

# **COMPUTERISED REMOTE MONITORING LOW VOLTAGE HARMONIC MEASUREMENT SYSTEM**

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## **ABSTRACT**

This project is concern on the design and development of a computerised low voltage harmonic remote monitoring system. A prototype was tested in the laboratory with yield satisfactory performance. The proposed system consists of a low-cost high performance data acquisition PCL-818L card plugged to a Personal Computer (PC) which acts as the data acquisition unit, and a remote monitoring unit. The remote monitoring unit and data acquisition unit communicates through modems. The system software was developed in Visual Basic, which exploits fully Windows capability giving flexible, fast and easy application.

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## CHAPTER 1

### 1.0 INTRODUCTION

Power quality is an issue that needs continual attention. In recent years, this issue has become more critical because of the increase in the number of loads sensitive to power disturbances, and as the loads themselves have become major causes of the degradation of power quality.

The electric utilities cannot be expected to provide perfect power because some of power quality problems are beyond their control. For instance, lightning may strike power lines and vehicles may hit electric poles. Furthermore, the operation of customer equipment can cause power disturbances. Therefore, the users and manufacturers of sensitive equipment should play a role in the mitigation of power quality problems. The manufacturers should design and build equipment that can withstand equipment and reasonable levels of power disturbances.

The terms used to describe power disturbances often have different meanings to different users. Figure 1 depict some of the power disturbances. A surge (also known as impulse or spike) is a short-duration (microsecond to millisecond) voltage increase. A voltage sag is a momentary decrease in voltage outside the normal tolerance. A voltage swell is a momentary increase in voltage outside the normal tolerance. Undervoltage is a sustained condition of low outside the normal tolerance. Overvoltage is a sustained condition of high voltage outside the normal tolerance. Harmonic distortion is the periodic deviation from normal sinewave power. An outage is a complete loss of power. Electrical noise is the distortion (not necessarily periodic) of normal sinewave power.

Monitoring power disturbances has been the objective of various site survey. Site surveys are conducted to assess the quality of power at a specific location with the