

SRM Institute of Science and Technology College of Engineering and Technology Department of Electronics and Communication Engineering
18ECC205J ANALOG AND DIGITAL COMMUNICATION Fifth Semester, 2022-23 (odd semester)

Mini Project Report

Name :
 Register No. :
 Day / Session :
 Venue :
 Project Title :
 Lab Supervisor :
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Particulars	Max. Marks	Marks Obtained
Objective & Description	05	
Result Analysis	10	
Presentation	10	
Report	05	
Total	30	

REPORT VERIFICATION

Date :
 Staff Name :

AUTOMATIC DOOR BELL

OBJECTIVE:

In this Project ,we are using 433Mhz RF transmitter and receiver module to design the Automatic door bell with help encoder and decoder.

ABSTRACT:

In this project, we are going to build a Wireless Doorbell . We will have a button which when pressed will wirelessly play a melody of our choice to indicate someone is at the door. For wireless connectivity, we will use the 433 MHz RF module. In general, the RF module must always be accompanied by a decoder and encoder module, but in place of the decoder and encoder module,

INTRODUCTION:

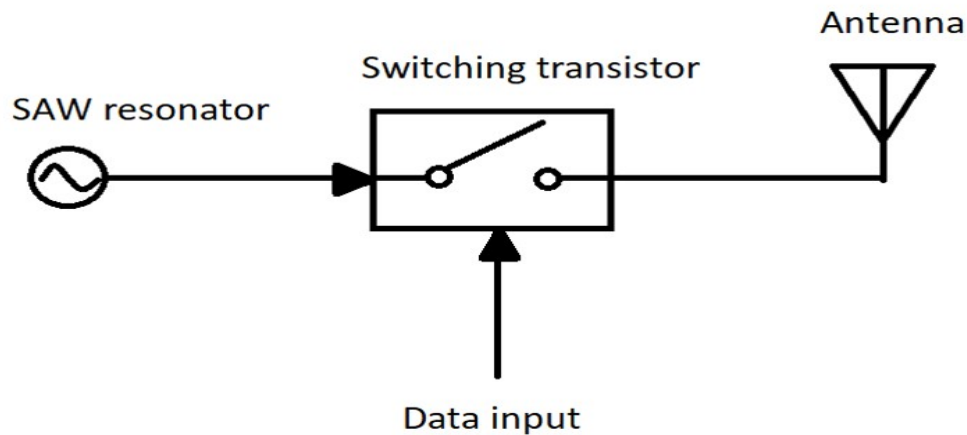
We all know of the wired doorbell systems which require wires and suitable outlets for it to work satisfactorily. As the wired doorbell system needs complicated wiring, it requires an experienced person to get the work done and it does not do good, in both working and appearance. Another problem with it is that, if you want to install a wired doorbell system for an existing house, it needs more effort and time for the installation. Due to the temperature and humidity, and other environmental factors, wires are damaged and will lead to a short circuit. This is where the wireless doorbell system gets into the picture. Even though the cost of the wireless Doorbell system is more, when compared to the wired doorbell system, the regular maintenance for the wireless Doorbell system is low when compared with the wired doorbell system, which requires an experienced person for maintenance purposes. When it comes to installation, wireless doorbell systems are very simple to install and requires no experience person for installation. In addition to this, wireless doorbell systems have additional features like camera, video recorder, etc and look stylish, and it can be easily installed in any part of the house as it is completely wireless.

HARDWARE REQUIREMENTS:

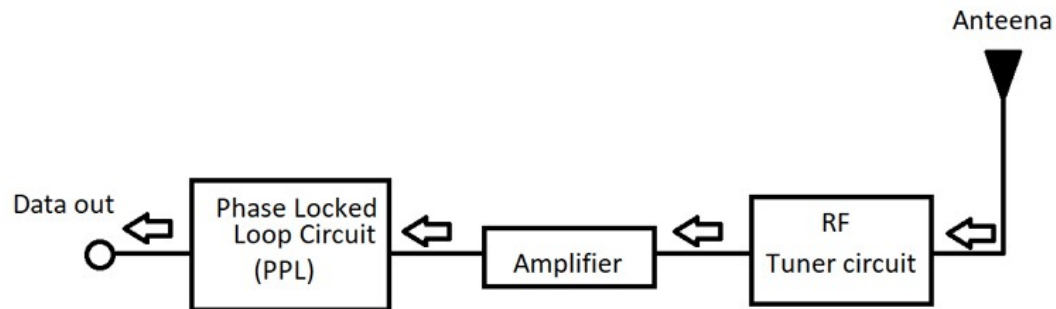
- * RF Transmitter and Receiver(433Mhz)
- * Encoder and Decoder
- * Buzzer
- * 740k,33k Resistor
- * BreadBoard and connecting wires

BLOCK DIAGRAM / CIRCUIT DIAGRAM: :

RF Transmitter:



Receiver Circuit:



CONCEPTS/WORKING PRINCIPLE

RF Transmitter:

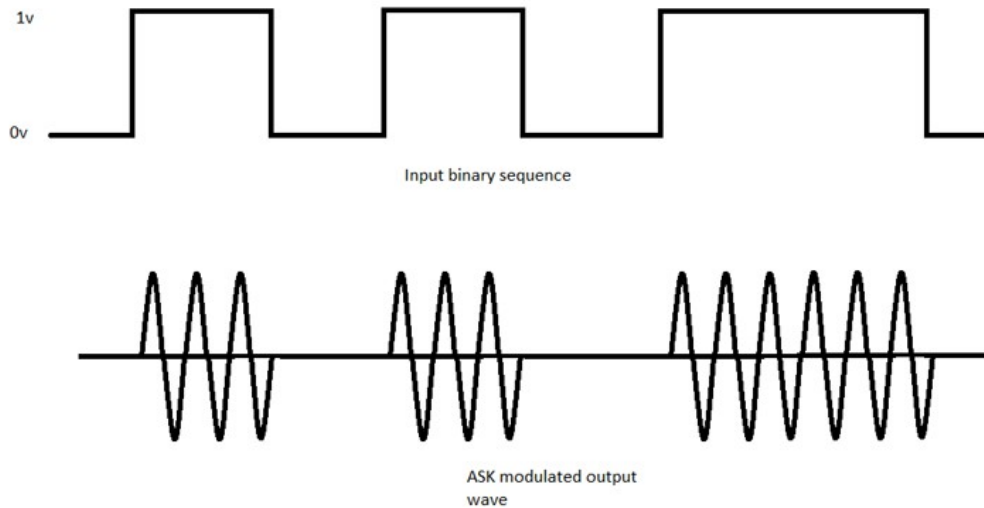
- * A transmitter consists of a SAW resonator, which is tuned to 433MHz frequency, a switching circuit, and a few passive components.
- * When the input to the data pin is HIGH, the switch will act as a short circuit and the oscillator runs which produces a fixed amplitude carrier wave and a fixed frequency for some period of time 't'. When the input to the data pin is low, the switch acts as an open-circuit and the output will be zero. This is also known as **Amplitude shift keying (ASK)**.

Receiver Circuit:

- * An RF receiver is a simple circuit that consists of an RF tuned circuit, an amplifier circuit, and a phase lock loop circuit.
- * An RF tuner is used to tune the circuit to a particular frequency, which needs to meet the transmitted frequency. An amplifier circuit is used to amplify a particular frequency from all other signals and to increase the sensitivity of the particular frequency.

Amplitude Shift Keying (ASK) Modulation:

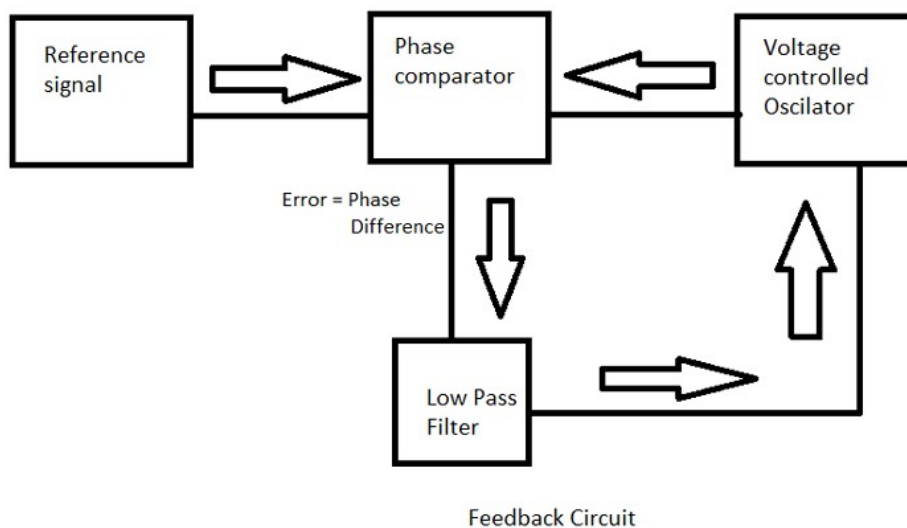
In Amplitude Shift key modulation, the sinusoidal carrier will keep on generating continuous high-frequency carrier, and the signal which is to be modulated will be in the binary sequence, and these signals make the input to the switching circuit to be either high or low.



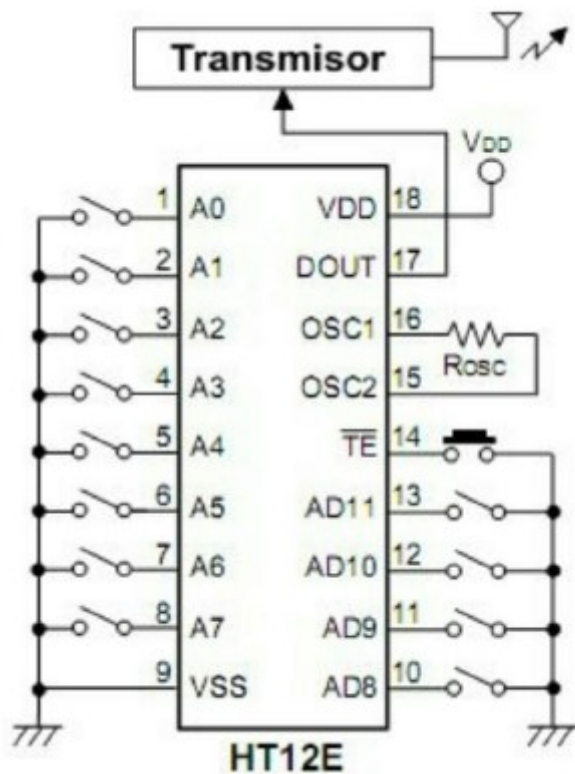
As shown in the above figure, when the input is low, the switch will act as an open circuit, and the output will be zero. When the input to the switch is high, the output will be the carrier signal.

Phase Lock Loop Circuit:

A phase lock loop circuit (PLL) is a circuit that is used in types of equipment in which we want a highly stable frequency from a low-frequency reference signal. A PLL is a negative feedback system that consists of a voltage-controlled oscillator and a phase comparator connected in such a way that the oscillator frequency always matches the input signal as shown below.

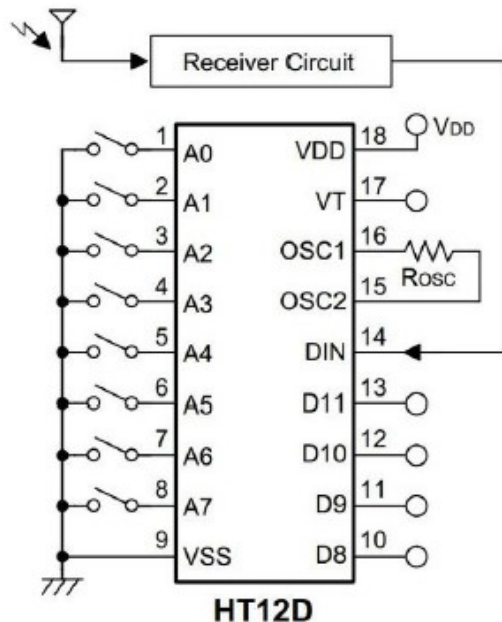


HT – 12E Encoder IC:



HT – 12E Encoder IC is often used with the RF Transmitter Module. The Encoder IC converts the parallel data from its input to serial data for the RF Transmitter module to transmit.

HT – 12D Decoder IC:



HT – 12D Decoder IC is the counter part of the Encoder IC. It is often used with RF Receiver Module. The RF Receiver receives the serial data from the RF Transmitter. The Decoder IC takes this serial data and converts it back to the parallel data.

CONCLUSIONS:

Thus ,The project of Automatic Door Bell Using the RF Transmitter and Receiver with the help of encoder and decoder is designed

REFERENCES:

<https://www.electronicshub.org/automatic-doorbell-with-object-detection>
<https://freakydiodes.com/automatic-door-bell-with-object-detection/>