GSM based Irrigation Water Pump Controller for Illiterates

The aim of this project is to provide an efficient solution for automatic control of irrigation motor for illiterates. Now a day's technology is running with time, it completely occupied the life style of human beings. Even though there is such an importance for technology in our routine life there are even people whose life styles are very far to this well known term technology. So it is our responsibility to design few reliable systems which can be even efficiently used by them. This basic idea gave birth to the project DTMF controlled soil moisture sensor. Here the automation process is done through the micro controller based technology.

In our project we make use of one microcontroller, which is dedicated at the water pump. The microcontroller forms the heart of the device. A relay switch to which irrigation motor is connected which is operated through microcontroller.

To operate the system initially we should make a call to the mobile phone which is present at the soil moisture sensor in the fields. That mobile phone will be automatically will be answered after one or two rings then the control of the sensor is in our hands by using keypad buttons of our mobile phone the motor will be ON/OFF through Relay switch.

The design of this system is very much sensitive and should be handled with utmost care because the microcontroller is a 5 volts device and it is employed to monitor the house hold power consumption per day where it should be interfaced with a 240 volts energy meter. So every small parameter should be given high importance while designing the interfacing circuit between the controller and the water motor.

Features:

1. Controls high voltage water pumps.

2. Feedback generated with the help of LED indicator.

3. Highly sensitive.

4. Power saving.

5. Low cost.

6. Remote control from anywhere in the world.

Applications:

1. Utilized for irrigation purpose.

2. Very useful for illiterates operation.

3. Can be operated from any place in the world.

4. No need of manual check for moisture level in soil.

5. User friendly.

This project provides exposure to the following technologies:

1. Microcontroller.

2. Embedded C programming for microcontroller.

3. DTMF decoder.

4. Design of PCB.

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Santoshnagar: Opp: Magna Hypermarket, Santoshnagar X-Roads, HYDERABAD – 59.

The major building blocks of this project are:

1. Regulated Power Supply.

2. Microcontroller.

3. DTMF decoder.

4. Relay with driver (Interfacing circuit).

5. Crystal oscillator.

6. Reset.

7. LED indicators.

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:

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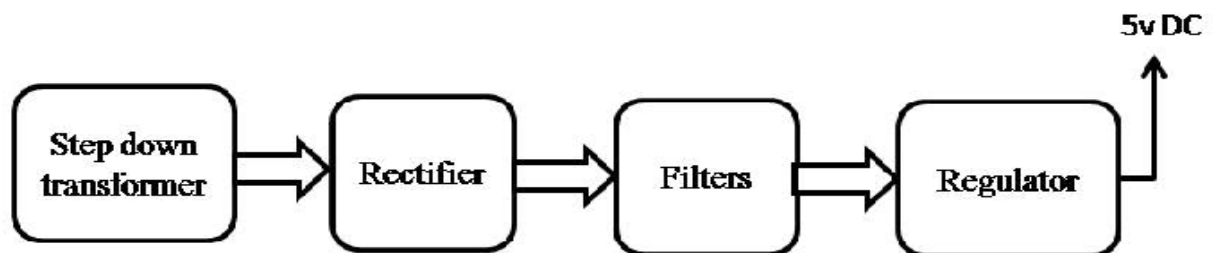
Block diagram:

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                    ┌─────────────────────────┐
                    │ Regulated power supply  │
                    └────────────┬────────────┘
                                 │
                                 ▼
┌──────────┐   ┌──────────┐   ┌──────────┐   ┌──────────┐   ┌──────────┐
│ Mobile   │──▶│ DTMF     │──▶│          │──▶│ Relay    │──▶│ Relay    │
│ phone    │   │ decoder  │   │          │   │ Driver   │   │          │
└──────────┘   └──────────┘   │          │   └──────────┘   └────┬─────┘
                              │  Micro   │                        │
┌──────────┐                  │controller│                        ▼
│ Reset    │─────────────────▶│          │                 ┌──────────┐
└──────────┘                  │          │                 │Irrigation│
                              │          │                 │ motor    │
┌──────────┐                  │          │                 └──────────┘
│ Crystal  │─────────────────▶│          │──▶ ┌──────────────┐
│oscillator│                  └──────────┘    │ LED indicators│
└──────────┘                                  └──────────────┘
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