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Greenhouse Controlled with Graphical Plotting in Matlab

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Abstract : This project aims to building a controlled greenhouse, or for better understanding, a structure where one can maintain a given range of temperature values (°C) coming from radiation emitted by an incandescent light, as previously defined, characterizing as a kind of on-off control and a differential, which is the plotting of temperature versus time graphs assisted by MATLAB software via serial communication. That way it is possible to connect the stove with a computer and monitor parameters. In the control, it was performed using a PIC 16F877A microprocessor which enabled convert analog signals to digital, perform serial communication with the IC MAX232 and enable signal transistors. The language used in the PIC's management is Basic. There are also a cooling system realized by two coolers 12V distributed in lateral structure, being used for venting and the other for exhaust air. To find out existing temperature inside is used LM35DZ sensor. Other mechanism used in the greenhouse construction was comprised of a reed switch and a magnet; their function is in recognition of the door position where a signal is sent to a buzzer when the door is open. Beyond it exist LEDs that help to identify the operation which the stove is located. To facilitate human-machine communication is employed an LCD display that tells real-time temperature and other information. The average range of design operating without any major problems, taking into account the limitations of the construction material and structure of electrical current conduction, is approximately 65 to 70 ° C. The project is efficient in these conditions, that is, when you wish to get information from a given material to be tested at temperatures not as high. With the implementation of the greenhouse automation, facilitating the temperature control and the development of a structure that encourages correct environment for the most diverse applications.

Keywords : greenhouse, microcontroller, temperature, control, MATLAB
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