AUTOMATIC RAILWAY GATE CONTROL SYSTEM

ABSTRACT

This project is aimed to design a system to control the railway gate automatically by using IR sensors.

Railways, being the cheapest mode of transportation are preferred over all the other means. When we go through the daily news papers, we come across many railway accidents occurring at unmanned railway crossings. This is mainly due to the carelessness in manual operations or lack of workers. In order to overcome these dangerous problems we in this project came up with a solution for the same. Using simple electronic components and a wireless communication technique we have tried to automate the control of railway gates. The main aim of this project is automating the unmanned railway gate i.e. the gate is closed automatically whenever the train arrives and gate is opened after the train leaves the railway-road crossing. The arrival of train in either direction can be identified using this project. Use of embedded technology makes this closed loop feedback control system efficient and reliable. AT89C51 microcontroller is the heart of the circuit as it controls all the functions.

The system comprises of two IR Transmitter-Receiver pairs. One IR TX - Rx pair is located at one end of the railway gate. The second pair is located at another end of the gate. In each pair the TX and Rx are arranged face to face across the railway track. i.e., TX is placed at one side of the track and the receiver RX at another side of track. The Rx should continuously get the signal from the transmitter. Whenever any train is arriving on the track, the IR signal gets disturbed due to the interruption of the train. Thus the microcontroller identifies the arriving of the train. Before closing the gate the microcontroller gives siren to alert the people. After 30 sec, the controller will close the gate by rotating the dc motor. For the opening of the gate, the micro controller should know whether the train has left the crossing or not. The second IR pair is used for this purpose. The second IR pair identifies the train since the IR signal gets disturbed when it comes in between TX and RX. The microcontroller will wait till the last compartment and when it left the IR pair, the receiver again gets IR signal. Hence the microcontroller knows that the train left the

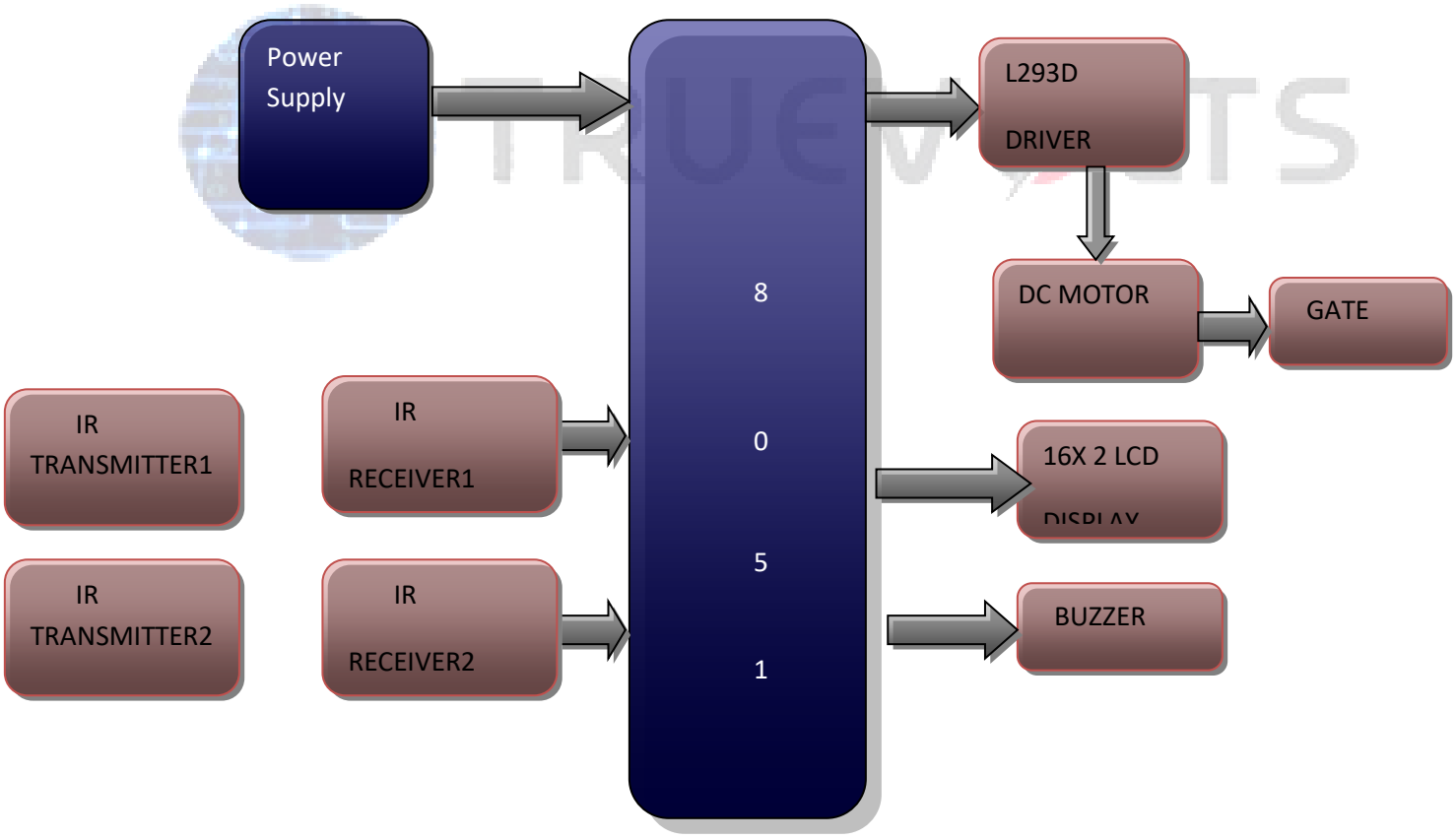
gate. Till this time the gate is closed. . Now, after the train left the crossing, the microcontroller will open the gate by rotating the DC motor. LCD displays the status of the gate.

This project uses regulated 5V, 500mA power supply. Unregulated 12V DC is used for geared motor. 7805 three terminal voltage regulator is used for voltage regulation. Full wave bridge rectifier is used to rectify the ac output of secondary of 230/12V step down transformer.

Applications:

- Automatic railway gate
- Automatic gate opening
- Toll gates
- Parking areas

BLOCK DIAGRAM:



POWER SUPPLY BLOCK DIAGRAM