

ECE-34

Power Monitoring System for Residential Use

ECE SENIOR DESIGN PROJECT 2004-05
FINAL REPORT

Power Monitoring System for Residential Use

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Abstract

This project intends to produce a device that will log/monitor power consumption of individual appliances and transmit data wirelessly to the user's personal computer (PC). Data collected will provide homeowners or service providers with graphical and rough cost analysis of power consumption for certain appliances/devices, they choose to monitor. The power monitoring system consists of three units, Power Monitoring Unit, Wireless Unit, and Software Unit.

The *Power Monitoring Unit* will consist of Power/Energy Integrated Circuit (IC) which measures the power consumption. A microcontroller, a critical part of our design will control the operation modes of the device and the computation of data. It will take the reading from the power measurement chip, store it in the memory of the microcontroller, and transmit the data wirelessly to the user's computer.

The *Wireless Unit* will transmit the power data from the power monitoring unit to the receiver which is connected to the PC. The ability to set up transfers allows the user to handle multiple power meters throughout the house.

The *Software Unit* will have two distinct software development requirements: microcontroller programming, and programming of the PC user interface. Microcontroller programming ensures the storage, transmission of data, and operation mode of the monitoring unit. Visual Basic is chosen as the coding language for the Graphical User Interface of the project which gives the user an interface to control the monitoring unit and the appliance and also interpret the data and record it to a file for cost and consumption analysis.

Table of Contents

1.	PROBLEM DESCRIPTION	- 1 -
2.	METHODS OF SOLUTION:	- 2 -
2.1.	APPROACH	- 2 -
2.2.	DESIGN OVERVIEW	- 2 -
2.2.1.	POWER MONITORING UNIT	- 4 -
2.2.2.	WIRELESS UNIT	- 5 -
2.2.3.	SOFTWARE UNIT	- 7 -
2.3.	TESTS TO BE CONDUCTED	- 7 -
2.4.	REQUIREMENTS AND DESIGN CONSTRAINTS:	- 8 -
2.5.	ALTERNATIVE SOLUTIONS	- 9 -
3.	PROJECT TIMELINE	- 9 -
4.	PROJECT EXPENSES	- 9 -
4.1	ENGINEERING DEVELOPMENT COSTS	- 9 -
4.2	PRODUCT PRODUCTION COSTS	- 10 -
4.3	MARKETING AND SALES COSTS	- 10 -
4.4	ECONOMIC FEASIBILITY ANALYSIS	- 10 -
5.	SOCIETAL, ENVIRONMENT & ETHICAL IMPACT ANALYSIS	- 10 -
6.	SUMMARY	- 11 -
7.	APPENDIXES	A- 1 -
	APPENDIX A – TIME LINE	A- 1 -
	APPENDIX B – BUDGET	B- 1 -
	APPENDIX C – SPECIFICATION AND DETAILS OF POWER MONITORING UNIT	C- 1 -
	APPENDIX D – SPECIFICATION AND DETAILS OF WIRELESS UNIT	D- 1 -
	APPENDIX E – SPECIFICATION AND DETAILS OF SOFTWARE UNIT	E- 1 -
	APPENDIX F – ALTERNATIVE SOLUTIONS CHART	F- 1 -
	APPENDIX G – POWER MONITORING SYSTEM BLOCK DIAGRAM	G- 1 -
8.	BIBLIOGRAPHY	H- 1 -
9.	RESUME	I- 1 -