

FREE DISTRIBUTION POINT(DP) LOOPS IDENTIFICATION UNIT

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ABSTRACT

There is a method for finding free loops in distribution points of Sri Lanka Telecom (SLT), by connecting a test phone. The 3 states of a line data, voice and free loops can be identified by the by checking the dial tone. But this method is less effective and trustworthy. In several scenarios with specific wired telecommunication technologies, this method is severely failing. In most cases data lines are misrecognized as free loops because current method is not sensitive enough to detect the complex behavior of the line. This has become a considerable monetary and time waste for the company. So in this study, a new system was suggested to overcome those issues and enhance the testing methodology. Voice, data and free loops have potential differences consecutively as 48 V, 3 V and 0 V. A programmed PIC IC can evaluate the voltage differences and execute the decision making by displaying detected line property by LED notification system. A voltage divider should connect to the input to reduce voltages to meet the programmed voltages of the IC. And a standard socket has been recommended for inputs to keep port from mismatching. This method will reduce the drawbacks in the current method.

Keywords: *Distribution point, Data line, Voice line, Free loop, Voltage divider*

1.0 INTRODUCTION

When establishing new Sri Lanka Telecom (SLT) telephone connections, there are no relevant distribution point (DP) numbers displayed on every DP panel. So, it is a big problem to find out exact DP numbers easily. This issue mainly affects the subcontractors because they are not provided with enough information by SLT. So DP numbers have to be found out separately from SLT. After finding the relevant DP, the availability of free loops in that DP is checked.

Manual system cannot be used to identify the data lines because the data line doesn't notify with a dial tone. This is the major problem. Due to this, when giving new connections, labourers think data lines as free loops. So they tend to connect the new telephone

connections by disconnecting the remaining data connections. Business places (Banks, etc.) have to face many serious problems due to that. By considering these drawbacks, a new unit was implemented to identify the free loops of the DP.

2.0 EXPERIMENTAL

The block diagram of the proposed system for the free loops identification unit is shown in the following Fig. 1.

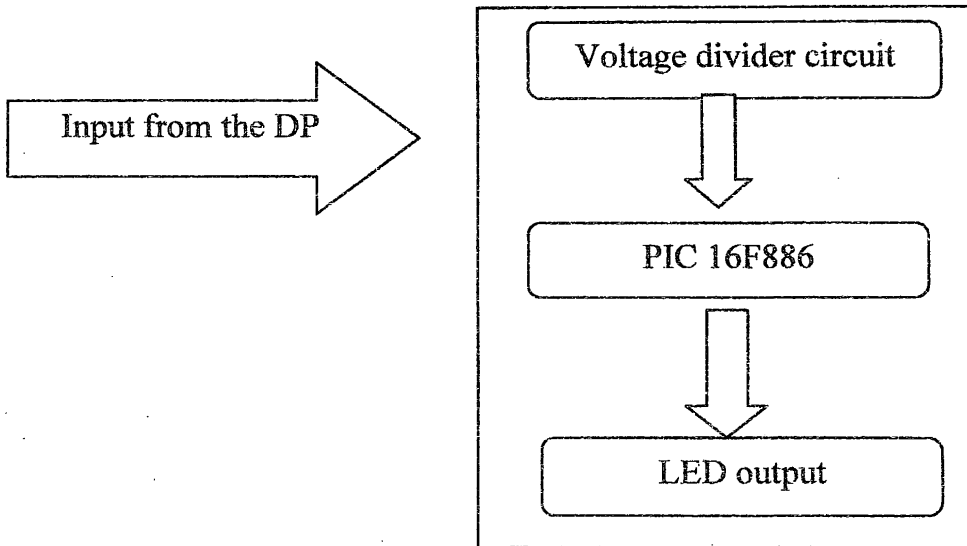


Figure 1: The block diagram of the free loops identify unit.

In a SLT voice line, there is a potential difference of 48 V and in data line there is a 3 V potential difference¹. The logic behind the proposed design is if there's no voltage in the line that is a free loop. The system measures the voltage of the line and it will notify the state of the line (voice or data or free loop) according to the measured voltage.

The input is taken at analog to digital conversion input of the PIC IC⁵. Then, decision making process flow is as follows.

- ❖ If the detected voltage of the PIC input is 4.4 V then the line is a voice line.
- ❖ If the detected voltage of the PIC input is 1.5V then the line is a data line.
- ❖ If it's not the above mentioned cases then the line is a free loop.

3.0 RESULTS AND DISCUSSION

The main function of the implemented design is to identify existing voice lines, data lines and free loops separately. This project was successfully developed and got the feedback from the site engineer of the SLT project.

3.1 Limitations of Research

1. No stand for all brand of DP product

Connecting port of the DP can be changed according to the manufacturer. For some standards, this system cannot be connected to the DP using proposed input port.

2. Use only Secondary Data

For this solution only secondary data were considered because it was difficult to get primary data regarding this matter with high accuracy. (To get the primary data, need to interview data personally with proper experimental agenda. But any primary data which is taken may have differed from the preferred standards of the company – SLT with many observation issues and technical state of the testing scenario. So published standard data was taken as secondary data for analysis)

3.2 Problems encountered and Alternative Actions

❖ (+), (-) connectivity problem :

In case of misconnecting the ports of the system to DP, the system will be crashed. So it is suggested to use a standard sockets for the connectivity.

❖ Complexity at detecting and decision making on AC current as input :

AC current which is running on the line while a voice call is connected should have to be neglected by a capacitor.

4.0 CONCLUSION

Modern communication systems are equipped with a lot of sophisticated devices and the systems must be immune to all critical situations and exceptions to give a reliable and robust service. It is essential to maximize the network availability at all times. In this study, it is suggested a new method to identify free loop lines in DP. In current scenario, there is no efficient method for that purpose. With establishing this proposed method in industry level as a standard, most of negative consequences of contemporary methodology will be diminished.

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