Mobile technology (GSM) based remote monitoring and control of digital Energy meter

The purpose of this project is to remote monitoring and control of the Domestic Energy meter. This system enables the Electricity Department to read the meter readings regularly without the person visiting each house. This can be achieved by the use of Microcontroller unit that continuously monitors and records the Energy Meter readings in its permanent (non-volatile) memory location. This system also makes use of a GSM modem for remote monitoring and control of Energy Meter.

The Microcontroller based system continuously records the readings and the live meter reading can be sent to the Electricity department on request. The electricity department can also send the bill through GSM message which will be displayed on the LCD display. This system also can be used to disconnect the power supply to the house in case of non-payment of electricity bills. A dedicated GSM modem with SIM card is required for each energy meter. The Microcontroller is programmed using Embedded C language.

Features:

1. Provides user friendly remote energy meter monitoring.
2. Supports controlling of meter.
3. Can be controlled anywhere in the world.
4. Non-volatile memory based energy-reading storing.
5. Auto disconnect feature.

The project provides the following learning's:

1. Energy meter working.
2. Conversion of AC supply to DC supply.
3. Interfacing energy meter to Microcontroller.
4. LCD interfacing to Microcontroller.
5. GSM technology.
6. Embedded C programming.
7. PCB designing.

The major building blocks of this project are:

1. Regulated Power Supply.
2. Microcontroller.
3. GSM Modem.
4. Electromagnetic Relay and Relay Driver.
5. Digital Energy Meter.
6. LCD Display with driver.
7. Buzzer with driver.
8. Crystal oscillator.
9. LED indicators.

Applications:

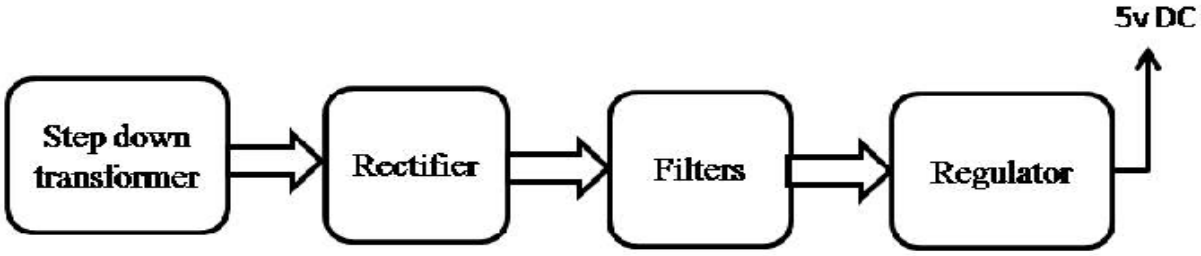
1. Electricity departments.
2. Household Energy meter monitoring.
3. Railway electrical systems.
4. Industrial Energy remote monitoring.
5. Remote controlling systems.

Software's used:

1. PIC-C compiler for Embedded C programming.

2. PIC kit 2 programmer for dumping code into Micro controller.
3. Express SCH for Circuit design.
4. Proteus for hardware simulation.

Regulated Power Supply:



Block Diagram: