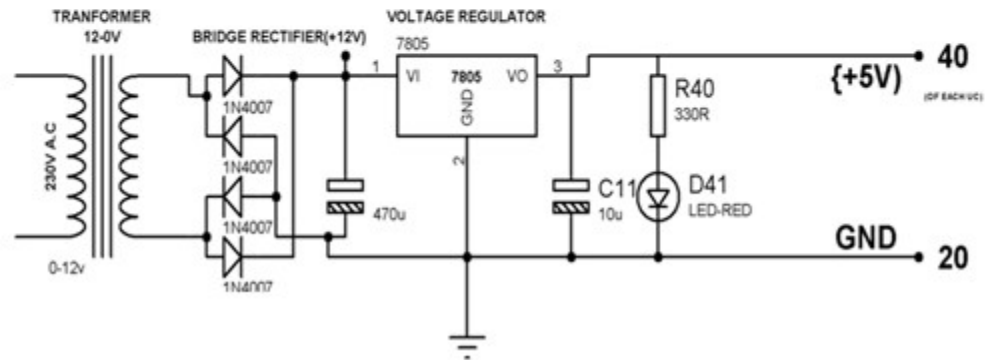
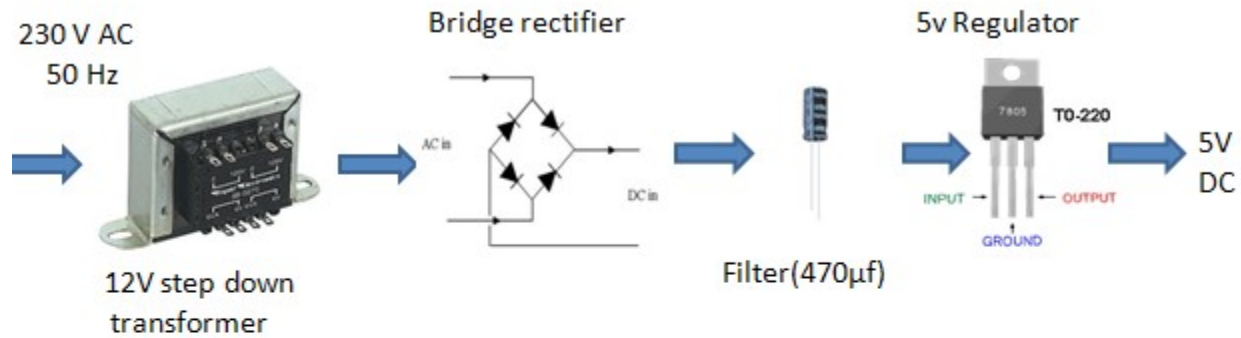


- Converts direct current electrical power into mechanical power
- The very basic construction of a dc motor contains a current carrying armature which is connected to the supply end through commutator segments and brushes are placed within the north south poles of a permanent or an electro-magnet

DC Motor - Construction



Power Supply



Advantages

- Advantage of RF is the wide range of control it makes it possible
- No wired connection is required between the transmitter and receiver. So the vehicle control can be made more in the form of remote control.

Future Work

- RF robots can be used for wide applications
- Remote control vehicles like unmanned aerial vehicles in space exploration and military
- IR sensors can be added to detect obstacles
- Camera can be used to monitor surroundings
- The robot can be interfaced with microcontroller to enhance its automation capability.

Conclusion

- RF based robot developed using RF transceiver system
- RF uses frequency of 434MHz
- Every type of movement of robot is made possible without using any wired connection or just like using a remote control.

References

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