

# PLC Using renesas controller for sliding railway platform

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**ABSTRACT:**This project is used for automatically close or opens the mobile platforms in between the track trains. Normally the mobile platform connects the two platforms through which the passenger can walk on the platform to reach on the next platform Sensors are placed on the two sides of track. If the train reaches one sensor the mobile platform will automatically close and allows the train to go through the tracks and then when the train leaves the second sensor the mobile platform will automatically open the bridging platforms. The PLC will sense the presence of train by using infrared sensor. So on sensing the train on one path controller will give pulses to the stepper motor to close the mobile platform automatically.

Now a day we are using over bridges for crossing the rail and manual controlling mechanism for the railway gates. In this project we are introducing a new intelligent platform which reduces accidents and make an easy passage for passengers from one platform to other platform and also an automatic railway gate which is controlled by a computer. The proposed system consists a detection system, The main advantages project is, it reduces the accidents at the railway crossing and platforms and provide an easy passage for the passengers

## I. INTRODUCTION

PLC invention was in response to the requirements of the automotive manufacturing industry. Primary to the PLC, control, sequencing, and safety interlock logic for manufacturing lines relied on hundreds or, in some cases, thousands of relays, cam timers, and drum sequencers and dedicated closed-loop controllers.

The basic PLC must be adequately

flexible and configurable to meet the diverse needs of different applications.

All PLCs have the same essential components.

These elements work together to bring input information into the PLC from the plant, process that information, and send output information back out to a plant.

## II. LITERATURE SURVEY

Researchers have concluded that it will tend to use PLCs as their main controller for any field of research even though there are other controllers out there in the market. We can conclude that PLCs can be applied to any system, whether it is a simple or complicated control system.

As the automation is today's need in almost all industrial and electrical applications, there is demand of PLC with reasonable cost also it must be user friendly, programming easy to understand and should have less maintenance

The paper describes the possibilities of a PLC training simulator and some software examples which are intended for learning the basics of the PLC programming.

## Methodology

The PLC using Renesas will sense the presence of trains by using Infrared sensor. So on sensing the train on one path, the PLC will give pulses to the motor to close the mobile platform automatically. The mobile platform has a red/green Signal indication so that the pedestrians can know whether they can use the bridge or not. The signal automatically turns to red when the train comes and becomes green when the train leaves the station.

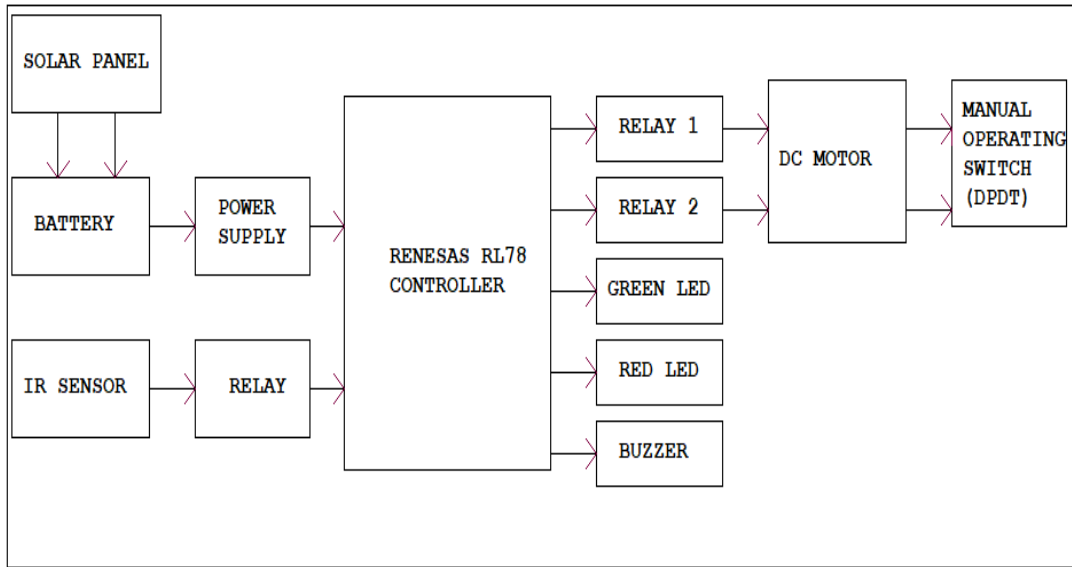


Figure 1: Block Diagram of System

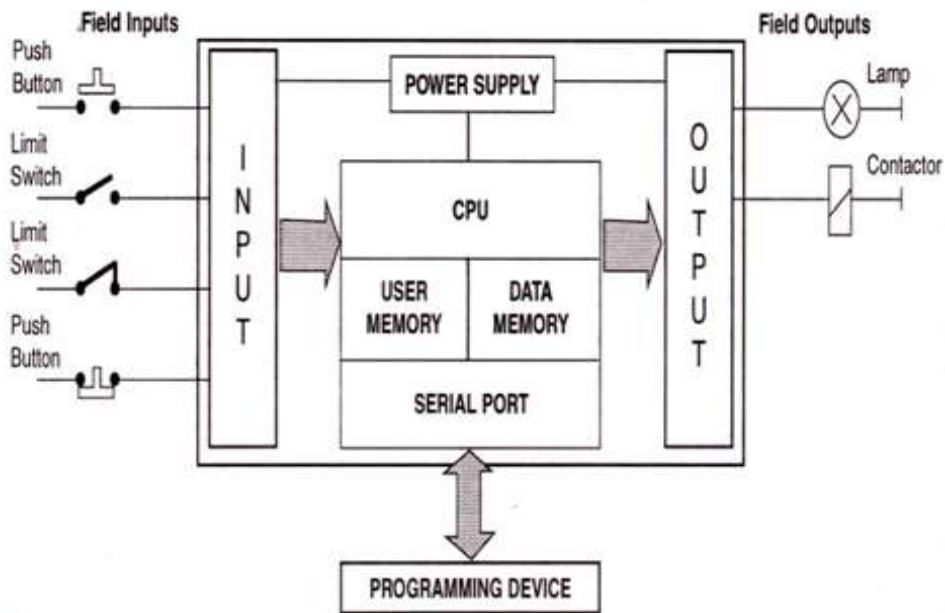


Fig.2 PLC Basic Block Diagram

### Problem Definition

Automation is the basic need in every industry to get efficient work within defined period of time. To have automated system, it is not always possible to buy the PLCs which are of higher cost.

So, our aim is to develop the PLC using Renesas Controller which in other hand having low cost, no need of purchase the licensed software, can easily identify and fix the problem and it is based on Digital logic gates programming which is more easier than ladder logic programming.

PLCs available nowadays in the market are having high initial cost, ladder logic programming which is hard to understand, high cost license software and requires more time when the failure occurs.

### Software Requirement

IO flow configuration tool is specially designed to construct the PLC. This configure tool is designed in JAVA to run on Windows platform. With this tool we can design complex logic for PLC. With This configuration tool we can live simulate logic inside the PLC.

This tool having different gates like AND, OR, AND, NAND, etc., different types of timers, flip-flops, comparators.

### Altium

**Altium Designer** is a PCB and electronic design automation software package for printed circuit boards. It is developed by Australian software company Altium Limited. For PCB designing we are going to use Altium.

### OrCAD

The software is used mainly by electronic design engineers and electronic technicians to create electronic schematics, perform mixed-signal simulation and electronic prints for manufacturing printed circuit boards. For development of software schematics and simulation we will use OrCAD. **Proteus**

Proteus design Suite by Labcenter Electronics, leading EDA software including schematic capture, advanced simulation, PCB autorouting, MCAD integration. Power supply design is prepared in Proteus and various signals are captured prior to actual system development.

### Advantages

#### With the use of Renesas controller:

- This system is more economical for the operation of the PLC.
- This system has Ultra Low power consumption as compared to the traditional system.

- Reduces maintenance cost as other PLCs required to call for the engineer from the same manufacturer.

- IO Flow software is licensed-free. So, no need to purchase the software of Higher cost

#### With the use of application:

- Saves the Time of Passengers
- Reduces the Accident: Slider foot-bridge reduces the accidents which are caused while crossing the over-bridge

- This system can be easy integrated with the current railway system so that no extra amount of hard ware has to add to system.

- Transportation: Slider foot-bridge can easily transfer goods from one platform to other platform.

#### Limitations

- No provision for Analog inputs.

- IC is not available in Dual-in-Package.

#### Application

- Smart Railway Platform

## III. CONCLUSION

In this project, the whole work took place heading towards minimizing the overall cost of the PLC. As the PLC which is developed using Renesas controller will have many advantages as it has Ultra-low power consumption, better performance applications and programming using digital logic gates which is more easier than that of using Ladder logic programming. Secondly, To reduce the maintenance time which is required when any PLC fails to work, as using Renesas controller, one can easily find the fault and and fix it even if the operator is not highly qualified. To keep in mind these all advantages over other controllers, here we are developing the PLC using Renesas controller with simple programming codes. This is the one step towards the automation with economy and better performance.

Also this PLC will be used to avoid accidents and reduce the number of fatalities in the field of railway transportation system.

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