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Application notes (temperature & humidity, acceleration / vibration, pulses, electrical signals, climate)

One of the popular and wide spread applications of the data logger is temperature and humidity measurement. A very small device is easy to operate and the user can choose himself when to start the measurement and the interval - how often it should be taken, as well as to download the stored data to the computer (with the help of the special software) and work with it further. The information about the temperature and relative humidity can be even presented as a graph. The device can work from battery (it is often lithium one) and is resistant to water or contaminators influence (such as dust, for example). Data logger does not consume much power which is also one of its strong points.

Modern models of this device are wireless which means its operation becomes easier and the data can be transmitted directly almost immediately after the measurements are taken.

Many data loggers have got colorful screens where the data is depicted. The temperature range can be very wide, from minus temperatures to very high temperatures above zero. The measurement can come out in both, F or ° C. there is sensor inside the majority of the models, but very often the device has also got the exterior probe used for taking versatile temperature and humidity measurements connected with other measurements, as well as dew point.

The device can be used inside, for example, warehouses, green houses, different levels of the buildings, including basement and attic, various work and living areas.

One very interesting application field of the climate data loggers is investigation of the environment and its changes in caves. In reality there is a still a long way to go in the climate studies and what factors influence it and which changes may happen in future. Caves are an interesting area for investigation as they have got their own temperature and humidity conditions different from the outside weather conditions. Data loggers help to investigate the conditions inside the caves and to monitor the changes which happen (if any) when the weather outside changes. The advantage of data loggers used for that purpose is that they can continue working in close interaction with water, very high humidity, even in soil etc. taking the measurement there where it is difficult to put any other equipment.

High in the mountains, deep in the ocean, rainforests etc – these are all the places that are difficult to reach but which are interesting for people. Man researches have been and many will be carried out in future. Small, but very robust climate data loggers help to get new knowledge about unknown things, to monitor the slightest changes in the climate, the interconnection between temperature, humidity, pressure, precipitation etc.

Data logger is a very big help when it is necessary to find out the best time for planting trees. The measurements can be taken regularly and to get an idea if the condition for growing are suitable or not, it the weather is stable or not, how much it changes and which and how often the fluctuations of temperature happen.

Data logger has become quite a competitor to the wired devices measuring acceleration and vibration. The advantage of this small and very easy to operate device is that it allows to catch the data very quickly. The frequency of vibration which the data logger can measure is very high, the measurement is taken in all three axes and sometimes it has got additional sensors allowing to measure temperature and pressure.

As a rule, the device is very small in size and light in weight, but has got a capacity to store huge amounts of data; the configurable software allows the users to decide themselves when to start the measurement, for how long to measure, it helps to analyze the data etc. This device is often used for the machinery monitoring.

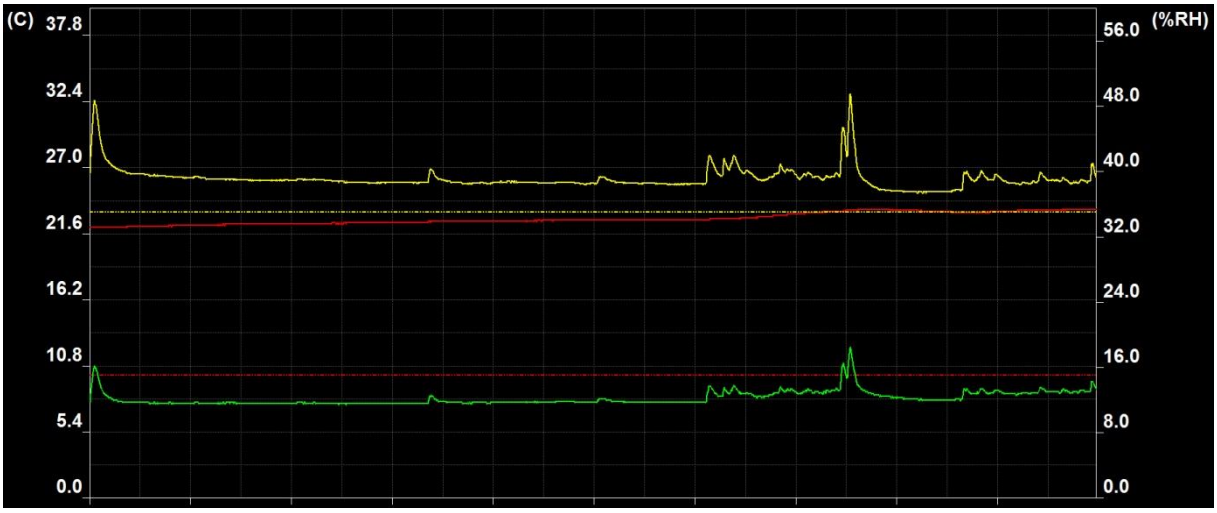
After configuration (it can be adjusted to individual needs) it should be placed in the appropriate place and after it is started the device takes measurements. The results can be all later downloaded to the computer and analyzed.

Data Logger finds one more application field – that is reading electric signals. As it can work separately from the computer and juts store the data for a long time for later saving it on the computer the user has got a chance to get a precise of picture of how much energy is consumed and to consider the possibilities for possible energy savings. With the help of that device the study of each particular energy supply can be carried out – that helps to bring the electrical supply in balance, if it is not, diminish the risk of overload and in such a way avoid the possible electrical damages in future.

Data logger for different measurands

Temperature and humidity measurements belong to the most popular and most frequently used functions of the data loggers. Due to its small size, the device is easy to handle and the user can determine, for example, the start of the measurement, as well as the measurement interval, and load the stored measurement data (using special software) on the computer. The temperature and moisture data can be displayed graphically. The devices are battery powered (usually lithium battery) and are water- and dirt resistant (e.g. dust). Another advantage of the data logger is its low consumption. The newer models are wireless, which makes their operation simpler and enables a direct, almost immediate data transmission after measurement. Many data loggers are equipped with color displays, on which the data is displayed.

The temperature measuring range is often very large and includes temperatures from the minus range up to very high temperatures above 0. The measurement can be carried out either in °C or °F. In the majority of models an internal sensor is installed; often, however, an external sensor is used in order to conduct a wide range of temperature and moisture measurements in connection with additional measurements, such as dew point measurement.



Data Loggers are used in closed rooms such as warehouses, greenhouses and various levels of buildings such as in basements and attics and in diverse working and living areas. A very interesting application field of climate data logger is the study of the ambient conditions and their changes in caves.

In reality we, humans, are still far from knowing exactly what factors influence the climate and what changes await us. Caves are particularly interesting for such studies, because there are their own temperature and humidity conditions there, which are different from the external weather conditions. With the help of the data logger it is possible to examine the conditions within the caves and to observe any changes that occur when the weather outside changes.

An advantage of using data logger for such purposes in comparison to the other measuring instruments is that this one withstands water and high humidity, and continues working also in the ground and under other difficult circumstances still. Difficult to reach places such as mountaintops, the depths of the ocean or rainforest etc. are often of particular interest to human beings.

Many researches have already been made and they will continue in future. Small but robust data loggers enable humans to explore the unknown and to observe and track the smallest climate changes, as well as connections between temperature, humidity, pressure, precipitation, etc. A data logger is a great help if you want to determine the optimum time for planting trees. It is possible to make regular measurements in order to get an idea of whether the conditions are favorable for planting, whether the weather stays the same or not, in what way and how much it is going to change and what and how often the temperature fluctuations occur.

Data loggers have become a serious competitor to acceleration and vibration meters with cables. The advantage of these handy and easy-to-use devices is that with their help a very fast data acquisition is possible. You can make vibration measurements in high frequency, the measurement is performed on all three axes and some devices are equipped with additional sensors for temperature and pressure measurement. Normally, a data logger is very small and light, but can store a high volume of data. With the configurable software, the user can determine when the measurement should be started and how long it will last and then can analyze the data, etc. Often data logger is used for condition monitoring). After the configuration (adjustment to individual requirements) the device is mounted at the corresponding position and started. After the measurement, the results may be loaded on the computer and analyzed.

Another application of the data logger is in the range of electrical signals. As data logger operates independently of the computer and the data are available for storage on the computer for a long time, the user can get a clear picture of how much energy is consumed and react accordingly to save the energy in future. On the basis of one data logger, every single power supply can be checked, to even out the energy supply, if it is in imbalance. Thus, the risk of over-voltage can be reduced so much that the electrical damage can be avoided in future.