

## **What is a Data Logger?**

### **General Application**

A data logger is an electronic instrument that records information over a period of time for later use. The type of information recorded is determined by the user. For the purposes here, we will limit the discussion to physical parameters such as temperature, relative humidity, pressure, voltage, water level, etc.

People have been using data loggers for many years. They are not a new invention. People have long had a fascination for learning what is happening when no one is around. For example, most of us have experienced waking up in the morning to find out that sometime during the night the power had gone out. There are a number of ways we might know this. Most of us don't care when the power went out or how long it was out. If, however, a large cooler containing perishable food was shut down, the story would be quite different. We would want to know how long the power was down and how high the temperature rose and for how long. This is where a data logger is useful.

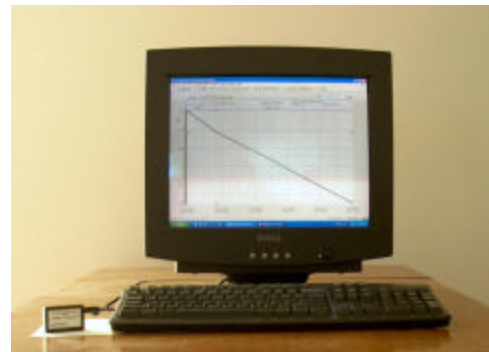
Typically, data loggers are used in remote areas where power may not be easily accessible. They are ideal for people involved with field studies, transportation monitoring, HVAC tests, troubleshooting, quality studies, general research, and educational science. Data loggers can be used in a wide variety of applications. Their small size makes them ideal for mounting in out-of-the-way locations.

With the recent introduction of new technology, it has become possible to build miniature electronic devices that are battery operated and can automatically record information for later retrieval by a computer. To minimize cost and size, full control and operation of the data logger is achieved through the use of a personal computer with data logging software as shown in Figure 1.

## Application Note #10

Typically, an interface cable is connected to the serial port of the computer. The other end of the cable has some sort of miniature plug, which plugs directly into the data logger. All communication with the data logger is directed by the software through this interface cable. The following steps are usually followed to operate a battery powered data logger:

1. Connect the data logger to a personal computer as shown in Figure 1.



**Figure 1.**

2. Using the software provided with the data logger, start the data logger to begin recording data.
3. Disconnect the data logger from the computer and place the data logger in the desired location for recording the required data and leave it there. Refer to Figure 2. In this case the data logger is recording the air temperature of a plant.

During this period, the data logger will collect temperature measurements at periodic intervals and record them in chronological order within the data loggers memory for later retrieval.



Figure 2.

4. After the desired recording period has elapsed, reconnect the data logger to the personal computer as shown in Figure 1.

Using the data logger software, download the data to the pc. Most data logger software packages allow the user to view data in a number of different formats. The most common formats are graphical and tabular. The graphical format, as shown in Figure 3, allows the data to be viewed pictorially as a graph. This format provides the user with a quick means for getting a feel for what is happening and observing trends. The tabular format, shown in Figure 4, provides the user with the raw data. Data in this format can be exported to a spreadsheet application such as Microsoft Excel, for further manipulation. Once the data is in the pc, it can be saved as a file on the computer or floppy disk for recall at a later date or printed.

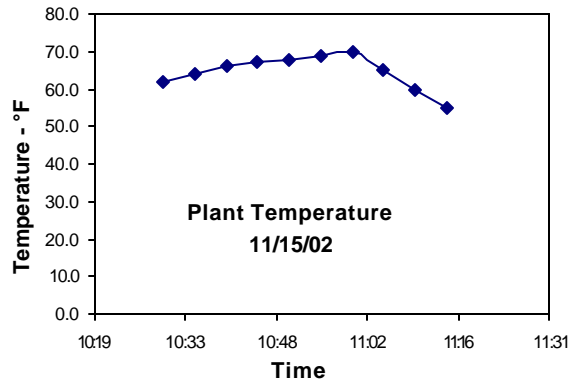


Figure 3.

Time (hr:min)	Temperature (°F)
10:30	62.0
10:35	64.0
10:40	66.0
10:45	67.0
10:50	68.0
10:55	69.0
11:00	70.0
11:05	65.0
11:10	60.0
11:15	55.0

Figure 4.

MadgeTech data loggers are small, battery powered, intelligent electronic devices that record measurements of physical parameters in the world for later retrieval by a computer. As the technology improves, significant achievements in performance can be made. MadgeTech has defined its mission as incorporating the latest technology into its data loggers as soon as it becomes available. At MadgeTech, we are taking the lead in the industry when it comes to price/performance as we have an unrelenting commitment to pursue performance improvements in our existing data loggers as well as designing and developing new data loggers.