



TYPICAL SPECIFICATIONS FOR ACME CEL4 SERIES MULTIPOINT, MULTIGAS DETECTION AND CONTROL SYSTEMS

1.0 Supply and install as shown on drawings an ACME CEL4 Series Multipoint & Multigas Centralized Detection and Control System consisting of the following:

A quantity of ___ Control Panel and a quantity of ___ Remote Sensor/Transmitter stations (maximum of 4 per panel). The system shall have a quantity of ___ CO sensors, ___ CO₂ sensors, ___ NO₂ sensors and/or ___ sensors for other gases.

Note: Panels and Remote Sensor/Transmitter stations shall be by the same manufacture.

1.1 DESCRIPTION

The system shall use an addressable RS485 communication protocol. Each sensor shall be sequentially polled by the Control Panel. Sensor data shall be acquired and stored in the Control Panel memory.

1.2 The ACME CEL Series Multi-point System shall use only a common 4-wire 14 gauge communication link between the Control Panel and the local sensor stations.

1.3 The Control Panel shall have an LED display with an indicating light for each sensor location. This light shall blink slowly for low-level indication, blink quickly for high-level indication and be solid ON for alarm level indication. A liquid-crystal alphanumeric 4-line display shall provide PPM levels for each sensor station, shall indicate the gas being sampled at that location and its alarm status.

1.4 The system parameter such as set-points, time delays, hysteresis, etc. shall be programmed at the factory.

1.5 The system shall have all of its components, including the controller, RS-485 communication module and relay outputs boards in a single enclosure. Multiple enclosures requiring inter-wiring are not acceptable.

1.6 The equipment shall be CSA and/or ETL certified.



2.0 OUTPUTS

2.1 "ON - OFF"

The Control Panel shall incorporate the necessary logic circuits to operate the exhaust/supply fans and the motorized dampers for fresh air and/or exhaust according to the specified logic of ventilation. For example, if the equipment operated by the 100 PPM CO contacts does not reduce the CO level below this value within 30 minutes (3 to 60 minutes adjustable), the Control Panel shall go on visual and audible alarm and also provide a contact for remote alarm indication or supervision.

2.2 CONSTRUCTION

The CEL Control Panel shall be of solid ventilated 16 gauge steel construction. All electronic components shall be behind a locked door. There shall be no accessible switches or knobs on front of panel (except for override if specified). All electrical connections should be made to clearly identified terminals.

2.3 SELF-CHECKING

Integrity of the system shall be under constant checking. Should a remote station not confirm a response, a fault condition will be displayed at the Control Panel with indication of faulty station location. A common alarm shall be locked in.

2.4 TIME DELAY

The Control Panel shall include a time delay of approximately 30 minutes scheduled between the time a High Level is detected and the time visual display on unit cover or panel, audible alarm and closure of alarm contacts. This time delay is introduced in order to avoid nuisance alarms produced by short temporary conditions. The time delay also allows the ventilation equipment, previously started at a lower gas level below alarm conditions, a reasonable length of time to reverse the gas trend.



3.0 SENSOR STATIONS

3.1 The wall or column mounted metal or PVC gasketed enclosure with vandal-proof cover screws or a lockable clasp and shall not have any parts accessible from outside.

3.2 RESPONSE

The local reaction time of the ACME ST remote stations shall be in the order of a few minutes therefore avoiding unnecessary start-stops of ventilation equipment every time a car happens to stop in the vicinity of the sensor.

3.3 The sensor's response to ambient conditions shall be interpreted by the detection circuitry according to selected levels. Information is converted for transmittal to Control Panel at scanning time.

3.4 CO Sensor/Transmitter stations shall have LED's for visual indication of "Power-On", and an LED bar graph indicating concentration levels.

3.5 Removing or disconnecting a local sensor station from the system shall not affect its operation as long as the "daisy-chain" connection to the other sensor stations is maintained.

3.6 There shall be no maintenance required except for periodic simple calibration checks performed by introducing a known gas mixture into the sensor and verifying or adjusting the electronic response at the sensor location.

3.7 CO Metal Oxide Semiconductor (MOS) sensors shall have a life expectancy of 5 years. CO₂ Infra-red analyzers shall have a life expectancy of 10 years. NO₂ and other Electrochemical Cell sensors shall have a life expectancy of two years. Combustible Gas catalytic bead sensors shall be explosion-proof and shall have a life expectancy of four years.



4.0 INSTALLATIONS

4.1 Wiring: The interconnections between the Control Panel and Sensors shall be made by a required number of branches consisting of 4 conductor 14 gauge wires.

For CO/CO₂ (Diesel Fumes): remote sensor stations must be mounted vertically according to the arrow on the sensor. Heights between 4 ft. (1.20 m) and 6 ft.(1.80 m) are usual. Locations where a parked vehicle may exhaust directly into the sensor should be avoided. Where sensors are mounted on columns, the preferred side should be outside the usual lane of traffic.

For NO₂ (Diesel Fumes), Methane, and Hydrogen: remote sensor stations must be mounted vertically according to the arrow on the sensor. Installation heights between 1 foot and 18 inches below the ceiling are typical.

For Propane and gas vapours: remote sensor stations must be mounted vertically according to the arrow on the sensor. Installation heights between 1 foot and 18 inches above the floor are typical.

4.2 CEL systems should be energized at all times. Supply 120/1/50 - 15A from dedicated circuit. It should be impossible to disconnect power to a CEL system in order to service other equipment.

4.3 All equipment shall be interconnected at the factory and shipped factory calibrated after a 7-day operational test. The logic of the system shall be factory tested by simulated field conditions as specified. A report shall be furnished with the equipment.

4.4 All electrical connections shall be made by the electrical contractor according to diagrams shown on drawings furnished with the equipment by the manufacturer. Use 4-wire coded cable from station to station, maintaining color code. All wiring is low voltage (24V).



5.0 OPTIONS

- 5.1** Provide on Control Panel selector switches with pilot lights to manually override all of the fans controlled by the system.
- 5.2** Provide in CEL Control Panel a battery back-up to maintain the system in operation during a power failure. A compact rechargeable battery shall be used because of the reduced power requirement of the CEL system.
- 5.3** Provide a Remote Alarm Station furnished with Audible/Visual alarm with silencing button.
- 5.4** Provide a 4-20 ma or 0-10V DC analog output signal based on the highest condition or on the average of conditions detected.
- 5.5** For larger systems, after complete installation, a representative of ACME ENGINEERING shall check the installation before the system is started. A written report shall be submitted to the engineers, contractor & owner.