



Securiton Prevent-iON Flammable Gas Sensor

SEC-PI-R-GAS-FLAMMABLE

Features

- ETL listed to UL2075
- Detects over 10 types of flammable gases
- Calibration free over its life span
- 0-100% LEL detection of flammable gases
- Detects electrolyte vapours (VOC)
- Very fast response time*: T90* <30 secs
- 3 Programmable relays
- RS485 communication - Modbus RTU protocol
- Wide operating temp range

*T90 response time is defined as the time required for the sensor to reach 90% of the final / maximum value

Description

Prevent-iON is an advanced self calibrating Flammable Gas Sensor. The patented self calibrating mechanism ensures that the detector is always operating at its optimum performance levels throughout its lifetime.

Prevent-iON is capable of detecting multiple flammable gases including Methane (CH₄), Hydrogen (H₂) as well as other Hydrocarbon gases - see Sensor Metrics table.

Prevent-iON is also capable of detecting Volatile Organic Compounds (VOC) these are key indicators of potential problems in Li-ion batteries. VOCs are emitted during critical situations like electrolyte leaks or overcharging and can lead to fires or explosions if not detected early enough.

Prevent-iON is unique in its ability to detect VOC and Hydrogen in the same sensor making it the ideal solution for protection of Battery Energy Storage Solutions (BESS).

Prevent-iON provides three programmable volt free changeover relay outputs for signalling status or controlling other equipment. Each relay can be programmed with a delay and a minimum running time. The minimum running time will determine how long the relay remains active once the trigger threshold is reached.

An LED status indicator is provided on the sensor which clearly indicates the current sensor status.

The Prevent-iON sensor can be directly interfaced to an Industrial Controller (ICS) or modbus controller using the RS485 connection and Modbus RTU protocol, this allows configuration of the sensor and monitoring of real time data.

Abuse Phase

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

Gas Venting

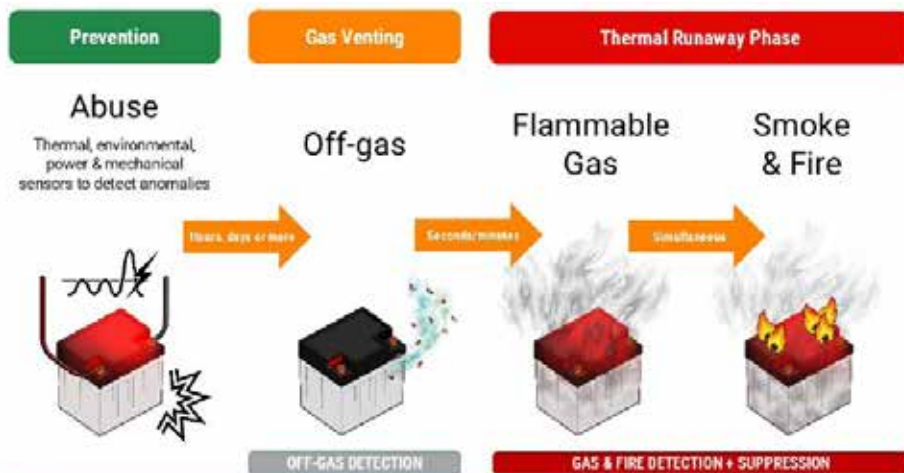
The cell releases gases such as hydrogen and VOCs — a clear early sign of failure. This can occur minutes or even hours before ignition.

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.



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Sensor Metrics

- Internal temperature measurement range: -40°C to 125°C (-40°F to 257°F)
- Internal temperature accuracy: ±0.48°C (0.86°F)
- Internal relative humidity measurement range: 0 to 100% RH (non-condensing)
- Internal relative humidity accuracy: 2% RH
- VOC measurement output range: 0-500 VOC Index
- VOC repeatability: <±5 VOC index points or % mass volume (m.v.)

- Accuracy:
 - Butane (C4H10), Ethane (C2H6), Hydrogen (H2), Isobutane (CH3), Methane (CH4), Pentane (C5H12), Propylene (C3H6) ±5% LEL
 - Propane (C3H8) ±6% LEL
 - Octane (C8H18), Toluene (C7H8), Xylene (C8H10) ±12% LEL

- Response time (T90): <30s
- Detection Range: 0-100% LEL
- Detection method: Spectrometer

Technical Specifications

- Relay outputs: 3 (normally open)
- Relay switching current: up to 0.5A
- Input voltage: 12-24 VDC
- Power usage: 672mW
- Status indicator tri-colour LED:
 - Normal - Green
 - Warning - Amber
 - Down - Red
 - Fault - Red

- Protocol: Modbus RTU over RS485
- Life span: up to 15 years

Environmental Specifications

- **Hydrogen (H2):**
 - Operating temperature range: -40°C to 75°C (-40°F to 167°F)
 - Humidity (operating and storage): 0 to 100% RH (non-condensing)

- **Methane (CH4):**
 - Operating temperature range: -40°C to 70°C (-40°F to 158°F)
 - Humidity (operating and storage): 0 to 100% RH (non-condensing)

Physical Specifications

- Sensor enclosure: Steel enclosure, industrial grade
- IP rating: IP20
- Mounting option: OU rack, DIN rail, magnetic, or wall mountable
- Dimensions: 71mm x 70.5mm x 30 mm
- Weight: 193g

Ordering Information

- Part Code: SEC-PI-R-GAS-FLAMMABLE

Scope of Delivery

- Each (1)