

PLC BASED SMART RAILWAY ALARM SYSTEM

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ABSTRACT

This paper proposes an automated degree crossing manage system primarily based on programmable common sense manage (PLC). The prevailing traditional gate manage gadget of stage crossings in India is manually operated, which reasons more and more stage crossing accidents due to carelessness in guide operation. The manual mechanism is also time eating. The gate control mechanism have to be designed to ensure the protection of road customers and guarantee a shorter time throughout the gate beginning and last method. In this work, a prototype of a road and railway track version with an automatic railway crossing manipulate mechanism became designed and applied. a hard and fast of photoelectric sensors is strategically positioned on the advent and departure facet of the crossing. also, reflective photoelectric sensors are strategically used to discover any boundaries. The developed prototype device is simple, has a high running velocity and works properly in a laboratory putting.

Keyword : - Photoelectric, PLC, Sensors, Control, Automated, etc.

1. INTRODUCTION

Now a days, India is the use of a which having global's largest railway network. Over hundreds of railways strolling on target each day. As railway has straightway strolling as well because it has really unstable and threatening as according to as general public and visitors situation. As we realize that it's far definitely impossible to prevent the walking train at instantaneous is a few vital state of affairs or emergency arises. Therefore at the locations of visitors density, suburban regions and crossings there may be excessive need to put in a railway gate in view of protection purpose. obviously at every and every gate there should be an attendant to operate and keep it.

However, India, has already sufficient within your budget troubles which might be ever been unsolved. So, to avoid all these items some form of automated and impartial machine comes in photo. Now a day's computerized device occupies each and every quarter of programs as it's miles dependable, accurate and no need to pay high attention.

So, retaining all this stuff and factors and want of such system our assignment batch tries to make such kind of machine with the assist of numerous electrical, electronic and mechanical additives. The thorough and element in formation as in keeping with as construction and running is worried, it is discussed fatherly.

2. HARDWARE COMPONENTS

- PLC (Programmable Logic Control)
- Reflective type photoelectric sensor
- Relay
- DC Motor
- LED
- Track Module

3. SOFTWARE REQUIREMENT

- Embedded C++
- Ladder Program

4. METHODOLOGY

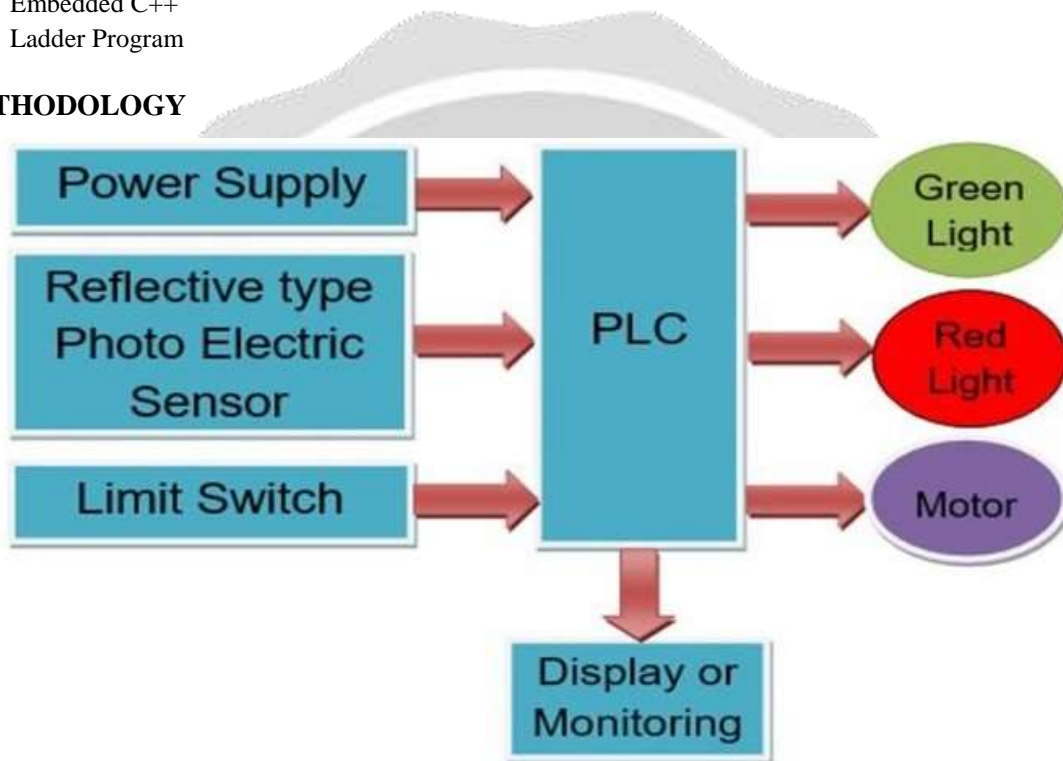


Fig. 4.1 Block diagram of PLC Based Smart Railway Alarm System

PREVENT DIAGRAM DESCRIPTION

1. Power Supply
2. Reflective Type Photo Electric Sensor
3. Limit Switch
4. PLC (Programable Logic Unit)
5. LED
6. Motor

Power Supply:

A energy supply is an electrical tool that resources electrical strength to an electrical load. The main reason of a electricity supply is to transform electric powered present day from a source to the correct voltage, current, and

frequency to energy the burden. As a end result, power components are occasionally known as electric powered power converters

Reflective Type Photo Electric Sensor:

A reflection-type photoelectric sensor is used to stumble on the mild beam contemplated from the target. A through beam sensor is used to measure the change in the quantity of light because of the goal crossing the optical axis.

Limit Switch:

Limit Switch is a switch operated by way of the motion of a device element or the presence of an item. A limit switch may be used for controlling equipment as part of a manage machine, as a safety interlock, or as a counter enumerating items passing a point.

PLC:

A PROGRAMMABLE LOGIC CONTROLLER (plc) is an business laptop manipulate device that continuously monitors the country of enter gadgets and makes decisions based totally upon a custom application to control the kingdom of output devices.

Ladder good judgment is the most not unusual programming language used for programmable logic controllers within the practice listing, function block diagram, based text, and sequential feature charts are all useful programming languages and may be greater suitable than ladder, depending at the utility

Programmable logic Controllers execute logic in a sequential way. They're programmed in ladder common sense, dependent textual content, sequential function charts, function blocks or practice lists. The applications designed via the engineers interface to the control device via various sensors that ship digital and analog information.

5. FLOW CHART

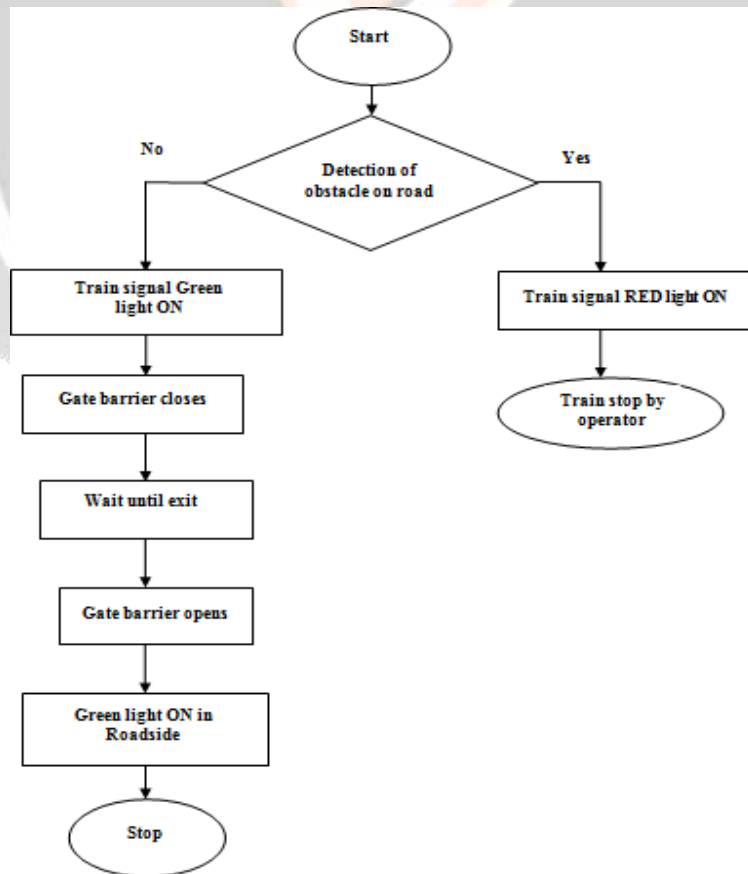


Fig. 5.1 Flow Chart of Smart Railway Alarm System

First, a train can be detected within 10 seconds the use of a reflective photoelectric sensor. Once the percent unit receives the signal from the sensor, a red signal lighting fixtures up at the aspect of the road to coach cars and passers-by means of to stop. Also, the barrier of the crossing gate also closes commonly. But, if the train isn't detected by means of the sensor, then the percent may also receive the signal and a inexperienced sign can be lit on the brink of the road to signify that motors and passers-via are to move the road. moreover, if there may be any obstacle at the verge, the % unit gets a valid enter from the obstacle sensor and the teach will be stopped by way of the educate operator when he sees the red light of the educate. This red mild will live on till any obstruction is removed. In this example, the gate will even open. however, if there may be no obstacle at the shoulder, an opportunity state of affairs arises. Each of these conditions will preserve as a result.

6. CONCLUSION

A prototype of an automated crossing gate manipulate device become evolved to make sure the protection of avenue customers. A percent-primarily based automatic stage crossing railway barrier manage mechanism can update the manually operated limitations operated via barrier guards in Bangladesh. The layout suggests simplicity, reliability and at the same time value performance in beginning and final the gate. The developed prototype device finished satisfactorily. If an automatic device is applied, it is able to reduce a massive range of injuries and keep away from the time-ingesting technique of beginning and ultimate the level crossing gate. This paintings can be in addition improved by way of imposing the image processing technique on a bigger scale.

REFERENCES

Following are some internet sites, books, magazines taken as reference for this project:

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