

## Brasch GSE Oxygen Detector Operation Sequence

- Normal Operation

If the monitored oxygen concentration is above the field adjustable Low Alert setting, the detector will be in the Normal Operation mode. In this mode the front panel display will indicate the ambient oxygen concentration. If a second sensor is employed, either internally or remotely, the display will alternate between their readings. The detector output control relays will be in the inactive state and only the power and active sensor front panel lamps will be illuminated.

- Low Alert Operation

If the monitored oxygen concentration drops below the Low Alert setting, the detector will flash the Low Alert indicator lamp and activate a delay timer. The duration of the delay is field adjustable from 0 to 600 seconds. If the concentration level remains below the Low Alert setting for the duration of the delay period, the Low Alert relay contacts will close. This contact closure can be used to actuate exhaust fans.

Once the monitored oxygen concentration again reaches the Low Alert setting, the unit will activate another delay timer. If the concentration remains above the Low Alert setting for the duration of this delay period, the unit will revert to the Normal Operation state.

The oxygen detector responds to a decreasing concentration of oxygen. When a second type of sensor is employed with the oxygen sensor, that second sensor responds to an increasing concentration of the gas being monitored. The second sensor's Low Alert sequence will operate in the opposite manner from the oxygen detector.

- High Alert Operation

If the detector is in a Low Alert status and the monitored gas concentration drops to a factory set concentration of 16.0 %, the detector will actuate its High Alert relay contacts and front panel lamp. If configured for 50%-100% operation, these contacts may be used to activate additional stages of ventilation. If configured for 2 speed operation, the Low Alert relay contacts will open. Once the concentration rises above 16.0 %, the detector will return to the Low Alert Operation mode.

If the Low Alert relay is actuated, High Alert Operation will be immediate. If the detector is processing a Low Alert delay period, it will enter the High Alert Operation mode upon its completion.

Again, if a second type of sensor is employed, the detector will respond in the opposite manner from the oxygen sequence.

- Alarm Mode Operation

Whenever the oxygen detector enters the High Alert Operation mode, a set of Alarm relay contacts will immediately close and an internal buzzer will sound. This set of contacts can be used to actuate an external alarm. The buzzer will stay on and the contacts will remain closed until the monitored oxygen gas concentration is no longer below 16.0 %. The internal buzzer may be silenced by pressing a front panel mounted push-button switch.

If a second type of sensor is employed, and the monitored gas concentration for that sensor remains above its factory set High Alert level longer than 15 minutes, the Alarm relay contacts will close and the internal buzzer will sound. The buzzer will stay on and the contacts will remain closed until the monitored gas concentration is no longer above the factory set High Alert level. Again, the internal buzzer may be silenced by pressing a front panel mounted push-button switch.

- Fail-Safe Operation

If a sensor fails, the detector will enter a Fail-Safe Operation mode. The Low Alert relay contacts will close, actuating the ventilation equipment controlled by that relay; the internal buzzer will sound and the Alarm relay contacts will activate.

If the detector loses power, the Low Alert relay contacts will close and allow controlled ventilating equipment with power to operate. When power is restored, the detector will reset. This power restoration process will take approximately 5 minutes at the end of which the detector will again monitor the sensor(s) and respond based upon the selected parameters.

- Self Test Operation

This operation mode must be initiated within the first five minutes after power is applied. To activate, press and hold the Alarm-Off / Test button for one second. Each display digit will be tested by displaying "0" through "9". After a 30 second pause, the Low Alert relay and indicator lamp will activate for 30 seconds. Another 30 second pause will ensue followed by activation of the high alert relay for 30 seconds. After another 30 second delay, the Alarm relay contacts and internal buzzer will activate for 3 seconds, followed by another 30 second delay, after which the detector will begin Normal Operation.