

Growing Trends In Data Logging Capabilities

Advanced New Dataloggers Increase Communications Options

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Recently the market has seen an increased interest in smaller models of battery-powered data loggers featuring wireless communications interfaces. These convenient systems rely on proprietary wireless protocols to provide the best mix of range and battery life, often lasting a full year or more. Data can be sent to a handheld receiver, PC, or a network-connected collector. Typical applications involve temperature monitoring in refrigerators, freezers, storage areas, and other controlled environments. For example, there is currently a great deal of activity in hospitals for monitoring refrigerated drug and blood storage being driven by the new JHACO regulations for monitoring and reporting. An excellent example of these monitoring products are the Accsense line of wireless temperature, humidity, environmental, and voltage/current dataloggers.



Another rising trend is the market's move toward building more functionality and intelligence into network-connected data loggers. The newest models of dataloggers offer built-in Ethernet interfaces for easy integration into the network along with FTP and Web servers for enhanced communication. This makes it possible to take advantage of the modern ubiquity of network connections, whether on a desktop in the plant or halfway across the world to make recorded data available to multiple users in real-time. The enhanced local intelligence of data loggers can be taken advantage of in several different ways for improved autonomous logging and reduced cost of operation. Local and remote alarming is certainly a major benefit: by utilizing programmable limits, local logic and math capabilities and digital outputs, sophisticated alarm algorithms can be programmed into the new data loggers. This allows the logger to activate a local sound or light alarm or other warning indicator or a remote alarm via pop-up window, email, or SMS message. Adaptive sampling is another intelligent logger advantage: often huge volumes of "normal" data are being collected when in fact the user is only interested in looking at anomalies. Intelligent data loggers give these users the ability to continuously monitor the desired parameters, but only record data when the values go outside of their expected range. This can greatly reduce the cost of analyzing and reporting exceptions. Intelligent loggers can also change their sample rate and which inputs are measured dynamically, allowing the user to get much more detailed information when abnormal events occur. Statistical data reduction provides a similar function: much like adaptive sampling, this allows the data logger to summarize a large volume of data into a few key pieces of information. Intelligent data loggers can provide statistics such as minimum and maximum over a user-set period of time as well as histograms and even rainflow analysis to further reduce the effort and cost of data collection.

Increasingly, solutions providers are being asked to provide more loggers equipped with cellular communication for use in monitoring remote or mobile sites. Innovative enhancements to cellular modems, both CDMA and GSM--in particular the addition of IP stacks--make it possible to access a

logger in the field via a regular Ethernet address from a nearby PC in the field or by desktop. State-of-the-art modems can make this data transmission almost completely transparent. The only drawbacks are that there is an additional monthly cost for the cellular account, and the initial configuration can be confusing for some users.

One particular application where cellular communication is extensively being used is in vehicle monitoring. With recent changes in EPA regulations covering emissions from industrial diesel engines, we have had many requests for datalogging systems to monitor emissions control systems on buses, trucks, construction equipment, and even snow-cats. Loggers are outfitted to monitor the exhaust stream and engine performance parameters with cellular modems allowing data to be collected from the vehicle while it is in the field, eliminating the need to actually travel to the equipment to retrieve the data.

Even more storage and communications options exist, such as USB; many new loggers incorporate USB communications interfaces for configuration and data download. Support for removable storage media is also available in the form of slots for USB memory sticks or SD/MMC card slots. This allows the user to expand the storage space of the logger and to rapidly retrieve stored data by simply swapping out the card. Some loggers even allow remote programming via these cards to update loggers in the field. Another technology is provided by SDI-12, a standard, low-speed serial bus that is used on environmental sensors and weather stations. New loggers provide 1 or more SDI-12 channels to allow easy data collection from these devices. Of course, CANbus is also available for vehicle applications, and a good solutions provider will offer a datalogger, such as the Influx Rebel xt, that can take advantage of a CANbus gateway to collect operating data via the standard OBD-II or J1939 network in most newer vehicles. Modbus communications further increase users' options using either serial or Modbus TCP, allowing the data logger to exchange information with other equipment, whether using a PLC or HMI. Wi-Fi wireless communications are especially valuable if the datalogger is going to be used in multiple locations in a facility. Eliminating the need for a wired connection back to the user's PC allows the logger to be quickly relocated from one piece of equipment or room to another. It also facilitates the collection of data from moving equipment. Finally, wireless Ethernet is being used as an alternative method to collect data such as temperature and humidity from multiple sites within a facility when it's not practical or expensive to string cables. Nowadays, some data loggers utilize Bluetooth communications to download stored data, including AEMC's ML 914 AC Current Data Logger. The low-power advantages of Bluetooth make it practical to use with battery-operated loggers where they will be located in areas that are difficult to access, inside a piece of equipment, or off the ground, although the limited range restricts the number of applications where it can be used.

For further information on intelligent data loggers, wireless dataloggers, devices featuring inbuilt cellular communications and/or Bluetooth communications, or to find the ideal solution for your application-specific needs, contact a CAS Data Logger Applications Analyst at (800) 956-4437 or visit the website at www.DataLoggerInc.com.

Contact Information:
CAS DataLoggers, Inc.

CAS DATALOGGERS

12628 Chillicothe Road
Chesterland, Ohio 44026
(440) 729-2570
(800) 956-4437
sales@dataloggerinc.com
<http://www.dataloggerinc.com>