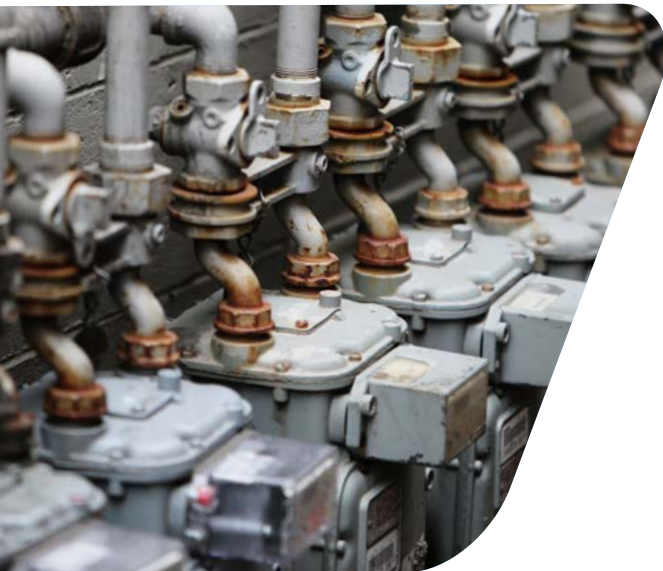


IDENTIFYING WATER METER TAMPERING USING A DATA LOGGER

ADVANCED DATATAKER MONITORING SOLUTION CATCHES UTILITY THEFT



CAS DataLoggers supplied the industrial data logging solution for [Pasco County Utilities](#), a provider of utility services to customers at a reasonable cost and in an environmentally responsible manner. The Utility Services Branch provides water and sewer services, reclaimed water, solid waste/resource recovery, recycling, hazardous waste, and street lighting service to most of the residents in Pasco County. The company maintains many remote water consumption meters in the field, which consist of billing meters for customers including businesses, golf courses, plants, and residences.

Pasco County also uses bulk sewer meters monitoring pump station output, normally recording the number of gallons customers put through the meter and billing based on that figure. Unfortunately, workers occasionally found water meter tampering by the clients. They would temporarily turn off the power to these meters and then run their water or pumps, trying to avoid being billed for the true usage.

Therefore, the company needed all their flow meter data date and timestamped, creating a legal digital copy as proof of cases of customer tampering—data that, once created, couldn't be altered by either party. With this in mind, Pasco County began searching for a cost-effective monitoring solution for their remote electronic flow meters in the field, which could prevent data tampering as much as possible in file format. This device would also need to support convenient USB memory stick support for easy data transfers and have the durability to operate unattended for extended periods.



INSTALLATION

Pasco County Utilities installed a [dataTaker DT82I Intelligent Industrial Data Logger](#) into a portable Pelican case which CAS DataLoggers also provided. First workers placed an external port inside the case and then added a through-the-case port. They then inserted the dataTaker logger and secured the case to a concrete pole adjacent to an onsite meter to prevent theft or vandalizing. At that point, personnel left

the dataTaker to log unattended to confirm the actual utility usage from clients and spot suspected meter violations.

USAGE

The dataTaker DT82I was a robust, stand alone, low power data logger providing an extensive array of features including USB memory stick support, 18-bit resolution, extensive communications capabilities and a built-in display. The dataTaker DT82I's Dual Channel concept allowed up to 4 isolated or 6 common referenced analog inputs to be used in many combinations, and the universal inputs enabled technicians to take measurements from almost any type of sensor including thermocouples, RTDs, thermistors, and strain gauges as well as voltage, process current, resistance and frequency. The DT82I formed a totally self-contained solution featuring support for Modbus sensors and SCADA systems, FTP and Web interfaces, and switchable, regulated outputs to power sensors. Additionally, the data logger's digital I/O channels and high-speed counters could be used to monitor equipment state or to count events or pulses.

Pasco County Electronic Technician Clifford Farris explained his use of the dataTaker logger: "With the analog outputs of the dataTaker, we found out the real usage in suspect cases by measuring the water and sewage flow itself, and the digital outputs measured the dry contacts on the pumps. We also monitored loss of power, comparing the power usage of the pumping station against the meter, looking for any discrepancies; if the power went out at any point, we'd see that, and if it went out for just the billing meter, we would see that too."

Workers quickly got the hang of programming the dataTaker and simply plugged a USB stick in the front for easy data retrieval. Equipped with superior data storage and communications features, the unit was able to store up to 10 million data points (expandable) so that as much or as little data could be recorded as needed. Users could overwrite or stop logging once allocated memory was filled, archive data on alarm event, copy to USB memory or transfer via FTP.

Additional communication features for the DT82I industrial data logger included connecting via RS232 or Ethernet, or connecting remotely through a modem or over the Internet. The web interface allowed users to configure the DT82I, access logged data and see current measurements as mimics or in a list using a web browser. FTP pushed data via the internet or mobile phone network without any need for polling or specific host software. Additionally, the dataTaker datalogger allowed downloading all the metering data in a strictly unalterable binary file format, which the utility company's legal representation then brought into court as proof of criminal tampering.

BENEFITS

Pasco County Utilities benefited significantly following installation of the dataTaker DT82I Intelligent Industrial Data Logger in their efforts to spot water meter tampering and win subsequent court cases. The data logger's universal inputs allowed connection with a wide variety of sensors to measure various parameters, while USB stick support made data collection fast and easy. Equally importantly, all data was recorded in the secure binary file format and served as a legal digital copy for litigation purposes. Mr. Farris elaborated on this feature's necessity: "The dataTaker is worth its weight in gold for proving our case in these types of violations. We can't edit or otherwise alter the binary format in any way—that qualifies it a legal digital copy."

For further information on [dataTaker Intelligent Data Loggers](#), monitoring water meter tampering or to find the ideal solution for your application-specific needs, contact a CAS DataLogger Application Specialist at **(800) 956-4437** or www.DataLoggerInc.com.