Jugaad-'We Are Solution'

May 20, 2010

WIRELESS ROBOT

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Robotics can be defined as the science or study of the technology primarily associated with the design, fabrication, theory, and application of robots.I will explain the simple wireless robot using ASK (Amplitude Shift Keying) based Tx/Rx (transmitter/receiver) pair or RF MODULE operating at 434 MHZ.
This is a very simple project, and can easily be expanded to transmit temperature data, alarm status, remote control signals, and other information over wireless links.

- The TWS-434 and RWS-434 are extremely small, and are excellent for applications requiring short-range RF remote controls.

TWS-434: The transmitter output is up to 8mW at 433.92MHz with a range of approximately 400 foot (open area) outdoors. Indoors, the range is approximately 200 foot, and will go through most walls.....

- The TWS-434 transmitter accepts both linear and digital inputs, can operate from 1.5 to 12 Volts-DC, and makes building a miniature hand-held RF transmitter very easy. The TWS-434 is approximately the size of a standard postage stamp.

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Ravi Jagdish Sahil Priyanka

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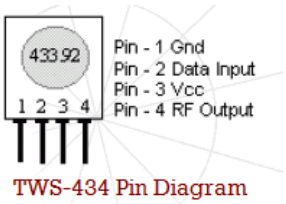
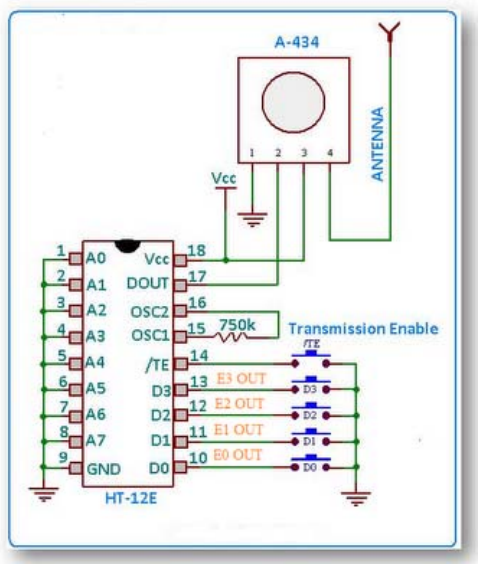


TWS-434 Pin Diagram

TRANSMITTER CIRCUIT DIAGRAM:



The encoder IC takes in parallel data which is to be transmitted, packages it into serial format and then transmits it with the help of the RF transmitter module. At the receiver end the decoder IC receives the signal via the RF receiver module, decodes the serial data and reproduces the original data in the parallel format.

RWS-434: The receiver also operates at 433.92MHz, and has a sensitivity of 3uV. The RWS-434 receiver operates from 4.5 to 5.5 volts-DC, and has both linear and digital outputs.

THE RECEIVER CIRCUIT DIAGRAM:

Now in order to control say a dc motor, we require 2 bits of information (switching it on/off) while we need 4 bits of information to control 2 motors. HT12E and HT12D are 4 channel encoder/decoder ICs directly compatible with the specified RF module.

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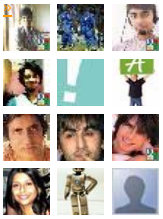

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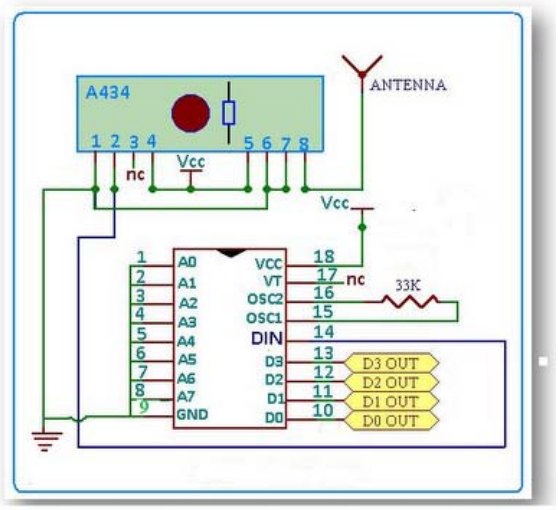
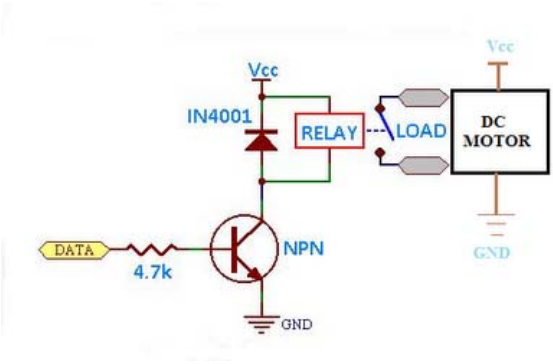


In order to drive motors, we would need to connect a suitable motor driver at the output of the decoder IC. Bcoz the current is not sufficient to drive the motor. The motor driver circuit can consist of a relay, transistorized H-Bridge or motor driver ICs like the L293D, L298 etc.

MOTOR DRIVEN CIRCUIT:

RELAY- 5 OR 6 VOLT



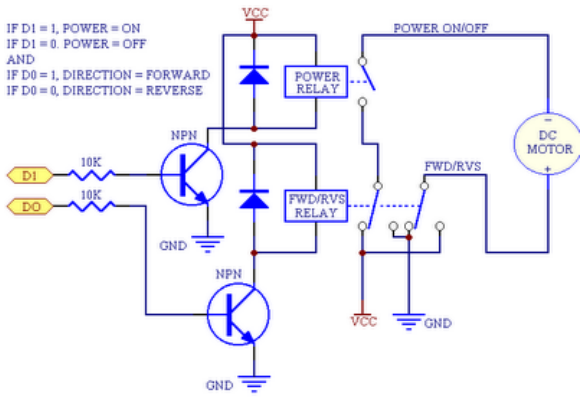
Here we have used a flyback protection diode to prevent the damage of the diode. The data output of the decoder ICs should be connected to base of transistor (as shown in the figure).

NOTE: Both the grounds for relay and receiver circuit are connected common.

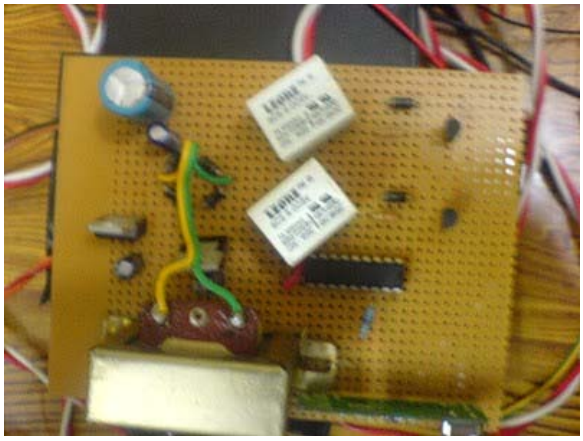
This example above shows the receiver section using the HT-12D decoder IC for a 4-bit RF remote control system. The transmitter and receiver can also use the

Holtek 8-bit HT-640/HT-648L remote control encoder/decoder combination for an 8-bit RF remote control system. Here are the schematics for an 8-bit RF remote control system:

For Bidirectional movement of the robot, Relay connections will be as follow:



MY OWN ROBOT:



REMOTE CONTROL:

Posted by Er.Rachin Jain & Er.Abhimanyu Singh at 4:11 AM

REACTION: COOL (0) INTERESTING (0) FINE (0)

2 comments:

Anonymous said...

hey ive been workin on rf modules frm past 1 yr
and the diags uve taken are originally frm botskool.com... neways wat i wantd to ask was whether ur robo actually worked... if it did wat was the resistor combination used... and plz temme wat was the range of transmission as in the MAX line of sight that it could be controlled...

November 4, 2010 9:22 AM

arun kumar said...

my self anil ive been workin on rf modules frm past six months,i have constructed 4bit rf module of freq 434mhz using ic ht12e/ht12d and what type of switches are you usde in transmiter part but its not working whether we should program the ics are not can you demonstrate throug a video how to construct it please,please.....

November 24, 2010 7:24 AM

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