digitron™

Kyros™

AUTOMATED WIRELESS BIOMEDICAL MONITORING



"We installed the system nearly a year ago and quickly recognised the great advantages it has given us. We use it to monitor the temperature in the department and in cold stores, refrigerators and freezers where we keep critical drugs. It's easy to use and we have been impressed by the message board and audio-visual alarm if temperature control goes awry. Installing it on the Trust's network means a virtually infinite number of sites can be connected to the system so we can monitor fridges on the wards. I have also been very impressed by the technical support the Digitron team have provided."

Alan Caterall
Chief Pharmacist
Alexandra Hospital, Redditch

Kyros™ is the third generation of Digitron's acclaimed automatic biomedical monitoring system, building on the capabilities, benefits, experience and knowledge derived from Digitrak, introduced in 2005. It efficiently monitors and records a range of critical point data, including temperature, humidity, pressure, door status and air quality, and provides effective reporting and visualisation for ongoing management.

Kyros™ is designed to work perfectly across related biomedical departments, including:

- Hospital
- Pharmacies
- Laboratories
- Pathology
- Blood Banks
- Pharmaceuticals
- Clean Rooms

Kyros™ is:

Flexible
to perform in a range of applications

Reliable
proven technology you can trust

Usable
easy to install, operate and manage

Economical
saving time, money and resources

Why monitor?

All biomedical environments from clean rooms and laboratories to blood banks and pharmacies require at least temperature and humidity to be maintained at a constant level, in order to meet health, storage and quality requirements.

The European Union (EU) Directive (2002/98/EC) and the UK Blood Safety and Quality Regulations 2005 (MHRA) were introduced in 2005 to ensure a high level of human health protection by setting standards of quality and safety for the collection, testing, processing, storage and distribution of blood and blood components.

Kyros™ is a centralized computer-based solution for clinical environmental monitoring within any regulated biomedical facility. Using wireless technology, Kyros™ can be used effectively in collecting critical data from fridges and freezers throughout pharmacies, operating theatres, laboratories and blood/tissue banks, ensuring that medicines, vaccines, bone marrow and other perishable materials are maintained at correct storage and quality conditions with appropriately monitored security.

Kyros™ is designed to comply with the toughest industry standards including 21CFR Part 11 as well as calibration validation for high accuracy sensors in temperature, pressure, humidity, CO_2 and door contact status for a wide range of applications.

Kyros™
Automated Wireless Biomedical Monitoring

Economical – saving time, money and resources

Kyros™ not only reduces the cost of monitoring, but can also enable your business to operate more efficiently.

1 We save time/labour

Automated data collection reduces the quantity of manual measurements required, reducing the risk of human error and ensuring that accurate data is recorded at precise intervals. Wireless technology also means that installation is easy and inexpensive as there is no need for costly cabling and electrical work.

2 We save energy

Data can be analysed to check efficiency of chillers, fridges and freezers plus CO_2 concentration for Internal Air Quality (IAQ). Door contact sensors can alarm to indicate when a door has been left open by mistake, prompting an immediate corrective action. Through regular monitoring, energy consumption can be greatly reduced.

3 We reduce waste

Alarm notifications such as SMS texts, visual LED message boards, pop-up windows, or simple flashing lights can indicate when there is a threshold breach within a critical storage area. Action can then be taken to prevent costly spoilage.

4 We eliminate paper storage

All the data is stored electronically, hence Kyros™ reports can be created automatically from the database, and viewed directly on either a local computer or networked server. Specific information can then be printed off or exported to a spreadsheet, as required.

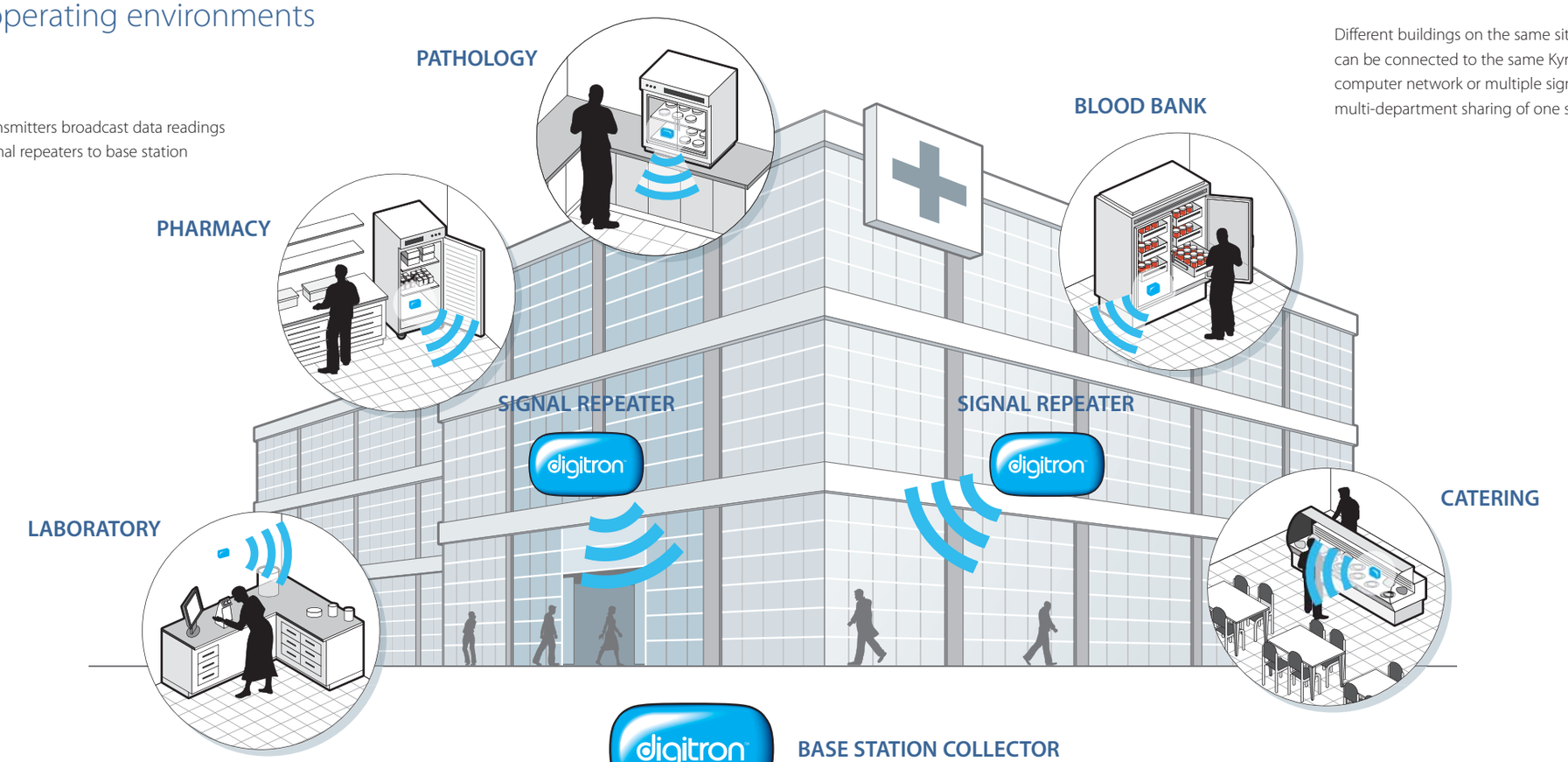
5 We cut equipment downtime

Since Kyros™ provides continuous temperature monitoring for example, the data report can show trends in the efficiency of cold storage areas. This information can then be used to optimize servicing intervals, ensuring maximum equipment efficiency and minimal downtime.

Kyros™
Automated Wireless Biomedical Monitoring

Flexible – to perform in a variety of biomedical operating environments

Battery operated RF transmitters broadcast data readings either directly or via signal repeaters to base station collector modules.



Different buildings on the same site or some distance away can be connected to the same Kyros™ software using the computer network or multiple signal repeaters, facilitating multi-department sharing of one system.

The Kyros™ software checks the received data and generates alarm alerts when any breach of prescribed limits is detected. Alarm alerts can be visual, audible, text messages, pop-up messages or emails.

Visualisation of data or reports is possible via browsers on computers connected to the same source network using ID/password authentification for secure access. Acknowledgement of alarm alerts is possible via computer or smartphone control.

Usability – easy to install, operate and manage

Kyros™ Software

Kyros™ uses a brand new tailor-made software platform, developed inhouse by Digitron to offer a range of benefits in performance, usability and flexibility.

The browser based visualisation interface provides access control with multi-user options via PC or network computer whilst managing historical data for verification, analysis, and notification control and report generation.

Kyros™ allows multi-user access at multiple sites. Once the system is installed on a central server and individual sites have been connected to the system, anyone with an internet browser on the network can access information using their ID and password. Once permissions have been established, any user can access information based on their areas of responsibility.

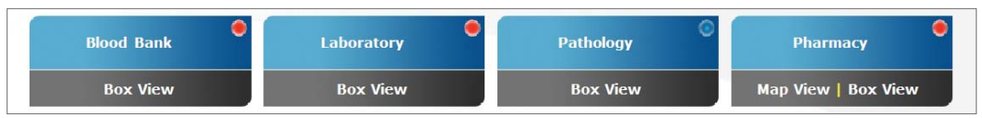
The Kyros™ software provides visualisation and configuration control with data management, archiving functions and alarm alert control running in the background. It allows instantaneous alerts and paperless reports for trend analysis, corrective actions and historical data files.

A useful feature of the visualisation software is the ability to display customised map layouts of the areas being monitored. This allows an immediate "at a glance" visual recognition of sensors, their location and alert status.

There are many different ways to customise the Kyros™ visualisation interface including:

- User-defined reports
- Access levels and permissions
- Flexible reporting intervals
- Data export options
- Language options
- Different critical parameter sensors (with product simulant options)
- Customisable alarm notifications (email, SMS, LED message boards, PC pop-up windows, flashing lights)

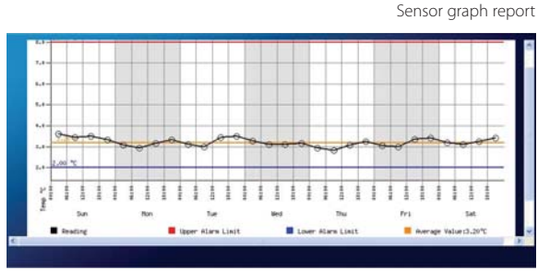
Group view



Sensor box view

Map view

Sensor graph report



Management Reports

The Kyros™ software offers a choice of management reports that can be accessed via a standard web browser. These include:

- Daily summaries
- Exception reports
- Weekly/Monthly Max/Min/Average summaries
- Corrective action reporting/traceability
- Door open/close reports

You can also easily export the data out of Kyros™ into Microsoft Excel or a similar spreadsheet for customised reporting.

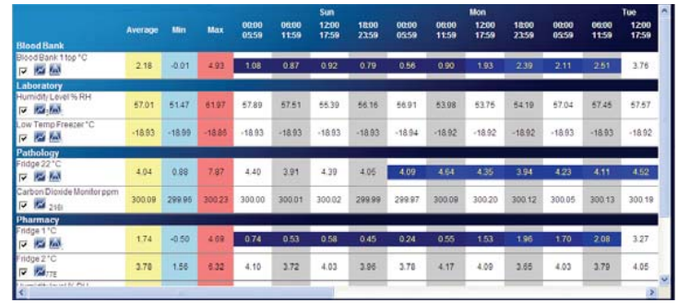
Sensor Trend Report

This report gives the time weighted average of a sensor reading over a selected time period. The colour and shade of the data value cell indicates the degree to which the time weighted average reading was over range (red) or under range (blue). If the cells are not coloured the values were within range. By hovering with the cursor on the cell being viewed it is possible to get additional information over the reading period;

Readings number of readings taken in the reporting period
Maximum maximum reading
Minimum minimum reading
Over range number of readings over the maximum of the range
Under range number of readings under the minimum of the range

Sensor Alarm Report

The Sensor Alarm Report indicates the status of each sensor over the time period which is being viewed. The data value in the cell represents the time weighted average over the duration of the cell time period. The colour of the cell represents the status of the sensor.



Statistics Report

This report gives statistical information about the readings and alarms on a per sensor basis. Clicking on the small pie chart symbol next to the check box for the sensor will reveal the pie chart display, giving a visual representation of the readings and user responses to alarms for that sensor. Clicking on the large pie chart symbol at the top of the table will reveal the pie charts for all the sensors which are being displayed.

Reliable – proven technology you can trust

A 12 month warranty is offered on all Digitron-supplied hardware and software to the original purchaser. Excluded from the warranty are any faults caused by accidental or malicious damage to components, computer operating system or network faults and any consumable parts such as batteries.

Robust technology

The RF transmitters broadcast at 868-915 Mhz, and having no LCD they are able to operate in low temperature environments for sustained periods, powered by an internal Lithium Chloride long life cell. Signal repeaters can be positioned at optimal locations to extend the RF coverage and communication distance to the base station modules. To prevent loss of data due to a power failure or network breakdown, base station modules can be fitted with an optional buffer memory and UPS. Signal repeaters are also supplied complete with an integrated back up power supply. Once power supplies are resumed then stored data is automatically transferred to update the software database.

When an alert condition occurs, Kyros™ identifies the precise location and length of time the sensor has been in an alert state, enabling corrective action to occur and a log of the incident to be recorded. Alarm methods are bespoke for each system and can consist of LED message boards, pop up messaging, emails, SMS text messages, or simple visual or audible warnings.

System Support

Our support team is available on the telephone to provide help and advice throughout the day. In addition, technical issues can be reviewed online via our secure remote access tool, which enables us to login to your system anywhere in the world to diagnose and troubleshoot quickly and efficiently.

If the need arises, our engineers can visit your site to undertake any necessary servicing or product upgrades.

Full on-site training in the use of Kyros™ is delivered at the time of commissioning, and comprehensive manuals are provided for those customers who wish to install the system themselves.

We recommend a system calibration check every 12 months, which can be carried out on-site by our service engineers.

> "We have found the system to be incredibly useful. We use it to monitor the temperature in our blood, drugs and bone donation fridges. The way it alerts us to potential problems at the earliest possible opportunity via the on-screen alarm is very beneficial."

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