King Fahd University of Petroleum and Minerals

University Diploma Program
Electrical Engineering Technology

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EET 027, Experiment # 12
PC-Based Data Logging

Student Name: _____ Student ID # : _____

Objectives:

Designing of PC-Based Data Logging and Recording system for the temperature.

Apparatus:

A Computer with windows operating system, Matlab, and Terminal Software.
A Temperature sensor device with serial port interface feature

Theory:

Data logging and recording is a very common measurement application. In its most basic form, data logging is the measurement and recording of physical or electrical parameters over a period of time. The data can be temperature, strain, displacement, flow, pressure, voltage, current, resistance, power, or any of a wide range of other parameters. Real-world data logging applications are typically more involved than just acquiring and recording signals, typically involving some combination of online analysis, offline analysis, display, report generation, and data sharing. Moreover, many data logging applications are beginning to require the acquisition and storage of other types of data, such as recording sound and video in conjunction with the other parameters measured during an automobile crash test.

Data logging is used in a broad spectrum of applications. Chemists record data such as temperature, pH, and pressure when performing experiments in a lab. Design engineers log performance parameters such as vibration, temperature, and battery level to evaluate product designs. Civil engineers record strain and load on bridges over time to evaluate safety. Geologists use data logging to determine mineral formations when drilling for oil. Breweries log the conditions of their storage and brewing facilities to maintain quality. (See attached tutorials *A Review of PC-Based Data Logging and Recording Techniques* for more detail).

The list of applications for data logging goes on and on, but all of these applications have similar common requirements. The purpose of this experiment is to design a simple data logging system to record the data from a temperature sensor and analyze the data in real environment.

Realterm is a terminal program specially designed for capturing, controlling and debugging binary and other difficult data streams. It is far better for debugging comms than Hyperterminal. It has no support for dialing modems, BBS etc - that is what hyperterminal does. (See attached tutorial of *Terminal Software* for more details)

Procedure:

1. Connect the temperature sensor device with the computer through serial port interface.
2. Start the Real Term software in the computer.
3. Configure settings of Real Term software, go to Port option and set baud rate to 9600 bps, then go to Capture option and set the path and filename to save the captured data.
4. Start Matlab and run the program exp12.m
5. Observe the graph representing temperature versus time.