

HOSPITAL TEMPERATURE MONITORING SYSTEM FOR COLD STORAGE VALUABLES

COST-EFFECTIVE, CONTINUOUS RECORDING IN REFRIGERATORS & FREEZERS



CAS DataLoggers provided the hospital temperature monitoring system for a hospital searching for a cost-effective way to maintain the temperatures for their valuable products in cold storage. The hospital's costs of performing manual temperature measurements on their high-quality medical freezers and refrigerators were quickly adding up:

1	Minute / Measurement
x 6	Measurements / Day
x 30	Days / Month
x \$20	Hour
\$60	Per Month / Single Freezer

**assuming the facility was staffed 24 hours a day*

Extra personnel often had to be brought in to monitor and record the temperature, further raising the cost and indicating the need for a better monitoring and recording solution. Personnel always had to stay mindful that if a temperature increase occurred in cold storage and lasted beyond a certain threshold, the stored drugs or samples would become unusable, costing significant time and money to replace.



Another dilemma was the temperatures inside the refrigerators and freezers weren't uniform throughout the units. The cold air entered the units from only one location and measured by the thermostat at only that location. As a result, a temperature gradient was always noticeable. Hospital staff remained concerned that there was not a single, reliable temperature inside the freezers.

INSTALLATION

Installation of an [A1-13 Wireless Temperature Data Logger](#) per each grouping of 1-3 freezers/refrigerators along with an E1-19 Temperature Probe inside each cooling unit placed in secure locations on the hinge side of each refrigerator proved successful in achieving measured results. An additional unit, an E1-34 Thermal Buffer, was included with probes to ensure consistent temperature readings. A [B1-06 Wireless Gateway](#) with built-in 10/100BaseT Ethernet was then installed per each wireless "group" to make the data online easily accessible. The gateways' internal data storage would compensate in the event of Internet outages.

USAGE

The A1-13 data loggers were then associated with the Gateway. The A1-13 accepted three PT100 inputs allowing the hospital to record and monitor from up to three refrigerators/freezers per pod, reducing the cost per measurement. The temperature probes' were capable of detecting a wide temperature range of -199°C (-326°F) to +150°C (302°F). The probes, with their attached buffers, reduced the false high temperatures readings for rapid rises in air temperature, instead simulating the temperature of the stored contents. The wireless gateways each supported up to 16 sensor pods, sending all data to secure servers. That were accessible from any browser with Internet access. Data online was able to be downloaded as a [CSV](#) file and loaded into most database applications.

BENEFITS

The hospital immediately benefitted in several ways from installing the new wireless equipment. The economic benefits were considerable – compared to manually recording the temperature as required by regulatory agencies, automated monitoring was far less expensive and much more reliable all the while securely storing the data in protected archives. The temperature buffers on the probes allowed the client's monitoring system to measure the temperature of the refrigerator contents rather than simply measuring the air temperature, increasing the safety of the items in cold storage. The buffers also smoothed out the temperature readings over time and slowed their response, reducing false alarms due to defrosting cycles and/or door openings. Hospital staff could also set the warning limits for a narrower temperature range if required.

The system's many programmable features also increased overall flexibility in alarm settings. For example: the wireless systems could check for alarms at different intervals than those used to record data. A typical setting for the customer's medical refrigerators was 10 minutes, with the trigger filter set to require 3 data points in a consecutive order to be out of limits before the alarm was triggered. The alarms generated by the system for each freezer could be sent to customized phone or email lists, as it was common in the hospital to have several "owners" of the freezers.

The hospital's data storage was also much improved over the manual method, with the new wireless gateway forming a connection between the data and the Internet. This allowed personnel to easily access all the data from one source, further ensuring the safety of the cold storage products. Extended-life battery packs were chosen as an efficient solution for the client's wireless installations since 110v wiring was often limited in the freezer rooms.

For more information on [Accsense Monitoring Systems](#), hospital temperature monitoring systems 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.