Winston Industries' Kitchen Data Systems™ Powered by Smart Temps® and HACCP Verification Program Specifications

System will provide the following:

Monitoring Equipment:

- Wireless 24-hour digital temperature monitoring for walk-in refrigerators and freezers, reach-in coolers, milk boxes, and cooking equipment and hot holding equipment used in a kitchen. Also, storerooms and district owned delivery trucks
- Temperature data is continuously sent to a secure website to document HACCP compliance information 24 hours a day, 365 days a year
- System automatically sends a text message, e-mail, and/or phone call if a potential problem is detected with the monitored equipment

Monitoring Food:

- Food temperatures are submitted directly to the secure website for accurate documentation
- Meets standard operation procedures and HACCP reporting standards
- Daily food menu items are automatically downloaded to the Shield/food thermometer to record all stages throughout the food preparation process including: receiving, preparation, cooking, holding, serving, and cooling

Reporting:

- All information will be available 24 hours a day, 365 days a year on a secure, password protected website
- Customizable HACCP reporting can be generated for each piece of equipment and food item that is monitored. Information is archived for no less than 7 years so reports can be viewed for any past day, month, or year, eliminating the need for paper logs to be kept on site

System Hardware Components:

Shield™ - Wireless thermometer for taking temperature of food

- To be used in recording temperatures throughout the flow of food: Receiving, Preparation, Cooking, Holding, Serving, and Cooling
- Type K micro tip probe takes internal temperatures
- Menu items are automatically sent from the Command Center™ through the Link™ to the food thermometer
- This thermometer initiates corrective action at the time temperature is taken if the temperature falls outside the correct temperature range of the food item
- Food temperature information is automatically sent via the wireless mesh network to the Command Center for instant viewing
- The temperature can be displayed in Fahrenheit or Celsius
- The unit uses three AA batteries and has a multiple line 14 character LCD display which provides visual temperature monitoring at a glance
- Dimensions are 7.5" X 3.25"

Shield

Guard™ - Wireless thermometer for automatic temperature monitoring of hot and cold equipment, storerooms, and delivery trucks

- A thermistor automatically checks and sends temperatures from the piece of equipment (example: coolers, freezers, hotboxes, and storerooms) to the website
- Identifies potential equipment maintenance issues
- The information is transmitted via a wireless mesh network
- Temperature can be displayed in Fahrenheit or Celsius
- The unit uses three AA batteries and has a four character LCD display which provides visual temperature monitoring at a glance. Battery life is two years based on 15-minute temperature read sent every 30 minutes
- Dimensions are 7.5" x 3.25"

Guard

Link™ - The wireless gateway located at each site that allows the Shield and Guard to communicate to the Command Center

- An IEEE 802.15.4 compliant transceiver with robust RX filtering allowing co-existence with IEEE 802.11g (Wi-Fi) and other devices
- Uses a custom embedded Linux operating system
- It is set up to use DHCP to obtain an IP Address, but can be configured to a static IP Address and a proxy server
- Communicated to the Command Center using the HTTP protocol (port 80)
- Requires a standard power outlet
- Requires an Ethernet port
- Comes with 2 USB ports (A&B)
- Comes with Ethernet Network Port
- Comes with Ethernet PC Port (used to share a network line with a PC)
- Comes with a 2.4 GHz 3.5" antenna
- All necessary Ethernet cables and power adaptor are included
- Dimensions 4.75" x 5.75" x 1.5"

Link

Passport ™ **-** A mesh-enabled wireless range extender

- Allows the Guard and Shield to communicate temperature readings from a further distance with better coverage and flexibility
- Does not require any special setup

Passport

System Website Component:

Command Center™ - A secure website used to manage the temperatures collected from both equipment and food

- Website contains the latest information collected from all monitored equipment and flow of food
- Custom HACCP reports can be generated for each piece of equipment and/or food item
- Each piece of equipment can be set up with specific temperature parameters allowing for alert notifications to be sent via e-mail, text message, or phone call when the equipment falls outside the preset parameters
- All equipment alerts, messages, and responses are documented
- Food items or menus can be loaded by cycle, site by site, or category, (i.e., high school, middle school, or elementary school) for simplicity and flexibility
- Food items/menus are sent via the Link to the Shield so only items being served are viewed to take temperatures
- Last minute food substitutions can be easily customized in the Command Center
- Multiple levels of security for either complete or limited access depending on settings for each user
- Information is archived for no less than seven years, allowing for viewing of past days, months, or years
- Compatible with web browsers Internet Explorer, Firefox, and Safari

Information Technology Requirements

- Access to the internet
- No computer or server required
- No wiring
- No software to buy, install, and maintain

Wireless Technical Operation of Winston Industries' Kitchen Data Systems™ powered by SMART Temps™

The Link device is based on an ARM9 microprocessor running a modified version of GNU Linux for embedded devices. Viruses for common Windows desktop machines or even for common Linux desktop machines will not execute on the Link due to its ARM (as opposed to x86) based microarchitecture. Viruses targeted at the Linux operating system are rare and viruses targeted at an ARM based Linux environment are extremely rare if even existent.

Communication and Network Inter-operability

Kitchen Data Systems devices communicate using the Zigbee protocol which is based on the IEEE 802.15.4 wireless communication standard (http://en.wikipedia.org/wiki/ZigBee). Zigbee is a low data-rate mesh network standard which is **NOT** compatible with the IEEE 802.11 standard. While SMART devices do communicate in the same frequency band (the license free ISM band) as many Wi-Fi devices (802.11b,g,n) they use vastly different signaling. Zigbee and Wi-Fi networks can safely coexist in the same environment without difficulty, but cannot intercommunicate without a bridge device. The data traffic across the Kitchen Data Systems wireless network is infinitesimal when compared to the usual data traffic across a typical Wi-Fi link. As such, Wi-Fi network performance degradation resulting from the shared frequency band is imperceptible.

Security

The wireless networking protocol of Kitchen Data Systems is proprietary and **NOT** based on typical IP type networking (i.e. no TCP,UDP, ICMP,etc.). The Link device is not a Wi-Fi router and does not export internet connectivity to the remote devices in the system. Instead the Link acts as a data collection point - receiving and forwarding information to and from the remote devices using the Kitchen Data Systems proprietary protocol. The Kitchen Data Systems protocol only defines a limited number of messages, most dealing with the transmission of temperature records and food menu data. Remote devices cannot request connections to arbitrary internet addresses, as all communication with the Kitchen Data Systems servers is handled by software internal to the Link device and the server URLs are hardcoded. Even if an unauthorized device could gain access to the Kitchen Data Systems network, it would not pose a security risk to the Link attached network due to the limited protocol through which Kitchen Data Systems devices communicate.

Ethernet Security

The Link device is based on an ARM9 microprocessor, running a modified version of GNU Linux for embedded devices. Viruses and other malware for common Windows desktop machines or even for common Linux desktop machines will not execute on the Link due to its ARM (as opposed to x86) based microarchitecture. Viruses and other malware targeted at the Linux operating system are rare and viruses targeted at an ARM based Linux environment are extremely rare if even existent. Should malicious code targeting a Link device be created in the future it would still be nearly impossible to "infect" a Link. As a rule the Link does not except any incoming TCP or UDP connections with the one exception being SSH (secure shell) session requests. The only Ethernet based server active on Link is an SSH server used for device administration. SSH communicates on TCP port 22 and all SSH sessions require username and password authentication. For added security it is recommended that port 22 of this device not be visible to the internet. All other data traffic to and from, the Link device, is client-initiated requests to the Kitchen Data Systems Servers.

Backup and Support

- The database is backed up daily with weekly snapshots and there is also a mirrored database in the event that the primary database is inaccessible
- There is customer support by phone and via e-mail

Key Benefits of Winston Industries' Kitchen Data Systems™

powered by SMART Temps

- Always shows up to work 24 hours a day, 365 days a year
- Identifies maintenance issues
- Allows staff to monitor temperatures at any step, especially the critical ones: cooking, holding, etc.
- Improves accuracy of all temperature documentation
- Corrective actions prompted and documented
- Electronic HACCP reports
- Paperless accountability
- Improves productivity
- Generates multiple reports
- Notifies when temperatures are not within parameter
- Helps prevent foodborne illness
- Ensures HACCP compliance
- Exceeds HAACP guidelines
- Alerts via e-mail, text, or phone
- Prevents food loss
- Peace of mind
- No expensive software to buy, install, and maintain
- Low cost setup and maintenance programs