

MACHINE PANEL CONTROLLING BY USING PLC

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Abstract

Automatic control, is the use of various control systems for operating equipment such as machinery, processes in motor controlling, and other applications with minimal or reduced human intervention. Some processes have been completely automated. machinery requires continuous monitoring and inspection at frequent intervals. There are possibilities of errors at measuring and various stages involved with human workers and also the lack of few features of microcontrollers. In this project we are controlling the various parameters such as voltage, current, frequency, RPM, obstacle and temperature etc. with the help of PLC (Programmable Logic Controller) and control the other devices accordingly. The main objective of this system is to control and monitor the parameters in the industrial machine using PLC

Keywords: Electrical panel, Industrial machines, Operational faults, Relays, Connectors.

1. INTRODUCTION

Programmable Logic Controller (PLC) is a specialized industrial computers used for controlling and operating the manufacturing process and machinery. It uses a programmable memory to store instructions and execute functions including on/off control, timing, counting, sequencing, arithmetic, and data handling. The PLC accepts inputs from switches and sensors, evaluates them based on a program (logic), and changes the state of outputs to control a machine or process. Programmable Logic Controllers (PLC's) are used in every aspect of industry to expand and enhance production. Where older automated systems would use

hundreds or thousands of electromechanical relays, a single PLC can be programmed as an efficient replacement. Programming is carried out using "LADDER LOGIC".

Simplification of engineering and precise control of manufacturing process can result in significant cost savings. The most cost-effective way, which can pay big dividends in the long run, is flexible automation; a planned approach towards integrated control systems. It requires a conscious effort on the part of plant managers to identify areas where automation can result in better deployment/utilization of human resources and savings in man-hours, down time. Automation need not be high ended and too sophisticated; it is the phased, step-by-step effort to automate, employing control systems tailored to one's specific requirements that achieves the most attractive results. That is where Industrial electronics has been a breakthrough in the field of automation and control techniques

2. Block diagram

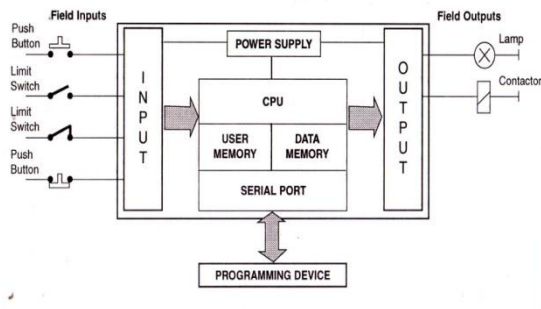
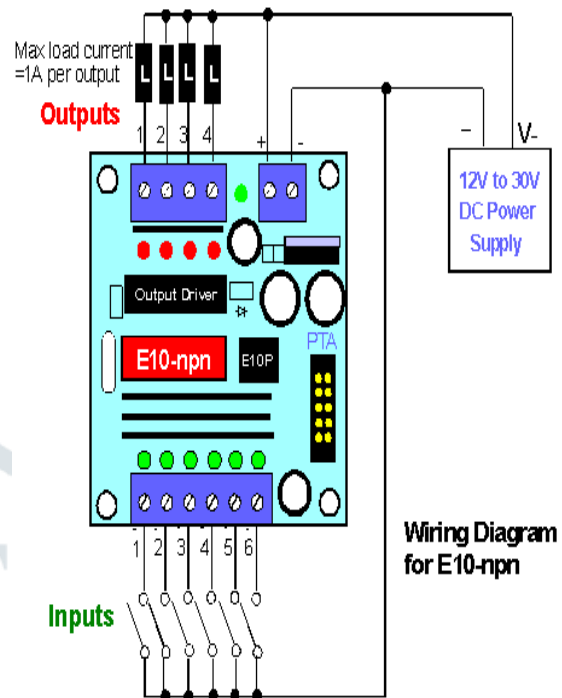


Fig1. Block Diagram of System

PLCs are well-adapted to a range of automation tasks. These are typically industrial processes in manufacturing where the cost of developing and maintaining the automation system is high relative to the total cost of the automation, and where changes to the system would be expected during its operational life. PLCs contain input and output devices compatible with industrial pilot devices and controls; little electrical design is required, and the design problem centers on expressing the desired sequence of operations in ladder logic (or function chart) notation. PLC applications are typically highly customized systems so the cost of a packaged PLC is low compared to the cost of a specific custom-built controller design. On the other hand, in the case of mass-produced goods, customized control systems are economic due to the lower cost of the components, which can be optimally chosen instead of a "generic" solution, and where the non-recurring engineering charges are spread over thousands of places. For high volume or very simple fixed automation tasks, different techniques are used. For example, a consumer dishwasher would be controlled by an electromechanical cam timer costing only a few dollars in production quantities.

3. Circuit Diagram & Analysis



4. Implementation of Hardware

Programmable logic controller (PLC) control panels or also known as **PLC Automation Panel** are one of the most important and efficient kinds of control panels. Which are generally used in variety of electronic and electrical circuit fittings. PLC Control Panels we manufacture are highly capable of giving higher output at less power consumption. Integrated with solid PLC logic and flawless PLC hardware programming.



transportation, Domestic appliances, production lines and so on. Using the PLC to control traffic light can reduce the used of hard-wired relays and other external components. PLC has an internal function such as timer and counter Making it become sophisticated but simple in used. It also provides flexibility of control that based on the programming and can execute simple logic instruction which being used in ladder diagram.

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5. Advantages

- Modification of electrical panel with new technology.
- To increase the performance of operation of Machine.
- Elimination of operational error.
- To make accurate and sensitive system
- PLCs are easily programmed and have an easily understood programming language.
- Rugged and designed to withstand vibrations, temperature, humidity, and noise.
- Easy to change logic i.e. flexibility
- Low power consumption
- Facilities in fault finding and diagnostic

References

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6. Conclusion

Nowadays, most of the control system operation in industries used PLC as a Controller to control the process. It contain in the process control,