



Q&A with
Nina Vernali,
Business
Development
Coordinator at
MadgeTech,
Warner NH.

MANAGING THE DEMANDS OF DATA LOGGING, 16 CHANNELS AT A TIME

MadgeTech, a leading manufacturer of data loggers worldwide, is known for its innovations in wireless technology, cloud services and real-time monitoring. Recently, MadgeTech introduced the X-Series, comprised of three-dozen multi-channel data loggers for the measurement and recording of temperature, voltage and current.

The new series features several significant improvements, including the flexibility to disable channels to enhance memory capacity, the elimination of an interface cable, and a faster download speed. MadgeTech envisions that the X-Series will bring enhanced versatility to more researchers and developers across a broader range of applications and industries – from automotive to food to medical.

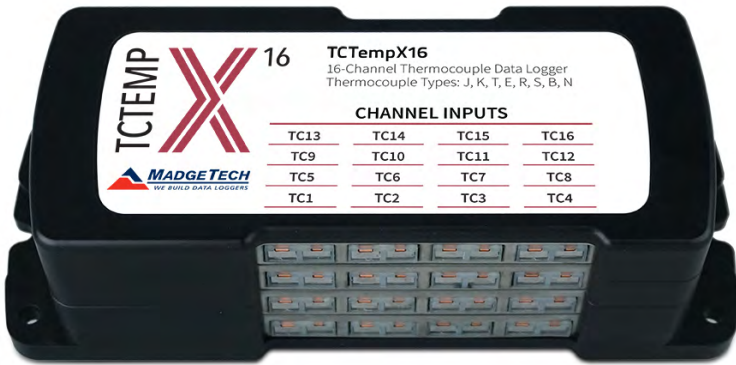
What are data loggers?

Data loggers are compact, powerful electronic devices that provide for automated monitoring of humidity, pressure, temperature and other physical parameters. Data loggers provide superior accuracy in demanding environments. They also offer solutions for quantifying natural atmospheric conditions and environmental occurrences.

Data loggers come in a variety of sizes and styles. They also vary in function, allowing them to adapt to a wide range of applications across industries. They are especially useful for process validation, efficiency improvement, and compliance and quality control.

How do data loggers work?

Data loggers are built with an intricate circuit board comprised of an internal memory storage and sensor. They use a battery – typically lithium ion – as the power source, avoiding the need for AC power. Once exposed, the logger will collect data and provide information based on given parameters and specified thresholds.



The TCTempX16 is the first of its kind, providing the most channels available on a MadgeTech data logger. The TCTempX Series includes 4, 8, 12 and 16-channel options to deliver high-precision measurement capabilities for the most demanding applications.

Data loggers are most often used with their manufacturer's software. The software interface allows users to manage devices and review data in multiple formats. Moreover, the software offers multiple reporting capabilities. Users have the option to configure reading rates, alarm thresholds, and delayed start and stop functionalities. Workflows and other features can be created to download data and save reports in designated folders, maximizing organizational structure and efficiency.

Data loggers also assist in the creation of reliable measurement analysis as needed. Automated data collection can be used to provide quality control for manufactured products, verify that equipment is operating as intended, and validate scientific findings or results.

Data loggers add great value for R&D professionals, including laboratory technicians performing sterilization processes in autoclaves; quality assurance technicians conducting temperature and humidity mapping in their warehouse; and shipping managers monitoring shock testing during bulk shipments. Importantly, data loggers do not replace employees; rather, they assist them by increasing productivity and quality.

What are their key advantages?

One major advantage of data loggers is their versatility; they can be used in a vast range of industries and applications. While data loggers are useful in almost any setting where data is needed, they are essential to industries that require regulatory compliance or operate on the basis of strict process control.

Advantages include the dynamic features of visual and audible alarms; automatic report analysis; and remote monitoring of data on any smartphone, tablet or internet-enabled device. With the assistance of data loggers, users are able to pass regulatory and quality audits with ease, even in the most regulated industries.

Choosing the right data logger depends on application, specifications and location. A first step is to identify what needs to be monitored. Another is to identify timing needs for capturing data.

How has data logging technology developed over time?

When they were introduced to the market, strip chart recorders built a reputation of being easy to use while providing quick and legible results. A strip chart recorder is a device that can record electrical or mechanical input onto a hardcopy that translates into a chart. It uses a stylus pen that archives and plots data points over a set of timed intervals.

Over time, they were considered the leading data logging solution for industries worldwide. However, with companies looking to improve efficiency and quality, strip chart recorders were overtaken by digital loggers. With their accurate readings, convenient size, and the option to store, share, and provide analysis and statistics, data loggers were proven to be the most economical and comprehensive solution.

How do I choose the right data logger?

Choosing the right data logger depends on the application, specifications and location. A first step is determining what needs to be monitored and where the data logger will be placed. For example, is the user looking to monitor the ambient temperature of a warehouse? Pressure levels of a gas chamber? Or shock/vibration readings during product transportation? Based on the application, measurement parameters can be established so that a user's choices become more evident.

Another step is to identify an application's specific timing needs for capturing data from the logger. Generally, there are two types of data loggers: wireless and stand-alone. Stand-alone loggers are particularly useful for those looking to capture data and information over time. Many loggers can be set up to take readings in intervals for months at a time. When the job is complete, the logger is retrieved, and the data can be downloaded directly to a computer.

The other type, wireless data loggers, also come in various sizes and styles for easy adaptation to an application. The key advantage of wireless data loggers is their ability to provide immediate access to real-time readings, with alerts and notifications set to trigger when conditions exceed a safe range. Most wireless data loggers allow users to access these readings through software, as well as remote access via cloud interface or an app.

What is an example of a challenge that your data loggers have solved?

An advanced materials and manufacturing firm was conducting research that required testing with realistic conditions to better understand performance at elevated strain rates. The firm was experiencing difficulty with finding an affordable and reliable way to test impact forces during drop tower testing.

Using MadgeTech's Shock300, they were able to mimic impact forces during deceleration in a crash scenario. To replicate the impact velocity speed that needed to be tested, the team built their own impact drop test tower and fitted the Shock300 to the impacting platen.

Once drop testing was complete, post-analysis of the data showed the drop tower impact efficiency, which is the percentage of kinetic energy measured at impact and the initial potential energy measured at drop height. This data allowed the company to determine what type of impact rate dependence their materials might have in real-world scenarios.

Where else has it solved a problem?

A large-scale metal finishing manufacturer was interested in an automated data logging solution after many years of conducting temperature readings via manual methods for their oven temperature profiling surveys.

Using our Titan S8, an eight-channel portable data acquisition system, the company succeeded in closely monitoring and recording all points of the oven. After the cycle was complete, the critical data was used to verify time and temperature requirements in an efficient and useful manner. Obtaining this data provided validation that the heat source and airflow pattern were properly operating, ensuring consistent surface finish, finish thickness, color and seal quality.

The X-Series will bring enhanced versatility to more researchers and developers across a broader range of applications and industries — from automotive to food to medical.

What is the X-series?

The X-Series is comprised of MadgeTech's leading multi-channel data logging products. Made up of four segments, the series features data loggers that are capable of monitoring current, voltage and temperature through both Resistive Temperature Detector (RTD) probes and thermocouples. Each data logger is available with 4, 8, 12 or even 16 channels — a new enhancement that now doubles the company's data logging capabilities. Using a standard USB-A to Micro USB cable, the X-Series loggers can be directly plugged into a PC to download readings via our software.

What are its benefits?

The X-Series data loggers are self-contained aluminum devices, making them suitable for the most demanding applications. The VoltX loggers are capable of high-resolution voltage recording, up to 0.004 mV. Our versatile CurrentX Series accepts voltage signals from sensors, transducers and many other common voltage sources. These low-level DC current loggers are available in three ranges.

The TCTempX Series is compatible with a variety of thermocouples and is capable of recording more than two million readings. This series features individual cold junction compensation for each channel, providing increased accuracy and response time. Our RTDTempX loggers accept 2, 3 and 4-wire RTDs. Users can enable or disable channels to maximize memory capacity. Once the monitoring cycle is complete, data can be downloaded for post-analysis.

Who will use your new product series?

With a battery life of up to 18 months and extended memory functionality, these new data loggers are ideal for long-term deployments. Furthermore, data from all connected channels can be simultaneously logged, significantly adding value for users who require monitoring of multiple points of an area. Users also will appreciate the 4, 8, 12 or 16 channels for capturing several data points at once across a variety of applications.