A Badger Meter® Brand

Gas Monitoring System

IsoMon Gas Detection System

OVERVIEW

IsoMon is a first-of-its-kind gas detector that allows both high and low value measurement of hydrogen peroxide levels, providing users with reliable validation data regarding the sterilization of aseptic environments.

The instrument is designed to pull samples from an enclosed space, delivering them to two separate measuring cells: one for high concentration and the other for low concentration.

DESCRIPTION

The IsoMon dual-channel gas detection system is specifically designed for monitoring complete decontamination cycles from start to finish, in isolators or other chambers, using hydrogen peroxide (H_2O_2) sterilization.

This unique system was primarily developed to address the needs of the medical and pharmaceutical industries, but can also be used within food packaging, biological, defense and industrial settings.

Hydrogen Peroxide Gas

H_2O_2 is released into the air during the decontamination process (fogging) and should be monitored as part of Quality Controls programs. Rooms, surfaces and equipment can be sterilized multiple times per day with higher levels of H_2O_2 than ever before, increasing the risk to those working close to them.

Monitoring H_2O_2 levels enables you to make sure sterile levels subsequently drop to safe, ambient levels post sterilization. This continuous monitoring allows you to validate and demonstrate that the vapor in the air is safe, posing no risk to staff and patients.

Generating the right amount of gas is vital for efficacy over prolonged periods. It is therefore essential to understand and accurately monitor H_2O_2 levels with a pre-calibrated monitor.

HOW THE GAS DETECTION SYSTEM WORKS

The IsoMon monitoring system draws a sample through Teflon® lined tubing, using an internal two-channel sample pump, with each pump head providing flow to a separate sensor. A common sample inlet port is provided, but an integral solenoid valve controls sample delivery to the low concentration sensor.

The solenoid valve is controlled by the high concentration monitor to avoid saturation of the low concentration sensor. The solenoid is activated when the measured value on the high concentration sensor reaches 30 ppm and resets at 28 ppm. When the solenoid switches, ambient air is drawn into the low concentration unit to make sure it is ready to operate when gas or vapor levels fall back to a lower level. This is done so that the low level sensor is not saturated by long exposure at high concentration. The high concentration measuring channel can measure to a maximum of 2000 ppm. However, it is possible to set the data logging and analog output range to a smaller, full-scale value.

Factory Programming

As shipped from the factory, the high concentration channel is programmed for a logging range of 0...1000 ppm. With this adjustment, the display indicates values up to 2000 ppm, but the internal data logger does not log values above 1000 ppm. This is done to improve data-logger resolution when the instrument is measuring at lower levels. The low concentration channel has a maximum measuring value of 200 ppm, but is set for a logging range of 0...20 ppm as the default.

Smart Sensor

Figure 1: H10 smart sensor

As with the high concentration channel, the low concentration channel can be programmed for any full-scale logging range within the limits of the sensor. The sensor used for hydrogen peroxide monitoring is the H-Series smart sensor with integral memory.

The sensor contains calibration data, specific only to the sensor, and can be returned to Badger Meter for recalibration. This eliminates the need for users to set up special calibration equipment. Standby sensors with up-to-date calibrations can be quickly inserted into the individual channels when installed. Contact Badger Meter at *https://www.badgermeter.com/technical-support/* for information.

Data logging of concentrations is done in each measuring channel separately. The accumulated data may be downloaded to a PC using the RS-232 connection. Data is transferred to files for use in Microsoft® Excel or other data handling programs. Data intervals of 1 second up to 60 seconds may be selected, with data storage from 11 days to more than 400 days, depending on the storage interval.

External Power

While the IsoMon is a transportable device designed for use in a variety of locations, external power is required to operate the monitor.

SPECIFICATIONS

Gas Type	• Channel 1 – Hydrogen Peroxide, 0...2000 ppm • Channel 2 – Hydrogen Peroxide, 0...100 ppm
Sensor Type	Elec trochemical
Response Time	90% in 60 seconds
Accuracy	Generally ±10% of value, but limited by available calibration gas accuracy
Repeatability	• ± 20 ppm on 0...2000 range • ± 1 ppm on 0...100 range
Electronic Linearity	±0.5%
Zero Drift	Less than 1% full scale per month, non-cumulative
Display	Backlit graphics liquid crystal display
Outputs	• Two RS-232 outputs for stored gas values • Two 4...20 mA DC analog outputs for remote display
Memory Storage	12,000 data points per measuring channel
Interval Typical	Programmable for 1, 2, 3, 4, 5, 6, 10, 12, 15, 30 or 60 seconds
Capacity Alarms	8 days at 1-minute storage interval
	Three concentration alarms with adjustable set points per channel. Alarms may be set for *high*, *low* or *off*. Default setting is *off*. Alarms are displayed on the LCD and indicated by audible beeper.
Power	120 V AC or 230 V AC
Operating Temperature	–5...45° C
Humidity	0...95% non-condensing
Weight	10 lb (4.5 kg)

COSHH ASSESSMENT

The Control of Substances Hazardous to Health Regulations 2002 (COSHH) requires employers to prevent or control exposure to hazardous substances. Where exposure cannot be prevented, employers are required to assess the risk to health and provide adequate control measures when using hazardous chemicals.

Health and Safety Executive

TECHNICAL SUPPORT

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