4.4 DATA LOGGER

Data logger is an electronic device that records data over time or in relation to location either with a built-in instrument or sensor.

- Pulse inputs

  Counts circuit closing

- Control ports

  Digital in and out. Most commonly used to turn things on and off can be programmed as a digital input

- Excitation outputs

Though they can be deployed while connected to a host PC over an Ethernet or serial port a data logger is more typically deployed as standalone devices. The term data logger (also sometimes referred to as a data recorder) is commonly used to describe a self- contained, standalone data acquisition system or device. These products are comprisedof a number of analog and digital inputs that are monitored, and the results or conditions of these inputs is then stored on some type of local memory (e.g. SD Card, Hard Drive).

Examples of where these devices are used abound. A few of these examples are shown below:

- monitoring temperature, pressure, strain and other physical phenomena in aircraft flight tests (even including logging info from Arinc 429 or other serial communications buses)

- Monitoring temperature, pressure, strain and other physical phenomena in automotive and in-vehicle tests including monitoring traffic and data transmitted on the vehicles CAN bus.

- Environmental monitoring for quality control in food processing, food storage, pharmaceutical manufacturing, and even monitoring the environment during various stages of contract assembly or semiconductor fabrication

- Monitoring stress and strain in large mechanical structures such as bridges, steel framed buildings, towers, launch pads etc.

- Monitoring environmental parameters in temperature and environmental chambers and test facilities. Ø A data logger is a self-contained unit that does not require a host to operate.

- It can be installed in almost any location, and left to operate unattended.

- This data can be immediately analyzed for trends, or stored for historical archive

purposes.

- Data loggers can also monitor for alarm conditions, while recording a minimum number of samples, for economy.

- If the recording is of a steady-state nature, without rapid changes, the user may go through rolls of paper, without seeing a single change in the input.

- A data logger can record at very long intervals, saving paper, and can note when an alarm condition is occurring. When this happens, the event will be recorded and any outputs will be activated, even if the event occurs in between sample times.

- A record of all significant conditions and events is generated using a minimum of recording hardcopy

- The differences between various data loggers are based on the way that data is recorded and stored. Ø the basic difference between the two data logger types is that one type allows the data to be stored in a memory, to be retrieved at a later time, while the other type automatically records the data on paper, for immediate viewing and analysis.

- Many data loggers combine these two functions, usually unequally, with the emphasis on either the ability to transfer the data or to provide a printout of it

Advantages

- A data logger is an attractive alternative to either a recorder or data acquisition system in many applications. When compared to a recorder, data loggers have the ability to accept a greater number of input channels, with better resolution and accuracy.

- Also, data loggers usually have some form of on-board intelligence, which provides the user with diverse capabilities.

- For example, raw data can be analyzed to give flow rates, differential temperatures, and other interpreted data that otherwise would require manual analysis by the operator the operator has a permanent recording on paper,

- No other external or peripheral equipment is required for operation, and

- Many data loggers of this type also have the ability to record data trends, in addition to simple digital data recording

Applications

- Temperature sensor
- Pressure sensor