



## SERIES 3000 GAS DETECTOR

### DESCRIPTION

The REGAL Series 3000 Gas Detectors are designed to accurately sense the presence of chlorine and/or sulfur dioxide in an enclosed environment. In the event of a possible gas leak, the Series 3000 detectors continuously display the concentration level(s) in PPM (parts per million) while simultaneously indicating the highest level detected on an LED bar graph. The REGAL detectors are available in both single and dual sensor models. Models 3001 (CL<sub>2</sub>) and 3003 (SO<sub>2</sub>) are single sensor detectors and Models 3002 (CL<sub>2</sub>), 3004 (SO<sub>2</sub>) and 3005 (CL<sub>2</sub> and SO<sub>2</sub>) are dual sensor.

### STANDARD FEATURES

- Programming and operation via a 4-button keypad.
- Digital LED display showing the current gas concentration level(s).
- 12 LED bargraph(s) to indicate and hold the highest gas level(s) detected until re-set from the keypad.
- Warning and Danger level alarm relays.
- External alarms may be wired to the Alarm Horn relay allowing them to be silenced directly from the keypad.
- Maintenance-free sensor(s) with no need to be purged or re-calibrated if exposed to CL<sub>2</sub> or SO<sub>2</sub> gas.
- Isolated 4-20 mA Analog Output.

### OPTIONAL FEATURES

- Serial Communications for continuous transmission of data for monitoring and logging purposes.
- Battery back-up to maintain operation during power outages. Battery capacity is rated for 24 hours.

### GENERAL SPECIFICATIONS

The monitor shall continuously scan and display the sensor data using a multicolor bargraph indicator (one for each sensor) to present both the current gas concentration levels and the peak levels. A three-digit numeric display shall continuously indicate the current gas levels for a single sensor detector and alternately (in five second intervals) for a dual sensor detector. The dual sensor detector will also have arrowhead LED indicators under each bargraph to designate which sensor information is currently being displayed. A separate LED indicator will show the type (chlorine or sulfur dioxide) of gas that each sensor is set up to monitor. Dual sensor detectors shall be configured to monitor either chlorine or sulfur dioxide at two different locations or both gases separately.



All REGAL Series 3000 Gas Detectors shall include the following six relay circuits.

- 2 **WARNING** relays
- 2 **DANGER** relays
- 1 **HORN/FAILURE** relay
- 1 **LATCH** relay

The **WARNING** relays activate at 1 PPM for chlorine and at 2 PPM for sulfur dioxide, whereas the **DANGER** relays will activate at 3 PPM for chlorine and at 5 PPM for sulfur dioxide. On a single sensor unit, both **WARNING** relays and both **DANGER** relays will activate during an alarm event. On a dual sensor unit, one **WARNING** relay and one **DANGER** relay will be dedicated to each sensor.

The internal alarm horn (and external alarm devices) will engage if the gas concentration reaches the **WARNING** level, and it will disengage if it drops below this level before the "**LATCH**" time (operator set-between 0 and 240 seconds) is reached.

If the latch time is reached, the horn (and external alarm devices) will sound continuously. If gas concentration rises from the **WARNING** level to the **DANGER** level, the alarm horn will sound and latch instantly. Under either condition (**WARNING** or **DANGER**), once the latch relay(s) is engaged, it will only be possible to **SILENCE** the horn and **RESET** the relays by means of the keypad. **NOTE:** Setting the latch time at Zero will deactivate the latch relay for **WARNING** level conditions, however, the latch relay for **DANGER** level conditions will remain active.

The **HORN/FAILURE** relay may be configured via an internal electronic DIP switch to give the user a choice between either a continuous or a pulse alarm. After any alarm condition, both the current and peak gas levels will continue to be indicated on the LED bargraph. When alarm readings exceed 10 PPM for chlorine or 20 PPM for sulfur dioxide, an OFS (off-scale) message will be presented on the numeric display. If there is a loss of signal from the sensor(s), a "Fail" message will appear on the numeric display and the **HORN/FAILURE** relay will engage.

## GENERAL SPECIFICATIONS (continued)

Calibration of the gas detector may be performed through a program designed to operate directly from the keypad. While using this program, all alarm relay operations will automatically be disabled until the calibration process is completed.

Programs will be included to test both the sensor and relay conditions. The sensor test will disable all alarm relays for a 15-minute time interval to allow the application (and dissipation) of the appropriate gas to the sensor inlet(s). The relay test will individually and sequentially activate, then deactivate the six relay circuits.

## CONTENTS GUIDE

### REGAL Models 3001 (CL<sub>2</sub>) & 3003 (SO<sub>2</sub>)

#### Single Sensor Detectors include:

1 each Wall mounted (NEMA 4X) Single Input Detector

1 each Sensor in "rain tight" wall mount enclosure with 25' of sensor cable

1 each Instruction Manual 13000

Approximate Shipping Weight:

6 lbs. without battery back-up

8 lbs. with battery back-up

### REGAL Models 3002 (CL<sub>2</sub>), 3004 (SO<sub>2</sub>), and 3005 (CL<sub>2</sub> and SO<sub>2</sub>) Dual Sensor Detectors include:

1 each Wall mounted (NEMA 4X) Dual Input Detector

2 each Sensors in "rain tight" wall mount enclosures each with 25' of sensor cable

1 each Instruction Manual 13000

Approximate Shipping Weight:

7 lbs. without battery back-up

9 lbs. with battery back-up

## OPTIONAL FEATURES

Serial Communications - Interface standards RS422 or RS485 using communication protocol OPTO-22

Battery Back-Up with Wall Mounted Enclosure & 5' of Cable  
Additional Sensor Cable

NOTE: Specify length required up to a maximum of 1000'

## ADDITIONAL SPECIFICATIONS

### Power Supply

Input:

100-250 VAC 50/60 Hz. @ 0.6A peak

Inrush Current:

20A @ 115 VAC, 40A @ 130 VAC

Output:

+15 V @ 1.7A current limited

### Fuse Protection

2.5 Amps (250 V) for 120/240 VAC

### Input Capability

1 or 2 Sensors

Must be specified at purchase

### Sensor Scan Display Rate

Approximately five second intervals

### Sensor Signal

Single or dual, un-powered 4-20 mA analog output

### Sensor Full Scale Response

For Chlorine - 10 PPM

For Sulfur Dioxide - 20 PPM

### Cable Lengths

(Based on using 22 gauge, 2-conductor shielded cable)

Sensor Cable Length - 25' standard

Can be extended up to 1,000'

Battery Cable Length - 5'

### Resolution

For Chlorine - 0.1 PPM

For Sulfur Dioxide - 0.5 PPM

### Warning/Danger Alarm Points

Chlorine: 1 PPM/3 PPM

Sulfur Dioxide: 2 PPM/5 PPM

### Repeatability

±5%

### Temperature Range

0-50°C (32-120°F)

### Horn

Internal 95 db

### Relays

Warning, Latch, and Horn/Failure relays are SPDT (single-pole double throw).

Danger relays are DPDT (double-pole double throw).

All relays are rated at 10 Amps @ 250 VAC and 50 or 60 Hz.

All relays (except for the horn/failure relay) can be field configured for normal or failsafe operation.

### Delay Timer for the LATCH Relay Circuit

Adjustable. 0 - 240 Seconds

### Isolated Analog Output

Isolated and un-powered 4-20 mA

### Battery Back-Up (Optional)

12 Volt, 1.1 AH, Lead Acid Gel Cell in a vented enclosure

### Operating Humidity

0-99% Non-Condensing

### Monitor Enclosure

Wall Mounted Polycarbonate or ABS NEMA 4X (7.87" X 7.87" X 5.25")

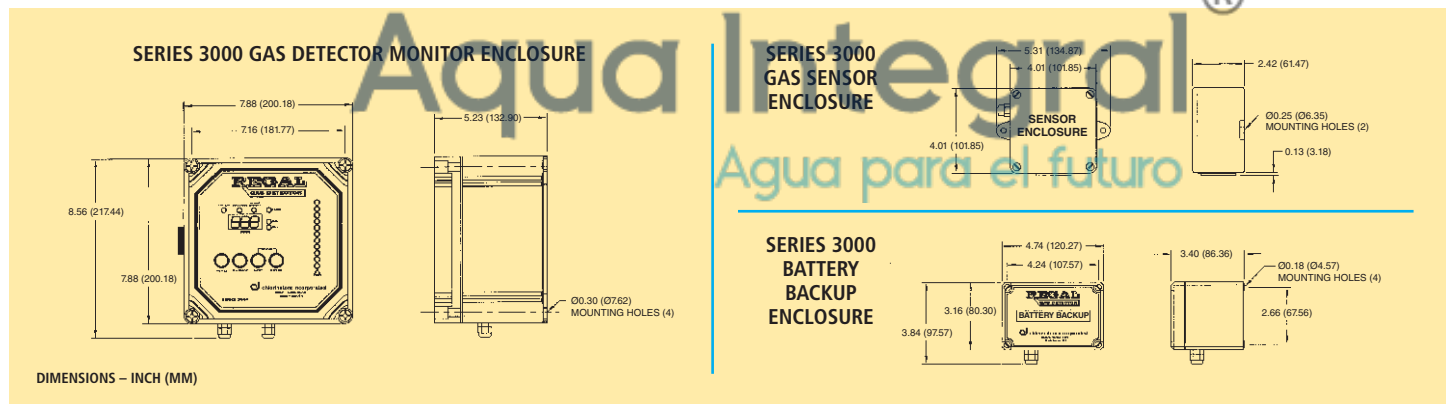
### Sensor Enclosure

Wall Mounted, Watertight, UL Approved (4.0" X 4.0" X 2.5")

### Serial Communications (Optional)

Interface standards RS422 or RS485 (jumper pin selectable) using communication protocol OPTO-22

Baud Rate: 1200 - 115,200



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