Smart Anti Power Theft System

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Abstract - *Electricity-stealing defense is one of the foremost critical tasks in distribution network reconstruction, and power distribution monitoring is a very important study topic in electrical power systems. Electricity theft may be a long-term problem; however, each power supply department has made significant manpower and material investments, the phenomenon of defending against electricity theft has increased and isn't abating, and also the method of electricity theft is continually improving; of course, some companies have begun to sell electricity-stealing products and special tools. Electricity theft not only costs the facility industry plenty of cash but also jeopardizes the safety and dependability of the most power supply. This paper discusses the implementation of an Electricity Stealing Detection and Monitoring System based on a digital single-phase electric energy meter that not only monitors the time when electricity theft begins but also calculates the number of electricity stolen and image information of the stealing location, providing positive proof to house lawbreakers who engage in such behavior. Theft of power could be a criminal offense. In today's power infrastructure, power theft has become a serious issue. It causes significant economic losses as well as power distribution system irregularities. Because developing countries are densely populated, this problem is more serious. Electricity theft may be a serious problem in a very densely populated country like India, where power demand is steadily increasing. Currently, 16.6% of India's total power generation is being looted, lowering power providers' total revenue. it's necessary to eliminate power theft*

Key Words - distribution monitoring, electricity theft, energy meter, monitors, Current flow.

1. INTRODUCTION

Embedded System

An Embedded System may be a set of hardware and software, further as mechanical and other components, that's designed to execute a specific task. A microcontroller-based, software-driven, dependable, real-time system, autonomous or human or network interactive, performing on a spread of physical variables and during a kind of contexts, and sold into a competitive and price-conscious market is thought of as an embedded system. An embedded system isn't a processing-only computer, neither is it a PC or UNIX computer code, minors it a conventional commercial or scientific application. There are two sorts of embedded systems: high-end and low-end. A high-end embedded system has 32-bit or 64-bit controllers and software. Personal digital assistants and mobile phones are two examples. Lower-end embedded systems - Typically, 8,16-bit controllers are used with limited operating systems and hardware layouts created specifically for the aim.

Any ADPS buried inside a product aside from a computer is referred to as an embedded system adds to the challenges we face when building applications, they're going to face a style of challenges when writing embedded system software.

Throughput - Our system could also be required to process large amounts of information in a very short amount of your time.

Response–Our system could also be required to react fast to occurrences. Testability–It may well be difficult to lineup equipment to check embedded software. Debugability – searching for what the software is doing wrong (other than not operating) without a screen or a keyboard could be a difficult task. Embedded systems must be able to handle any condition without there requirement for human involvement.

Memory space - On embedded systems, memory is restricted, so you need to fit the software and data into whatever memory is on the market.

Installation of software-specific tools is required to urge your software into embedded devices.

Power consumption - Because portable systems must run on battery power, the software in these systems must be power efficient.

Processor hogs computation that necessitates a big quantity of CPU time can exacerbate the response issue.

Cost - In many embedded system projects, lowering the price of the hardware could be a priority; software frequently runs on hardware that's just enough for the work.

Embedded systems have a memory and a microprocessor/microcontroller. A port or a network connection is obtainable on some. They regularly lack keyboards, displays, and hard drives.

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1. Objectives

• To make a system that avoids the consumption of electricity by anyone other than the user or the owner.
• To make this method self-alerting and capable of reducing the quantity of electricity used unnecessarily.
• Installing a closed-circuit television will both detect and record theft.
• To manage usage, make signaling on the utilization of the button to the most supply.
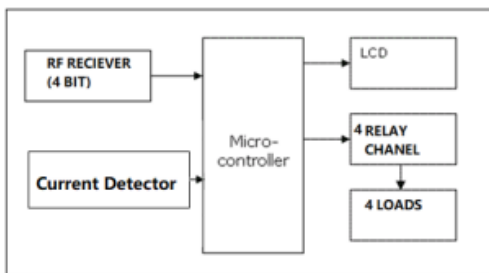
2.1 Block Diagram
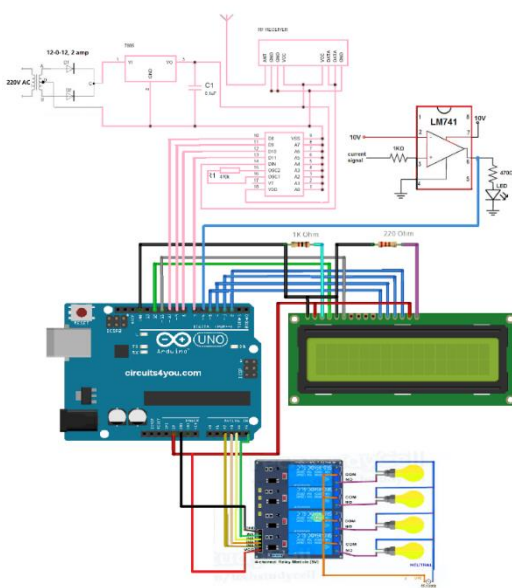

Fig. Block Diagram

2.2 Circuit Diagram

Fig. Receiver Diagram

3. LITERATURE REVIEW

Today, efficient electricity generation is critical, as wasted energy may be a significant issue. the facility factor could be a measurement of a system's energy efficiency and how important it's to boost the supplied standard. Electricity is one of the foremost extensively stolen commodities on the earth, and it is obtained through transmission and distribution. The foremost common source of electricity theft in our country is in distribution. Companies that provide electricity. Every year, electricity theft causes a severe economic disaster. We can't stop electricity theft whether or not we take meter readings., because the distribution business isn't tuned in to which is that the customer truthful or deceitful? However, the goal of this initiative is to those who steal electricity from pole wires should be stopped. In we'll steal electricity similarly to where the ability comes from during this endeavor. We'll demonstrate how electricity was stolen using this project. We're acting on this project so that the distribution officer and I can work together. For this, personnel must seek sites where electricity is stolen. If people realize that the expense of transportation is increasing, they're going to need to utilize lots of motorcycles. The worth of gasoline is rising each day, and the extra expense is rising likewise. We will devise a mechanism to forestall electricity theft and catch the perpetrators. [1]

This article presents a study on Detecting Electricity and Power Theft, to detect any theft involving electricity. Current is critical and crucial in existence, and it is the industry's backbone. Electricity may be a part of our daily lives and plays an important role in almost every aspect of it. Power theft could be a big issue that continues to afflict the country's power sector. The goal and purpose of this project are to form a system that will protect users against theft and billing, irrespective of how they use the system. due to the theft of electricity. This project is about an energy meter theft system. To propose a solution. The signal is shipped to the electricity board through radiofrequency. The energy meter is being measured and also the IR is being monitored. A sensor is required, which is accomplished using an AT89s52 microcontroller. The educational system is extremely beneficial to scholars. with no mishaps or inconveniences, the electricity board monitors the complete supply and rectifies invoicing accordingly. Electricity demand is growing. The theft of electricity as a result of the corresponding power theft is additionally on the increase. The informational method is extremely beneficial to the ability board in terms of monitoring the entire supply and accurate billing with no glitches or inconveniences. This model eliminates manual manipulation work and theft control, leading to more precise billing. Information to properly integrate the assorted elements, we must first understand how they work. Various components must be integrated. A cursory examination of the components and technology that we use is all that's required. are aspiring to use in our project, and putting this technique in situ will save lots of electricity, which can save us money. Electricity is available to a greater number of individuals than before, which can be helpful because it'll increase the number of individuals who can use it. Increasing the supply of electricity through minimizing electricity theft. There are numerous

instances of electricity-related theft, and we will use this method to manage it as well as design a microcontroller-based power theft identification. the most motivation for developing such a system is that it'll reduce unlawful electricity use and save plenty of cash because it directly impacts the economy of the country. The nation, also because the customer, loses lots of cash as a result of power theft. As a result, this technique is advantageous to both the customer and also the government the simplest part about this project is that it only must be installed once. cost-effective, and may be utilized indefinitely without the necessity for additional investments. As a result, this initiative is extremely beneficial. All customers, further because the entire nation, are going to be relieved. [2]

Power Quality monitoring is critical, especially for nonlinear burdens with a high recurrence and drivers that move quickly. to work out the character of power, precise estimation of electrical boundaries is required, which entails gathering, dissecting, and producing voltage and flow tests over an unknown period. As a result, an influence meter that acts on electric boundaries with high precision and computation speed for diverse burdens is required. [3]

Electrical design is progressing at a rapid and good rate. Although nonlinear power equipment has concerns with power quality, its use is unavoidable. The vast bulk of clinical equipment is powered by electronic devices. Low information power factor and extended waves within the information current are two major concerns. Several bridgeless geographies have experienced relief from the aforementioned issues. Buck, lift, Cuk, and epic converters are utilized in regular geographies. This study proposes a bridgeless zeta converter with one cycle control for emergency clinic show screens. [4]

To develop the presentation, management, and authority over the framework, power frameworks require power supply testing. Power quality is defined as a perfectly sinusoidal voltage and a relentless supply of power to clients. The facility quality factor (QPF) could be a noteworthy pointer that ranges from 0 to 100% and represents the character of the three-stage power supply recommended to the client. [5]

The current remote correspondence arrangement of the energy meter has been finished using ZIGBEE and GPRS. This strategy is chiefly won't to get the correspondence channel and ZIGBEE for the transmission of knowledge in an exceedingly sequential interaction. [6]

Science and technology, with all of their wondrous developments, have captivated human life to such a degree that it's difficult to imagine a world without them. While technology is progressing, we won't even

be responsive to the increase in unethical actions. From a technical standpoint, "Power Theft" may be a serious crime that's only too often and encompasses a direct impact on a country's economy. [7]

On average, absolute transmissions and dispersion misfortunes are around 23%, with some states' misfortunes exceeding 50%.[8]

Electricity theft could be a hidden crime that costs power companies plenty of cash. Despite advanced managerial and technical attempts to combat power thieves, power distribution firms are having a difficult time reining within the unethical manner within which power is stolen. There's no one-size-fits-all solution to power theft, therefore utilities must find their solutions. This book gives a close explanation of technological and administrative solutions that may help to unravel the problem few states' misfortunes exceeding 50%.[9]

This project aims to manage losses on the distribution side, mainly that specialize in losses because of the theft of electricity. The theft of electricity is one of the most important problems of energy crises within the World. These illegal connections become an excellent hurdle to achieving revenue, to beat such problems there should be a wise system that may detect and control the theft of electricity. This project relies on a wise system that will detect the theft load and also burn the theft load automatically [10]

4. CONCLUSIONS

• The use of load can only be controlled by RF signal.

• The theft cannot be executed because the rf signal cannot be received by the outer source without knowing the address signal pattern of the RF module.

• Address can be changed according to more than 100 patterns.

• The current flow without signal is restricted by relying on circuits which is very useful when the home is locked.

5. FUTURE SCOPE

• This device can be further extended by making it use multiple load detector modules.

• This can be an algorithm to count the initial value of current and if any sudden increment in load is shown it can be treated as theft also.

• The whole system can also be interfaced with the wifi module so that the user can also be informed from time to time.

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