About the Watts Aware Solution

The Watts Aware product is an essential tool for the challenge of reducing electricity consumption to lower costs. Watts Aware consists of several state-of-the-art hardware and software components to remotely monitor real-time electricity usage.

Sensor Synergy's "Watts Aware" product line was created in response to customer requests for an integrated, remote monitoring tool to help control electric utility costs. The Watts Aware system leverages our industrial smart sensor-interface technology with computing technologies to create a cost-effective, easy-to-setup, turn-key electricity-use-monitoring solution.

NEEM WA-118 Data Acquisition Unit / microWeb Server:

One of the core elements of the Watts Aware product line is Sensor Synergy's patented Network Enabled Equipment Monitoring (NEEM) unit. This unit transforms analog sensor data, proportional to current flowing in supply cables, into digital information that can be wirelessly transmitted to a Netbook computer. For the Watts Aware solution, we introduced a new NEEM model –- the WA-118 configured to process data from 6 AC current sensors as well as a Type-K thermocouple temperature sensor. The unit provides the sensor data to Internet/LAN based queries via the internal microWeb server. The power consumption information can be retrieved in real time on the Netbook Dashboard monitoring console.

Included Sensors:

Sensor Synergy selected UL listed, USA manufactured, split-core current transformers with integrating electronics as the AC current monitoring sensors for the Watts Aware system. The split-core transformer design allows the sensors to be installed without power interruption. These "clamp around" sensors are opened and then placed around the power supply cable to be instrumented. Once the sensors are snapped shut, low voltage, sensor output cables are connected to the Watts Aware WA-118 NEEM unit. No direct high voltage electrical connection is needed. A sensor can be set for a "full scale" output at 100 amps, 150 amps, or 200 amps, and can be attached around a main supply cable from the main AC service entrance or around a branch conductor. Each of the monitored cables can be up to 0.85" in diameter, can carry up to 200 amps of 50 - 60 Hz, AC current and can operate at voltages up to 480 VAC. The 6 AC current sensors supplied with the Watts Aware system provide a reliable, cost effective component of a complete power monitoring solution.

The "clamp around" feature of the AC current sensors provides the ability to change the installation without re-wiring circuit breaker panels. For example, the Watts Aware monitoring system can be moved from one circuit breaker panel box to another after sufficient information has been measured at the first location. After one or two months of operation at the initial installed circuit breaker panel location, the user can decide to instrument different power supply cables associated with a different circuit breaker panel. The "clamp around" sensors used here make this a relatively simple change with no interruption of AC power - typically this type of "de-install then re-install" can be completed in less than 1 hour.

The WA-118 model also includes the capability to measure the temperature of an included Type-K thermocouple from -18C to +105C (0F to 220F.) In many instances, our customers have found that power consumption can be linked to temperature issues - internal and/or external temperature fluctuation. The inclusion of a Type-K thermocouple electrical interface and sensor provides the capability to monitor temperature while the electrical power is being monitored.

Sensor data measuring current flowing through the instrumented cables, is processed by the WA-118 NEEM unit. The WA-118 processes this data and makes it available to a "client computer" connected through a wireless network interface.

Pre-configured Wireless Router:

Included with the Watts Aware product is a wireless router unit that connects the WA-118 to any computer within range of the wireless router. In the most basic configuration, the wireless router creates a simple 3 node network consisting of the WA-118 NEEM unit, the wireless router and a client computer. This basic network can also include access to a larger local area network or connectivity to the Internet. Details of the network configuration will depend on the user's preferences, availability of public static IP addresses, access to external network resources and other requirements. The basic "out of the box" solution requires no external resources and is ready to function immediately.

Dashboard Monitoring Console:

The Watts Aware solution includes a preconfigured Netbook computer loaded with Watts Aware Dashboard monitoring software. This program queries the WA-118 to collect sensor measurements from all sensors approximately once every 5 seconds. The Dashboard software automatically applies the calibration and correction factors to the raw sensor measurements necessary to display easily understandable information on the screen of the Netbook.

The Watts Aware Dashboard software running on the Netbook computer provides an easy-to-read dashboard display to view the corrected, real-time sensor data in graphical form. Additionally, it stores all of the corrected sensor data in .CSV (comma separated values) files on the Netbook's local hard drive. These .CSV files are compatible with Microsoft Excel and most other spreadsheet or data viewing and analysis software. In addition, the data files can be easily viewed with most standard text viewing software, including Notepad and Wordpad - which are included with most Microsoft operating systems such as Vista, Windows XP and Windows 7.

If all 6 current sensors and the type-K thermocouple are activated, the included Netbook hard disk has enough storage capability to save approximately 50 years of data collected at 5 second intervals before the oldest data would need to be removed to make room for new data. Once set up, the Watts Aware Netbook can run continuously (24 hours a day, 7 days a week) while connected to its AC power supply. While running, the dashboard software collects data from each of the active sensors, stores data in the Netbook's hard disk and displays real-time instantaneous data in its gauges and graphs. A wide range of power saving opportunities can be realized from both the easy-to-read, real-time data display and access to detailed historical data.