



Enclosed Parking Facility with VFDs

DCC Dual Channel Self Contained Controller

Peace of mind. Guaranteed.

Continuous monitoring of CO, NO₂ and/or combustible bases in parking facilities with VFD fans

Running vehicles in enclosed parking structures can create a hazardous environment when exhaust fumes collect and are not ventilated properly. Gas powered vehicles create Carbon monoxide and diesel powered vehicles exhaust nitrogen dioxide. To provide a safe parking facility and minimize energy costs associated with the operation of the ventilation system, a hazardous gas detection system is necessary.

For a small to mid-size parking structure, Critical Environment Technologies' [DCC](#) Dual Channel Controller provides flexible internal and/or external combustible sensor configurations for monitoring hazardous gases to ensure a safe breathing environment.

To provide fresh air and move contaminated air out of the facility, VFD fans are used because it is not economical or practical to run fans continuously. Being able to gradually ramp up and ramp down the ventilation system saves on wear and tear, maintenance and energy consumption. The [DCC](#) has a 4-20 mA output signal that increases or decreases the speed of the fans depending on the level of current being passed through the VFD.



Continuous Monitoring of Vehicle Exhaust in Enclosed Parking Facilities

When determining where to install the DCC, you must consider the air flow patterns. Sensors should be placed in dead air zones, where there is little or no air movement and in areas of good air circulation but not in the path of rapidly moving air. 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. Each DCC should be mounted in the "breathing zone", 4 to

6 feet from the floor, the height at which most humans breathe. For most commercial vehicle exhaust applications, each sensor will monitor up to 5000 to 10,000 ft² (464 to 929 m²) or 40 to 56 foot (12 to 17 meter) radius. The layout of the area, where the walls are situated will impact how open or closed off the area is and will affect the sensing range of the sensor. In addition, mounting the sensor in a more central location, preferably not on back walls will also allow a wider sensing range. The DCC can be mounted on the back of a column, in a less obvious spot to reduce the likelihood of tampering.



The DCC has two 5 amp SPDT dry contact relays, one of which can be programmed to activate

or delay the activation of equipment for a specified length of time after the low alarm is activated (up to 20 minutes). This allows the fans without VFD to get up to speed and stay on before they get turned off if the alarm was activated by a nearby idling vehicle or a high number of cars entering/exiting all around the same time, such as when the majority of commuters start and end work. Using the relay's on and off delay functionality for activating the ventilation system keeps the equipment running properly and reduces energy costs by not having the fan on constantly. Relay 2 can be programmed to trigger remote alarm devices such as a remote strobe and horn combo located in an area that will alert the appropriate parking lot personnel. For VFD equipped fans, the DCC constantly outputs a 4-20 mA signal that will tell the VFD to increase or decrease the speeds of the fans depending on the level of current being passed.

Depending on the type of parking facility, a few common DCC sensor configurations are:

- Two internal sensors, one CO and one NO₂
- One internal CO sensor and a remote LPT with an NO₂ sensor
- One internal CO sensor and one remote ESH-A combustible sensor (H₂, C₃H₈ or CH₄)

The standard water and dust tight polycarbonate enclosure has a hinged, secured door and is corrosion resistant. With the optional, factory installed splash guard it is IP54 rated and protected in wash down or water spray applications.