October 2019

Electrical
Products & Solutions™

The Purchasing Guide for Electrical Contractors

www.epsmag.net

SIMPLE-TO-USE
DATA LOGGERS

Simple-to-use Data Loggers

BY JOHN OLOBRI

DATA LOGGERS serve several very important tasks. To name a few, they satisfy the requirement to document the necessary information to support the proper operation of production systems and processes. Equally important, data loggers are the technician's eyes to find intermittent problems, as some parameters and events cannot be seen in real time and only present themselves at unpredictable times.

This is a helpful tool to assist in preventive maintenance by enabling a person to quickly accomplish the task in a minimum timeframe. Reviewing the recorded data after the fact and analyzing it on a computer screen is far more beneficial and effective than having a technician standing around waiting for the problem to occur and trying to spot it.

Before we get to the point about simple-to-use data loggers let's explore data loggers in general. Data loggers come in all shapes and sizes and cut across a wide price spectrum from hundreds of dollars to thousands of dollars. You can break down the requirement into two types, those measuring and recording AC information and those measuring and recording DC information. In the latter group we will include event, pulse and temperature loggers.

Measuring AC information can be complex and therefore requires more sophistication, as very fast sample rates are needed for accurate data recording as well as large amounts of memory to store the data. This, in turn, adds cost and more complicated user interfacing to get the needed information. It also requires that the user be better trained to operate the equipment properly and safely. Before the data logging begins there are many questions to ask: what data to record, how fast to sample, how long the sampling takes place and how to download and interpret the data which are factors requiring even more consideration. The qualifications of the technician for technical and safety aspects of the installation should also be taken into consideration.

DC data loggers, on the other hand, are a lot less complicated and do not require the computing power that goes into recording AC measurements. This results in less complicated electronics and user interfacing to get the needed information.

In all cases, the technician installing the data logger is burdened with the task of deciding what to record, configuring the instrument to record it and determining how long and how fast to record it.

A new breed of data loggers called simple loggers have emerged which take away all the up-front decision making for the installer. These loggers are usually low-cost single channel devices that that can be installed quickly in a wide variety of applications and collect data for a work shift, a day or a month.

A fresh set of AA alkaline batteries typically will last for 2 to 3 months. Some units offer the ability to power from a USB port eliminating the need for batteries. These instruments are ideal for troubleshooting those intermittent problems usually found in day to day operations in industrial manufacturing and process monitoring. They provide short term profiling of new installations and system upgrades where start up recording is needed.

The technician, process engineer, plant maintenance staff or contractor simply shows up at the job site, connects the logger to the required measurement point, presses the start button and walks away. The example here shows a typical temperature monitoring application.

Sample rate and
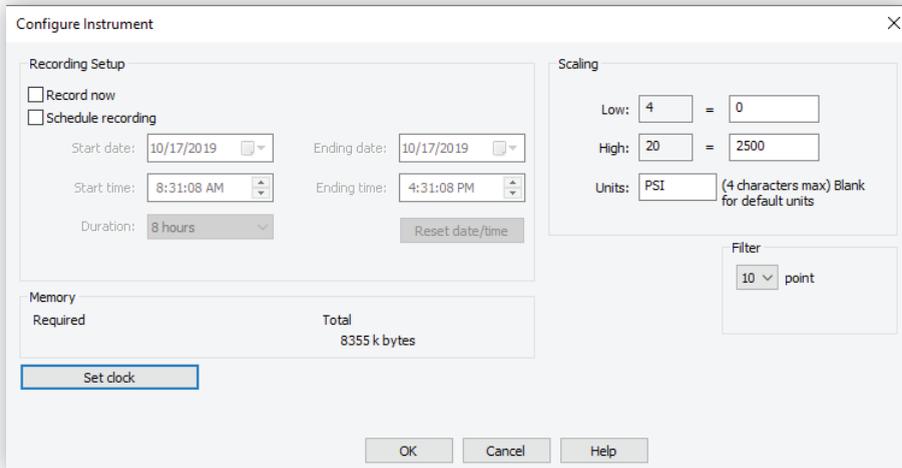
storage rate are preset in the instrument and are based on years of statistical data on the most common intervals. The only up-front decision that needs to take place is to be sure that the measurement range of the data logger is compatible with the data to be logged. It can be from a transducer, thermocouple, RTD sensor, current probe or dry contact in the case where the measurement is to count pulses or log on/off type events. Typical measurement ranges in these simple-to-use loggers are compatible with industry standard transducers and temperature probes with DC voltage, 4-20mA, low voltage AC and thermocouple inputs.

The installer requires no special training and data logging can literally start in seconds. Once the data is collected a press of the button ends the recording and puts the data logger in standby mode. The data logger can then be brought back to the office or lab and connected to the computer typically using a USB cable. The process of connection to the computer automatically loads the application software again requiring no special skills on the user's part.

Here are just a few steps after the recording is complete. Once the data is downloaded and displayed on the computer screen, the scale and units of mea-

sure can be set up to match the recorded data to the actual parameters associated with the job site such as, GPM (gallons per minute) for a flow system or PSI for pressure monitoring. It can even be changed after the fact in the event it is entered incorrectly. The configuration screen shown here depicts a typical scale and units of measure set up for a 4-20 milliamp logger.

The date and time can be set from the software either before or after the recording takes place again eliminating set up time at the job site.

Analysis and reporting of the recorded data is also a simple process. The software automatically sets the scale and the time base from the downloaded data and presents it on screen along with statistical information as well as the logger's configuration.

If need be, the user can zoom in to review the interested area in the case of anomalies in order to better understand them and assist in identifying the cause. Printed reports can be displayed as graphed data and/or tabular listing of the data. The software also provides a session summary screen where the user can type in pertinent information about the recording location as well as comments on the analysis from reviewing it.

Today the circuitry
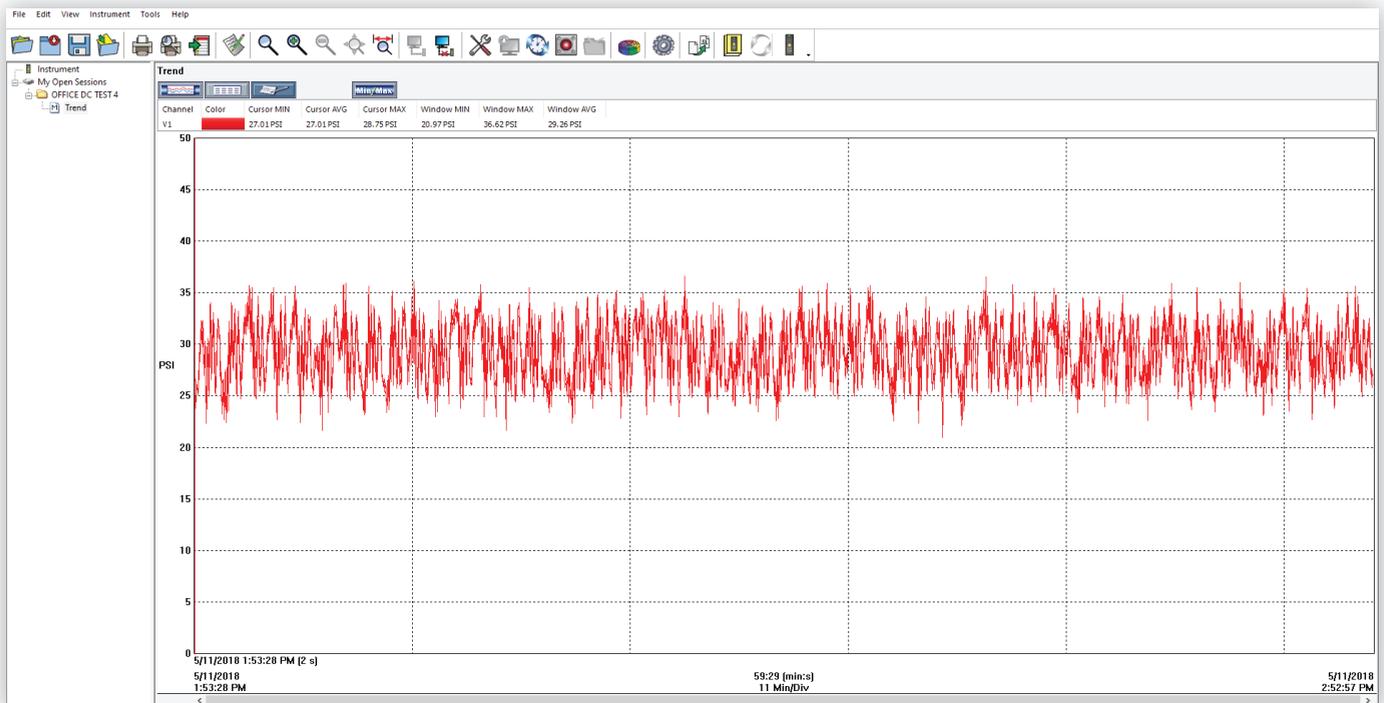
and design of data loggers provide more of the up-front configuration needs freeing up the user to get the job done quickly and correctly with minimal on-site needs that in many cases they may not be comfortable or familiar with.

Simple loggers are cost effective and, in many cases, sell for less than $100. They are time savers for the user who can install and begin recording in seconds with confidence that the instrument will perform its intended task. And finally, the analysis and report generation software is equally simple-to-use providing graphs, charts and reports with minimal need for the operator to have advanced computer skills or to fully understand the software's functionality. ❏

Think Simple! Get it done Right and Quickly!