

# Exhaust Fans

Example Implementation with Lonix Technologies

01/2009

[www.lonix.com](http://www.lonix.com)

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### 2.2 FUNCTIONAL DESCRIPTION

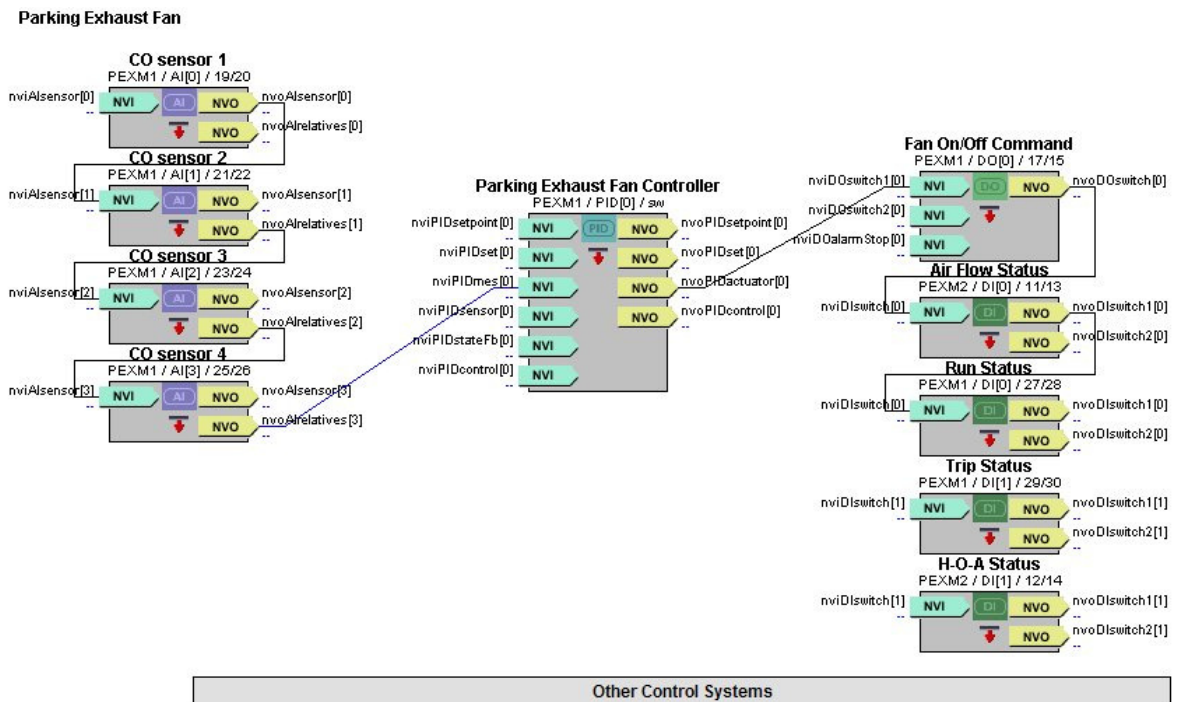
The parking exhaust fans are responsible for the removal of exhaust fumes which contain traces of carbon monoxide from the parking Areas. Usually the parking exhaust fans are controlled according to readings from the CO transducers placed in the parking areas. Sometimes parking exhaust fans are operated according to a time schedule as well.

An On/Off controller (Parking Exhaust Fan Controller) operates the exhaust fan according to the detected carbon monoxide levels (CO sensor 1-4) inside the parking area. When any of the detected CO levels reach a certain threshold the parking exhaust fan is switched on. When all detected CO levels drop below another, lower threshold the controller will turn the fan off.

Airflow status of the exhaust fan is taken by a differential pressure switch placed across the fan and if the fans fail an alarm is given through the user interface. A similar conflict comparison is made with the run status information received from the starter panel.

### 3 Solution with Lonix technologies

This chapter shows an example implementation using Lonix Modules and Lonix PCT. The following figure is a screenshot produced from Lonix PCT.



**Figure 2. Exhaust fan**

Figure 2 shows an example implementation of a Parking Exhaust Fan consists of 3 CO Sensors. The Fans are operated on an On/Off basis and controlled through the CO levels detected by CO Sensor.

An On/Off controller (Parking Exhaust Fan Controller) operates the exhaust fan according to the detected carbon monoxide levels (CO sensor 1-4) inside the parking area. The AI objects are of the

type Active (0-10V) Maximum so that the controller receives the maximum carbon monoxide level within the parking area. When any of the detected carbon monoxide levels reach a certain threshold the controller will turn the parking exhaust fan on. When all detected carbon monoxide levels drop below another, lower threshold (for hysteresis) the controller will turn the fan off.

The Exhaust Fan Controller is bound to a DO object (Fan On/Off Command) controlling a relay that supplies power for a Fan. 120 seconds off delay configured to Fan On/Off Command makes sure that all exhaust fumes are blown outside. The run status indication informs the system that the fan is running. This DI object is also responsible for creating an alarm in fault situations by comparing the state of the DO object and the run status signal from the starter panel. Even if the system is getting the run status it checks for the Airflow status which confirms the physical running of the fan. If the Airflow status indicates that there is no pressure difference over the fan when the fan should be running it produces an alarm to notify that there is something wrong with the fan.

Usually the Fans can be operated manually as well, and H-0-A signals should be available. These are connected to DI objects that inform the Lonix System if the fan is in AUTO mode. The starter panel should be equipped with a H-0-A switch for the fan, which is very useful when a fan is malfunctioning.

## 4 Required devices

This chapter lists the required devices for the example implementation.

**Table 1. I/O objects**

I/O type	Amount
DI	4
DO	1
AI	4
AO	0
PID	1

As you can see in the above table, you will need one (1) Lonix Multimodule 2242P and one (1) Lonix Indication Module 1000S.

**Table 2. Lonix Modules**

Module Type	Description	Units
Lonix Digimodule 5400P	2 DI, 2 DO, 4 AI, 2 AO, 2 PID	1
Lonix Indication Module 1000S	10 DI	1

LX-CM-R is a good carbon monoxide transducer for parking areas. The airflow status of the fan is received by an LX-PDS-Fan differential pressure switch. Run and trip status information is obtained through the starter panel.

Details of the suggested products are available at [www.lonix.com](http://www.lonix.com).