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| **Paper Title** | **Authors and Year** | **Type of Controller** | **User Interface/ Control Method** | **Technology Used for Data Storage** | **Technology Used / Communication Interface** | **Sensor/s Technology Applied** | **Merits** | **Demerits** |
| [[1]](#_Microcontroller-based_electronic_me) Electronic based energy meter with Remote Monitoring and Billing system | M. Islam, M. Ahmad, et al. (2012). | ATMEGA8L microcontroller | LCD Display and Keypad | Electrically erasable programmable read-only memory (EEPROM) | Powerline Communication Circuit (PLCC) | Current Transformer (CT) and Potential Transformer (PT) | Allows remote power monitoring and communicates the data to the distribution office. Also has a backup-battery. | The system showed poor result in measuring non-linear type of loads |
| AC Power meter design based on Arduino: Multichannel Single-phase Approach | N. Tamkittikhun, t. Tantidham, et al. (2015). | Arduino Mega 2560 board | Computer (PC) | Data is directly passed into the control PC | Via Universal Serial Bus Connection (USB) | Current Transformer and Voltage Transformer | High power measurement accuracy | Does not support remote configuration and online power monitoring |
| Prototype Design of Wireless Electric Energy Transmission System and Distance Electric Recording Record System Using PZEM004T and NRF24L01 Module | MD. Tobi, V. Van Harling (2021) | Arduino Uno board | LCD Display | None | NRF24L01 transceiver module | PZEM004T module | High power measurement accuracy and Wireless Data Transmission | The receiver unit is powered by a Battery power source and the system has no memory for data storage. |
| Accuracy Comparison of Present Low-cost Current Sensor for Building Energy Monitoring | R. Khwanrit, K. Kittipiyakul, et al. (2018) | ESP32  wifi-microcontroller | Computer (PC) | Data is directly passed into the control PC | Wi-Fi | ACS712, WCS1800, SCT013, and PZEM004T current sensor | Shows the accuracy comparison of low-cost current sensors. | The objective of measuring energy consumption is not included but still mentioned in study. |
| Wireless Power Consumption Monitoring and Data Logging System for SMEs: A Prototype System Development and Evaluation | M. Credo (2019) | Arduino Board | Computer (PC) | Data is directly passed into the control PC | Radio frequency Transmitter module and Receiver Module | Non-invasive current sensor. An AC-AC Adapter is utilized to get the sample voltage | Provides accurate power monitoring and data logging of the recipient establishment | The system only supports one-way channel communication from the transmitter to the receiver |
| Design of Ultra-Low-Energy Temperature and Humidity Sensor Based on nRF24 Wireless Technology | B. Babusiak, M. Smondrk, et al. (2019) | Raspberry Pi | Raspberry Pi Console Window | Raspberry Pi built-in Memory | NRF24L01 transceiver module | Temperature and Humidity Sensor | Demonstrates the development of connecting multiple Temperature and Humidity sensors together through wireless network | Measurement of Energy consumption was not mentioned in the study |
| Remote Power Meter | D. Zinner (2014) | Arduino Board | OLED Display | Data is sent into web database (internet) | NRF24L01 transceiver module and GPRS modem | Voltage Divider, Shunt Resistor, Energy Metering IC | IoT based Power Monitoring that allows remote monitoring of household appliances | Storing Data requires stable internet connection. |
| GSM-Based Smart Energy Meter with Arduino Uno | WA. Indra, F. Morad, et al. (2018). | Arduino Uno Board | LCD Display | Electrically erasable programmable read-only memory (EEPROM) | GSM Module | Single Phase Energy Meter, TSL257 light to voltage converter | Remote Energy Consumption Monitoring through SMS | No back-up battery and the type of memory used is prone to data loss. |
| Individualized Electric Power Management System using BLE Tag at a shared house | H. Kondo, K. Takami (2018) | PCB  (Embedded Circuit) | Smartphone/Android  Application | Data is sent to the Smartphone | Bluetooth | RATOC Bluetooth watt checker REX - BTWATTCH | Successfully measures an individual’s power consumption | Conflicts in identification of power user when two or more users are using the same customized outlet |