TempTrak™ HEALTHCARE

Technical White Paper

Design and Features Overview
Revision I
March 2013

Introduction

Today's healthcare facilities have a multitude of equipment in several departments that require a consistent equipment monitoring program. The demands of regulatory compliance and patient safety place the burden squarely on the shoulders of department heads to see that proper temperature, humidity and pressure differential monitoring protocols are in place. Some of the challenges of manual temperature management that our healthcare customers have communicated to us are:

- The process is time-consuming, taking precious resources away from patients
- Documentation of corrective actions is inconsistent
- Paper logs are routinely misplaced
- A manual program makes it difficult to assess and verify low-performing equipment
- Remote locations (such as clinics) may be left unmonitored for extended periods
- The use of consumer-grade equipment often presents erratic temperature swings
- Inventory can be compromised, forcing it to be discarded
- A manual program only provides a temperature snapshot, not historical data

The solution to all of the above issues can be found in one of the most exciting innovations in the industry today: Wireless Temperature Monitoring. Conversion from a manual, paper-driven methodology to a 24/7, wireless solution is made even simpler by the installation of our **TempTrak™** system. When seeking a hospital-wide, enterprise solution, over 1200 hospitals have selected **TempTrak**, which has been at the forefront of this technology for over 12 years. Our most current edition of software, Version 5.0, provides users with a unique, yet customizable interface that eliminates the resource-draining expense of manual temperature collection and provides instant Alert Notifications that require acknowledgement as well as Corrective Actions. Whether you select our 900 MHz or 802.11 Wi-Fi solution, the **TempTrak** system provides real-time data as well as historical input that helps verify equipment malfunctions and inconsistencies.

TempTrak is most commonly used to monitor storage temperatures of medications, food, blood specimens and reagents, and offers a comprehensive NIST solution for any department that requires it. Whether you are collecting and sharing temperature data across town or across the country, the system allows monitoring of an unlimited number of points in an unlimited number of locations or buildings with a single software platform, thus requiring far less IT resources to maintain and manage your data.

TempTrak has remained the #1 choice in wireless temperature monitoring of hospitals for the last 8 years.

Functional Overview

The TempTrak system is a combined back office server software application with wireless transmitters that automates a number of the manual Temperature and Quality related data collection processes required for regulatory compliance (Joint Commission, CAP, AABB, FDA, HACCP etc.)[1] or as part of a Quality Control Program, including:

- Continuous 24 / 7 remote equipment temperature monitoring, reporting every 5 minutes with a 1 minute delta sampling to detect rapid temperature changes, supporting temperature ranges of -328°F to 500°F (-200°C to 260°C).
- Temperature verification in the event of equipment failure (15 minute sensor snapshot data and recovery)
- Energy management adjustments (defrost cycles, minimum / maximum temperature settings, average temperatures, etc.)
- Automatic alert notifications when temperature exceeds defined limits
- Automatic multi-level escalation of notifications if action is not taken on an alert within specified time periods
- Historical data retention and reporting
- Enhanced security access controls
- Automated database backups
- Cross-browser compatibility
- Smartphone/tablet support to view, acknowledge and clear alerts with EZLink
- Implements parameters & controls to assist an organization with FDA 21 CFR Part 11 compliance[2]
- Scheduled Reporting
- Custom Reporting
- NIST Documentation

The TempTrak application includes management facilities for the registration of equipment transmitters, creation of notifications / alerts based on time-of-day, day-of-week and min / max range settings, escalation of notifications, summary, historical and detailed analysis reports, security access controls, audit reports and automated database backup. The back office functionality is browser-based (Microsoft Internet Explorer, Opera, Mozilla Firefox, Google Chrome, Apple Safari) and allows access to the management functions and reporting features from any PC with network connectivity. All access to the system is controlled through the use of centrally managed User IDs, passwords, roles and access lists maintained in the back office database (in addition to standard operating system security controls). Microsoft Active Directory is supported, allowing for a user to log directly into TempTrak with valid credentials.

[1] Hazard Analysis & Critical Control Points (HACCP), Joint Commission on the Accreditation of Healthcare Organizations (JCAHO), American Association of Blood Banks (AABB), Food and Drug Administration (FDA).

[2] 21 CFR Part 11 is an FDA regulation which defines the minimum processes and controls which must be implemented in order for the FDA to accept electronic documents and signatures as being equivalent to traditional handwritten signatures and paper documents. This regulation has been in effect since August 1997.

Cooper-Atkins offers two types of TempTrak Transmitters, 900 MHz and 802.11 Wi-Fi.

900 MHZ TRANSMITTERS

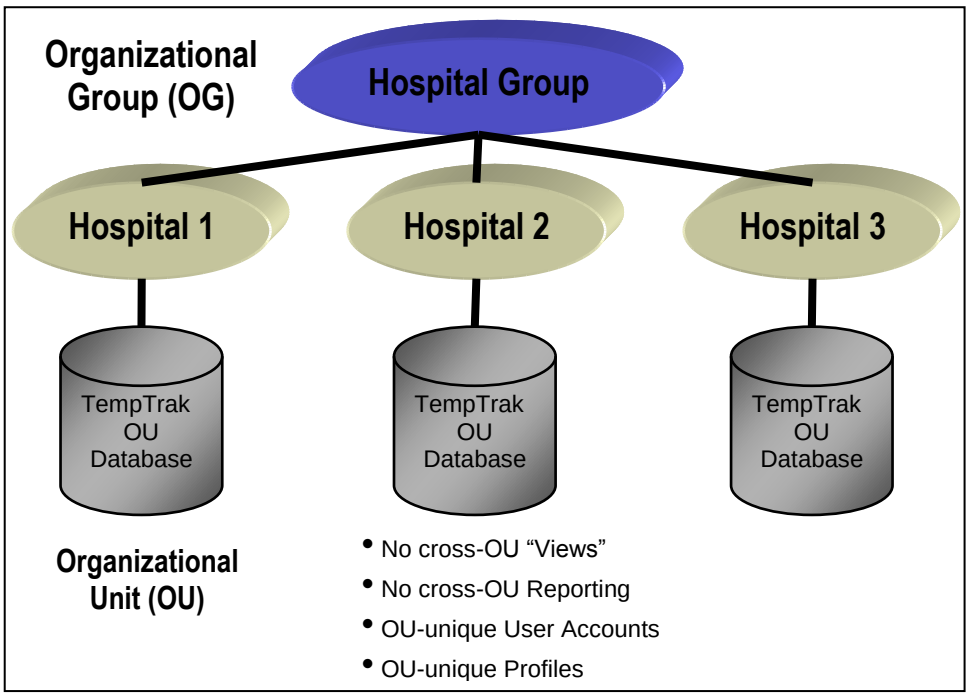
The 900 MHz transmitters' data is sent immediately (wirelessly) to the back office server application through a "receiver" (and optionally with one or more signal repeaters) and logged into a Microsoft SQL database. The 900 MHz TempTrak system can also operate in a fallback "batch" mode where the sensor data is temporarily saved in a "buffer" at the receiver in the event the server PC or application is unavailable. Sensor data is saved until communication with the TempTrak server is re-established. There is no intervention by the user required to initiate this fallback mode or to recover from it. In the event of a power outage, a buffer containing on-board memory is capable of retaining 200 monitoring points, for 31 days, at 15 minute sampling.

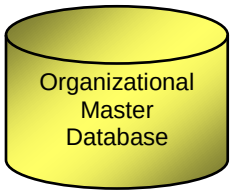
WI-FI TRANSMITTERS

The Wi-Fi (802.11 b/g/n) transmitters pass data wirelessly over a standard 802.11 b/g/n RF Frequency 2.4 to 2.497 GHz with the UDP protocol utilizing Wi-Fi standard security protocols including WEP, WPA-PSK, WPA2-PSK, WPA2-Enterprise with Enterprise Security - PEAPv0 with EAP-MSCHAPv2 (available on latest models). The transmitter passes information to the TempTrak application which can be located on any Wi-Fi-enabled network. In the event of a power outage each TempTrak Wi-Fi transmitter has an on-board memory back-up capable of storing up to 4,096 samples (42 days at 15 minute sampling).

MULTIPLE DATABASES

A multi-database setup allows a hospital group to have each hospital configured as a single organizational unit, utilizing one application server as an interface to their data, and providing each organizational unit with their own user accounts, views and reporting. This prevents one organizational unit from viewing information related to another organizational unit. In affect, one central location provides access for all organizational units to view and store their own data.





- Defines OG's
- Defines OU's
- All "Intelli-Ware" Data Stores in OU Databases

Hardware Overview – 900 MHz

EQUIPMENT TRANSMITTERS

TYPE

Dual Internal / External Temperature*

- External Temperature Range: -328° to 572°F (-200° to 300°C)
- Internal Temperature Range: -4° to 140°F (-20° to 60°C)
- Accuracy: ±0.8°F (±0.5°C) Internal, ±1°F (±0.5°C) external
- Dimension: 3.5" H x 1.7" W x 0.9" D (8.9 cm x 4.3 cm x 2.29 cm)
- Weight: 3.0 oz (85 grams)

Temperature / Humidity*

- Temperature Range: -4° to 140°F, -20° to 60°C / 0 - 90% RH)
- Accuracy: ±0.5°F, 2.0% RH
- Dimension: 3.5" H x 1.7" W x 0.9" D (8.9 cm x 4.3 cm x 2.29 cm)
- Weight: 3.0 oz (85 grams)

Contact (i.e. Door Open / Close with magnet)

- Dimension: 3.5" H x 1.7" W x 0.9" D (8.9 cm x 4.3 cm x 2.29 cm)
- Weight: 3.0 oz (85 grams)

Analog (i.e. Pressure Differential, CO2)

- Dimension: 3.5" H x 1.7" W x 0.9" D (8.9 cm x 4.3 cm x 2.29 cm)
- Weight: 3.0 oz (85 grams)

Dual Input

- Temperature Range: -25° to 140°F (-32° to 60°C)
- Accuracy: ±1°F (±0.5°C)
- Dimension: 5.5” H x 3” W x 1.5” D (140 mm x 76 mm x 38 mm)
- Weight: 6.5 oz (184 g)

OPERATING ENVIRONMENT

- Operating Environment: 0° to 140°F (-17.7° to 60°C), Up to 90% RH (non-condensing)

POWER

- Standard “2/3 A” size LiMn02 battery (e.g., Duracell DL123A)
- Battery life 2-5 years (typical)

RF COMMUNICATIONS

- 2500 feet (762 meters) open field range
- 900 MHz, Frequency Hopping Spread Spectrum
- Bandwidth range: 902-928 MHz (U.S. ISM 900 MHz). Also switch selectable for European (868-870 MHz), Australian (915-928 MHz) & New Zealand (921-928 MHz) frequencies.
- Output Power: 50mW
- FCC certified (Part 15)

OPTIONAL SIGNAL REPEATER

DIMENSIONS / OPERATING ENVIRONMENT

- 6.5” x 3.5” x 1.0” (16.5 cm x 8.9 cm x 2.54 cm)
  [with NEMA enclosure: 7” x 7” x 3” (17.78 cm x 17.78 cm x 7.62 cm)]
- Wall mounting (optional outdoor enclosure available)
- 0° to 140°F (-17.7° to 60°C), up to 90% relative humidity (non-condensing)

POWER

- Standard 120v AC (external transformer supplied)
- Approx 24 Hr Integrated Battery Backup
- Does not require any connectivity to other Repeaters or Base Stations

RF COMMUNICATIONS

- Bandwidth: 902-928 MHz (U.S. ISM 900 MHz). Also available for European (868-870 MHz), Australian (915-928 MHz) & New Zealand (921-928 MHz) frequencies.
- 4 mile (6.44 km) open field range
- 900 MHz, Frequency Hopping Spread Spectrum
- Output Power: ~250mW
- FCC certified (Part 15)

RECIEVER + INTELLI-BASE BUFFER

DIMENSIONS / OPERATING ENVIRONMENT

- 6.5” x 3.5” x 1.0” (16.5 cm x 8.9 cm x 2.54 cm), internal antennas
- Wall mounting (interior)
- 32° to 140°F (0° to 60°C), Up to 90% relative humidity (non-condensing)

POWER

- Intelli-Base Buffer - 12 Volts DC, 1A
- Base Stations Receiver - 12 Volts DC, 200 mA (requires a network drop with a static IP address)

INTELLI-BASE BUFFER

- 16 MB Flash Memory
- 24 / 7 remote temperature monitoring supporting temperature ranges from -328° to 500°F (-200° to 260°C) storage capacity of a buffer with 200 transmitters, communicating every 15 minutes will have data stored for 720 hours (31 Days). Any network failure, TempTrak stores 1 temperature reading per transmitter every 15 minutes until server is back online.

COMMUNICATIONS

- DB9 RS-232 Serial connection to PC serial port, or
- 10/100 Base-T Ethernet

Hardware Overview –Wi-Fi (802.11 b/g/n)

EQUIPMENT TRANSMITTERS

TYPE

Dual External Temperature*

- Temperature Range: -328° to 572°F (-200° to 300°C)
- Dimension: 4.25" x 2.5 " x 1.27 " (108 mm x 64 mm x 29 mm)
- Accuracy: ±1°F (±0.5°C)

Internal Temperature / Humidity*

- Temperature Range: -4° to 140°F (-20° to 60°C), 0 - 95% RH
- Dimension: 4.25" x 2.5 " x 1.27 " (108 mm x 64 mm x 29 mm)
- Accuracy: ±0.5°F (±0.3°C), ±2% RH

Contact (Door Open / Close)

- Reed switch activates with magnet
- Dimension: 4.25" x 2.5 " x 1.27 " (108 mm x 64 mm x 29 mm)

Analog

- Works in conjunction with digital output device
- Dimension: 4.25" x 2.5 " x 1.27 " (108 mm x 64 mm x 29 mm)

DIMENSIONS / OPERATING ENVIRONMENT

- Weighs approximately 4 oz. (113 g)
- 0° to 140°F (-17.7° to 60°C), Up to 95% relative humidity (non-condensing)
- Mounts with DualLock™ Tape or screw mount

POWER

- Standard AA Lithium battery (2)
- Battery life 1-2 years (typical)

RF COMMUNICATIONS

- 180 meters open field range
- PEAPvO (PEAP) enterprise security
- 802.11 b/g/n (Wi-Fi) network with TCP/IP or UDP protocol.
- 2.4 to 2.497 GHz RF Frequency
- RF Output: 18 dBm (63 mW)
- FCC IEEE 802.11 b compliant, IEEE 801.11 b/g/n compatible, Speed up to 11 mbps (802.11 b)

Probes Overview

PROBES





- Standard Air Probe (-25° to 180°F, -32° to 82°C)*
- Glycol Product Simulator Probe (-25° to 180°F, -32° to 82°C)*
- Solid Simulator (-25° to 180°F, -32° to 82°C)*
- Solid Vial Simulator (-25° to 180°F , -32° to 82°C)*
- Lab / Cryogenic Probe (-328° to 500°F, -200° to 260°C)*
- Lab / Cryogenic Product Simulator Sleeve
- Low Temp Probe (-76° to 302°F, -60° to 1580°C)
- High Temp / Hot Probe (-75° to 302°F, -60° to 150°C)
- Incubator CO2 Sensor (0 to 100% RH)*
- High Resolution Pressure Differential Monitors*
  (±1" w.c / ±0.5" w.c, 0.001 / 0.02 mm of w.c. resolution)
- Moisture Leak Detector (-4° to 176°F, -20° to 80°C)
- Liquid Probe (-40° to 302°F, -40° to 150°C)*
- Dishwasher Probe, Includes Pipe Clamp (-75° to 302°F, -60° to 150°C)
- Steam Trap Probe (-40° to 392°F, -40° to 200°C)

***NIST Traceability Available**

Software Overview

BACK OFFICE PC PLATFORM

HARDWARE / OS (MINIMAL RECOMMENDED CONFIGURATION)[3]

- Windows Server 2003 (SP2), Windows Server 2008. Standard 5 User. (32 or 64 Bit)
- Microsoft SQL Server Express 2008 R2 w/Reporting Services or Microsoft SQL Server 2005 / 2008 w/Reporting Services (32 or 64 Bit)
- 4G Memory
- Intel/AMD Processor 2.0+ GHz (Multi-Core)
- 160G Hard Drive
- Ethernet (10/100/1000Mb)

[3] For complete listing of TempTrak server hardware and requirements please refer to the *TempTrak Recommended Server Requirements White Paper* (67-991).

DEVELOPMENT ENVIRONMENT

The TempTrak application has been developed using the Microsoft SQL Server database system as the underlying data store and makes use of stored procedures for encapsulating common data access functions. In addition, the applications are written using a combination of the following development tools:

- Microsoft .Net Framework
- C#, VB.Net, ASP.Net
- Microsoft Visual C++
- Microsoft Visual Basic
- ActiveX Component technologies
- Microsoft Visual Basic Scripting (VBScript)
- HTML / JavaScript
- Microsoft SQL Server with Reporting Services

Communications Overview

Cooper-Atkins provides two types of network configuration: 900 MHz RF and Wi-Fi. Each is fully compatible with TempTrak and can work together, side by side, in a hybrid environment.

For a 900 MHz RF configuration, communications between the monitored equipment transmitters and the base receiver is via a wireless frequency hopping, spread spectrum 900 MHz RF network (902-928 MHz U.S.). The TempTrak data collector service running on the back office server is responsible for interfacing with the database system and other application modules.

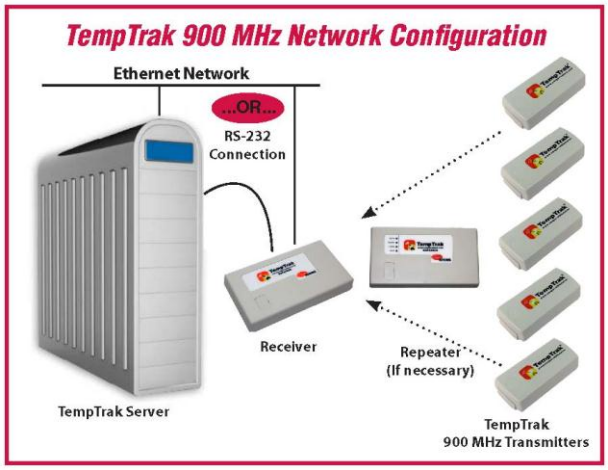
- Wireless communication consists of a small, unidirectional, non-routable data packet (approximately 13-20 bytes) that contains transmitter data only.
- Communication flow is uni-directional – from the transmitters to the base station only – the transmitters do not contain a receiver component.
- Unlike a wireless LAN network (i.e. 802.11 a/b/g/n) [4] operating at 2.4 GHz, the transmitters' wireless network cannot be compromised in order to gain access to other servers on the network.
- Fast Burst – Low Duty Cycle Communication – A complete message from a transmitter is sent in less than 30 milliseconds (30/1000 of a second). Plus, during this "on-the-air" time of 30 milliseconds, the transmitter is on less than 4% of the transmission time, making it unlikely that a standard message would be noticeable, even if it were within range and in the same band as a voice communication product.
- Low Power Communication – The peak power of the standard transmitter is about 50 mW U.S. / 25 mW Europe, compared with up to 600 mW for a typical cellular phone.
- Transmitters, repeaters and base station on the 900 MHz RF Network can co-exist with other wireless communication operating in the same, or nearby frequency bands.

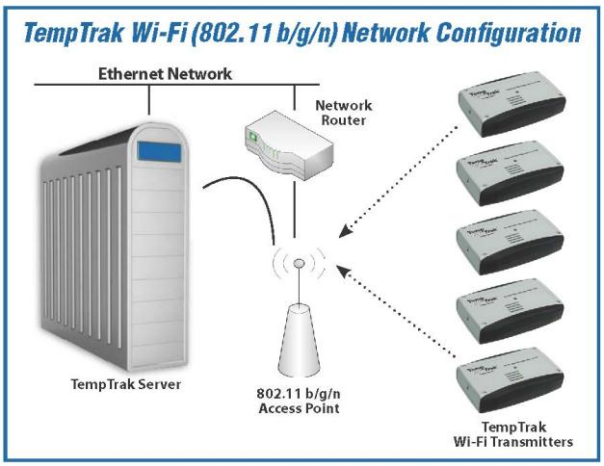
[4] IEEE 802.11 is a set of standards carrying out wireless local area network (WLAN) computer communication in the 2.4, 3.6 and 5 GHz frequency bands. 802.11b and g equipment may occasionally suffer interference from microwave ovens, cordless telephones and Bluetooth devices.

For Cooper-Atkins' Wi-Fi configuration, communications over a Wi-Fi enabled network between the monitored equipment transmitters and the TempTrak server is via standard 802.11 b/g/n (Wi-Fi – RF Frequency 2.4 to 2.497 GHz) with the UDP protocol and PEOPv0 enterprise security. The TempTrak data collector service running on the back office server is responsible for interfacing with the database system and other application modules.

- Wireless communication consists of a small, UDP data packet (approximately 60 bytes) capable of providing the ultimate in data security, PEAPv0.
- The transmitters utilizing PEAPv0 provide unparalleled protection of customers' data monitoring information transferred over their network.
- Wi-Fi transmitters are capable of transmission to speeds up b/g/n.

The diagrams below depict an overview of the components and communications paths on a 900 MHz RF and 802.11 b/g/n Network:





Based on a review of the communications protocol and these technical specifications, it has been determined that the TempTrak Transmitters, Repeaters and Base Station Receiver meet the Technical Standards for Federal "Non-licensed" Devices specified in Annex K of the National Telecommunications and Information Administration (NTIA) Manual of Regulations & Procedures for Federal Radio Frequency Management (Red Book).[5] Compliant with FCC 15 Regulation.

[5] Phil Nash, Telecom Operations Management Service Manager, Wireless Operations, Tuscaloosa VA Medical Center (phillip.nash@mail.va.gov)

Reporting Features

The underlying data storage for all of the TempTrak information is Microsoft's SQL Server.

By utilizing an industry standard database structure, nearly any available reporting tool on the market is able to interface with the TempTrak data for reporting and analysis (including tools such as Microsoft SQL Reporting Services, Microsoft Excel, Microsoft Access and Crystal Reports).

All transmitter information recorded to the database is time-stamped and cannot be altered through the TempTrak user interface. Temperature data can be displayed in either °F or °C by user.

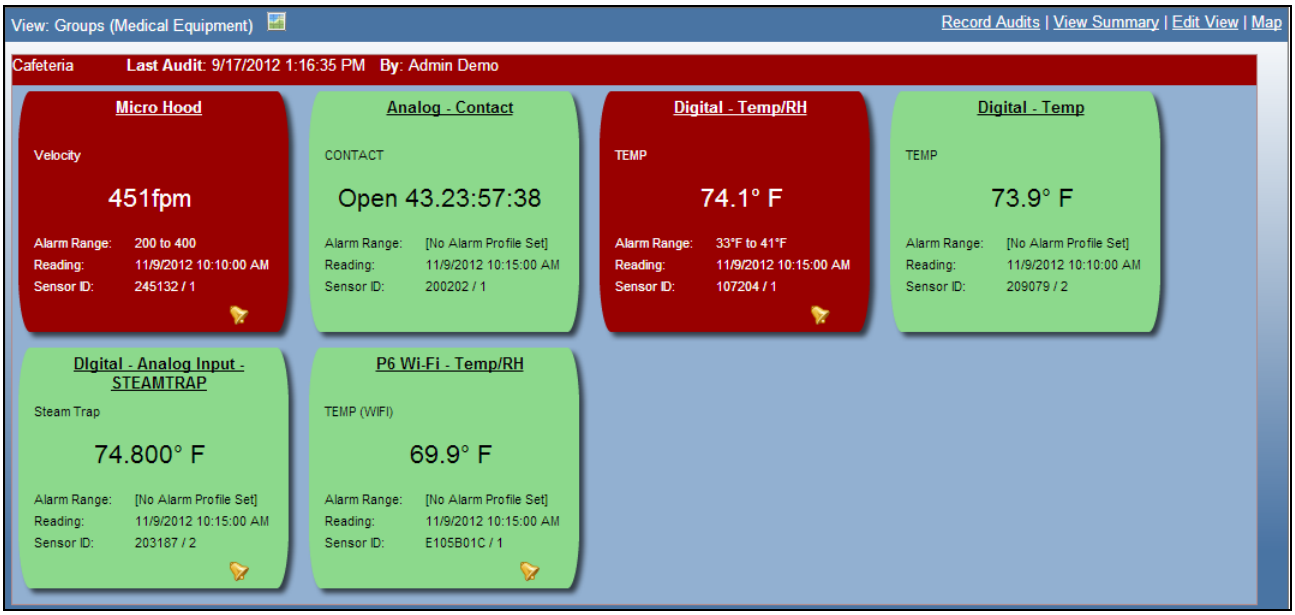
The TempTrak browser interface also includes a number of standard reports of the Transmitter data that has been captured. All reports are available for exporting and printing through Microsoft SQL Reporting Services. Reports can be scheduled (with a fully licensed SQL version) to be automatically emailed or archived to file, while any report can be exported in multiple formats (Excel, Word, CSV, XML, TIFF, MHTML) regardless of SQL licensing. If customer specific reports are required, custom reporting is available.

Types of reports available include (not all inclusive):

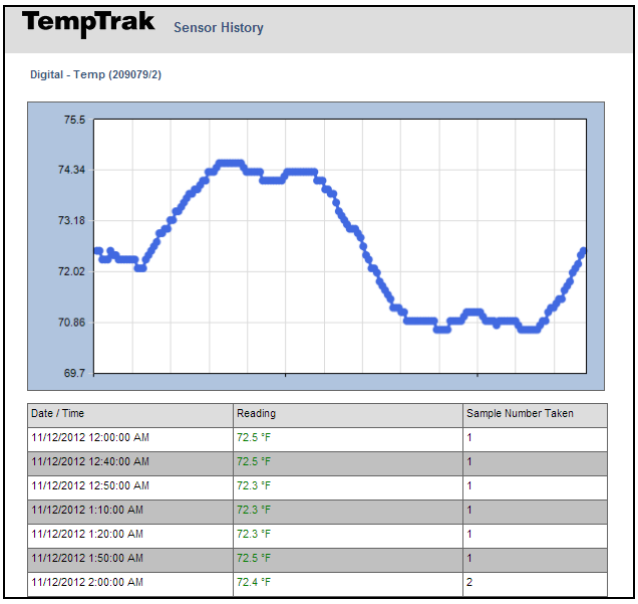
- Current transmitter readings
- Transmitter RF communication status
- Current and recently acknowledged alarms
- Low battery alarm conditions
- Audit reporting
- System configuration change report
- Historical sensor alarms by selected date
- Daily summary report for a transmitter
- NIST summary validation report
- 2 Hr., 12 Hr. or 24 Hr. daily sensor data summary
- Contact Transmitter open / close
- Monthly equipment QA performance analysis
- Sensor history report
- Comparative graphical history for multiple transmitters
- Database backup history

The samples screen shots below represent some of the report formats available as part of the standard application.

Current Transmitter Readings:

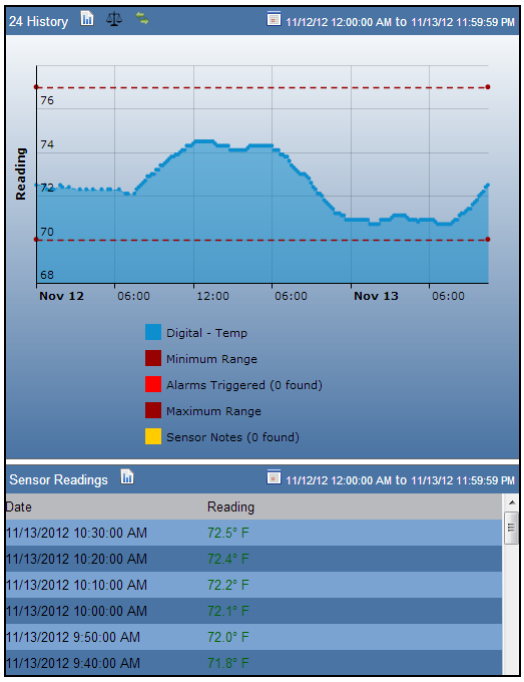


Sensor History Report:

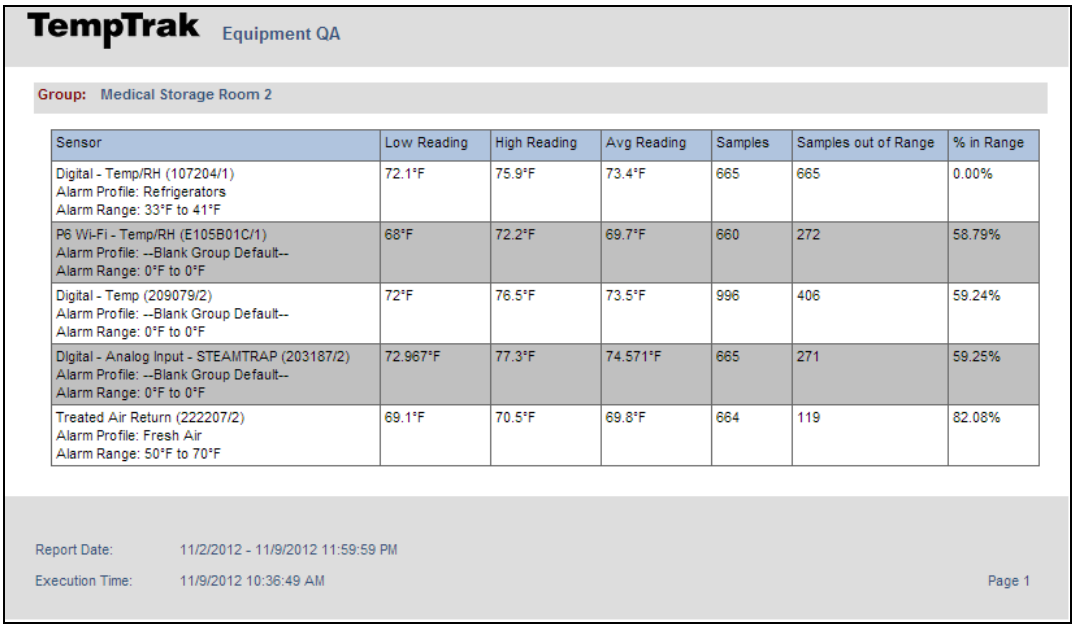


Date / Time	Reading	Sample Number Taken
11/12/2012 12:00:00 AM	72.5 °F	1
11/12/2012 12:40:00 AM	72.5 °F	1
11/12/2012 12:50:00 AM	72.3 °F	1
11/12/2012 1:10:00 AM	72.3 °F	1
11/12/2012 1:20:00 AM	72.3 °F	1
11/12/2012 1:50:00 AM	72.5 °F	1
11/12/2012 2:00:00 AM	72.4 °F	2

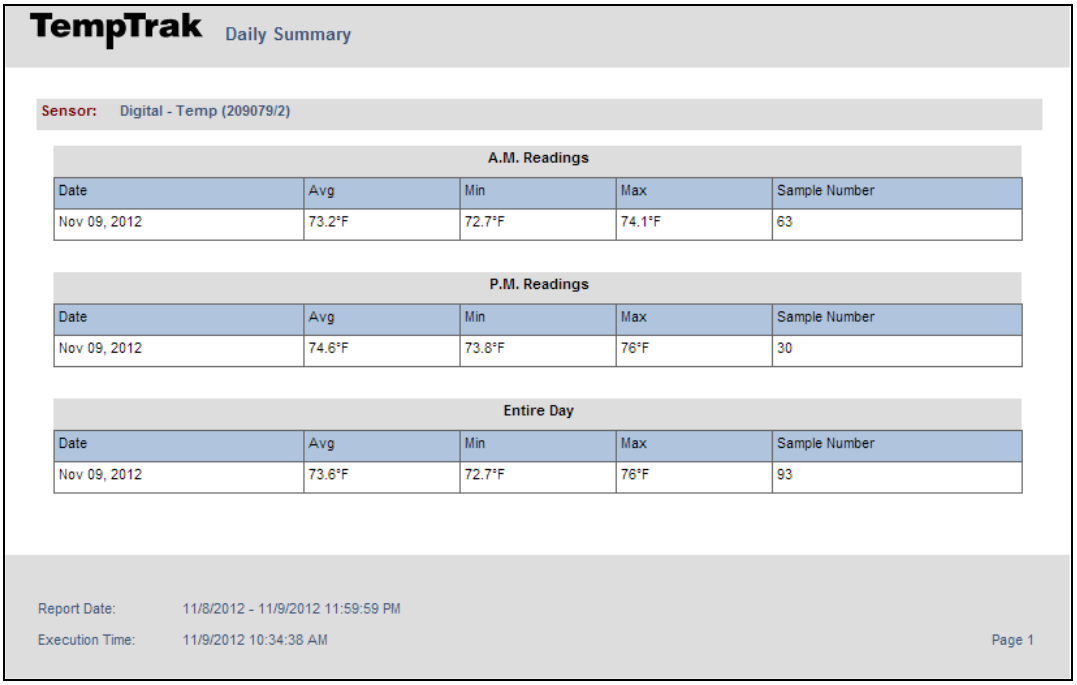
Sensor Detail Report:



Equipment QA Report:



Daily Summary Report:



TempTrak Daily Summary

Sensor: Digital - Temp (209079/2)

A.M. Readings

Date	Avg	Min	Max	Sample Number
Nov 09, 2012	73.2°F	72.7°F	74.1°F	63

P.M. Readings

Date	Avg	Min	Max	Sample Number
Nov 09, 2012	74.6°F	73.8°F	76°F	30

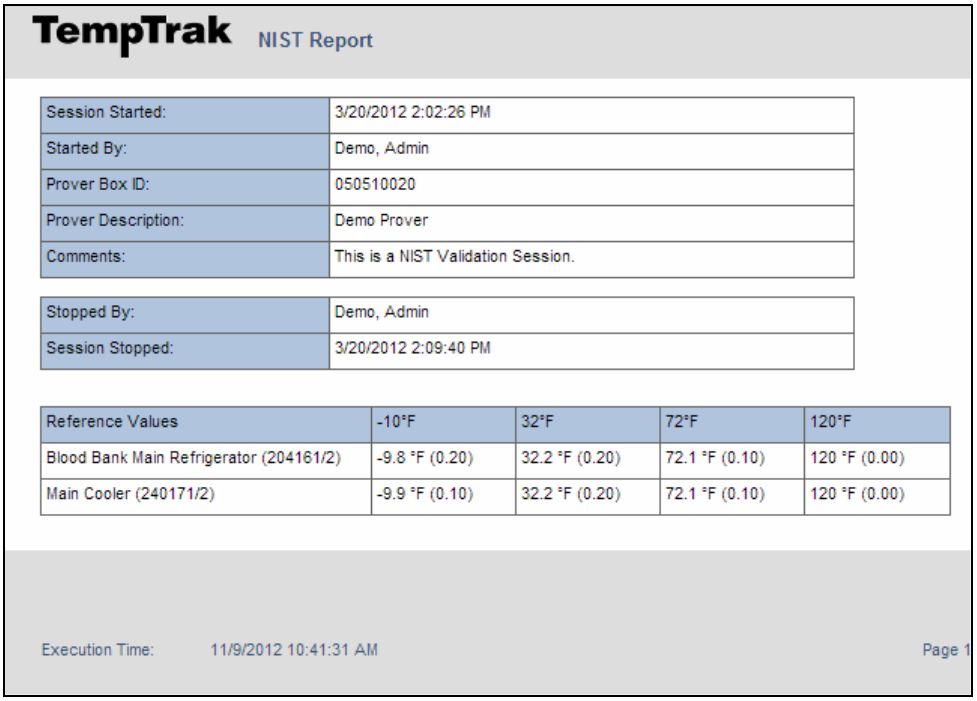
Entire Day

Date	Avg	Min	Max	Sample Number
Nov 09, 2012	73.6°F	72.7°F	76°F	93

Report Date: 11/8/2012 - 11/9/2012 11:59:59 PM

Execution Time: 11/9/2012 10:34:38 AM Page 1

NIST Validation Report:



TempTrak NIST Report

Session Started:	3/20/2012 2:02:26 PM
Started By:	Demo, Admin
Prover Box ID:	050510020
Prover Description:	Demo Prover
Comments:	This is a NIST Validation Session.

Stopped By:	Demo, Admin
Session Stopped:	3/20/2012 2:09:40 PM

Reference Values	-10°F	32°F	72°F	120°F
Blood Bank Main Refrigerator (204161/2)	-9.8 °F (0.20)	32.2 °F (0.20)	72.1 °F (0.10)	120 °F (0.00)
Main Cooler (240171/2)	-9.9 °F (0.10)	32.2 °F (0.20)	72.1 °F (0.10)	120 °F (0.00)

Execution Time: 11/9/2012 10:41:31 AM Page 1

Alarming & Notifications

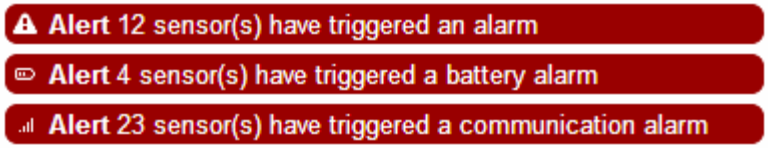
Since the TempTrak system is collecting transmitter data from various pieces of equipment 24/7, it also has the ability to alert designated personnel based on notification parameters when the equipment is not operating per specification.

Transmitters are factory configured to transmit readings at preset intervals. By default, most transmitters are set to report a reading every 5 minutes. For some applications (i.e. dish machines, laboratory applications, etc) a 5-minute reporting interval may be too long when temperatures are changing rapidly. For these types of applications, the transmitter also has a feature to sample the temperature more frequently (every 60 seconds) and transmit immediately if it detects more than a 5 percent change in the electrical resistance value. This allows the TempTrak system to collect and report transmitter data at a regular interval (i.e. 5 minutes), but record and alarm if the temperature changes rapidly before the next reporting interval.

The transmitter attribute & notification parameters consist of:

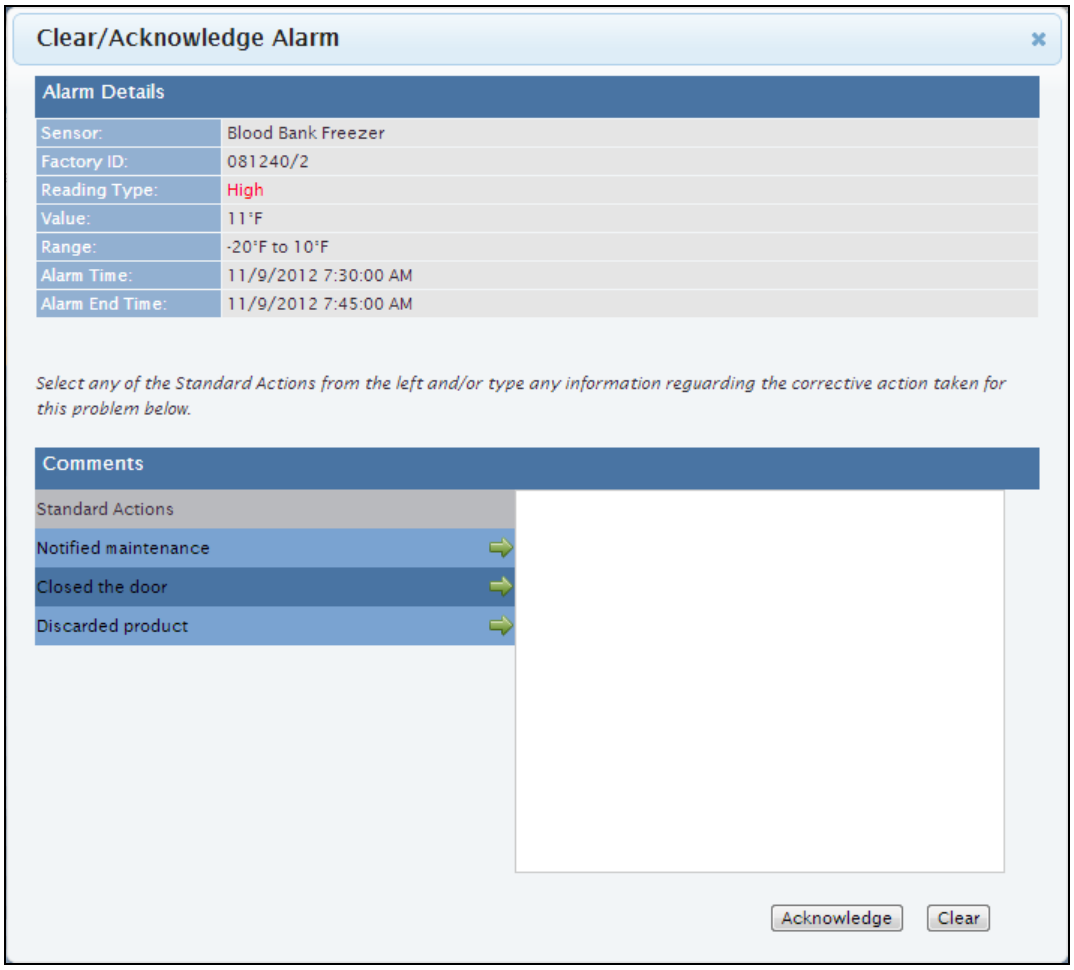
- Transmitter name
- Minimum / maximum transmitter reading values allowed
- Time of day [optional]
- Day of week [optional]
- Logging summarization interval
- Alert threshold value
- Notification type (one or more of):
  - Email message
  - Text message
  - Remote pop-up window
  - Digital pager message
  - LED message board
  - Digital paging
  - SNPP paging
  - External relay switch (lights, sirens, etc)
  - SMS

As the TempTrak data collector service monitors incoming data packets from the equipment transmitters, readings are compared in real-time to the configured minimum / maximum and threshold values for the transmitter. The use of a threshold value allows the alarming engine to delay the generation of an alert until the transmitter readings are out of the minimum / maximum range for a specified number of consecutive minutes. For example, once an alarm condition exists for a transmitter (out of min / max range for <threshold> consecutive minutes) a new alarm will be generated (unless there is already an unacknowledged alarm recorded for this transmitter). At this point the alarm condition is recorded in the database and any notification actions are performed (i.e. page, email, etc.).



An operator must “acknowledge/clear” the existing alarm. The operator can choose from existing default actions or can write a description of any corrective actions taken to resolve the issue(s). The time and person acknowledging the alarm is recorded and stored with the alarm event in the database. An alarm cannot be cleared without a documented corrective action.

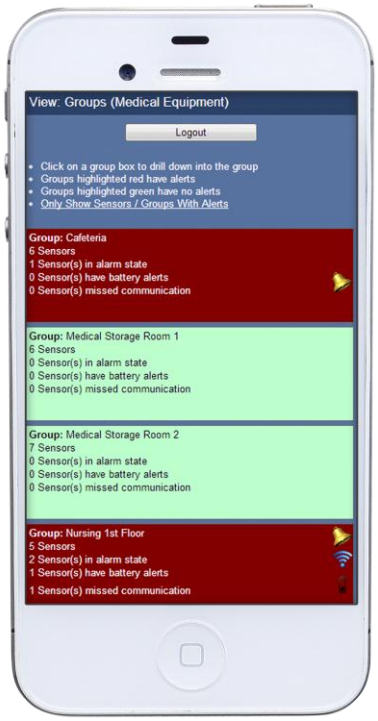
The screen shot below shows an example of the alarm clear/acknowledgment dialog window:

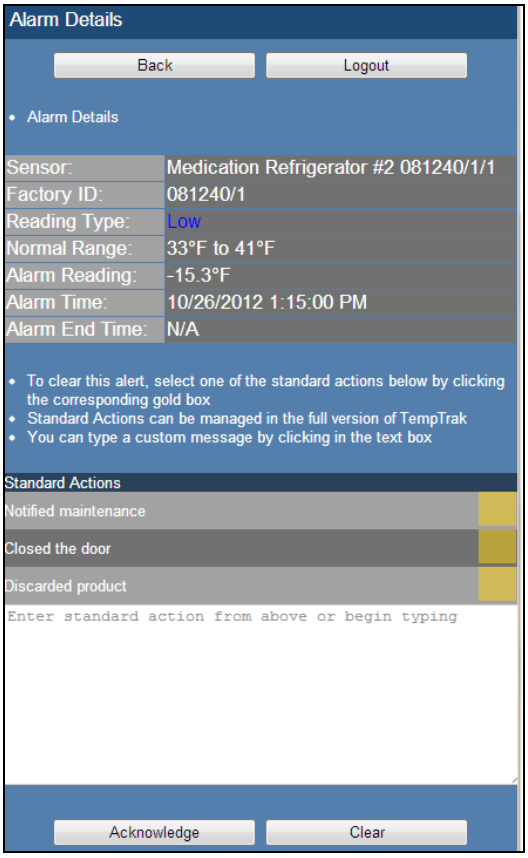


The administrator can also optionally configure escalation parameters for transmitters so that once a notification has been sent, if no action is taken against the alert within a specified timeframe (i.e. a notation mode, alarm cleared), a different notification can be delivered (i.e. notify a supervisor). This escalation can be repeated multiple times.

EZLink

Administrators and facilities alike do not always have access to a computer to check the status of their TempTrak system. In these cases, TempTrak's EZLink™ comes into play. With EZLink, anyone with access to a current generation smartphone or tablet (requires JavaScript and cookies enabled), can view, acknowledge and clear TempTrak alarms using the same login credentials as they do with TempTrak. EZLink also provides viewing of groups, sensors and 24 hour sensor reading history to provide the overall health of your TempTrak system.

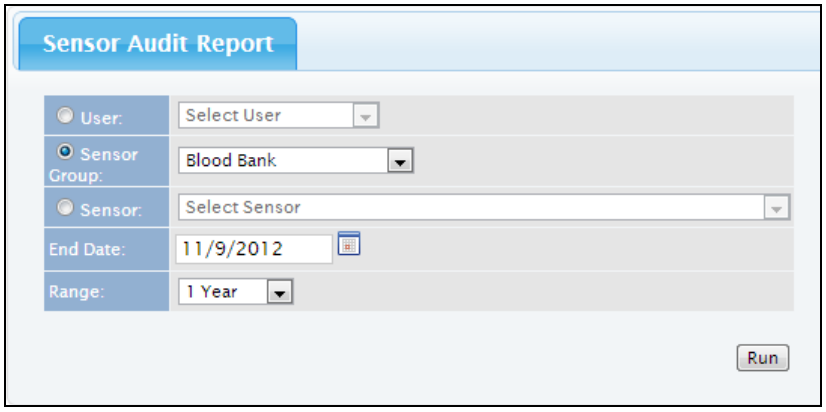


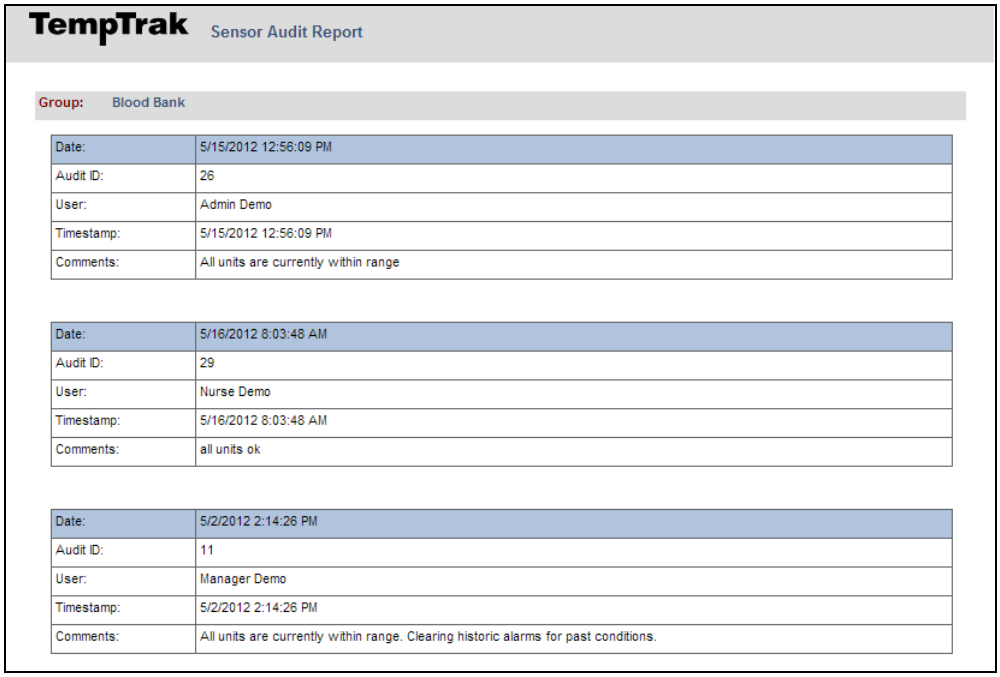


Transmitter / System Auditing

For some applications or for regulatory compliance, it may be necessary to maintain documented records of periodic "audits" of the system and transmitters. The TempTrak application allows operators (with the appropriate permissions) to perform regular audits of transmitters, recording: timestamp, audit comments / actions and the auditing operator. This information is maintained indefinitely, and is available for reporting by date range, operator or transmitter. Information about the most recent audit can be displayed by groups of transmitters (i.e. pharmacy equipment, lab equipment, etc).


Group Details
Group Audit | Edit Group
Group: Nursing 1st Floor
Sensors: 5
Above Range: 1
Below Range: 0
Last Audit: 9/13/2012 8:12:21 AM (Admin Demo)
Group Profiles
Edit Group Profile Defaults
Logging Profile: 15 Mins/Average/No Delta
Alarm Profile: -- Not Set --
Notification Profile: -- Not Set --
Escalation Profile: Default
Sensors
View Group Audit Charts | Refresh Sensors
Blanket Warmer
TEMP
119.8° F
Alarm Range: [No Alarm Profile Set]
Reading: 11/9/2012 11:00:00 AM
Sensor ID: 141096 / 2
West Wing
HUMIDITY
33.3% RH
Alarm Range: 15 to 65
Reading: 11/9/2012 11:00:00 AM
Sensor ID: 095228 / 2
West Wing
TEMP
74.2° F
Alarm Range: 60°F to 80°F
Reading: 10/21/2011 10:00:00 AM
Sensor ID: 167077 / 1
Medication Refrigerator
TEMP
48.9° F
Alarm Range: 33°F to 41°F
Reading: 11/9/2012 11:00:00 AM
Sensor ID: 071130 / 2

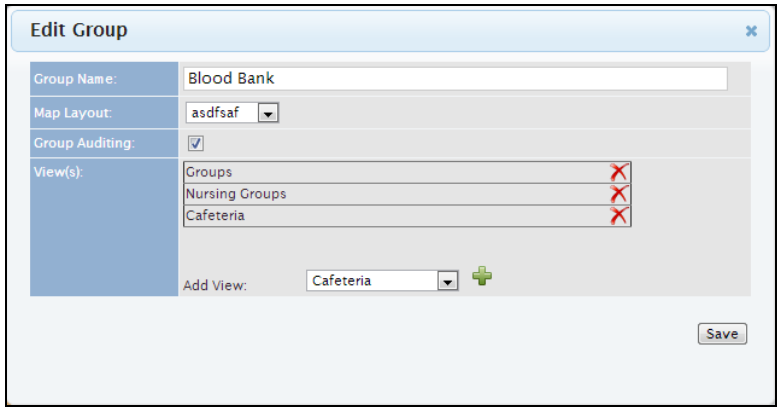

Sensor Audit Report
User:
Select User
Sensor Group:
Blood Bank
Sensor:
Select Sensor
End Date:
11/9/2012
Range:
1 Year
Run

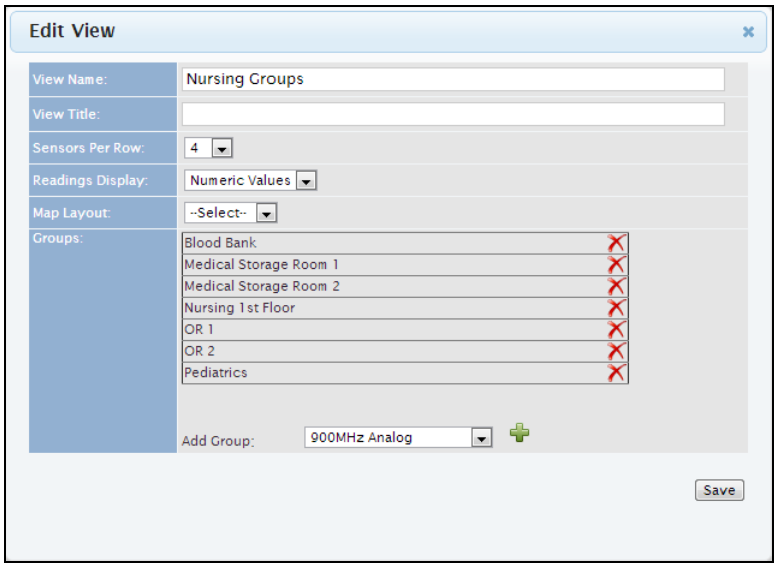

TempTrak
Sensor Audit Report
Group: Blood Bank
Date: 5/15/2012 12:56:09 PM
Audit ID: 26
User: Admin Demo
Timestamp: 5/15/2012 12:56:09 PM
Comments: All units are currently within range
Date: 5/16/2012 8:03:48 AM
Audit ID: 29
User: Nurse Demo
Timestamp: 5/16/2012 8:03:48 AM
Comments: all units ok
Date: 5/2/2012 2:14:26 PM
Audit ID: 11
User: Manager Demo
Timestamp: 5/2/2012 2:14:26 PM
Comments: All units are currently within range. Clearing historic alarms for past conditions.

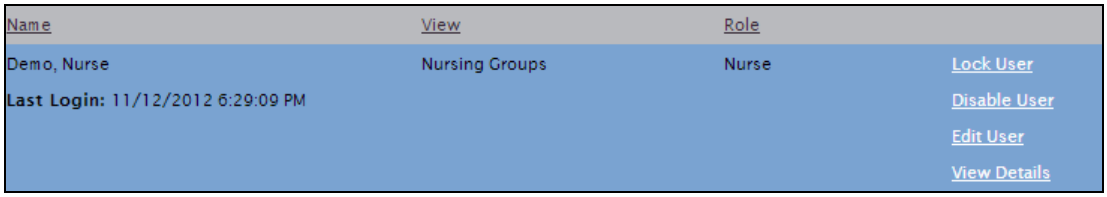
“Views” and “Groups”

Very often the data being collected by the transmitters will be related to different groups or departments (i.e. Pharmacy, Laboratory, Blood Bank, Engineering/Facilities, etc) and each department will only want to monitor the areas for which they have responsibility.

This can be accomplished by using the “Groups & Views” capability within the TempTrak user interface. With Groups & Views, an administrator can create any number of named groups of transmitters (i.e. 1st Floor Pharmacy, 5th Floor Nursing Station, etc) and then organize these groups into one or more named views (i.e. Pharmacy, etc). Finally a view is associated with each user’s login ID. When that user logs in to TempTrak, only those transmitters that are part of their “view” are displayed or are able to be re-configured.

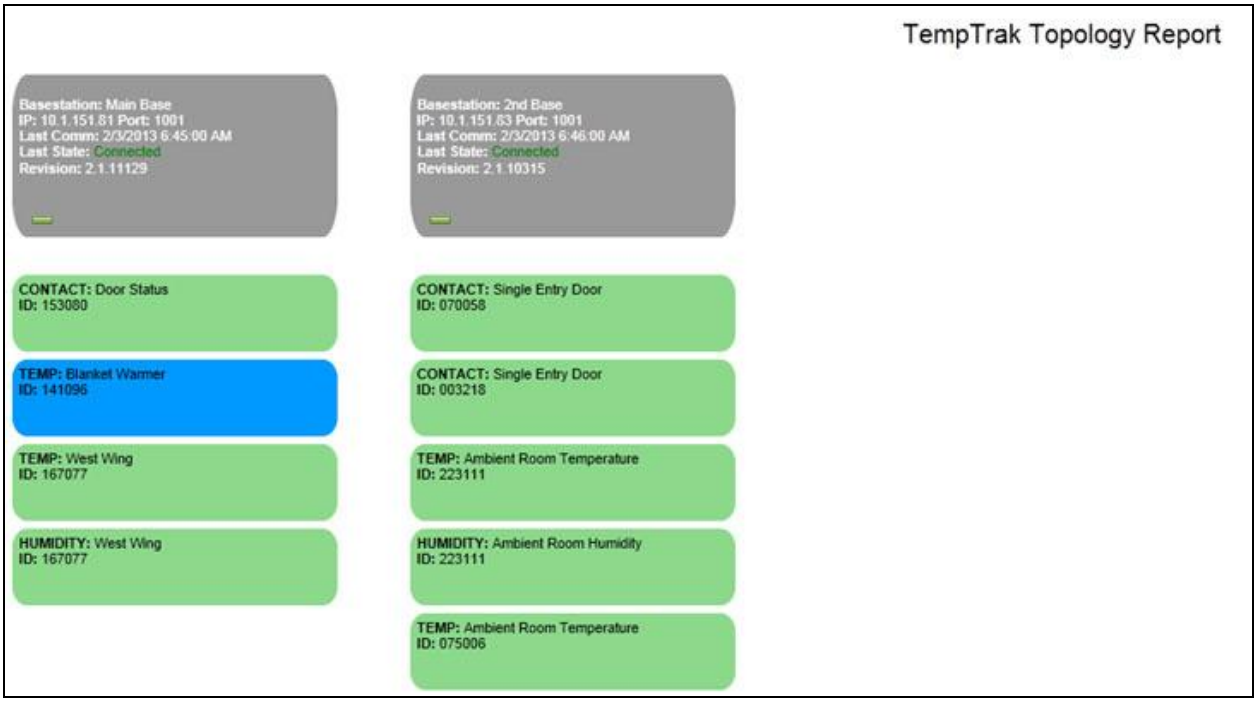






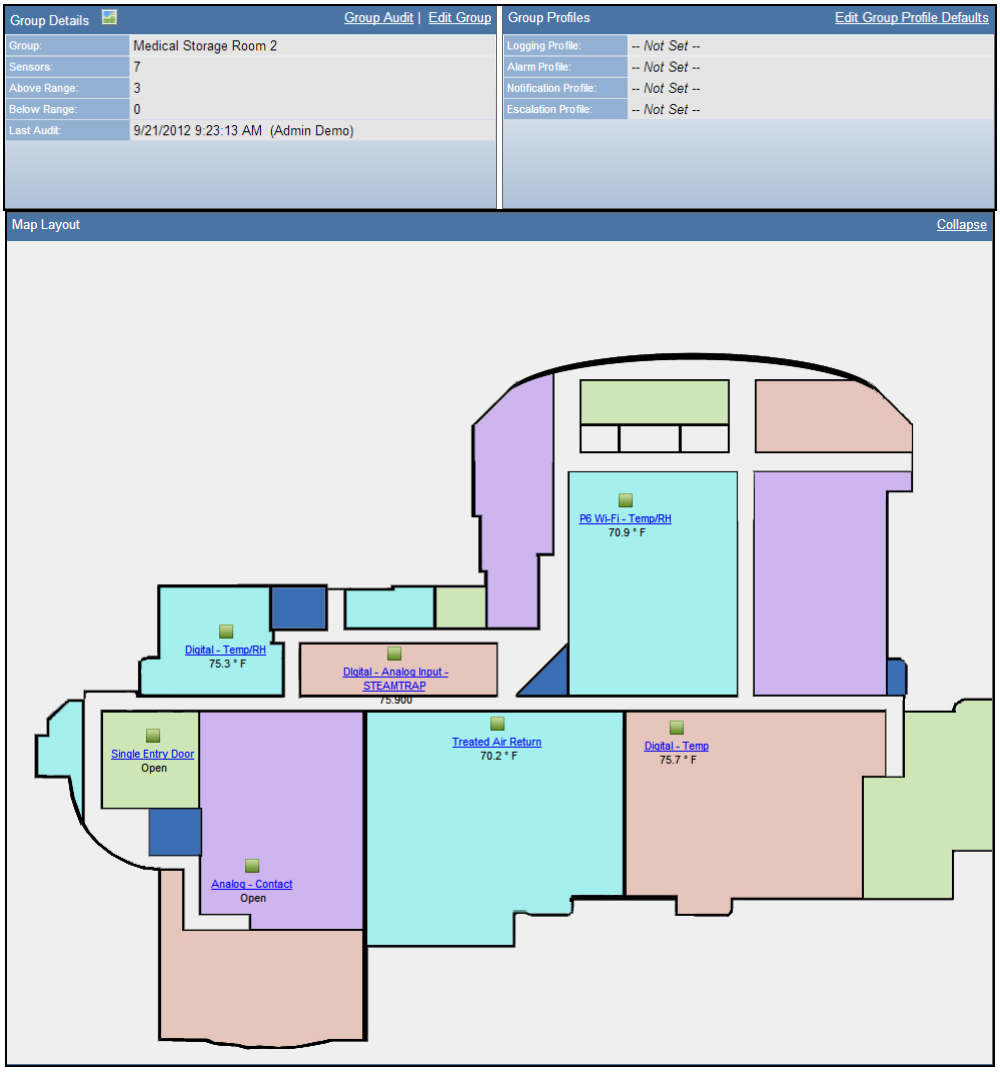
RF Topology Report

RF Topology Report (shown below) shows what transmitters are communicating with what repeaters and if some transmitters are communicating directly to the base station. It also shows if a transmitter is not communicating at all. The situation analysis is fluid, meaning it can change with each subsequent transmission. For example, transmitter A can communicate through repeater A for one transmission and then repeater B for the next transmission.



Graphical Representation

For a more “intuitive” view of transmitter data, TempTrak also supports the ability to display transmitter / group status information against a backdrop image such as a floor plan or other picture. This layout supports full drill-down capabilities (as do the other real-time transmitter data views) to individual transmitter data and historical graphing.



Group and transmitter icons are displayed for easy diagnosis and drill-down to a more detailed floor plan or layout is supported.

Floor plan / layout images can easily be uploaded into the TempTrak system directly from the browser interface. Once imported, individual transmitters or transmitter groups, can be placed directly on the image corresponding to their physical location. At any time, images can be replaced or transmitter icons re-located to track any equipment movements.

Summary

The architecture of the TempTrak system is to provide a cost-effective, timesaving and reliable solution for continuous equipment monitoring of key performance metrics and form the foundation for a comprehensive Healthcare strategy. The system is designed to allow easy addition of transmitters as equipment is added or moved and can easily grow to support even the largest monitoring requirements, while still providing an intuitive interface to the user and robust alerting and notification capability.

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