

Monitor. Alert. Comply.

LabWatch® IoT

COMPLETE CLOUD MONITORING,
ALARMING AND REPORTING SOLUTION



LabWatch IoT - Cloud Based Monitoring, Alarming, and Reporting for GxP Environments

At Kaye, we understand the unique regulatory requirements of applied industries and the key processes and facilities they use. With a long history of producing validation systems, Kaye developed LabWatch IoT - a cloud-based monitoring system built around the Kaye LabWatch wireless data logger. LabWatch IoT is a web-based solution for complete monitoring, alarming, and reporting - no site-based servers are required.

A COMPLETE CLOUD SOLUTION

LabWatch IoT is an operational-intelligence system that transforms your GxP data into real, actionable insights. Know the status of your products 24 hours a day, seven days a week - the promise of the Internet of Things (IoT) and Industrial Internet of Things (IIoT).

LabWatch IoT delivers smart asset monitoring, advanced predictive intelligence, and intelligent alerts and notification. It is provided in a hosted cloud environment with no internal administration costs. By eliminating expensive servers and local IT overhead, LabWatch IoT removes the burden of operating system patches, backups, and local monitoring software installation. The system is accessible from any standard web browser - desktop or mobile - so monitoring can be performed from any platform.

The solution integrates high-quality sensors and the latest wired and wireless communication technologies to provide redundancy and robust networking in an easy-to-use data management platform. LabWatch IoT combines precision monitoring with effective alarming, flexible web-based reporting, and secure data archiving using AWS cloud management. The system detects excursions and can notify personnel wherever they are via email, SMS, phone, or push messaging. It documents critical facility and process parameters without generating stacks of paper.

The cloud archive creates a secure audit trail of events and alerts, including actions taken by personnel, and provides ready access to historical data. All user interactions are logged using electronic signatures, with options for sign-only or sign-and-verify confirmation on every validated entry.

REGULATORY COMPLIANCE

LabWatch IoT's reporting capabilities let you generate PDF reports that support compliance with FDA, GMP/GLP, AABB, JCAHO, AAALAC, and other regulatory bodies. By maintaining a secure cloud archive of sensor data, the system readily provides the information needed for internal analysis and regulatory documentation.



Multilingual, Multi-Timezone, Multi-Site - LabWatch IoT for Distributed Compliance Programs

SCALABILITY AND FLEXIBILITY

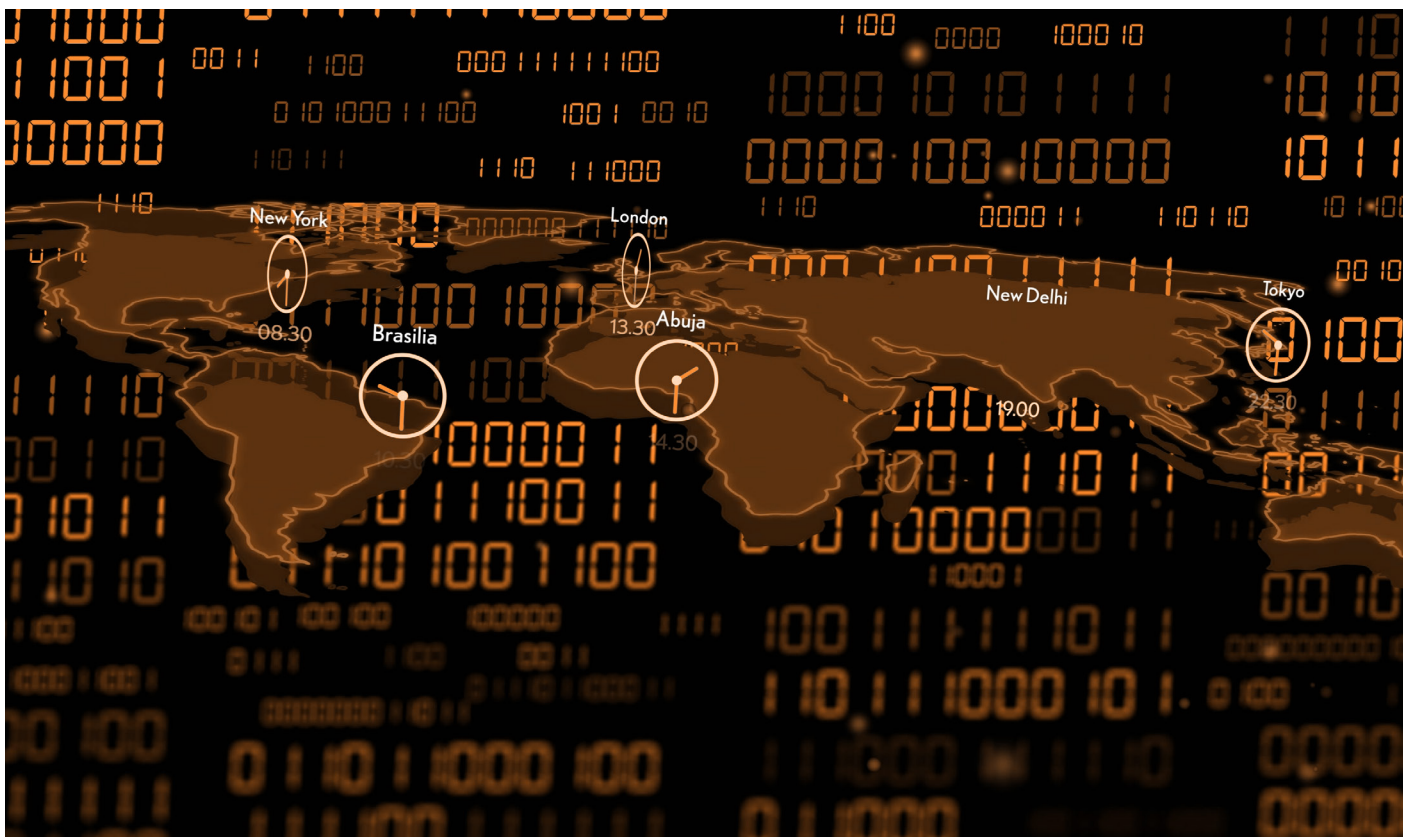
Whether you need to monitor 5 or 3,000+ inputs, LabWatch IoT scales to meet the task. All data is triple checked for missing or duplicate values. Redundancy begins with the sensor, is replicated at the tunnel, and is finally stored in the secure cloud. Each point of possible network disconnect allows for storage of data, until the path is restored - LabWatch IoT's store-and-forward logic ensures data reaches the cloud even after outages. The system can be fully configured for each individual user. Users can add, move, or remove validated report and view components on the screen; each component provides different ways to view historical and alarm data (by function type, asset, time range, and location). All data is timestamped in UTC, enabling global data collection with display in local or browser time zones. A single cloud installation can monitor multiple sites across multiple time zones while providing localized monitoring and reporting for each site. User access can be restricted to specific facilities or extended to the full global installation - you have control.

LOCAL LANGUAGES

LabWatch IoT supports different languages for every user individually. Together with support for different time zones, it enables globally integrated systems while users comfortably work in local languages and timezone.

KEY DELIVERABLES

- Distributed Measurement Hardware – wired or wireless
- Redundant data storage – Loggers, VPN collector and cloud storage
- Web and mobile browser access – unlimited users
- Ease of use
- Alarm notification – Email / SMS, voice and mobile Application (iOS / Android)
- Web based reporting functions
- Services – Specification development, Installation, IQ / OQ protocol development / executions, Training, Calibration Services, Technical Support
- Turnkey solution for GxP Monitoring



One platform — multiple languages, zones, and sites for consistent compliance

Robust and Scalable System Architecture



Using AWS GxP Cloud

SYSTEMS ARCHITECTURE

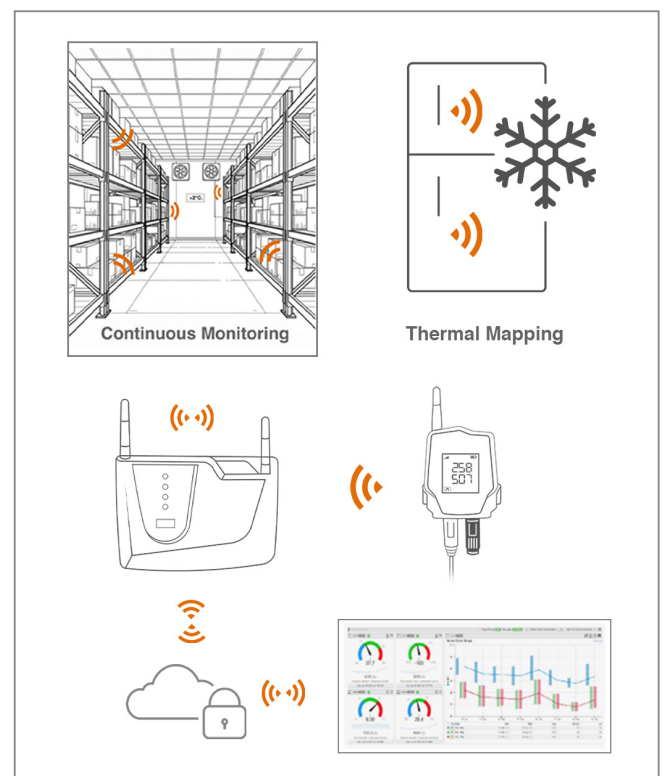
The Kaye LabWatch IoT system is built as a Cloud Architecture Model encompassing intelligence and redundancy at multiple levels in the system. Each of the elements in the architecture are robust, complete and independent sub systems. At the primary input of the system lie the extremely accurate calibrated sensor modules (temperature / humidity / current / voltage / etc.). These sensor elements feed into the wireless Kaye ValProbe RM data loggers or the wired NetPac II modules.

As the reliability, repeatability, and accuracy of real-time wireless technology evolved, Kaye has harnessed the latest advances in RF and battery technology to design a performance optimized wireless monitoring system. The ValProbe RM loggers communicate real time via a robust and reliable 2.4 GHz RF Wireless network technology to the base stations. The ValProbe RM base stations can connect up to 50 loggers. Any number of such base stations can be connected to a LabWatch IoT system via an Ethernet network. Each ValProbe RM logger can store up to 100,000 samples per sensor in case of network or server failures. ValProbe RM base stations communicate to the LabWatch IoT system via the industry standard protocols

The LabWatch IoT system architecture supports a Hybrid system with Wired and Wireless inputs based on the cus-

tomers application or to add new Wired or Wireless points to an existing Wired / Wireless network. In a Wired System the sensor modules are physically wired to a NetPac II series module. The NetPac modules are connected to the LabWatch IoT system through Ethernet and communicate to the VPN collector gateway that uploads the data to the LabWatch IoT Cloud System. LabWatch IoT resides completely in the cloud – all data is collected locally on-site through collector and is pushed to the cloud through a VPN gateway (Physical or Virtual Linux based machine). The VPN tunnel PC allows a secure connection through the site firewall and ensures that no external accessibility of data or the internal network can be achieved. The VPN gateway also acts as a store and forward database (in the event that the Internet connection is lost). The data for the last 30 days can be also viewed locally. The data collector holds all associated drivers that are required to communicate with the site hardware.

The ability to load and connect to any OPC or MQTT compatible driver ensures that LabWatch IoT can communicate with all 3rd party sensors, therefore making the monitoring system a complete answer for facility monitoring applications.



The perfect solution for continuous monitoring or thermal mapping

Monitoring What Matters Most

WHERE WE MONITOR

- Warehouses
- Clean Rooms
- Blood Banks
- Pharmacies
- Cold Storage
- Animal Rooms
- Laboratories
- Workshops / Production Line

WHAT WE MONITOR

- Stability Chambers
- Freezers
- Refrigerators
- Incubators
- Cryogenic Freezers
- LN₂ tanks
- Ovens
- Process parameter

SENSORS

- Temperature – RTDs, Thermocouples
- Humidity
- CO₂
- Pressure – Absolute, Differential
- Contacts – Door Switch, Relays
- Voltage / Current inputs
- Light – Visible, Ultraviolet
- Air Flows
- Particle counter

SYSTEM BENEFITS

- Operates in compliance with the FDA regulation 21 CFR Part 11 on Electronic Signatures and Records.
- Creates an audit trail of alarms and actions taken by the system and the people who log onto the system.
- Provides a complete history of alarms and data in one central location, automatically.
- Protects your time by avoiding nuisance alarms and guards your product investment by providing reliable alarm detection.
- Notifies an unlimited number of people to handle specific alarm conditions with a variety of notification methods: email, SMS phone call and push messages.
- Lets you retrieve data easily for viewing, reporting, analysis, and regulatory inspections. Provides web-based tools to review historical data and create customized reports to suit management or client requirements.
- Provides secure cloud data storage via encryption of files to prevent tampering.
- Runs on any supported browser – Microsoft, Apple, iOS and Android.



Monitor your Freezer Farms with confidence

Kaye ValProbe RM - Wireless System



Kaye ValProbe RM and RM-B System with Base Station



ValProbe RM and RM-B for pharmaceutical and biotech facilities

ValProbe RM® TECHNOLOGY

Kaye ValProbe® RM (Real-Time Monitoring) is a cutting-edge wireless data-logger system designed specifically to meet the monitoring and regulatory needs of the pharmaceutical and biotech industries. As real-time wireless reliability, repeatability and accuracy advances, Kaye has applied the latest RF and battery technology to create a highly sophisticated system built around the wireless ValProbe RM data logger. The ValProbe RM logger features a compact base body that accepts two digital sensors, giving users flexible sensing options in a single, rugged package. For applications that do not require a display, the ValProbe RM-B provides a cost-effective alternative while retaining the platform's core performance and reliability.

RF SPECIFICATIONS & CERTIFICATIONS

The Kaye ValProbe RM wireless system is built on the versatile 2.4 GHz ValProbe platform and uses a proprietary dual-antenna design to form a star network that links each base station to up to 50 loggers. Engineered for reliable, long-range performance, a single base station delivers approximately 900 ft (300 m) line-of-sight coverage to each logger; actual range may be reduced by obstacles, building materials, or the local RF environment. Multiple base stations can be deployed and networked via Ethernet to scale coverage and integrate with LabWatch IoT

using industry-standard protocols, and each ValProbe RM logger provides local sample buffering to protect data during temporary network or server interruptions.

Selected RF type approvals are available for the United States, Canada, the European Union, India and Brazil. Please contact the factory or your Kaye representative for the most up-to-date, country-by-country certification list and supporting documentation.

DATA REDUNDANCY

The Kaye ValProbe RM logger stores up to 100,000 samples per sensor. At a one-minute sampling rate this provides roughly 10 weeks of local data storage (approximately 69 days), all of which can be retrieved if network access is interrupted. When connected to mains power the logger runs from the power supply and will automatically switch to battery operation during a power loss. The gateway retains an additional 30 days of data that can be accessed locally if the internet connection fails. All data is ultimately synchronized to the cloud for centralized, long-term archiving once connectivity is restored.

DATA SECURITY

All ValProbe RM data are protected throughout their lifecycle: information is encrypted both in transit and at rest using industry-standard protocols, and the system implements tamper-evident and tamper-resistant controls to preserve data integrity. Device authentication, secure key management and configurable access controls help ensure that only authorized users and systems can access monitoring data, while comprehensive, time-stamped audit trails record who did what and when. The platform is designed to support GxP expectations for data integrity (including traceability and non-repudiation) and to assist customers during regulatory reviews.

FLEXIBLE DIGITAL SENSORS

Kaye ValProbe RM loggers provide two ports for attaching Digital Sensor Modules. These digital sensors measure parameters such as temperature and humidity and convert readings into digital signals for greater precision and reduced susceptibility to interference.

Calibration offsets are stored directly on each sensor module, so a sensor can be replaced with a newly calibrated unit at any time without interrupting continuous monitoring. Sensor replacement is detected automatically by the system and prompts an eSignature capture to support GxP-compliant documentation and traceability. Used sensors can be returned for recalibration at our ISO/IEC 17025-accredited service centers to maintain measurement accuracy and compliance.

NetPac II - Wired System

Our NetPac II universal controllers and I / O products use Click&Go control logic, which includes our patented active monitoring technology and support for a versatile set of OT / IT protocols, to help you easily configure, deploy, and realize IIoT applications such as energy monitoring, facility monitoring, and machine OEM applications.

NetPac II system is a distributed, industrial I / O network providing the most cost-effective data collection available in the industry. It uses remote modules to condition, measure, linearize and transmit process variables to the LabWatch IoT Cloud. From the Cloud, you have the power of performing calculations, trending, archiving and reporting. Prepackaged, hardened for the real world and linked by company network to a GxP Cloud. Hardware configurations include a watertight NEMA 4 enclosure, as well as NetPac 1 upgrade NEMA 4 enclosures with 128 sensor inputs. NetPac nodes also can send outputs to the process from the Server.

NETPAC GENERAL SPECIFICATION

- Combines Smart/Intelligent NetPac CPU with independent I/O modules
- Supports up to 8 daisy-chained I/O modules
- Separate T/C, AI, and DI modules (8 inputs each)
- Onboard 4-port Ethernet switch for communications
- Data backup storage: 32 GB SD card (1M samples)
- Automatic data recovery: 1 min.
- Internal 24V power supply
- Internal terminal connections for powered 4-20 mA inputs

TYPICAL IO MODULES & SPECIFICATION

NP1262 T / C MODULE

8 T / C Inputs

Type T, J, K, E, B, N

Range: -200 to 1300C

Sampling: 12 ch / sec

Connectors: Max 14 AWG

16 bits A / D

Accuracy:

0.1% FSR @ 25C

0.3% FSR @ -10 to 60C

Wide operating

Temperature range:

-40 to 75°C (-40 to 167°F)

2 port Ethernet switches

NP1240 AI MODULE

8 AI Inputs

Voltage / Current

Jumper Selectable

0 – 10V, 4 – 20ma, 0 – 20ma

Built in resistor 120 Ω

16 bits A / D Sampling: 12 ch / sec

Connectors: Max 14 AWG

Accuracy:

0.1% FSR @ 25C

0.3% FSR @ -10 to 60C

Wide operating

Temperature range:

-40 to 75°C (-40 to 167°F)

2 port Ethernet switches

Removable Connectors

NP1210 DI MODULE

Digital Inputs

Connector:

Screw-fastened Euroblock terminal Counter Frequency: 250 Hz

Digital Filtering Time Interval:

Software configurable

Dry Contact

On: short to GND / Off: open

I / O Mode

DI or event counter

Points per COM

8 channels

Sensor Type

Dry contact

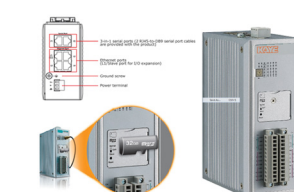
Wet contact (NPN or PNP)

Wet Contact (DI to COM)

On: 10 to 30 VDC / Off: 0 to 3 VDC



Nema 4 Cabinet for security



Local redundant data storage



NetPac II for IoT

Easy Access to Real-Time and Historical Data

CUSTOMIZABLE VIEWS

The LabWatch IoT Cloud presents the user with an asset-based tree structure. The tree structures can be modified to represent the logical grouping of assets or sensors. The user can segment by departments, groups or physical locations.

These Groupings or nodes also allow for customized access, alarm and historical data - all access is controlled by the System administrator or can be assigned to node administrators. Operators can be assigned to certain nodes only, giving complete control over access to the data.

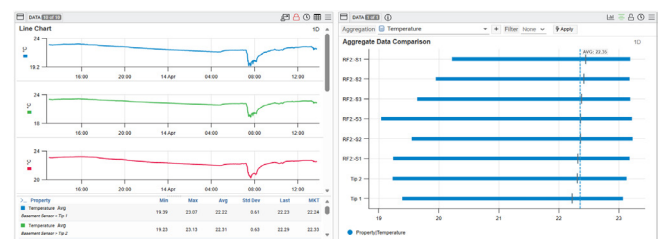
Each node can have a subset of data components that give different views of the live and historical data. Each component is validated and can be added or removed from each Group based on requirement. The view can be saved as default, public access or for the user only.

EASE OF ADDING NEW SENSORS

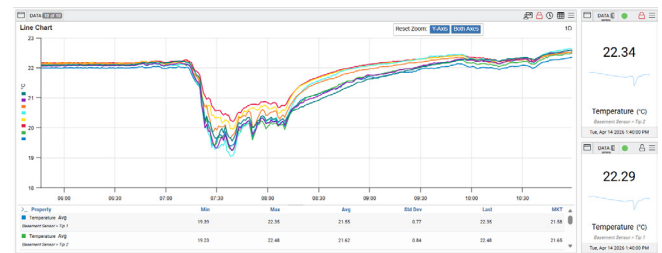
At Kaye, we recognize that customers' infrastructure needs evolve over time. That's why LabWatch® IoT makes scaling simple: users can quickly add or remove measurement points and dashboard views without disrupting operations and with minimal training. To install a new logger, power it on, pair it with the base station, and assign it to an existing or newly created node in your equipment tree. The system

automatically adopts the logger's configuration and begins reporting, providing continuous monitoring and immediate visibility from the moment it's deployed.

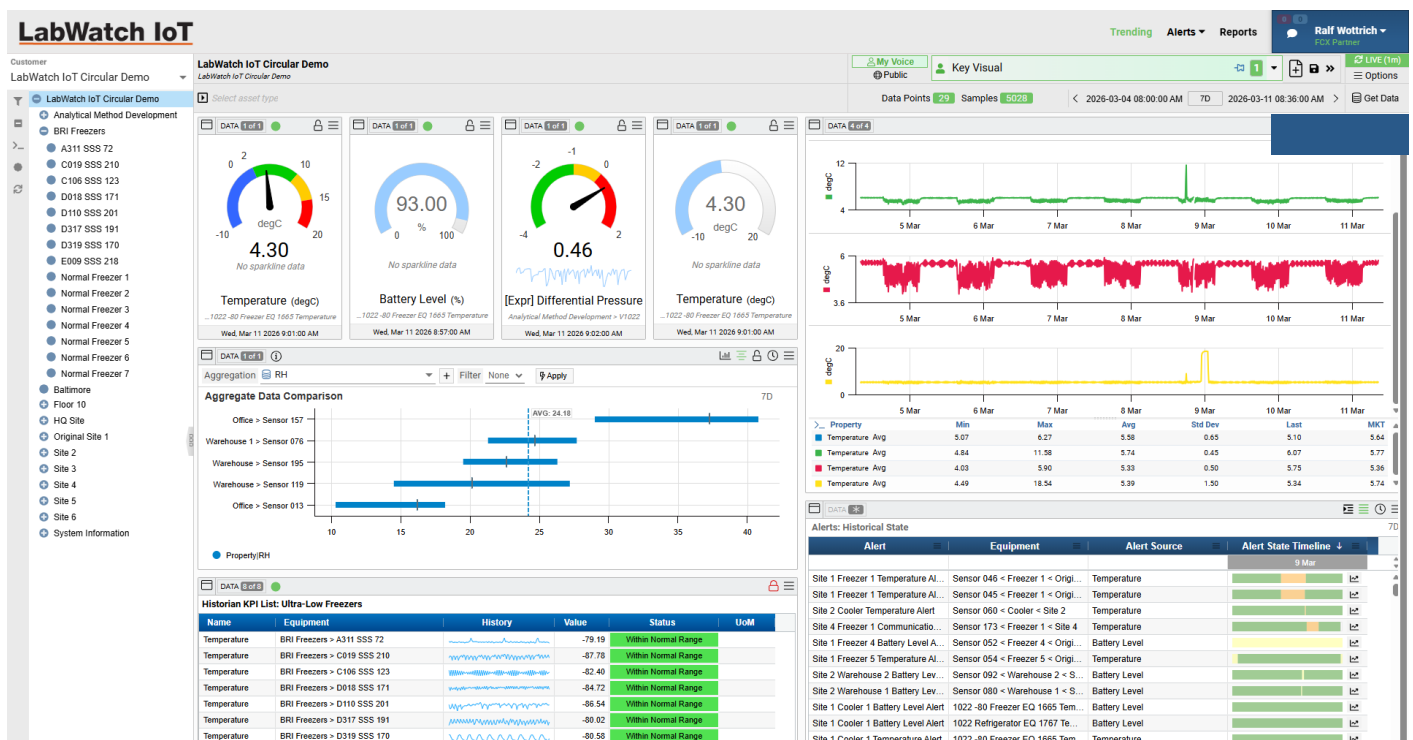
The user can purchase additional hardware from Kaye, and in a few simple steps, add the hardware to the LabWatch IoT system either by self configuration - or let Kaye perform the Cloud work remotely as part of a Service Contract.



Easy viewing of Data and Statistics



Validated graphical components – Build your own platform



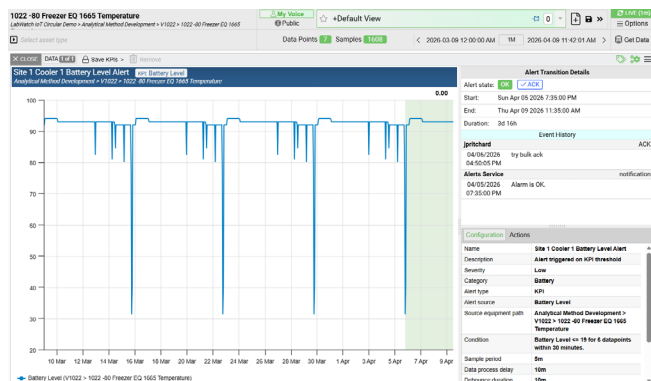
LabWatch IoT Data Trending Dashboard

Historical Data, Audit Trail Storage and Analysis

HISTORICAL TRENDING

LabWatch IoT stores live data at regular intervals which can be used to display graphical process trends and components on the Cloud web browser. The user can view multiple parameters, components and assets on a historical screen for any time period selected. Move the cursor to any point on a graph / trend to display instantaneous, min / max / avg values - or any alarm parameters and notifications.

Historical trending provides the ability to pre-select assets, or groups of sensors – using the Validated Data Component allows easy configuration of specific views for each area. The historical graphing allows you to view the maximum amount of data stored for your system - the intelligent trending picks out the min / max points regardless of the time spans selected. The user has the ability to export the data directly from the trend into readable formats for further analysis.

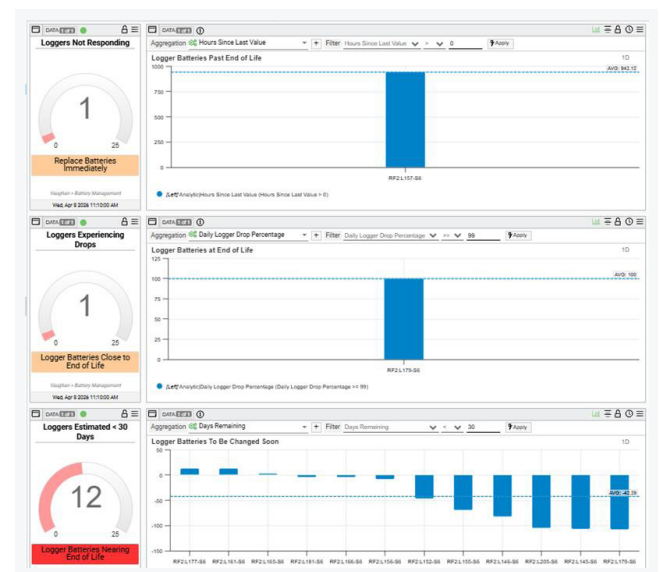


Detailed Sensor View

AUDIT TRAIL

The LabWatch IoT monitoring system creates an audit trail for every action executed. Examples of actions taken that are recorded include alarm acknowledgement, enable / disable alarms, limit / delay changes etc.

To generate an accurate audit trail, each system user is required to follow the login procedure with a proper login name and password. The software provides a commenting feature to add comments into the audit trail to record events as part of the audit trail reports in the future. LabWatch IoT has intelligent filters and sort capability that allows the operator to quickly and easily retrieve audit information through asset locations, dates and many other fields. This makes retrieving data for regulatory inspection easy. For example, you can look at events concerning any individual sensor by sorting by that sensor name.



Alarming - Get Notified Instantly

DEPEND ON LABWATCH IOT TO ALERT YOU OF TRUE ALARMS

The goal of LabWatch IoT is to detect environmental excursions the moment they occur and notify the appropriate personnel for corrective response. Using high-quality industrial sensors, high-accuracy measurement electronics, and 2-point sensor calibration, the system provides reliable, accurate and repeatable results. LabWatch IoT continuously scans all inputs and notifies the user only when genuine alarms occur.

MODIFY ALARM LIMITS TO SUIT YOUR OPERATING CRITERIA

Different levels of alarming in the LabWatch IoT system allow you to customize alarm detection to suit your operating requirements. Individual alarm delays for each limit setting help prevent unnecessary alarm notification. For example, LabWatch IoT detects a temperature that has exceeded the preset limit. The system monitors the excursion and recognizes it as a valid alarm only when the temperature remains above the limit for the duration of the delay. Nuisance alarm conditions and the resulting “false alarm” calls are avoided.

VERIFY CORRECTIVE ACTIONS

With proper security access, adjustments can easily be made to limits and delays and all modifications are documented with the LabWatch IoT system. The system documents who made the change and records the new value and the old value (to meet 21 CFR Part 11 regulations) and any comments describing corrective actions taken. These comments, including the name of the users, are logged directly to the audit file.

SECURITY

A system administrator grants access privileges and maintains an operator registry. Users can either use a Cloud based user / password combination – or connection to your company’s network, using SAML / SSO email address. Both login variants have the option of MFA (Multi Factor Authentication), this will allow a PIN code to be sent to the user’s mobile phone, for secondary confirmation of logging into the system. The use of SAML / SSO uses all the existing features of Windows security such as password aging, complexity and minimum character length.

Historical Alarm Analysis –
all in one convenient component

Alert Status

LabWatch IoT Circular Demo

ALARM 1

INSUFFICIENT 0

OK 616

ALARM TREND

Current %

Previous %

2026-04-08 11:00:00 AM

1D

2026-04-09 11:35:54 AM

Search History

ALERT GROUPING

TYPE FILTER

STATE FILTER

ACK'D ALERTS

ACK SELECTION MODE

none

equipment >

category >

severity >

all types

kpi

analytic

any state

alarm

insufficient

ok

n/a

show

hide

single transition

Alert	Alert Source	Equipment	State	Last Change	Durati...	State History	ACK	Seve...	Co
> Site 1 Freezer 4 Bat...	Battery Level	Sensor 052 < Freezer 4...	!	04/10/2024 08:15 PM	104w 0d			Low	Battery Le
> Site 5 Cooler 2 Co...	Temperature	Sensor 149 < Cooler 2 ...	✓	04/08/2026 06:45 PM	15h			High	Temperati
State Start End Duration Messages ACK Notification 04/08/2026 06:45 PM notification Alerts Service Alarm is OK. recipients > adaoust jpritchard									
State Start End Duration Messages ACK Notification 04/08/2026 06:00 PM notification Alerts Service Temperature is missing/bad quality for 120 minutes. recipients > adaoust jpritchard									
State Start End Duration Messages ACK Notification 04/04/2026 02:45 PM notification Alerts Service Alarm is OK. recipients > adaoust jpritchard									
> Site 1 Freezer 5 Te...	Temperature	Sensor 054 < Freezer 5...	✓	04/08/2026 06:05 PM	17h 20m			Low	Temperati
> Site 1 Cooler 1 Tem...	Temperature	1022 -80 Freezer EQ 1...	✓	04/08/2026 04:45 AM	1d 6h			High	Temperati

LabWatch IoT - Predictive Monitoring for Modern Laboratories

PREVENT SAMPLE LOSS

Freezer failures can cause havoc in vital areas like research labs, pharmaceuticals, and food storage due to a variety of issues including equipment malfunction, control board failure, lack of preventative maintenance, power outages, or insufficient training. Certain problems like a blocked defrost drain, dirty condenser coils, or improper door use can be mitigated with proper maintenance and training. However, during power outages, or if a complex control system fails, having backup measures or a proactive maintenance plan becomes crucial. Therefore, adopting intelligent strategies and preventive tactics is essential to avoid asset loss due to freezer failures.

AUTONOMOUS AI OVERSIGHT

LabWatch IoT replaces noisy, reactive alarms with autonomous, AI-driven oversight that detects equipment issues days, even months, before they impact operations. Built for Life Science and Pharma 5.0 environments, LabWatch IoT combines cloud-scale infrastructure, intelligent sensor networks, and advanced machine learning to deliver continuous compliance, automated analytics, and actionable early warnings.

INTELLIGENT SENSOR NETWORK

LabWatch IoT uses a network of intelligent sensors and cloud connectivity to stream lab equipment telemetry into an AI engine. Machine learning models continuously learn equipment behaviour and adapt autonomously, generating high confidence early warnings and maintenance recommendations.

PROVEN OPERATIONAL RESULTS

Case studies show LabWatch IoT eliminates emergency repairs, protects critical research materials, and maintains operational continuity, turning unpredictable risk into planned, manageable maintenance. Ready for your lab LabWatch IoT is engineered for fast deployment and measurable results.

REAL-TIME PROTECTION

Its real-time and AI predictive analytics capabilities enable early detection of potential freezer or refrigeration malfunctions, granting ample time to plan maintenance and avoid costly product loss, rendering the Kaye LabWatch IoT system a prime solution for safeguarding vital assets and preventing freezer failure.

What it delivers:

- Predictive protection: Early failure detection - real customer deployments have produced warnings up to 1.5 months in advance - preventing emergency repairs and safeguarding irreplaceable samples.
- Reduced downtime: Proactive maintenance and anomaly detection dramatically cut unplanned outages and operational disruptions.
- Faster decision-making: Automated analytics and clear, prioritized alerts let teams focus on mitigation and high value activities.
- Rapid ROI: Enterprise deployments are quick to implement with a typical payback in 6–18 months.
- Secure, scalable platform: Cloud-native architecture supports collaboration, auditability, and enterprise compliance.



Select a Report to Suit Your Needs

LABWATCH IOT SYSTEM COMES WITH VALIDATED REPORTING AND ANALYSIS INTERFACE. WITH A BROWSER BASED SELECTION OF CUSTOMIZABLE REPORT TEMPLATES, THE REPORT INTERFACE IS SIMPLE TO USE.

DAILY REPORTS

Daily Reports summarize the hourly average, maximum and minimum values of selected sensors over a 24-hour period. The report can be automatically generated for the previous day's data or manually generated to select any previous date for data display.

HISTORICAL ALARM REPORTS

The selectable Alarm History report help retrieve historical alarm data for any sensor or asset location over a defined period of time. Quickly report on any out of specification asset, and follow the audit information.

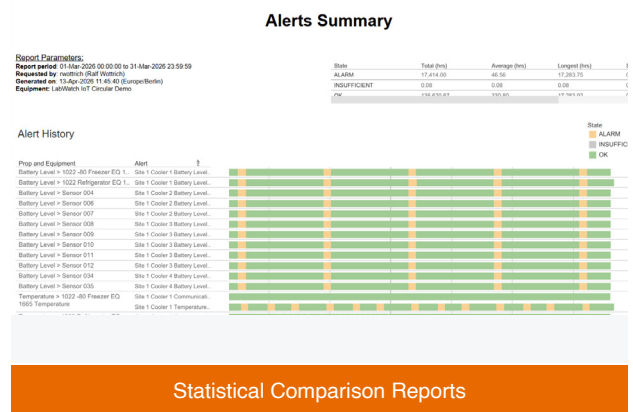
HISTORICAL DATA REPORTS

LabWatch IoT provides a variety of historical data reports to help retrieve validated data for sensors or assets over a defined period of time. The types of reports available are Min / Max / Avg (interval statistics), Value Reports and Period Summary reports.

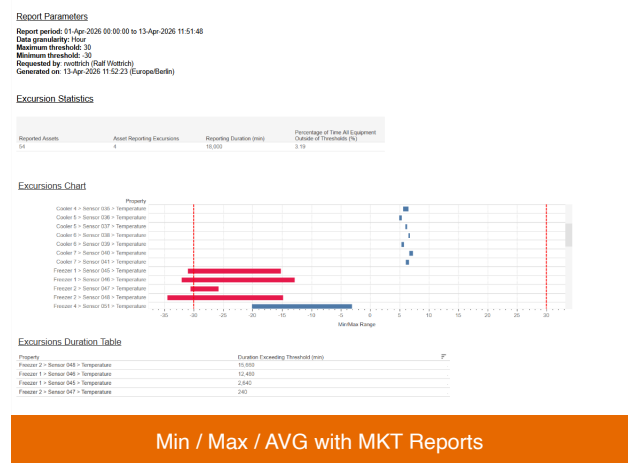
Values Report includes all values for selected sensors at specified intervals over a period of time. You can also filter sensor values by defining upper and lower limits. Included in the report are values that exceed the specified upper limit and those that fall below the specified lower limit. Period Summary Reports provide the Minimum, Maximum & Average for each sensor tag over a defined period of time.

MEAN KINETIC TEMPERATURE REPORT

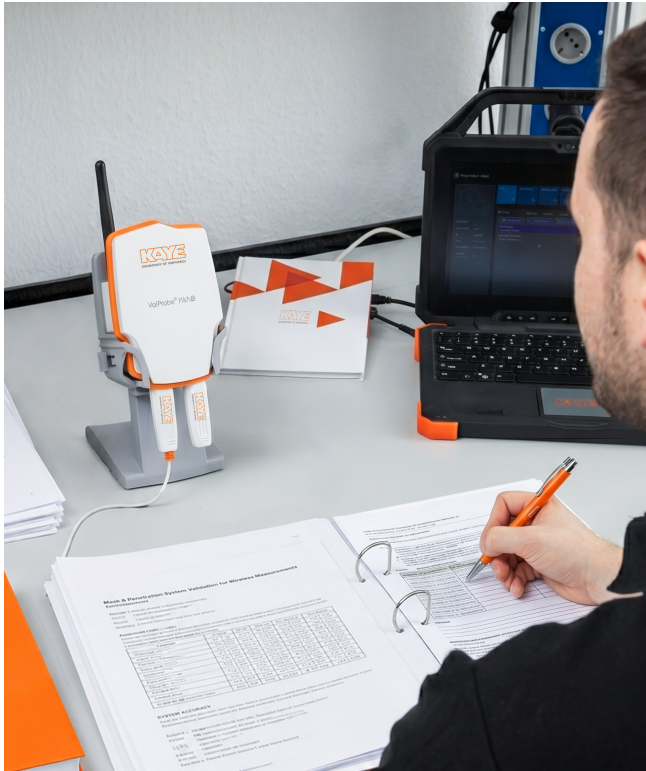
Mean Kinetic Temperature (MKT) is the isothermal temperature that corresponds to the kinetic effect of a time temperature distribution. The MKT calculation produces a single value that characterizes the effect of fluctuating temperature on long - term product storage by weighting higher temperatures more heavily than lower ones. This is appropriate because at higher temperatures, product degradation occurs at an accelerated rate. Generating MKT reports with the LabWatch IoT system is very simple. The system extracts data from the historical data files, performs an MKT calculation and reports the result to each selected temperature point on an MKT report. This report can also be formatted to display trends.



Environmental Monitoring - Excursions Report



Service and Support



FULL PROJECT OWNERSHIP

The success of the LabWatch IoT system extends beyond installation. Our application engineers assume ownership of the full project lifecycle, from initial specification through design, integration, and system validation, providing clear accountability at every stage and delivering a turnkey solution, subject to contractual terms.

To ensure the best outcome we integrate existing hardware, migrate historical data into the new system where feasible (dependent on access and format compatibility), and partner with local suppliers and hardware providers under a single, consolidated project plan. All integrations and migrations adhere to Kaye's security and regulatory-compliance standards.

FLEXIBLE VALIDATION OPTIONS

To ensure your complete satisfaction, Kaye has developed comprehensive Installation and Operational Qualification (IQ/OQ) protocols to validate the LabWatch IoT system. Depending on your company's resources, you can purchase protocols and have Kaye execute them or use your own qualified personnel to execute.

Kaye-delivered execution includes project management, on-site validation, formal test scripts, documentation of results, and a final acceptance report. If you choose internal execution, Kaye provides training, remote support, and review of deliverables. All validation activities follow applicable regulatory requirements.

YOUR VERIFICATION CHOICE

The choice is yours. What better way to ensure your system is operating correctly than to have Kaye verify and document the proper installation and operation of the system?

INSTALLATION QUALIFICATION PROTOCOL

The Installation and Operational Qualification Protocol documents define a set of procedures to ensure that the LabWatch IoT system and its associated components are properly installed and operated according to Kaye recommendations and adequately documented and controlled according to cGMP requirements. Topics covered include:

- Master Equipment File
- Software Version Verification
- Critical Equipment Installation Verification
- Power and Fusing Verification
- Wiring / Cabling Verification
- Hardware Configuration Verification
- Software Configuration Verification

AFTER SALES SUPPORT

After developing and executing the validation protocols, Kaye will provide ongoing post-installation support to ensure system performance and user satisfaction. Support is available by telephone and email, with remote troubleshooting and configuration assistance, plus direct cloud-backend support for diagnostics, updates, and performance monitoring. Kaye's after-sales services include software updates, scheduled on-site assistance and calibration service. Training and periodic system health checks are available to optimize long-term operation. All support is delivered subject to contractual terms and follows regulatory-compliance standards. Optional service-level agreements (SLAs) can be added to define response times and escalation paths.



Validation and Services Offered

Operational Qualification (OQ) is a critical step in proving the LabWatch IoT system operates reliably, securely, and in accordance with your site requirements. The OQ protocol below documents the functional, data, security, and resilience tests we perform to verify system behavior under normal and alert conditions, giving you confidence in day-to-day monitoring, reporting, and alarm performance. The accompanying checklist covers input/output and data-processing verification, operator interface and alarm testing, historical display and report verification, audit trail and duplicate-account checks, loss-of-power and data-redundancy testing, and overall system security validation. These tests are designed to demonstrate that the installed solution meets your specifications and regulatory expectations.

To support the OQ, Kaye offers a full suite of services: needs evaluation, detailed system specification, installation (or managed installation), system start-up and training, validation-protocol development and execution, and

after-sales support. Post-installation support includes telephone and email assistance, remote troubleshooting, and direct cloud-backend diagnostics and updates. Service levels, scope, and any on-site requirements are defined in the agreement to ensure clarity and measurable acceptance criteria.

OPERATIONAL QUALIFICATION PROTOCOL

- Input / Output Verification
- Data Processing Verification
- Operator Interface Testing
- Alarm Testing
- Historical Display Verification
- Report Verification
- System Security Testing
- Loss of Power Testing
- Duplicate User Account Verification
- Audit Trail Verification
- Data Redundancy Testing

SERVICES OFFERED INCLUDE:

- Needs evaluation - Kaye engineers will meet with you, review your needs and suggest the optimum solution for reliable monitoring of your site.
- System specification - a complete description of what is included in the system from start to finish.
- Installation - our specialists will install or contract the installation of the system. You decide what suits your needs.
- System start-up and training - on installation, our experts train your personnel on the LabWatch IoT system.
- Validation protocol development - we provide validation protocols ready for execution as well as validation services, upon system installation. You approve the protocols before validation services are scheduled.
- After-sales service - as with any service offered by Kaye, we provide full support for your System after installation.
- Telephone support is always available from Kaye.



LabWatch Specifications

EDGE Data Collector LabWatch IoT data collector, VPN gateway based on Linux, Industrial PC or Virtual Machine

Web browser Any Browser with Internet access to the Kaye LabWatch IoT Cloud

Interfaces with any hardware which supports industrial standard communication protocol such as, OPC, MODBUS and MQTT

NETPAC II - WIRED FIELD MODULES SENSORS

Inputs Voltage	0 – 10V
	Currents 4 – 20mA, 0 – 20mA Thermocouples T, J, K, E, B, N Dry Contact Open / Closed
Input Capacity	From 8 to 64 inputs per node: NEMA4 enclosure
Outputs	Contact out, 2A at 26 VDC, 1A at 120 VAC Analogue out 0 to 10VDC, 0 to 5VDC, 4 to 20mA, 1 to 5mA
Environmental	Temperature: 0 to 60°C; Humidity: 0 to 95% non-condensing
Communications	TCP / IP over corporate LAN to VPN / Cloud connection
Thermocouples	J, K, T: Specs for type T: Stranded, 22 AWG, Accuracy $\pm 0.1^{\circ}\text{C}$ at 40°C, $\pm 0.25^{\circ}\text{C}$ at 121°C; Variation with-in group (type) $\pm 0.03^{\circ}\text{C}$ at 40°C, $\pm 0.05^{\circ}\text{C}$ at 121°C
Humidity	Accuracy: 1% or 2%
Other Sensors	Light (visible & UV), pressure (absolute and differential), flow, CO2, door switches

VALPROBE RM - WIRELESS FIELD MODULES

Temperature	Sensor range: -196 to +200°C (Accuracy of $\pm 0.2^{\circ}\text{C}$ from 0 to 60°C, $\pm 0.5^{\circ}\text{C}$ from -25 to 0°C) RTD Probe length options: 3ft, 5ft, 15ft and 30ft
Relative Humidity	Sensor range: 15 to 95% RH (Accuracy: $\pm 2\%$ RH from 15% to 95% RH at 25°C to 40°C) Temperature: -25 to 60°C, Accuracy: $\pm 0.2^{\circ}\text{C}$ from 0 to 60°C
Auxiliary Inputs	Contact Dry (50V maximum) Voltage 0 – 10 VDC (Accuracy of 0.5% Full Scale) Current 4 – 20 mA (Accuracy of 0.5% Full Scale)
Sensor Input Modules	1 x Temperature RTD 1 x Temperature + 1 x RH + 0 – 10VDC+ Contact 4 – 20mA + Contact Power Adapter
Environmental	Body: Operating temperature: -25 to 50°C, 0% to 90% RH non-condensing Storage temperature: -40 to 60°C. Sensor element: RTD PT100 Temperature range: -196°C to 200°C Resolution: 0.01°C Logger Dimensions: 118 mm (4.6") x 81 mm (3.2") x 36 mm (1.4") (L x W x H) Material: Premium ABS plastic with safety UL 94-HB flammability rating Base Station Dimensions: 190 mm (7.6") x 130 mm (5.2") x 55 mm (2.3") (L x W x H)
Battery Life	12 month at 1 minute sample rate Field replaceable 2 x 3.6V, A size Lithium primary battery Optional adaptor 100 to 240Vac 50/60Hz with output 5VDC, 2A
ValProbe RM Base Station	Up to 50 Loggers and 100 sensors per Base Station
Connection	Ethernet
RF Specifications	2.4 GHz unlicensed ISM band (IEEE 802.15.4 complaint) Range is approximately 300 feet / 300 meters from one node to another Star network topology with Antenna Diversity technology
Logger Storage	Up to 100,000 data samples per Sensor

Visit our website:

www.kayeinstruments.com

Kaye Representative contact:

www.kayeinstruments.com/en/contact

Request a demo:

www.kayeinstruments.com/en/demo

EUROPE, MIDDLE EAST, AFRICA AND ASIA

Amphenol Advanced Sensors Germany GmbH
Sinsheimer Strasse 6

D-75179 Pforzheim

T: +49 (0) 7231-14 335 0

F: +49 (0) 7231-14335 29

Email: kaye@amphenol-sensors.com

USA/AMERICAS

Amphenol Thermometrics, Inc.

967 Windfall Road

St. Marys, PA 15857

T: +1(814) 834-9140

F: +1(814) 781-7969

Email: kaye-us@amphenol-sensors.com

INDIA

Amphenol Interconnect India Pvt Ltd.

Plot no. 6, Survey No.64 | Software Units layout

MAHAVEER TECHNO PARK

Hitech City, Madhapur | Hyderabad,

Telangana – 500081

T: +91 40 33147100

Email: kaye-india@amphenol-sensors.com

CHINA

Amphenol (Changzhou) Connector Systems

Co., Ltd, Building 10, Jintong Industrial

Park, No. 8 Xihu Road, Wujin High-Tech

Development Zone, Changzhou,

Jiangsu 213164

T: 0086-519-83055197

Email: kaye-china@amphenol-sensors.com

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