KCL - 06

TEMPERATURE SENSOR TRAINER

Measurement of temperature is an important task in a large number of physical processes. A transducer in a device which converts the temperature information into an electrical signal, usually voltage, for an automated processing. A very wide variety of temperature transducers are commonly available which differ from each other with regards to there:

- Range of operation
- Sensitivity and linearity
- Accuracy, Stability and Repeatability
- Speed of response

The present experiments has been designed to study the input-output characteristics of some common transducers like, thermistors NTC type, K-type thermocouple, Platinum type PT100, semiconductor sensors and may be extended to also study the temperature coefficients of resistances.

The main requirements for an experiment of this nature are,

a) A precisely controlled from oven with a temperature display which is fast

b) An adjustable gain instrumentation amplifier which may be used to amplify the different levels of signals from transducers

c) Interfacing circuits suitable for the transducers used.

Features

- Study of 4 different temperature transducers - NTC thermistors, RTD Platinum, K(Cr-Al) thermocouples, IC temperature sensors.
- Study & comparison of Temperature transducer controlled alarm system.

Note : Specifications can be altered without notice in our constant efforts for improvement.

- PID control: P, P+I, P+D & P+I+D control action
- Instrumentation amplifier, adder amplifier : X1, X100, X235, P controller, I controller, D controller Comparator, Electronic switch, Signal conditioning, Rotary /Slide pots, Heater, Relay, Buzzer, LED
- Digital meter   :   Actual/Set temp/mV
- Interconnections
  - All interconnections are made using 2mm banana Patch cords.
- Test points are provided to analyze signals at various points.
- All ICS are mounted on IC Sockets.
- Bare board Tested Glass Epoxy SMOBC PCB is used.
- In-Built Power Supply with Power ON indication.
- Attractive ABS Plastic enclosures.
- Set of 2mm Patch cords for interconnections
- User's Manual.

List of Experiment

- Study the NTC Thermistor sensor.
- Study the Platinum RTD sensor.
- Study the K-type Thermocouple Temperature sensor.
- Study the IC LM335 type Temperature sensor.