CARPARK GAS MONITORING SOLUTIONS

Gas monitoring is vital to detect dangerous levels of carbon monoxide and other harmful gases in enclosed spaces.

JUNE 2025

kenelec scientific

www.kenelec.com.au

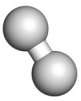
GAS MONITORING IN CARPARKS

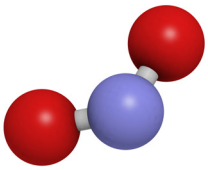
Implementing correct ventilation could avoid an enclosed parking facility from becoming a hazardous environment caused by gases produced from vehicle exhaust.

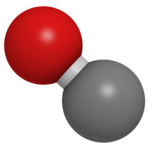
Enclosed parking facilities vary in size, design, location and the number and type of cars coming and going. If the facility is not ventilated properly, it can become a hazardous environment as vehicle exhaust from idling cars and slow moving cars trying to find a place to park collects in the enclosed area.

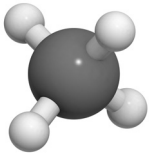
To provide a safe, breathable parking facility and minimize energy costs associated with the operation of the ventilation system, a hazardous gas detection system is necessary.

Kenelec Scientific supply a range of gas sensors from Critical Environment Technologies (CET) for accurate and reliable detection of common carpark gases across a range of applications and price points.





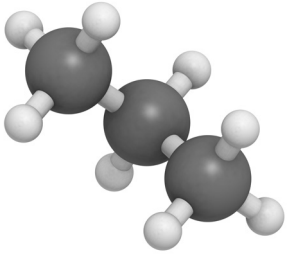




WHAT GASES SHOULD BE MONITORED?

Carbon monoxide (CO) is the most abundant of the exhaust fumes, but there is also the possibility of **Nitrogen dioxide (NO2)** from diesel powered engines (and, in more modern facilities, **Hydrogen (H_2)** build-up from electric car charging stations).

Combustible gases - **Hydrogen (H_2)**, **Propane (C_3H_8)** or **Methane (CH_4)** - in vehicle exhaust type applications such as parking garages and auto repair shops should also be considered; if the parking facility is frequented by propane powered vehicles, is equipped with electric car charging stations or a facility that has been built on an old landfill site, methane off-gas may be of concern.



LOCATIONS FOR GAS SENSORS?

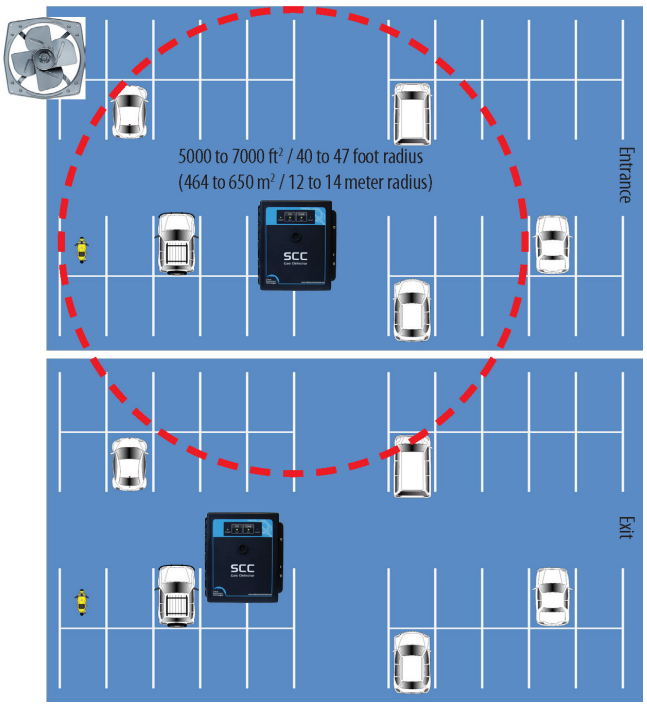
Parking garages vary in size, layout and the number of cars in operation. When planning installation and mounting locations of gas sensors, you must consider the air flow patterns.

Entrances to the parking facility, elevators, exhaust fans, makeup air fans and any other sources of active air currents will affect the ability of the sensor to accurately read the gas levels.

Sensors should be placed in **dead air zones**, where there is little or no air movement and areas of good air circulation but not in the path of rapidly moving air; Each sensor will monitor up to 465 to 650 square meters. Or a radius of 12 to 14 meters.

Sensors should be mounted in the “breathing zone”- the average height at which most people breathe. CO sensors should be 1.2 to 1.8 meters from the floor; NO2 sensors should be 0.2 to 0.5 meters above the floor (NO2 exhausted from diesel engine is heavier than air).

The sensor can be mounted on the back of a column or a wall, preferably in a less obvious spot to reduce the likelihood of tampering.



OTHER CONSIDERATIONS

Whether you are installing a new, upgrading the current one, or integrating with an existing gas monitoring system in the carparks, there are factors affecting the selection of products, scale and peripherals to be used.

Common considerations are:

- **Type:** Is it a new or existing carpark (prewired, is it Analog or Digital?)
- **Dimension**: Size, levels and layout of the carpark (no. of entrance, exit and shape) – to determine the number sensors and wiring options
- **Controller**: Is a local controller required or the system to be controlled by Building Management System BMS? (Modbus or BACnet)
- **Ventilation Fan**: How many ventilation fans are required on each floor if there is local controller? Are they controlled by dry contact relay or VFDs?
- **Alarm**: How may remote audible alarms or strobes are required?

CARPARK SOLUTIONS

MID-SIZED PARKING FACILITIES

SOLUTION:

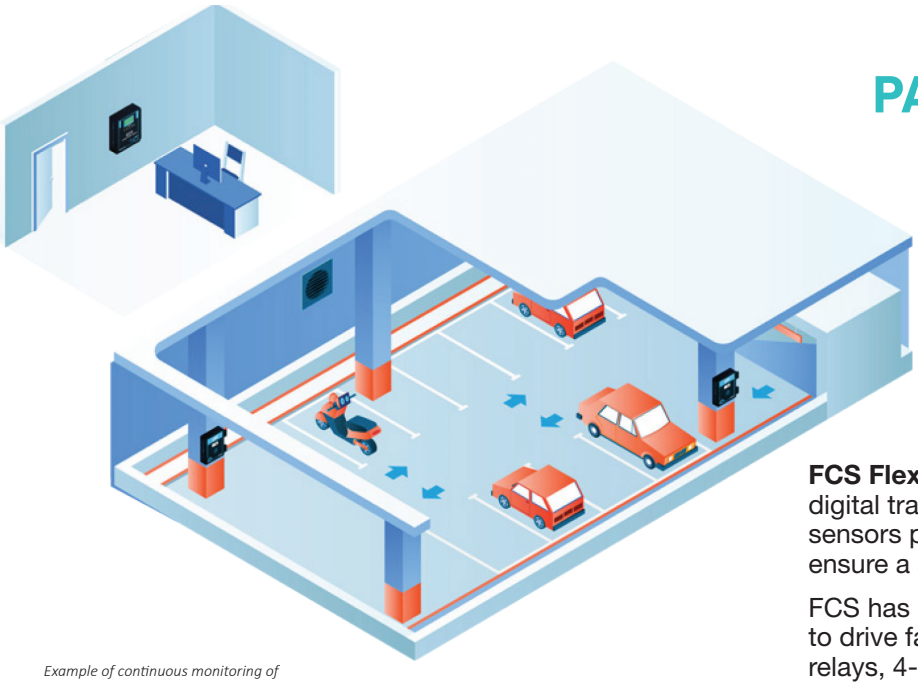
SCC Self Contained Controller

SCC Self Contained Controller is a single or dual channel, self-contained controller for monitoring toxic (CO/ NO2) or combustible gases (Hydrogen (H2), Propane (C3H8) or Methane (CH4) in parking garages and auto repair shops.

Remote Monitoring of CO or NO2 can be achieved by combining the SCC with a 4 – 20 mA transmitter such as the LPT-TCO or LPT-END.

SCC features two alarm level line voltage relays with field configurable time delays and trigger levels, integral audible alarm and LED indicators for power, channel alarm status and fault conditions.

Example of continuous monitoring of vehicle exhaust in small to mid-size parking facilities; Source: CET Application Note



Example of continuous monitoring of vehicle exhaust in large enclosed parking facilities; Source: CET Application Note

LARGE ENCLOSED PARKING STRUCTURES

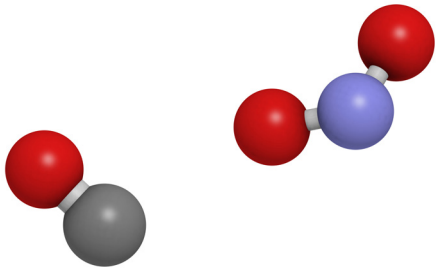
SOLUTION:

FCS Flexible Control System

FCS Flexible Control System connected to LPT-P digital transmitters with internal CO and NO2 sensors provides monitoring hazardous gases to ensure a safe breathing environment.

FCS has internal and remote control interfaces to drive fans, heaters and louvers/dampers using relays, 4-20 mA output or Modbus® output.

Offers from 4 up to 128 channels, 4 internal relays, data logging and an extensive menu structure with password protection, enhanced logic controls and priority/zoning capabilities. The FCS can operate as a standalone system or be connected to a BAS/ DDC using Modbus® or BACnet® output.



RECOMMENDED PRODUCTS

	Applications	Standard / Optional features	Suggested Configuration
SMALL-SIZED / BASIC	Continuous monitoring of CO, NO2 in a small-sized parking garage Basic Transmitter, No alarm or relay are required (serves as part of a fixed system with a controller) 	Standard: • 4-20 mA output signal (LPT) • Field configurable BACnet or Modbus RTU RS-485 output signal (C-GAS-D) • LED indicator (LPT) • 2x16 characters LCD display (CGAS-D)	Analog transmitter- Single channel 1. **LPT-TCO** 2. **LPT-END** Digital transmitter- Single channel 3. **CGAS-D-CO** 4. **CGAS-D-NO2**
MID-SIZED	Continuous monitoring of CO, NO2 in a mid-sized parking garage 	Standard: • Internal alarm • LED indicators • Two 5A SPDT dry contact relays Options: • Remote Strobe/Horn combo RSH-24V-R • Splash guard -S	Self contained controller SCC- Single channel 1. One internal CO sensor **SCC-A-TCO** 2. One internal NO2 sensor **SCC-A-NO2B** Self contained controller SCC- Dual channel 3. One Internal Electrochemical Sensor + One Remote LPT Transmitter **SCC-D-TCO-RT+LPT-END or SCC-D-NO2B-RT+LPT-END**

	Applications	Standard / Optional features	Suggested Configuration
MID-SIZED	Continuous monitoring of CO, NO2 and/or combustible gases in parking facilities with VFD fans 	Standard: • Internal alarm • 2x16 character LCD display with LED indicators • Two 5A SPDT dry contact relays • Two 4-20mA outputs (for VFD fans) Options: • Remote Strobe/Horn combo RSH-24V-R • Splash guard -S • Built in timer with 7 off timer ranges and manual shut off switch -T	Self contained controller DCC- Dual channel 1. Two internal sensors, one CO and one NO2 **DCC-E-TCO-NO** 2. One internal CO sensor and a remote LPT with an NO2 sensor **DCC-D-RT-TCO-LPT-END** 3. One internal CO sensor and one remote ESH-A combustible sensor (H2 , C3 H8 or CH4) **DCC-D-R-TCO-ESH-A-CH2-100** (e.g. H2)
LARGE-SIZED	Continuous monitoring of CO, NO2 in large enclosed parking garages, controller located in control room 	Standard: • Internal alarm • Full colour LCD display • Four 5A SPDT dry contact relays • Modbus or BACnet outputs • Data logging, extensive menu structure with password protection, enhanced logic controls and priority/zoning Optional: • Remote Strobe/Horn combo • Internal / Remote analog inputs / outputs • Remote display module • Remote relay outputs • Remote power supply	Flexible Control System FCS-4 (4 channel) or FCS-8- (8 channel) 1. Modbus output **FCS-4-M or FCS-8-M** 2. BACnet output **FCS-4-B or FCS-8-B** Flexible Control System FCS- Multichannel (max 128) 3. Modbus output **FCS-M** 4. BACnet output **FCS-B** Configured with: Digital Transmitter LPT-P with two internal sensor one CO and one NO2 **LPT-P-TCO-NO2B**

KENELEC SCIENTIFIC

Our company:

Established in 1962, Kenelec Scientific is one of Australia's leading scientific and environmental technology companies. Based in Melbourne, with distributors located throughout Australia and New Zealand, we are industry leaders in the supply of globally sourced, latest generation technologies at competitive prices.

Our services:

Sales
Buy the latest equipment from some of the most trusted brands in the industry.

Rental
Short and long term hire available on an extensive range of instruments.

Calibration
Professional calibration of your instruments in our accredited laboratories.

Validation
Wide range of validation services to ensure compliance with regulations.

Service & Repairs
Local after-sales service and support from our experienced technicians.

Education
Product education and support available in-house, onsite or online.

Financing
Secure your equipment without relying on up-front capital funding.

More solutions

CET gas monitoring solutions are flexible in scale, configuration and suitable for various applications including Indoor Public Spaces, Hotels, Boiler rooms, Agriculture, Warehouses, Water Treatment and many more....

SCC Self Contained Controller

Single / Dual Channel

DCC Self Contained Controller

Single / Dual Channel

FCS Multi-Channel Flexible Control System

High performance Controller

LPTs Analog / Digital Transmitter

Up to 3 internal and remote gas sensors

CGAS Analog / Digital Transmitter

Single or Dual gas / Particulate sensors

Don't see your solution here?

Find more gas monitoring solutions on our website - visit www.kenelec.com.au to view more of our range, or get in touch with our experienced team to discuss your specific requirements.

We look forward to working with you.

NATA

bsi. ISO 9001 Quality Management
FS 605267

Kenelec Scientific Pty Ltd | ABN 88 064 373 717
Unit 4, 18-20 Redland Drive, Mitcham VIC 3132
p 1300 73 22 33 | e sales@kenelec.com.au | w www.kenelec.com.au

KS BROCHURE | CARPARK | Jun25

kenelec scientific