

# Explanation of Circuit Diagram of Terminator –Of Dust

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**Abstract:** In today's scenario due to heavy workloads people sometimes reacts irritatingly upon the simple tasks, thus leading to unsatisfied life. So in order to make their life simpler "TERMINATOR –OF DUST" is the best solution. In this paper we are focusing on the basic circuit diagram of our model along with the explanation of the components used.

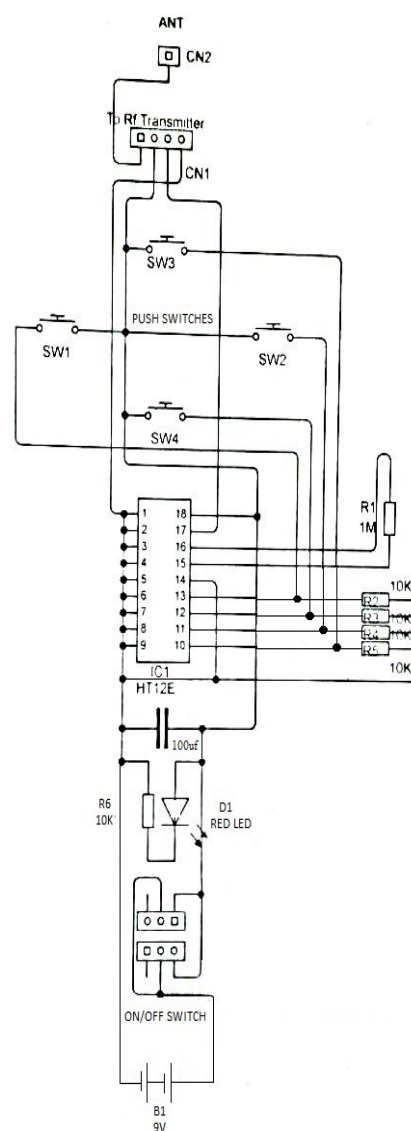
## 1. INTRODUCTION

Taking into regard the needs and demands of the citizens "TERMINATOR – OF DUST" ,is best applicable for all their needs . This model is well suited to reduce the fatigue of people in order when they spend their time and money in the task of cleaning. This model efficiently cleans the flat surface in addition the stairs also with the aid of vacuum cleaner. So in this paper all the specifications along with the circuit diagram of the model are described. The paper is divided in 5 sections. First section provides introduction about the idea of the paper. Second section is dedicated to the circuit diagram. Third section gives the detail of circuit diagram. Fourth section is the results and discussion. fifth section is conclusion.



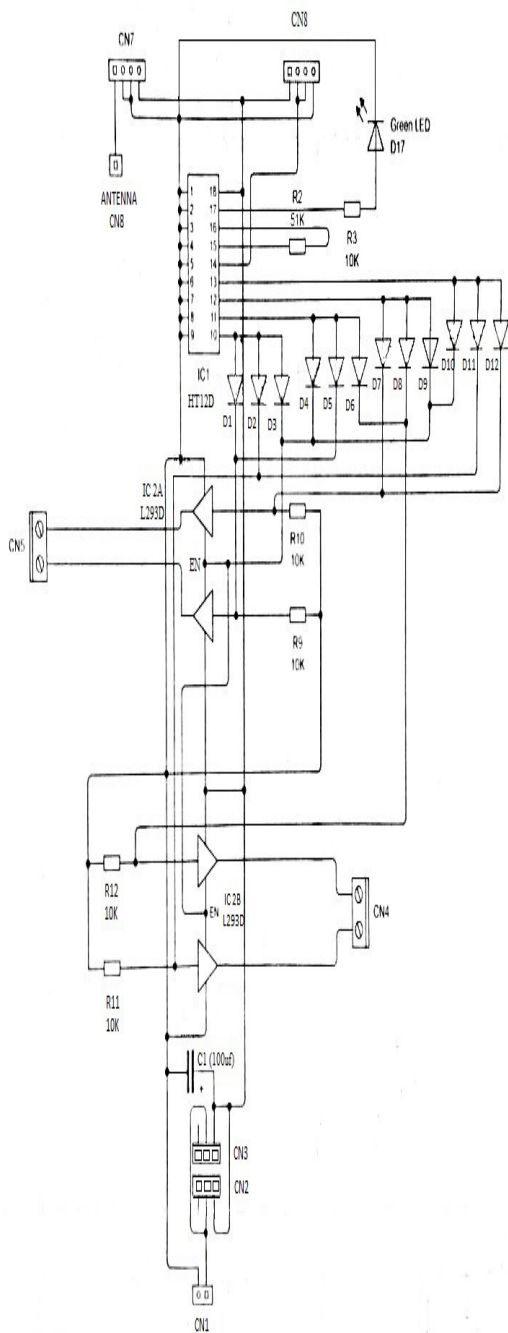
FIGURE.1

## 2. CIRCUIT DIAGRAM



TRANSMITTER

FIGURE.2(a)



**RECEIVER**

FIGURE.2(b)

### 3. ABOUT THE CIRCUIT

CN1 is the battery connector. CN2 and CN3 are the switch terminal. CN4 and CN5 are the left and right motors respectively. CN6 and CN7 are the receiver connectors.

### 3(a) IC'S USED :-

- 1.) HT12E
- 2.) HT12D
- 3.) L293D
- 4.) L293E

### 3(b) IC'S DESCRIPTION :-

- HT12E Encoder IC

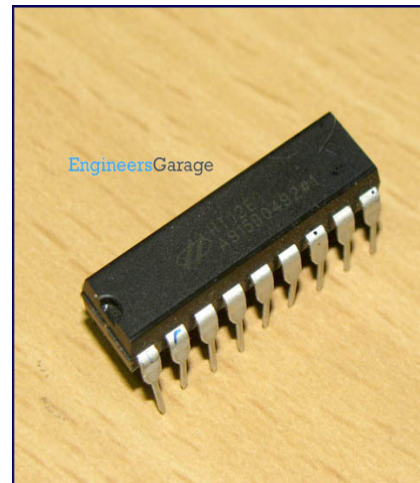


FIGURE.3

HT12E is an encoder integrated circuit of  $2^{12}$  series of encoders. They are paired with  $2^{12}$  series of decoders for use in remote control system applications. It is mainly used in interfacing RF and infrared circuits. The chosen pair of encoder/decoder should have same number of addresses and data format. Simply put, HT12E converts the parallel inputs into serial output. It encodes the 12 bit parallel data into serial for transmission through an RF transmitter. These 12 bits are divided into 8 address bits and 4 data bits. HT12E has a transmission enable pin which is active low[2]. When a trigger signal is received on TE pin, the programmed addresses/data are transmitted together with the header bits via an RF or an infrared transmission medium. HT12E begins a 4-word transmission cycle upon receipt of a transmission enable. This cycle is repeated as long as TE is kept low. As soon as TE returns to high, the encoder output completes its final cycle and then stops.

**PIN DIAGRAM:-**

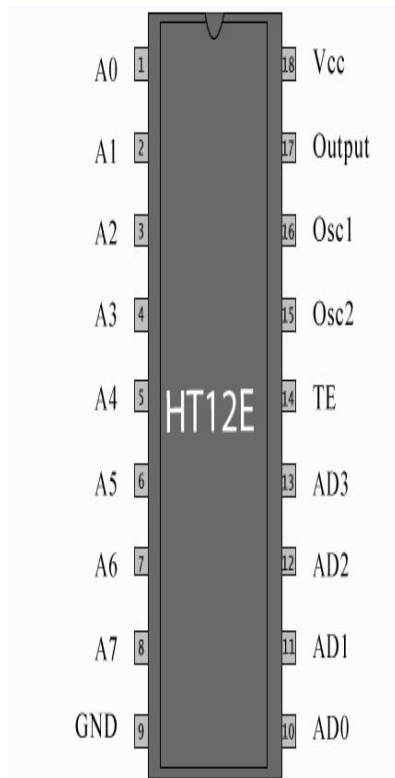


FIGURE.4

**PIN DESCRIPTION:-**

TABLE.1

Pin No	Function	Name
1	8 bit Address pins for input	A0
2		A1
3		A2
4		A3
5		A4
6		A5
7		A6
8		A7
9	Ground (0V)	Ground
10	4 bit Data/Address pins for input	AD0
11		AD1
12		AD2
13		AD3
14	Transmission enable; active low	TE
15	Oscillator input	Osc2
16	Oscillator output	Osc1
17	Serial data output	Output
18	Supply voltage; 5V (2.4V-12V)	Vcc

• **HT12D:-**

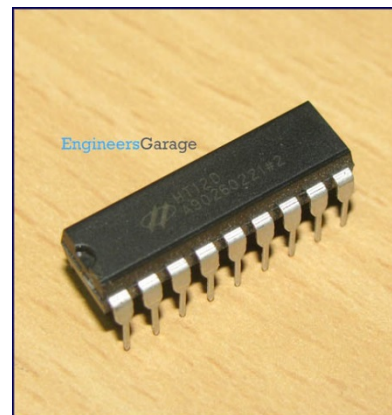


FIGURE.5

**HT12D is a decoder integrated circuit** that belongs to  $2^{12}$  series of decoders. This series of decoders are mainly used for remote control system applications, like burglar alarm, car door controller, security system etc. It is mainly provided to interface RF and infrared circuits. They are paired with  $2^{12}$  series of encoders. The chosen pair of encoder/decoder should have same number of addresses and data format.

In simple terms, HT12D converts the serial input into parallel outputs. It decodes the serial addresses and data received by, say, an RF receiver[3], into parallel data and sends them to output data pins. The serial input data is compared with the local addresses three times continuously. The input data code is decoded when no error or unmatched codes are found. A valid transmission is indicated by a high signal at VT pin. HT12D is capable of decoding 12 bits, of which 8 are address bits and 4 are data bits. The data on 4 bit latch type output pins remain unchanged until new is received.

**Pin Diagram :-**

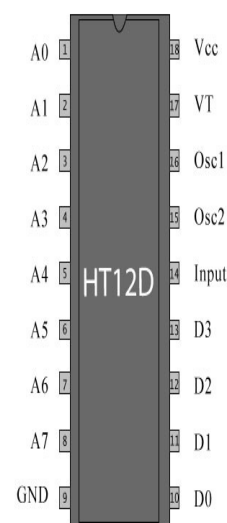


FIGURE.6

**Pin Description :-**

Pin No	Function	Name
1	8 bit Address pins for input	A0
2		A1
3		A2
4		A3
5		A4
6		A5
7		A6
8		A7
9	Ground (0V)	Ground
10	4 bit Data/Address pins for output	D0
11		D1
12		D2
13		D3
14	Serial data input	Input
15	Oscillator output	Osc2
16	Oscillator input	Osc1
17	Valid transmission; active high	VT
18	Supply voltage; 5V (2.4V-12V)	Vcc

TABLE.2

• **L293D :-**

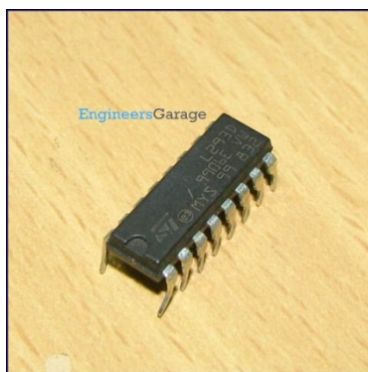


FIGURE.7

L293D is a dual H-bridge motor driver integrated circuit (IC). Motor drivers act as current amplifiers since they take a low-current control signal and provide a higher-current signal. This higher current signal is used to drive the motors. L293D contains two inbuilt H-bridge driver circuits. In its common mode of operation, two DC motors can be driven simultaneously, both in forward and reverse direction[4]. The motor operations of two motors can be controlled by input logic at pins 2 & 7 and 10 & 15. Input logic 00 or 11 will stop the corresponding motor. Logic 01 and 10 will rotate it in clockwise and anticlockwise directions, respectively. Enable pins 1 and 9 (corresponding to the two motors) must be high for motors to start operating. When an enable input is high, the

associated driver gets enabled. As a result, the outputs become active and work in phase with their inputs. Similarly, when the enable input is low, that driver is disabled, and their outputs are off and in the high-impedance state[5].

**PIN DIAGRAM :-**

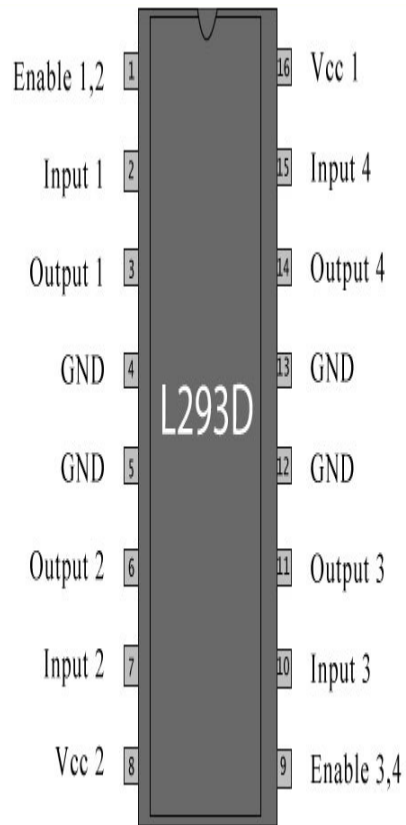


FIGURE.8

**PIN DESCRIPTION :-**

Pin No	Function	Name
1	Enable pin for Motor 1; active high	Enable 1,2
2	Input 1 for Motor 1	Input 1
3	Output 1 for Motor 1	Output 1
4	Ground (0V)	Ground
5	Ground (0V)	Ground
6	Output 2 for Motor 1	Output 2
7	Input 2 for Motor 1	Input 2
8	Supply voltage for Motors; 9-12V (up to 36V)	Vcc <sub>2</sub>
9	Enable pin for Motor 2; active high	Enable 3,4
10	Input 1 for Motor 1	Input 3
11	Output 1 for Motor 1	Output 3
12	Ground (0V)	Ground

13	Ground (0V)	Ground
14	Output 2 for Motor 1	Output 4
15	Input2 for Motor 1	Input 4
16	Supply voltage; 5V (up to 36V)	V <sub>cc 1</sub>

**TABLE.3**

#### 4. RESULTS & DISCUSSION

The result which we expect from our project is that the robot[6] will run efficiently on the flat surface and climb upon the stairs without any difficulty . Also that the robot will move according to the command given at the receiver end without any ambiguity .We also expect that the robot will tolerate the vacuum cleaner load and without any problem the robot will clean the floor efficiently and fast.

#### 5. CONCLUSION

From the above mentioned circuit diagram we expect a well running staircase robot which can clean the flat surface as well as the staircases. With this model many of the daily issues of people will be resolved since this “TERMINATOR - OF DUST” can by itself clean the floors , the only need is just to press the switch and the robot will automatically perform it’s task without any external aid.

#### REFERENCES :-

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