



GSS ultrafast CO2 sensor used to upgrade CO2Meter's datalogger for quicker results

Cumbernauld, Scotland, UK – xx XXXX 2018. Carbon dioxide (CO₂) is an ideal fire suppressor for many applications, because apart from actual fire damage, there is no clean-up or residue associated with a CO₂ system - unlike with foaming agents or water. When a fire starts, high-pressure CO₂ is released into the area it is protecting. Carbon dioxide gas displaces the oxygen until there is no longer enough required for combustion¹. The fire can then be controlled or extinguished.



A common application is the protection of switch rooms or control panels, and other confined space environments which house electrical components, computer or process equipment such as server farms². Other common uses include gas turbine enclosures, power generation stations, and flammable liquid storage areas.

However, there are two key challenges when using CO₂. First, the cylinders of CO₂ used in these Fire Suppression Systems could leak. Therefore the areas where they are stored need to be monitored³. Second, when such a system has been deployed, the atmosphere must be checked to ensure that the CO₂ has dispersed to safe levels for re-entry⁴.



CO₂Meter has developed a data logger capable of measuring up to 100% CO₂ concentrations. The portable device is ideally suited for leak detection testing in fire extinguisher systems, and can detect even a slight change in the level of CO₂. By attaching a length of tubing, the unit can be run in real-time along pipe connections and valves to pinpoint leaks - even in hard-to-reach places.

This unit is also used to create a three-dimensional map of the CO₂ levels in a particular space, by sampling from both horizontal and vertical locations. This helps determine when it is safe for emergency services to enter an area after a CO₂ extinguisher has been used. "Our original design used a GSS

ExplorIR®-W CO2 sensor, as the low power requirements of their LED-based technology enabled us to create a portable, battery-powered product that could go weeks between recharges,” explained Irene Hicks, CEO of CO2Meter. “It is also highly accurate right up to 100% CO2 concentrations, which is vital for a sensor in safety applications. However, an almost instant CO2 reading is needed in some situations, so in future we will be using a high speed GSS SprintIR®-6S sensor in our datalogger. This sensor takes 20 readings per second, so it’s ideal for recording fluctuating CO2 levels, particularly in fast changing environments. The beauty of the SprintIR-6S is that it’s still low power enough to be used in our portable data logger, so you can have high speed and low power sensing effectively combined.”

A customer of the CM-0003, who uses them for full discharge tests of CO2 fire suppression systems, said, “The meters are small enough to take as carry-on luggage, which I find very useful. I typically use three or four meters simultaneously, with test times ranging from 30 to 60 minutes each. To date I’ve used these CM-0003 meters for testing well over 200 sites.”

The data logger model (CM-0003) is available from the CO2Meter website:

<https://www.co2meter.com/collections/fire-suppression/products/co2-sampling-data-logger-100-percent?variant=50696225108>

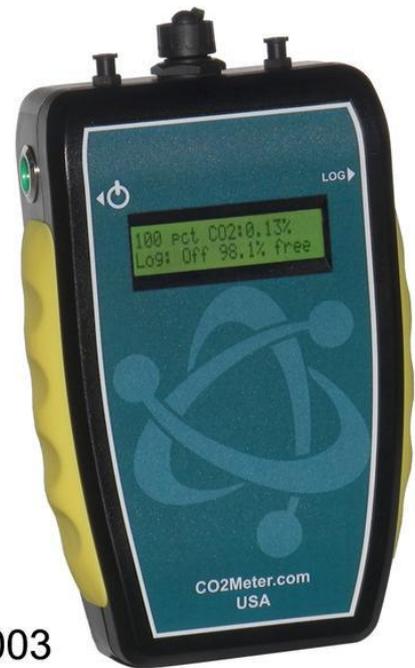
Rachael Yates, Marketing Manager at GSS, added, “We have a very close working relationship with CO2Meter who use a variety of our sensors in their products. The solid-state design of our LED-based sensors makes them particularly rugged so that they can withstand the rough handling that portable devices are subjected to. We are delighted to be working with them as they integrate our latest designs of ultra-fast reacting sensors into their product range. In particular, our unique, low power, 100% CO2 sensors are opening new market opportunities for them to create solutions for.”

GSS technology

Most CO2 sensors work by measuring how much light is absorbed by CO2 molecules in the 4.2 to 4.4 microns range as it passes through the sample gas, which is called Non-Dispersive Infra Red (NDIR) absorption. The amount of absorption indicates how much CO2 is present. GSS developed proprietary LEDs that are specifically tuned to emit at these wavelengths. The LEDs use very little power and turn on almost instantly, enabling sensor readings to be made in a few seconds. As a result, GSS has pioneered the development of CO2 sensors that can be powered by batteries for long periods of up to ten years. Competitor sensors use IR sources that require significantly more power per measurement and also take much longer to reach a stable condition for a measurement, resulting in the need for mains power. Examples of the wide range of applications for GSS CO2 sensors can be found on the company’s website www.gassensing.co.uk

CO2Meter www.co2meter.com

The company was founded in 2008 after CEO Irene Hicks found first-hand how important hazardous gas detection instruments were in the South African mining industry where she represented a gas detection company. Once she took the opportunity to become head of their US facility, she decided to move to the States and met Ray Hicks - a successful entrepreneur and engineer looking for a new



CM-0003

project. He became fascinated by gas detection technology and the result of their shared interest spiked the successful business that is constantly growing today. Its approach is one based in the science of gas and how best to accurately and repeatedly measure that gas for the end user's purposes. Its business partners in agriculture, HVAC, science, safety, research, pharmaceuticals, beverage, and other fields find its devices to be highly accurate and cost effective.

Gas Sensing Solutions (GSS) www.gassensing.co.uk

GSS is a world leader in CO2 sensor design, manufacture and customisation. Its disruptive solid-state technology uses proprietary, mid-infrared LED sensors to enable best-in-class records for fastest response times, lowest power consumption and longest product lifetime. Based in Scotland, this technology pioneer has been exporting its state-of-the-art sensors worldwide for over ten years, and has in-house bespoke development capabilities to support its international customer base. Tel: +44 1236 781900 info@gassensing.co.uk

Sources

- 1) CO2 for fire suppression: <http://www.fireextinguisherguide.co.uk/types-of-fire-extinguishers/co2-fire-extinguishers/>
- 2) Active fire suppression systems: <http://www.hse.gov.uk/comah/sragtech/techmeasfire.htm>
- 3) Risks of CO2 as a fire suppressant: <https://www.epa.gov/sites/production/files/2015-06/documents/co2report.pdf>
- 4) Monitoring of fire suppression systems: <http://www.legislation.gov.uk/ukxi/2005/1541/article/17/made>

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