K·Detect·iON

Calibration-Free Sensing

Kentec

Introduction

K-Detect-iON is a calibration-free flammable gas detector, delivering rapid detection, robust performance, and peace of mind as part of a complete energy storage protection solution. Designed to integrate seamlessly with the Sigma ZXT extinguishing panel, it enhances system capability while maintaining simplicity. This addition further reinforces Kentec's reputation as a world leader in the extinguishing systems market.

PRECISE HYDROGEN AND VOLITILE ORGANIC COMPOUND DETECTION

CALIBRATION-FREE OPERATION

EXTENDED LIFESPAN EXCEEDING 10 YEARS

INTEGRATION

Powerful System Integration

When paired with Kentec's Sigma ZXT extinguishant system, K-Detect-iON delivers optimal protection, enabling real-time monitoring and rapid response.

Whether deployed in EN or UL environments, the same core technology ensures consistent performance and protection across global markets.

Sigma ZXT (EN) Systems comply with:

- EN54 Part 2
- EN54 Part 4
- EN12094 Part 1

Sigma ZXT (UL) Systems comply with:

- UL 864 (10th Edition)
- FM Standards
- NFPA 855 - Energy Storage Protection

Critical Early Detection

In Battery Energy Storage Systems (BESS) fire incidents follow a predictable sequence: from cell abuse to off-gassing, and finally to thermal runaway and fire. Hydrogen gas is one of the first and most dangerous indicators that this chain reaction is underway.

K-Detect-iON fits precisely at this early warning stage detecting hydrogen off-gassing well before it reaches the Lower Explosive Limit (LEL). Its fast response time helps minimise the risk of ignition, while its robust design ensures dependable performance free from false alarms, even in demanding environments.

When connected to the Sigma ZXT the system can automatically operate extraction vents to release built-up hydrogen reducing explosion risk and stabilising the environment. If needed, and based on desired configuration, suppression systems can then be activated — all from one integrated platform.

EARLY DETECTION

Abuse Phase

Mechanical, thermal, or electrical stress causes internal degradation — often undetected by standard fire systems.

Gas Venting

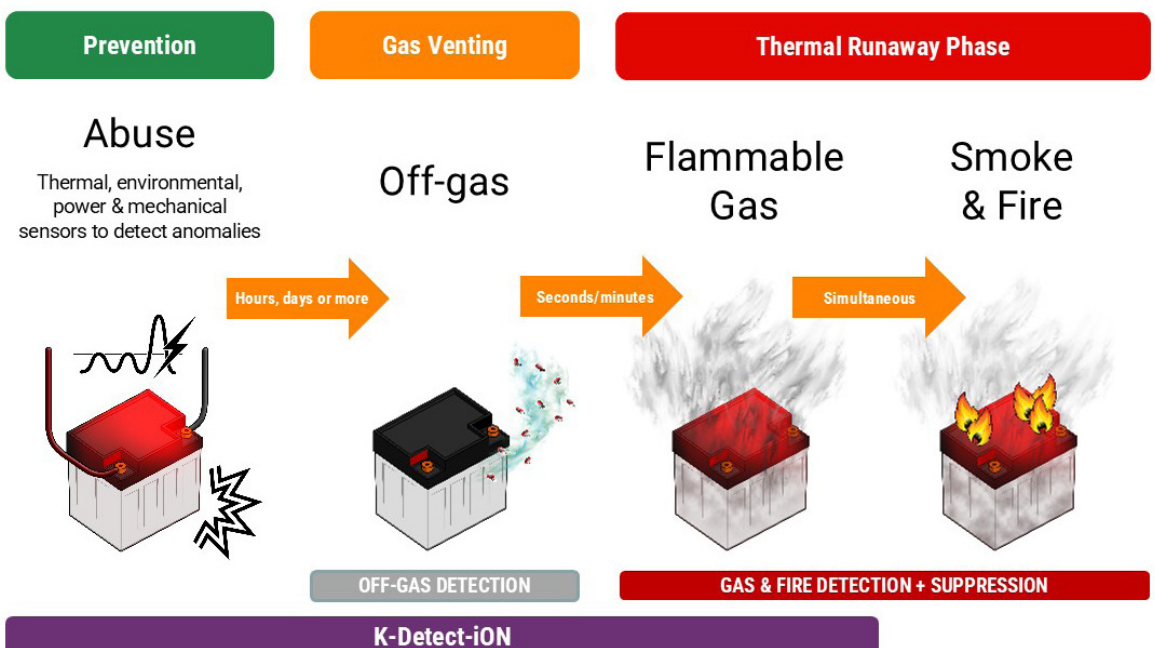
The cell releases gases such as hydrogen and VOCs — a clear early sign of failure. This can occur minutes or even hours before ignition.

Flammable Gas Phase

Concentrated gases, including hydrogen, reach the LEL — a critical point where rapid detection can trigger automated suppression.

Thermal Runaway

Combustion occurs, leading to fire.



Sensor features summary

CALIBRATION-FREE FOR 10+ YEARS

0-100% LEL DETECTION

-30°C–75°C OPERATING TEMPERATURE

THREE PROGRAMMABLE RELAY OUTPUTS

SINGLE OR MULTIPLE SENSOR CONFIGURATIONS

MODBUS RTU INTEGRATION VIA RS485

- Fully certified and ETL Listed to UL 2075
- Calibration-free over 10+ year lifespan
- Volatile Organic Compound (VOC) range: 0 - 500 VOC Index
- Detection range: 0 - 100% Lower Explosion Limit (LEL)
- Helps meet NFPA 855 gas detection requirements for BESS
- Modbus Remote Terminal Unit (RTU) integration via RS485
- LED Status indication: Normal, Warning, Fault
- Compact and lightweight at 193g
- Flexible mounting options
- Supports single or multiple sensor configurations
- Relative humidity (non-condensing): 0 - 100% (±2% accuracy)
- Three programmable relay outputs
- Compatible with Sigma ZXT, Syncro XT+, and Elite RS with XT+ releasing panel
- Rapid response time: T90* <30s
- Operating temperature: -30°C - 75°C (±0.48°C)

* The T90 time is the time taken for the instrument to record 90% of full scale gas concentration.

Product overview

Calibration-Free

K-Detect-iON is the only calibration-free hydrogen sensor on the market that is UL 2075 listed. Designed for long-term reliability, it is ideal for unmanned or hard-to-reach locations, where regular maintenance is not practical. With no need for calibration K-Detect-iON helps reduce service costs, minimise site disruption, and ensures consistent performance throughout its lifespan.

Sigma ZXT Integration

K-Detect-iON can interface directly with the Sigma ZXT panel enabling an immediate response to hydrogen detection independent of the Battery Management System (BMS). By connecting directly to the Sigma ZXT there is no need for an external power supply, which reduces both costs and system complexity.

K-Detect-iON can be pre-configured at the factory which eliminates the need for on-site set-up when delivered as part of a complete BESS fire protection system. This reduces installation time and minimises the risk of configuration errors.

LED Status Light

The built-in Status LED provides instant visual feedback which makes it easy to confirm system status at a glance. This allows operators or maintenance personnel to quickly identify whether K-Detect-iON is operating normally or if attention is needed — without the need for additional tools or system access. This supports faster checks, clearer diagnostics, and improved on-site awareness.

Flexible Mounting Options

Ideal for complex and space-limited set-ups K-Detect-iON's flexible mounting options make installation straightforward with reduced installation times across a wide range of environments. K-Detect-iON can be positioned (using Open Rack, DIN rail, magnetic surface or simply wall-mounted) exactly where it is needed for optimal performance which is invaluable in these complex or space-limited set-ups.

Extended Lifespan

K-Detect-iON delivers a lifespan of over 10 years, helping to reduce replacement frequency, minimise disruption, and lower lifecycle costs. Its long-term reliability supports system continuity — especially important in applications where uptime is critical.

Broad Range Lower Explosive Limit (LEL) Detection

A full 0–100% LEL detection range ensures precise monitoring of hydrogen levels from the earliest trace through to potentially hazardous concentrations. With configurable outputs at 10% and 25% LEL, K-Detect-iON provides early warnings and enables proactive intervention — such as activating vents or isolating equipment — well before hydrogen levels become hazardous. This approach to detection supports safer operations and gives more time to respond before reaching critical thresholds.

Modbus RTU Connectivity Via RS485

Modbus allows K-Detect-iON to integrate seamlessly with compatible systems, including BMS, without the need for gateways or converters. Modbus RTU provides access to real-time data, device status, and relay control, supporting both monitoring and configuration. Its simplicity, resilience to electrical noise, and long-distance capability make it ideal for use in critical infrastructure, where reliable and simple integration is essential.

Compact & Lightweight

K-Detect-iON's compact form and lightweight build — just 193g — makes it ideal for installation in tight or crowded spaces. Its small size allows for unobtrusive placement without interfering with other equipment, and the low weight allows for straightforward handling while reducing strain on mounting surfaces. K-Detect-iON is the practical choice for both new and existing systems where space, accessibility, and ease of deployment are important considerations.

Built to Withstand Harsh Conditions

Built to perform in challenging environments, K-Detect-iON operates reliably in temperatures up to 75°C and 0—100% relative humidity (non-condensing). K-Detect-iON maintains high detection accuracy, within 2%, across the full humidity range ensuring consistent and dependable hydrogen and VOC detection regardless of environmental fluctuations. This level of robustness helps reduce false alarms and supports long-term reliability.

Container-Ready Solution for BESS

Kentec's integrated solution combines proven detection and control technologies to deliver a reliable, container-ready safety system for BESS applications.

On hydrogen detection, the Sigma ZXT can be configured to trigger the appropriate response — from activating extraction fans and raising alarms to initiating suppression where required. This flexible configuration allows the system to be tailored to specific risk levels, enclosure layouts, and operational protocols.

Designed for dependable performance, the system responds only to genuine risk conditions — not to background interference or non-critical changes. It operates consistently in demanding environments, with a wide temperature and humidity range that supports reliable detection across diverse environments.

The panel design maintains a consistent interface across both EN and UL versions, making it easier to configure, operate, and support regardless of regional requirements — supporting a faster rollout across global markets.

COMPANY OVERVIEW

Safe in Our Hands

With over 40 years of experience, Kentec is a trusted name in life safety — protecting people and property. Fire safety isn't just about preventing damage; it's about ensuring operational continuity and protecting reputations. That's why we build fire detection and control systems that are fast, reliable, and ready to respond when it matters most.

Trusted Worldwide

Kentec is a leading global manufacturer of fire detection and extinguishing control panels, supplying high-quality, locally compliant solutions to over 90 countries. Our products are designed and built in the UK, where experienced teams work across engineering, manufacturing, and support to ensure exceptional quality and performance.

Service That Goes Further

Our reputation is not just built on products, but on people and application know how. Using a network of trusted partners our Kentec Installation Partners (KIP's) provide global coverage for aftercare support including local standards, design, installation, and servicing to match the needs of each market. Wherever our systems are installed, customers trust Kentec and its partners to deliver reliable protection — and the knowledge to support it.

+44 (0)1322 222121
sales@kentec.co.uk
kentec.co.uk

Units 25-26
Fawkes Avenue
Questor Dartford
Kent, DA1 1JQ, UK

 BR22 Rev.01 05/25