APPLICATION NOTE

CAS DATALOGGERS

Solving Voltage Problems with a UPS Monitoring System

Single Phase 300Vac Data Logger Kit Pinpoints Power Dropouts

A customer recently contacted CAS DataLoggers looking for a system to monitor the output of a UPS (Uninterruptible Power Source) which powered the company's server computer, phone and voicemail server. On several occasions, the owner came to work in the mornings and saw evidence of voltage problems as indicated by systems being off or rebooted. Because this was a small business, he needed a UPS monitoring solution that fit into a modest budget.

Installation

Applications Specialist Tony King- recommended the EC-1V Single Phase Voltage Logger Kit to monitor the output of the UPS for power issues. It was simply a matter of configuring the recorder with a PC, plugging it into the wall, plugging the UPS into the recorder and pressing the start button. Recording was indicated by a flashing green light and a red light indicated that memory was full and recording had stopped.

Usage

Commonly used for troubleshooting and analysis, the EC-1V sampled the voltage multiple times per line cycle and recorded 3 quantities at the end of each user selectable recording interval: the average, maximum and minimum True RMS voltage. This allowed it to capture all the highs and lows which were one cycle or longer and store this information in non-volatile memory.

The datalogger used a constant sampling technique to sample every channel 16 times per cycle (16ms at 60Hz and 20ms at 50Hz), and users could choose the recording interval from 1x a second to 1x an hour. The single-phase recorder was then left for 20 days to capture any voltage fluctuations in the output of the UPS. The normal readings would average around 120VAC but lowest readings for the UPS output voltage would be about 85VAC indicating that there was some issue with the UPS.

The Electrosoft software provided with the recorder offers a convenient troubleshooting tool to analyze the recorded data. Data stored in the recorder was uploaded to a PC via USB, and then the recorded voltage levels, dates & times were viewed in both graphical and tabular form. Normal operation of the UPS would be represented by a straight line around 120VAC. However as shown in the graph below, but that's not what the customer observed. They quickly found that the voltage had periodic dropouts during 7 out of the 20 days during the recording period, indicating there was a real problem with the UPS. These graphs were then printed out to clearly show the recorded voltage output.

Benefits

The voltage recorder kit worked well for the customer as a low-cost troubleshooting tool—it was small, safe and easy to use. In fact, several employees could check the readings since the recorder didn't need special training to set it up or use it. The data from the graphs let the customer know that their UPS was probably the culprit, which they quickly replaced, fixing the problem and keeping everything online 24/7. The recorder provided a cost effective way for the customer to monitor their voltage supply and capture voltage problems quickly for further investigation.

For further information on the EC-1V Single Phase Voltage Logger Kit, a UPS monitoring system, 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.