



THE CENTRALISED MULTI-ALARM AND REMOTE MONITORING USING
TWO WIRES SYSTEM.

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Abstract

A reliable and effective alarm system is vital to save human lives and their properties in case of emergencies. It is no doubt that all buildings are equipped with alarm system. However, without proper co-ordination, the system does not function effectively. Although the latest technology on alarm system addresses this issue, the implementation is very costly and unaffordable to the small and medium scale customers.

The main objective of this research work is to design, develop, construct and test a prototype centralised multi-alarm system which utilises and enhances the present conventional alarm system. The design also integrates the capability of remote monitoring and control of electrical loads. The system uses two wires for communication between the remote site and the central station. *Maximum number of sites is 512 with maximum distance of 1.5 Km.* The central station is easily relocated to any sites with less cabling work involved and minimum of two wires required.

Any activated alarms or sensors will send appropriate signals directly to the central station. The developed Graphical User Interface at the central station enables the users to be alerted and informed immediately once the alarm is activated, so that immediate action can be taken.

1.0 INTRODUCTION

Although multi-storey or single storey building has a fire alarm system that sounds bells in the hallway and common areas, it is often difficult for the personnel in charge to hear these bells behind closed doors, through insulated walls and over radio, television, air conditioner or other noises. Even increasing the sound level of the hallway bells far above the requirements of NFPA (National Fire Protection Association) 72A often fails to meet the sound level recommended for family living units. The best way to insure that the fire alarm is acknowledged is to send the signal direct to the control station.

The commercially available centralised systems are very expensive and the products are very rigid. All the sensors and controllers are glued to the particular brand. It is often that only their trained personnel are able to maintain the system.

The proposed project is to enhance the present conventional alarm system with the following features:-

1. Flexible design. The system uses two wires for communication between the remote site and the control station. Maximum number of sites is 512 with maximum distance of 1.5 Km. The control station is easily relocated to any sites.
2. Lower cost. Less cabling work involved, minimum of two wires required.
3. The proposed system utilises conventional alarm system such as fire alarm panels, infra-red motion detectors and magnet pickup sensor.
4. The proposed system is also capable of controlling and monitoring any electrical loads remotely e.g. pumps, water level, lighting etc.

To meet the above specifications, the following research methodology has been adopted:-

- a. Hardware design.

The hardware design involves designing interfacing circuits between conventional sensors and the proposed centralised system. It also include signal conditioning and protection circuits.

b. Software development.

The developed Graphical User Interface (GUI) at the central station will display the status of the alarm system. The software development also provide the user to control electrical loads remotely.