

## ABSTRACT

*Multi-sensors measurement temperature system can be used for mapping the flow of temperature over space. The ability to measure several sensors at almost real time create the possibility to measure the heat flow in pipes, closed rooms or open spaces. In this research, a multi-sensor temperature measurement and logging system was developed. The system was designed to monitor 30 points temperature. T-type thermocouple sensors were used due to its wide measuring range, good accuracy and cost effectiveness. The system employs a microcontrollers that controlling a selector system to maintain the availability of the sensors. This system equipped with an operational amplifier based signal conditioning circuit. The results show that the average sensitivity, accuracy, and precision of the sensors was 14.05 mV/°C, 91.42%, and 90.05% respectively. In order to test the system, a heat flow in pipes were monitored and the result shows the variation of temperature over distance from heat source.*

**Keywords :** *T-type thermocouple, multi-sensor temperature, temperature measurement, heat flow.*