APPLICATION NOTE

CAS DATALOGGERS

Troubleshooting UPS Problems With a Voltage Data Logger

Accsense Electrocorder Saves Local Business Time and Money

In an ongoing 'stumper' troubleshooting application, CAS DataLoggers has provided the Accsense Electrocorder voltage data logging solution to troubleshooting UPS problems for Osage Energies, a Generac Full-Service Dealer based in Vermilion County, Illinois. Osage Energies installs and services emergency power generators to backup residential/commercial customers and also supplies UPS batteries and custom control design. Owner Lu Green is a Commercial Level II Generator Technician and a proud U.S. Navy Veteran. Lu started the business in 2004, supplying all residential and commercial applications that Generac Guardian equipment can power.

Lu sent in an online request to CAS DataLoggers looking for a 0-500 Vac-capable input device to record voltage for a uniquely challenging application. He explains, "Right now the voltage logger is at a customer's site watching for a voltage sag event that's been really hard to capture." This customer has twin 30k Generac generators backing up an IT server room located in their corporate headquarters. This room is experiencing momentary voltage anomalies resulting in repeated UPS event 'nag' alarms. Unlike a brownout, voltage only drops for a brief instant during these events. "It's a major inconvenience for the customer--their IT staff keep getting these event messages at all hours but they can't pinpoint the cause when they get there.

Their APC/UPS system keeps picking it up because of their window-of-event alarms." The customer's IT department is reluctant to disable or loosen the tolerance of their event alarms, so for extensive analysis Osage Energies needed a voltage data logger to capture and identify this anomaly.

Installation

CAS DataLoggers provided Osage Energies with an Accsense Electrocorder EC-3V Single and 3-phase Voltage Logger to quickly highlight their customer's voltage problems for further investigation. The data logger (500Vac, L1, L2 & L3 to Neutral) allows users to quickly monitor and resolve both single- and 3-phase voltage problems with its integral Phase Sequence or Rotation Checker. The voltage recorder is currently at the customer's site installed in the facility's utility area in a circuit breaker panel. The panel splits from there into the circuit A-side and B-side going into the server room racks. The data logger is part of a kit including the voltage data logger, a carry case, input leads, a USB lead, and free software--this was a cost-effective way for Osage to source all the required equipment.

Data Collection & Troubleshooting

Accsense Electrocorder products use a constant sampling technique, unlike the single reading taken by similar products. When these dataloggers start to record, they sample every channel 16x per cycle. Users can select an averaging period to suit each situation, and the logger is accurate to ±1% of the reading, ±1 volt. At the end of each averaging period, the device saves 3 quantities for each channel:

- The True RMS Average;
- The Max, the highest cycle value during the period;
- and the Min, the lowest cycle value.

This means that these data loggers will record the highest peak and the lowest valley within each cycle.

The logger stores the voltage levels along with dates and times on its non-volatile memory with a capacity of 32,000 true RMS voltage values per phase (10 bit). Recording is signified by a flashing green light on the logger, while a red light shows that the unit has finished collecting data. With the back-up battery, the Electrocorder data logger can continue to record for a year. Whether the mystery problem's cause turns out to be an overload, a short circuit or another issue, Accsence Electrocorder will capture it for presentation to the customer--and stop the nag alarms!

SOFTWARE

USB data storage allows Lu to easily collect and transport the data for later analysis on his laptop or PC. When it's time to retrieve the data, Lu uploads the logger's recorded readings to his laptop for analysis with Electrosoft. Users can also access the software database across a network to transfer data via email. Lu comments, "The software's extremely easy to walk through for configuration and looking at the voltage data." The kit's free software also contains analysis and troubleshooting features, while the simple interface enables users to export data files and produce report-quality graphs as proof to customers. Users can also draw electrical line diagrams and output to PDF, RTF, XLS, HTML, etc.

Benefits

As this application continues, Accsense Electrocorder is already saving Osage Energies money. Lu comments, “Currently I’m renting it out to our customer so it’s already earning its keep. I’m very impressed with its speed and I plan on picking up the current/voltage model next. As a professional electronic technician who appreciates great test gear, I can say that this logger will be a great tool in my quiver.”

The mystery event may in fact be a transient, so Lu is looking at the EC-7VAR Data Logger that can monitor not only voltage but also current, power factor, power and energy. “The logger is very easy to set up and apply while we’re trying to get this elusive event captured. Eventually we’ll find it though. When you use it, your voltage readings are dead-on, and it’s portable so you can put it in a cabinet or wherever you need.”

Future Uses

Lu notes that there are many other uses for the voltage logger. For example one of his customers has a 45kW generator handing power generation for a farm that kept browning out for hours: “Those industrial fans on grain-drying bins need a lot of power, so customers’ single-phase gets hammered out in these rural areas where 3-phase isn’t available. As a result there’s a lot of anomalies and dips that people put up with that they shouldn’t.” The generator is protecting HVAC equipment and kicks on when the farm sees a 10% voltage drop. Lu was able to log and certify that event to the customer using another product but explains, “The customer was on 2 phases of a 3-phase and his automatic voltage compensator was malfunctioning and causing the brownouts. With your 3V logger I would have found it a lot faster and I could have downloaded the data. My next purchase will be the next model up to capture current and power data for other sites.”

For further information on Accsense Electrocorders, troubleshooting UPS Problems, or to find the ideal solution for your application-specific needs, contact a CAS Data Logger Application Specialist at **(800) 956-4437** or www.DataLoggerInc.com.