

Data-Logging on Microcomputers: Thermistors for
Temperature Measurement in the Elementary Laboratory

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(Abstract)

An important function of computers is the collection and storage of data. The present work reports on the use of Commodore 64 microcomputers for taking temperature measurements in introductory physics experiments. The system is able to read resistance measurements and convert them to temperatures as a function of time. For resistances that are sensitive to temperature changes, we used thermistors (semiconductors with a negative resistance-temperature slope).

Details are given for making the devices and for calibrating them over the desired range of temperatures (10-40 deg C). The experiments for which the system has been used are: 1) heat of fusion of water and 2) mechanical equivalent of heat by an electrical heating method. Practical hints are given for avoiding experimental difficulties and for using a machine language program for reading the resistances. Although this work was done with C-64 computers, a similar method can be used with other systems having paddle ports.