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"SPEED CHANGE OF FAN WITH THE HELP OF TEMPERATURE"

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ABSTACT

It contains transformer that is used to regulate voltage .here we have used lcd for displaying present information, led's for supply indication.

We are using pic controller for measuring analog voltage and current.pic microcontroller has inbuilt ADC, it can sense an analog signal and convert it.

There is used one temperature sensor which senses room temperature. If temperature is approximate 30 then speed of fan become slow in first step through relay, if temperature increase between 40-45 then speed of fan become more than fast from first step and temperature increase up to the level of 50 then speed of fan will be full.

Thus one can control the speed of fan according to room temperature.

INTRODUCTION

In this project we are designing speed change of fan with the help of temperature in this cases is required if temperature is low, the speed of fan is run slowly and if temperature is high the fan run fast. In this project we use relay & with the help of this we can on and off the relay by which we can on & off the fan.

We use the driver to operate the relay. we use the npn transistor (BC547) for using the driver.

The aim of this project is to design a system which is lighter in weight and gives the accurate reading for this we have used a microcontroller .The microcontroller used here is a pic microcontroller which has inbuilt ADC, that it can sense analog signal and can generate a digital signal at its output .This project is highly calibrated since it gives the correct speed of fan for applying to it

PLATFORM USED

SOFTWARE REQUIREMENTS

PIC16F72 is a 28-pin, 8-bit CMOS FLASH microcontroller with A/D converter.

SOFTWARE USED

- **MPLAB IDE v7.00:**

  Source code Editor

  Assembler

HARDWARE REQUIREMENTS

1. *Microcontroller PIC16F72*
2. Crystal Oscillator
3. Resistor
4. Capacitor
5. Connectors
6. Buzzer
7. Transformer
8. Transistor
9. Led
10. Relay

WORKING OF THE PROJECT

It contains transformer that is used to regulate voltage .here we have used lcd for displaying present information, led's for supply indication.

We are using pic controller for measuring analog voltage and current.pic microcontroller has inbuilt ADC, it can sense an analog signal and convert it.

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CIRCUIT DESCRIPTION

POWER SUPPLY SECTION:

Consists of:

1. **RLMT Connector**--- It is a connector used to connect the step down transformer to the bridge rectifier.
2. **Bridge Rectifier** --- It is a full wave rectifier used to convert ac into dc , 9-15v ac made by transformer is converted into dc with the help of rectifier.
3. **Capacitor:** -----It is an electrolytic capacitor of rating 1000M/35V used for filtering to give the peak dc. Capacitor is the component used to pass the ac and block the dc.
4. **Regulator:** ----LM7805 is used to give a fixed 5v regulated supply.
5. **Capacitor:** -----It is again an electrolytic capacitor 10M/65v used for filtering to give pure dc.
6. **Capacitor:** ----- It is an ceramic capacitor used to remove the spikes generated when frequency is high(spikes).

So the output of supply section is 5v regulated dc.

MICROCONTROLLER SECTION:

Requires three connections to be successfully done for it's operation to begin.

1. **+5v supply:** This +5v supply is required for the controller to get start which is provided from the power supply section. This supply is provided at pin no.20 of the PIC 16F72 controller.

2. **Crystal Oscillator:** A crystal oscillator of 4 MHz is connected at pin no.9 and pin no.10 to generate the frequency for the controller. The crystal oscillator works on piezoelectric effect.The clock generated is used to determine the processing speed of the controller. Two capacitors are also connected one end with the oscillator while the other end is connected with the ground. As it is recommended in the book to connect two ceramic capacitor of 20 pf—40pf to stabilize the clock generated.
3. **Reset section:** It consists of an rc network consisting of 104 pf capacitor and one resistance of 1k. This section is used to reset the controller connected at pin no.1 of PIC 16F72.

BUZZER SECTION:

This section includes a buzzer as well as a resistance to limit the current. The buzzer operates in the range of 20-25mA. The voltage given to the buzzer is 5v and also the buzzer can operate between 3V-24V. The resistance used is calculated by using the ohm's law.

Buzzer is an indicating device which is used for checking the software condition and also used for indicating any specific condition.

LCD(LIQUID CRYSTAL DISPLAY)

"MICROCONTROLLER BASED LCD DISPLAY" ,this project is an embedded project . Embedded is the combination of software and hardware before designing any embedded project it is the first step to design the proper hardware for the desired application. Here we are interfacing the LCD, LIQUID CRYSTAL DISPLAY with the Microcontroller, we are using ATMEL series 51 controller 89c51 controller. It is a 40 pin IC, the first step while designing hardware is to design the required power supply as the controller operates on +5 v supply so first we have to design the regulated supply with the help of transformer, regulator and filtering capacitor.

Next step is the necessary connections of the controller like reset and the crystal oscillator for resetting and speed respectively.

Then comes the LCD interfacing ,we are using 16x2 LCD for display, pin no. 7 to 14 are the data lines of the LCD which has to be interfaced with the microcontroller input/output pins. Port p0 has been used for the interfacing of data lines.

Since the display becomes very easy when we use microcontroller hence we have made this project and we have tried to show different display using the switch.

TEMPERATURE SENSOR

National Semiconductor's LM335 IC has been used for sensing the temperature. It is an integrated circuit sensor that can be used to measure temperature with an electrical output proportional to the temperature (in **o**C). The temperature can be measured more accurately with it than using a thermistor. The sensor circuitry is sealed and not subject to oxidation, etc.

FEATURES:

- Calibrated directly in ° Celsius (Centigrade)
- Linear + 10.0 mV/°C scale factor
- 0.5°C accuracy guaranteed (at +25°C)
- Rated for full −55° to +150°C range
- Suitable for remote applications
- Low cost due to wafer-level trimming
- Operates from 4 to 30 volts
- Less than 60 μA current drain

VOLTAGE TRANSFORMERS

A Transformer does not generate electrical power, it transfers electrical power. A transformer is a voltage changer. Most transformers are designed to either step voltage up or to step it down, although some are used only to isolate one voltage from another. The transformer works on the principle that energy can be efficiently transferred by magnetic induction from one winding to another winding by a varying magnetic field produced by alternating current . An electrical voltage is induced when there is a relative motion between a wire and a magnetic field. Alternating current (AC) provides the motion required by changing direction which creates a collapsing and expanding magnetic field.

NOTE: Direct current (DC) is not transformed, as DC does not vary its magnetic fields
A transformer usually consists of two insulated windings on a common iron (steel) core:

The two windings are linked together with a magnetic circuit which must be common to both windings. The link connecting the two windings in the magnetic circuit is the iron core on which both windings are wound. Iron is an extremely good conductor for magnetic fields. The core is not a solid bar of steel, but is constructed of many layers of thin steel called laminations. One of the windings is designated as the primary and the other winding as the secondary. Since the primary and secondary are wound the on the same iron core, when the primary winding is energized by an AC source, an alternating magnetic field called flux is established in the transformer core. The flux created by the applied voltage on the primary winding induces a voltage on the secondary winding. The primary winding receives the energy and is called the input. The secondary winding is discharges the energy and is called the output.

. CONCLUSIONS

The Speed Change of FAN with Temperature is a vital requirement in various industries.

- In Industries, it saves expensive plants (machinery) from being damaged against small or large variations in their optimum parameters.
- It is used in various industries such as sugar industry, paper industry & rubber industry.
- It is robust in design and hence requires very little maintenance.

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