

Smart Garden System

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Abstract

The Smart Garden is an automatic system that doesn't depend on manual operation or a timer to irrigate the plants. It detects the humidity in the soil directly. Furthermore it has a screen cover system that protects the home garden from strong sunlight that damages the plants mostly in the summer. A GSM modem is used to send a message to the owner to inform him/her that the cover system has been activated and the garden is protected.

The main platform is the microcontroller (MC-360) which controls the whole system and is programmed using Assembly language. The system consists of three inputs and three outputs, the three main input components are the LDR (light depending resistor), LM35CA (temperature sensor) and the soil moisture sensor whereas the three main outputs are two DC motors, a solenoid valve and a GSM modem.

When the moisture sensor detects that the soil is dry, it sends a signal to the microcontroller to activate the solenoid valve and opens it to provide the plants with water until the appropriate level is reached, then the valve closes to avoid overflow. The LDR will check if there is light (daytime) and if the temperature exceeds 40°C. If so, the cover system will activate by rotating two motors used to operate the cover system. When the garden is fully covered, the GSM Modem will send an SMS message to the owner to inform him/her that the garden is covered.



Figure 1: Traditional Garden Cover

When nighttime comes and the LDR doesn't detect any light, the cover on the garden will be removed by rotating both motors backwards even if the temperature exceeds 40°C.