



ColdStream® Site

Facility and Equipment Monitoring Service for Visibility and Compliance

Regardless of where in the world you conduct business, or where your business fits in the food supply chain, food safety regulations likely rank high on your worry index. In the perishable food industry, the Hazard Analysis and Critical Control Points (HACCP) system is the foundation on which food safety plans are drawn and supporting regulatory compliance documents are written. The HACCP approach is a preventative system that is used to identify potential hazards across all stages of food production including packaging, processing, distribution, and storage. A key component of the seven steps of HACCP is record keeping; upon inspection, it is only through the documented records of your preventative controls, processes, and corrective action procedures that you can prove you are in control of and managing food safety. With temperature being a universal critical control point for all perishable food, managing your temperature records manually can be cumbersome and prone to error. Sensitech has a solution.

The ColdStream® Site Facility Monitoring Service is a wireless offering that automates the process of temperature, humidity, and condition monitoring in controlled environments (i.e., manufacturing, warehouses, storage areas, food preparation areas, and retail outlets). In a time of increased scrutiny, the ColdStream Site service helps companies comply with regulations and current Good Manufacturing Practices (cGMP). Individual areas can be monitored and include refrigerators, freezers, cold storage, and refrigerated packaging and preparation areas—anywhere perishable food is handled or held. In addition to electronic record keeping and reporting, the ColdStream Site service will keep designated staff informed of individual areas of compliance, and will automatically alert when excursions beyond set parameters occur.

Features and Benefits

- Flexible, wireless sensor network that supports both large and small environments.
- Easy-to-use, non-disruptive deployment—no need for expensive hard-wired infrastructure.
- Cost-effective, automated record keeping eliminates manual clipboard checks.
- Secure, encrypted data management keeps your records safe through centralized data administration.
- Global access to information when and where you need it—by sensor, by room, by facility.
- Real-time alarming and alerting for temperature compliance and product quality assurance.
- Improved visibility and compliance through online data history and audit trail.



ColdStream[®] Site

The ColdStream[®] Site Service Overview

The ColdStream[®] Site service is a fully integrated solution for facility temperature, humidity and condition monitoring which combines wireless sensors with a dedicated wireless reader network and a Software-as-a-Service (SaaS) web portal.

- TempTale[®] Site wireless sensors are configured with user-defined alarm thresholds and measurement intervals. They are strategically placed inside any number of storage areas to record environmental conditions.
- TempTale Site wireless sensors record data and transmit the encrypted information wirelessly to a local ColdStream Site Network Controller.

- The ColdStream Site Network Controller relays the information to the ColdStream Site Web Portal. All data is stored securely and is accessible to authorized users via a web browser; additional software is not required.
- The ColdStream Site Web Portal provides immediate access to real-time and historical sensor data for all monitoring locations—anytime, anywhere. Reports are available on demand or can be scheduled using a report wizard which will generate and distribute reports automatically via e-mail or fax.
- When an excursion occurs, designated personnel can be alerted through audible/visual alarms, as well as through e-mail, text or automated phone call. Once a problem has been identified and corrective action has taken place, the incident can be recorded in the system's historical audit log.



The TempTale Site wireless sensors communicate with the ColdStream Site Network Controller.



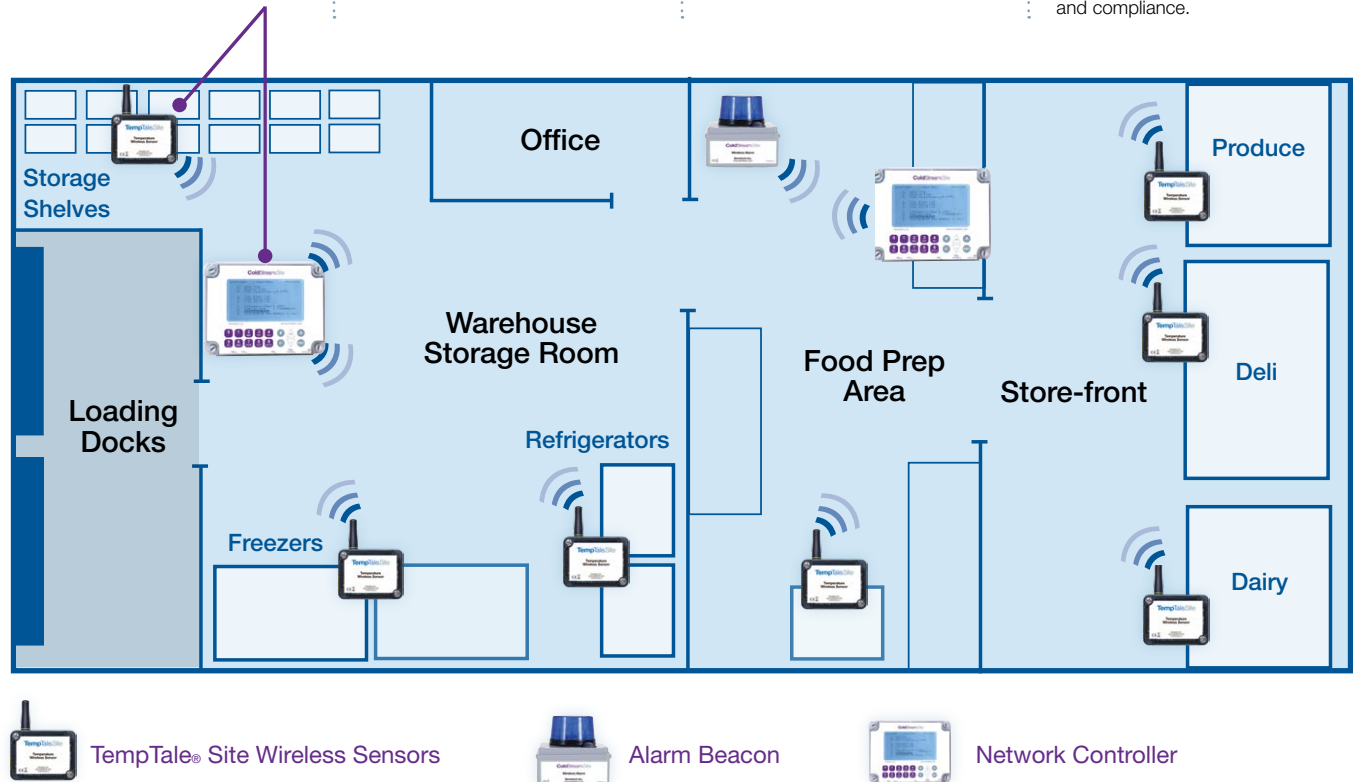
Data transmits via Internet to the hosted, secure ColdStream Site Web Portal.



Alerts can be delivered by alarm beacon, email or text message.



From storage to storefront, the ColdStream Site Network monitors your facility for visibility and compliance.



Information Where and When You Need It

The ColdStream® Site Web Portal makes data access and reporting easy. The portal's dashboard and site map provide immediate access to key information regarding the current state of all monitored locations. The dashboard highlights current sensor alerts, while the site map provides a quick overview of all sensors, their current readings, and their current status (e.g., normal, warning, or critical).

Information is delivered in the format your organization prefers; data can be viewed on demand or downloaded in multiple formats (e.g., .pdf, .xls, .csv formats) for a given day, week, or specific time period. Reports can also be scheduled for automated daily/weekly electronic delivery through the Report Wizard.

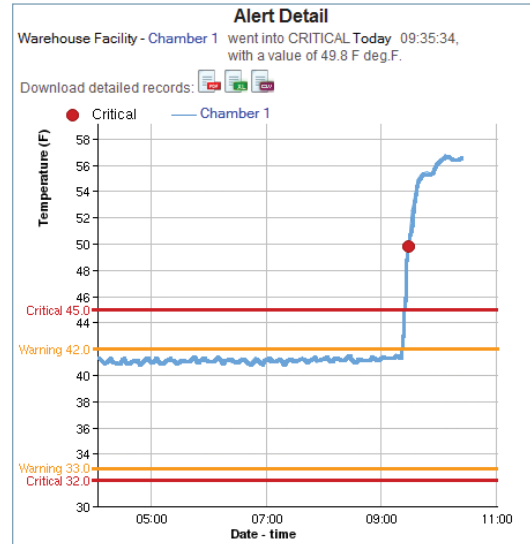
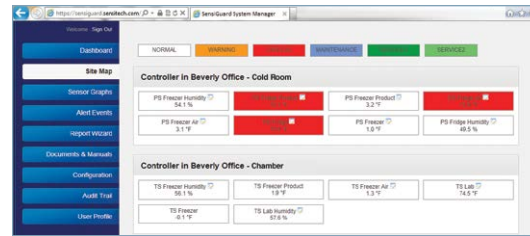
Alarming and alerting capabilities are key features of the ColdStream Site Facility Monitoring Service. The service can alarm on sensor-level readings (i.e., temperature excursions) or system-level issues such as damage to or removal of sensors, power failure, device malfunction, and network connectivity loss. Each alert can be configured to notify designated personnel through a variety of methods: local audible/visual alarm beacons, email message, text message, or automated phone call.

- Audible/visual alarm beacons can be installed at various high-visibility points within the facility to alert on-site staff that an excursion or system-level issue needs attention. Beacons can be configured to alarm for an individual sensor or group of sensors.
- E-mails and text message alerts can be configured to reach designated personnel with information that includes the exact location and details of the alarm. Escalating, automated phone calls can also be made to designated personnel until someone logs in, investigates the alarm, and takes action.

Corrective actions can be used to document your process controls. Once an excursion has occurred, corrective actions can be entered by authorized users. A user can select from a pre-defined list or can manually enter a corrective action as needed. Every corrective action entered is date and time stamped and includes electronic signatures.

Electronic record keeping helps to assure that you have a robust audit trail when needed. The ColdStream Site service maintains a rigorous 21 CFR Part 11 compliant audit log, tracking user and system activities including configuration changes, user logins, alerts, and corrective actions.

Your data is secure using a variety of methods. Access is protected by username and password authentication. Depending on their responsibilities, personnel can be granted different levels of access including read-only, read/write or



SENSITECH Automated Weekly Summary Report
1. Sensor Data Summary

Temperature					
Sensor Name	Min. Value (deg.C)	Max. Value (deg.C)	Average (deg.C)	Standard Deviation	Total Records
Finished Products	26.5	30.5	27.6	4.0	288
Retained Samples Storage	21.4	22.5	21.8	1.0	288
Raw Materials and Finished Product	20.4	21.5	20.7	1.3	288
Component Storage	25.1	30.8	27.1	5.7	288
Chamber 2	23.9	24.0	23.9	0.2	288
Chamber 1	29.2	29.6	29.4	0.4	288
Capsule Storage	18.0	18.4	18.2	0.4	288

full access to add corrective actions and sign-off data. In addition, all data transmissions are encrypted for security assurance.

Thermal Mapping Guidance

Thermal mapping is a critical step in understanding the risk of temperature abuse in a storage environment. Mappings are performed by placing monitors in a three-dimensional pattern throughout a product storage area. Capturing temperature, and if necessary, humidity, over a period of time will document where extreme locations are and how extreme the temperature and/or humidity may become. This information helps determine if the storage area is capable of maintaining product storage requirements as well as the appropriate locations of permanent monitoring sensors. These locations should represent worst case scenario—the locations that will likely alarm first during a temperature and/or humidity event to allow corrective action to be taken before product damage or loss occurs.

ColdStream[®] Site Wireless Network Components

ColdStream Site Wireless Communication Network

ColdStream Site Network Controller is responsible for collecting information from the TempTale[®] Site wireless sensors and relaying it to the ColdStream Site web portal via SMTP. The unit is AC powered with battery backup and communicates to the network via an Ethernet connection. Other communication options are available upon request. Each network controller can support up to 250 sensor channels. Additional network controllers can be installed, allowing for an even greater number of sensors.

ColdStream Site Wireless Repeater is used to extend the read range of the wireless network and is AC powered with battery backup.

TempTale Site Wireless Sensors

TempTale Site Temperature Wireless Sensor monitors both air and product temperatures. Product temperatures are simulated via a second temperature sensor embedded in a silicone gel.

TempTale Site Temperature and Humidity Wireless Sensor monitors both air temperature and humidity.

TempTale Site Wireless Thermocouple Temperature Sensor is suitable for liquid nitrogen applications and other extremely low temperature conditions. The sensor comes with a seven-strand thermocouple cable insulated with overall clear Teflon to provide extra strength and protection against rough handling and extreme temperatures. The unit is AC powered with battery backup in the event of a power failure.

TempTale Site Temperature and Door Ajar Wireless Sensor tracks air temperature and door open/close events. The sensor can be configured to alarm when the door has been left open for longer than a user-defined time frame.

TempTale Site 4-20 mA Wireless Transceiver will enable you to attach up to two standard two-or three-wire 4-20 mA transmitters to monitor other facility conditions such as shock or vibration. Alarm event conditions are user defined and configured based on the interpreted value measured and the duration of the event. The unit is AC powered with battery backup in the event of a power failure.

TempTale Site Wireless Sensor Specifications (by logger type)

	Temperature	Temperature and Humidity	Thermocouple	Temperature and Door Ajar
Read Range (Line of Sight)	Up to 100 m (328 ft)	Up to 100 m (328 ft)	Up to 100 m (328 ft)	Up to 100 m (328 ft)
Frequency Bands	868 or 915 MHz	868 or 915 MHz	868 or 915 MHz	868 or 915 MHz
Temperature Range	-35°C to +40°C (-31°F to +104°F)	0°C to +50°C (+32°F to +122°F)	-200°C to +200°C (-328°F to +392°F)	-35°C to +40°C (-31°F to +104°F)
Temperature Accuracy	±0.5°C (±0.9°F)	±0.5°C (±0.9°F) [Range 0°C to +50°C (+32°F to +122°F)]	±0.5°C (±0.9°F) [Range -200°C to +200°C (-328°F to +392°F)]	±0.5°C (±0.9°F)
Temperature Resolution	0.1°C (0.18°F)	0.1°C (0.18°F)	0.1°C (0.18°F)	0.1°C (0.18°F)
Humidity Range / Accuracy* / Resolution	—	10% to 90%, non-condensing; ±5%; 0.1%RH <i>*RH Accuracy stated within Temperature Exposure Range of: 5°C to +50°C (+41°F to +122°F), Non-Condensing</i>	—	—
Probe Type	Probed [90 cm cord (35.4 in)] / Probeless	Probeless	Probed [3 m cord (9.8 ft)]	Probeless
Data Storage	5,461 data points	5,461 data points	5,461 data points	5,461 data points
Battery Life/Type	5 year operating life— 3.6v lithium non-replaceable	5 year operating life— 3.6v lithium non-replaceable	5 year operating life— 12V DC 1A, 4 x 1.2V NiMH backup	5 year operating life— 3.6v lithium non-replaceable
			Battery-Powered Option: 2 year operating life— 6000mAh Lithium MnO2 Battery	
Configurable Measurement Interval	5 to 100 minutes	5 to 100 minutes	5 to 100 minutes	5 to 100 minutes
Alarm Function	High/Low warning High/Low critical	High/Low warning High/Low critical	High/Low warning High/Low critical	Door open alarm High/Low warning High/Low critical
Typical Dimensions	80 W x 130 H x 30 D (mm) (3.1 W x 5.1 H x 1.2 D (in))	80 W x 130 H x 30 D (mm) (3.1 W x 5.1 H x 1.2 D (in))	148 W x 94 H x 35 D (mm) (5.8 W x 3.7 H x 1.3 D (in))	80 W x 130 H x 30 D (mm) (3.1 W x 5.1 H x 1.2 D (in))
Weight	148 g (5.2 oz)	148 g (5.2 oz)	380 g (13.4 oz)	180 g (6.3 oz)
Quality Assurance & Certifications	3-Point NIST®/UKAS® traceable Certificate of Calibration; FCC; CE; UKCA	3-Point NIST®/UKAS® traceable Certificate of Calibration; FCC; CE; UKCA	3-Point NIST®/UKAS® traceable Certificate of Calibration; FCC; CE; UKCA	3-Point NIST®/UKAS® traceable Certificate of Calibration; FCC; CE; UKCA

Sensitech Inc. is a global leader in delivering supply chain visibility solutions. Our innovative monitoring products and services help to maintain the quality and integrity of our customers' valuable products at every step in their journey, all around the world. For 30 years, leading companies in the food, pharmaceutical, industrial, consumer goods and other industries have relied on Sensitech to help protect their products—and their bottom lines. All trademarks and service marks are property of their respective owners. Visit www.sensitech.com for additional information. ©2023 Carrier. All Rights Reserved.

Sensitech Inc. • Global Headquarters • 800 Cummings Center • Suite 258X • Beverly, MA 01915-6197
1-800-843-8367 • +1-978-927-7033 • Fax: +1-978-921-2112 • sensitech.clientservices@carrier.com