**AUTOMATIC INTER GATE LOCKING SYSTEM FOR TOLL TAX**

**DESCRIPTION:**

This project is a standalone Embedded two gate interlock control system for toll tax using AT89C51 microcontroller. This project is useful in all applications where two door interlocking is needed. Use of embedded technology makes this closed loop feedback control system efficient and reliable. Micro controller (AT89C51) allows dynamic and faster control. AT89C51 micro controller is the heart of the circuit as it controls all the functions.

Two IR TX – RX pairs are used in this project to identify the entry or exit of the vehicle. These two IR TX – RX pairs are arranged each one on two gates. Initially the entry gate is closed. Whenever any person comes in front of the entry gate, the IR RX identifies it since the IR signal gets disturbed. Then the microcontroller opens the entry gate by rotating the DC gear motor. After some delay, the gate will be closed.

After the person finishes his task, when the vehicle stands near the exit door, the second IR pair placed at the exit gate detects the vehicle and then the exit gate opens for the vehicle to leave. The microcontroller closes the gate only after the vehicle exits out. And again the entry gate sensor will be waiting for the next vehicle to enter. Thus both the entry and exit gates will be locked when a vehicle is present in between the two gates.

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.

# TECHNICAL SPECIFICATIONS:

**HARDWARE:**

Micro controller : AT89x series

Crystal : 11.0592 MHz

L293D

DC gear Motor

IR transmitter

IR receiver

Power supply

Transformer : 12V step down

Filter : 1000uf/25V

Voltage Regulator : 7805, 7812

**SOFTWARE:**

Keil IDE

UC flash

Proteus

**APPLICATIONS:**

* Road transportation systems

**BLOCK DIAGRAM:**

DC gear Motor 1

L293D

DC gear Motor 2

Power Supply

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IR transmitter (at entrance)

IR receiver (at entrance)

IR receiver (at exit)

IR transmitter (at exit)

**POWER SUPPLY BLOCKDIAGRAM:**

Step down Transformer

Filter

Regulator

Output

Bridge Rectifier