

MSAN SECURITY SYSTEM WITH A FEEDBACK

S.D.P. Rangana*, G. A. K. S. Perera

Department of Electronics, Wayamba University of Sri Lanka, Kuliypitiya, Sri Lanka
*kprangana@gmail.com**

ABSTRACT

In the outside plant maintenance center of the Sri Lanka Telecom, when the multi-service access node (MSAN) has a power failure, it gives a message to main switch. Then the board takes an action to this error. But this facility is only available for failures of power. When there is a fault of other parts of MSAN, there is no way to identify such failure. So, in this project it was aimed to develop a security system with an identification message for MSAN when there are failures of power card, rectifier and line card also. The proposed design includes a security system with an identification message as a solution. Though this, a message will be sent to the responsible person informing that there is a failure of MSAN and then a reply with response action taken him.

Keywords: Multi Service Access Node, Power Card, Rectifier, Line Card

1. INTRODUCTION

MSAN is assigned for Multi-Service Access Nodes. This is the device typically installed in a telephone exchange which connects customers' telephone lines to the core network to provide telephone connection, Integrated Services Digital Network (ISDN) and broadband such as Digital Subscriber Line (DSL) all from a single platform. Earlier in the deployment of MSANs, telecom providers typically had a multitude of separate equipment including Digital Subscriber Line Access Multiplexer (DSLAM) to provide the various types of services to customers.¹

Integrating all services on a single node which typically backhauls all data streams over internet protocol or Asynchronous Transfer Mode can be more cost effective and may provide new services to customers quicker than previously possible. A typical outdoor MSAN cabinet consists of narrowband (POTS), broadband (xDSL) services and batteries

with rectifiers, optical transmission unit and copper distribution frame. MSANs overcome many of service limitations by integrating multiple network functions into a single platform.²

When there is a power failure in MSAN, there is a provision to send a message reporting this to a responsible person. Then, the board takes an action to this error. But it gives this kind of message when there is only a failure of power. So, project is aimed to develop a security system with an identification message for MSAN when there are failures of power card, rectifier and line card in addition to a power failure.

2. EXPERIMENTAL

2.1 Block diagram of the design

There are four indicators to show the failures of those four factors separately. Then, the indicator identifies the signal and gives it to integrated controller circuit. It consists with ATmega328P. Then, the IC identifies the failure and sends the message using GSM module to a responsible person through GSM network. The reply message from the responsible person is thereafter sent to the IC. Then it waits for some time and checks the action taken by the message receiver. If there is no action taken by him then the second warning is sent to the next responsible person. The waiting minutes depend on the distance between the MSAN and the main maintenance center.

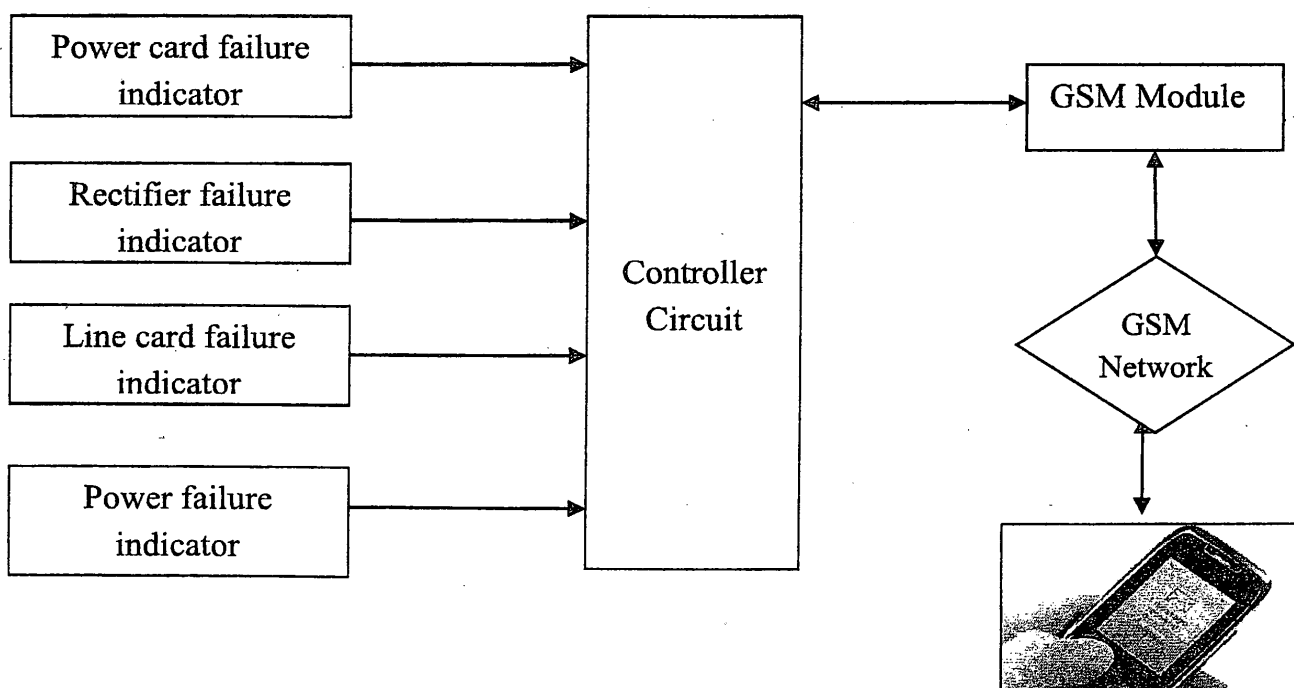


Figure 2.1: Conceptual block diagram of the design

2.2 Flow chart for design operation

When the first message is sent to the first responsible person (TTO), the system waits for some time an action. Then, a second message will also be sent to the second responsible person (AE) if there is no responsible action from the first person. If rectifier is not fixed at that instance then system will send third message to third responsible people (DIT). After 03 days the system checks the state of the failure. If anyone could not fix the problem within 03 days, the system will send messages to all responsible people as a reminder. As well as if it is fixed after 03 days, the MSAN will work continuously. Above waiting times for replying depends on the distance from the site to the main exchange.

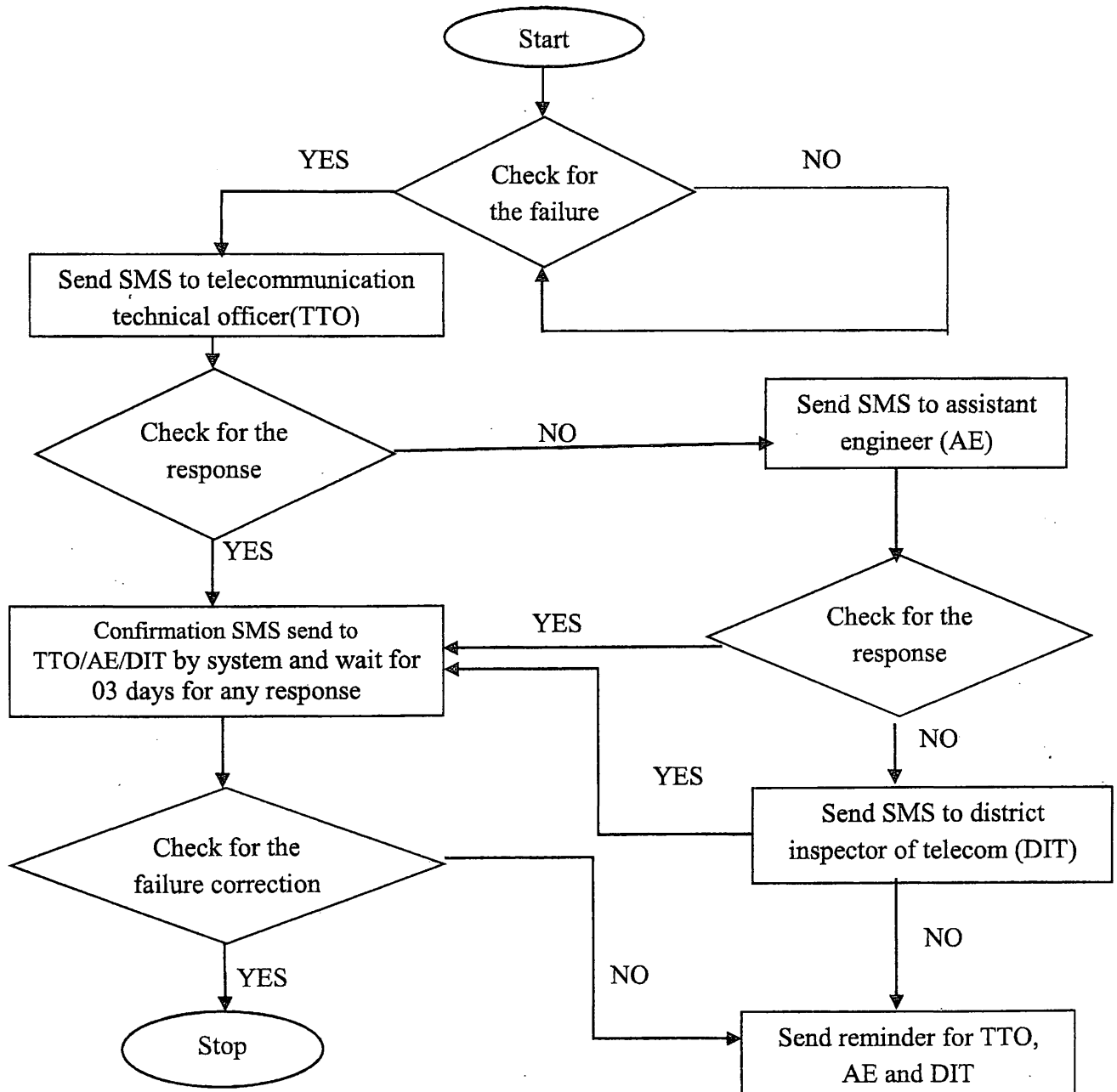


Figure 2.2: Flow chart of the system operation

2.3 Printed Circuit Board Design

The Printed Circuit Board (PCB) layout is as follows.

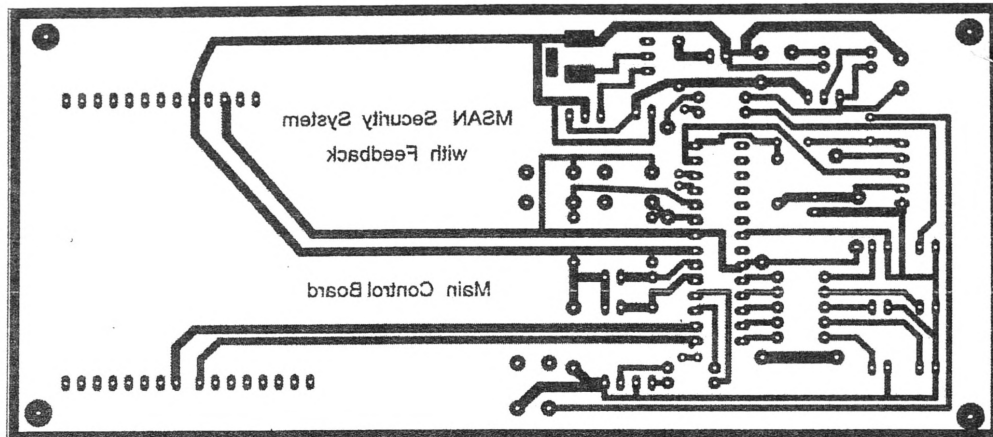


Figure 2.3: PCB design of the system

3.0 RESULTS AND DISCUSSION

This project contributes to the organization mainly to give a continuous service to the customers and it helps SLT to keep their goodwill on the top with the competitive environment. As well as it can help the company to minimize their cost by reducing labor cost and maintenance cost due to instance action taken by the responsible people who work in this section. Also, the traveling cost and labor cost that is required for maintenance can be minimized. This system helps to increase the responsibility of the technical assistants and officers who are able to correct a certain failure. There-by, this proposed design may help to give a continuous service to the customers and increase the customers' trust on the company.

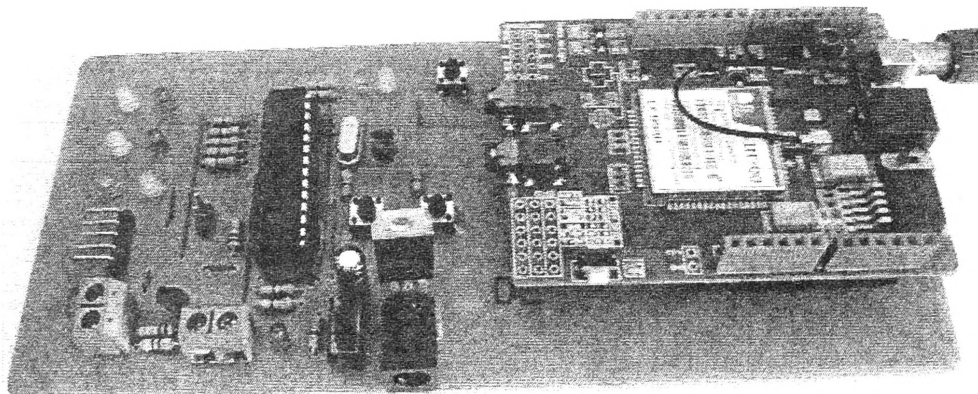


Figure 3.1: MSAN security system

4.0 CONCLUSION

MSAN connects telephone lines of customers to the core network to provide connection. Its operation is disturbed due to various reasons such as power, rectifier, line card and power card failures. When such a disturbance occurs, customers are affected badly. As per the present day situation, MSANs are having a facility to inform any interruption of power. But, none of the other causes will be identified and well attended on time for rectification. This project was aimed to develop a design to address other disturbing issues in addition to power failures. Thereby, any one of the four failures will be informed to the responsible person. If any satisfactory action is not taken, error will be notified to next higher officers in stepwise. So, the design may help the customers to get a continuous service and on the other hand, SLT gets the benefit of customer satisfaction which is needed for their survival in a top place.

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