

BUSITEMA UNIVERSITY
FACULTY OF ENGINEERING
DEPARTMENT OF COMPUTER ENGINEERING

FINAL YEAR PROJECT REPORT

**DESIGN AND CONSTRUCTION OF A REMOTE THREE PHASE
METER LINE SWITCHING SYSTEM**

BY:

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**PROJECT REPORT SUBMITTED TO THE DEPARTMENT OF COMPUTER
ENGINEERING IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE AWARD OF BACHELOR OF COMPUTER ENGINEERING OF BUSITEMA
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DECLARATION

I Nuwabeine Eriya BU/UG/2011/824 hereby declare that this project report is my original work and it has not been presented to any institution of higher learning for any academic award.

Signature.....

Date.....

APPROVAL

This is to certify that the final year project report under the title “Design and construction of a remote three phase meter line switching system” has been done under my supervision and is now ready for examination.

Signature:.....

Date:.....

Mr.Arineitwe Joshua

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LIST OF ACRONYMS

LCD	Liquid Crystal Display
AC	Alternating Current
KWh	Kilowatt hour
RMS	Root Mean Square
PLS	Power Line Sensor
SCADA	Supervisory Control And Data Acquisition
PLC	Programmable Logic Controller
PLM	Power Line Modem
PC	Personal Computer

ABSTRACT

The project seeks to design and construct a remote automated three phase line switching control system. The proposed system is enabled the utility company remotely re-connect back its customers on three phase lines without sending technical personnel on ground. The project is based on an 8-bit reduced instruction set computer based on Harvard CPU architecture-the ATMEGA328P microcontroller interfaced with a quad band SIM900 GSM modem from SIMcom. By sending control commands, the utility company is remotely control connection of three phase customers.

CHAPTER ONE: INTRODUCTION

1.0 Background of the study

An electricity meter is a device that measures the amount of electric energy consumed by a residence business or a powered device [13].

Electric utilities use meters installed to measure energy delivered to consumers for the billing purposes. They are calibrated in billing units and most common is the kilowatt hour (kWh) [15]. Usually they are read once for each billing period. Some meters measure demand, maximum use of power in some intervals, time of the day or allow electric rates to be changed during the day, record usage during peak high cost periods and off peak, lower cost periods [3].

In some areas, meters have relays for demand response load shedding during peak load periods.

Three phase electric power is a common method of power and distribution in which three conductors carry AC of the same frequency and amperage at a more efficient and economic rate than standard three phase system [5].

These systems are used in applications in which more power is required. Metering three phases requires a three phase meter to monitor each individual hot leg multifunction power meter like the Acuvim 11 series are able to monitor power and energy in these circuits.

Three phase solutions are found in both three phase four wire and three phase three wire configuration [1].

Single phase and three phase applications can take input/output voltage of three four wire and three phase delta systems up to 690Vac without additional hardware configurations.

The ACU prewired panel series can be customized to include the Acuvim 11 series meter working with single and three phase application, with a direct input and configuration tailored to your circuit requirements [12].

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