

# Capital Controls

## ADVANCE™ Series 1610B

### Single Point Gas Detector

Capital Controls ADVANCE™ Single Point Gas Detector, Series 1610B provides continuous detection of chlorine, sulfur dioxide and ammonia gas in a normally clean air environment.

ADVANCE™ gas detectors are ideal for protection of personnel and property wherever chlorine, sulfur dioxide or ammonia is unloaded, stored or used.

Highly sensitive, the detector monitors gas levels below OSHA requirements for either chlorine or sulfur dioxide gas.

The sensor responds immediately to the presence of gas, and quickly recovers after the gas has cleared. The sensor is also designed to eliminate false alarms caused by interference gases and environmental conditions.

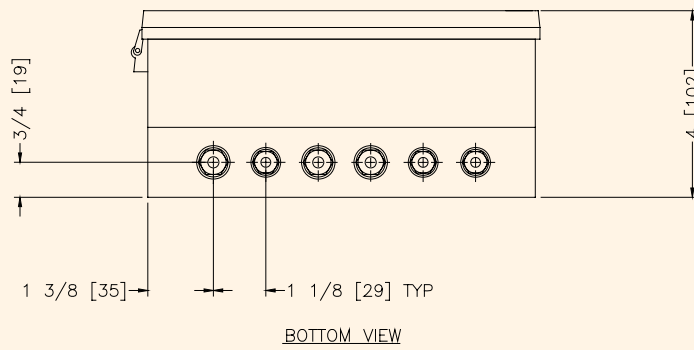
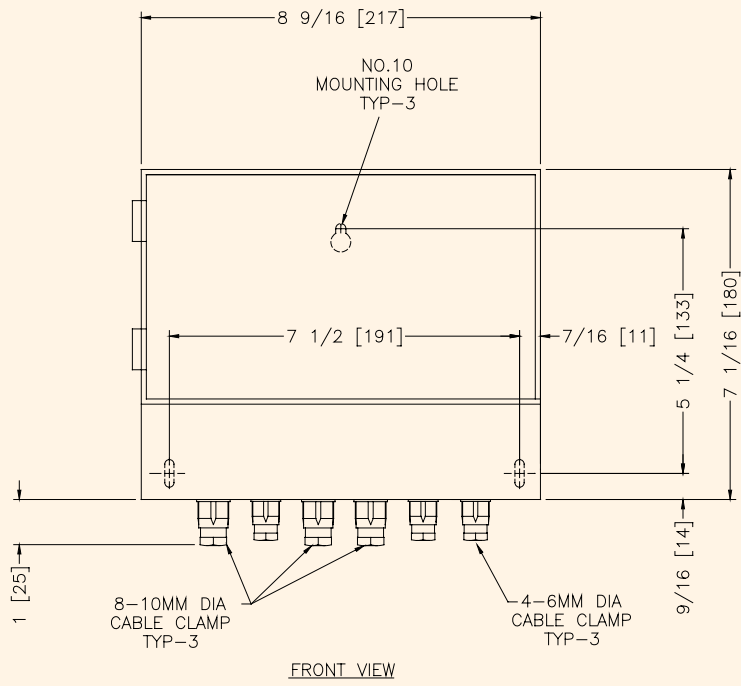
Series 1610B design includes protection against radio frequency /electromagnetic interferences (RFI/EMI) typically present at industrial and municipal plants.

The modular design for the gas detector provides easy installation of the receiver and sensor module.

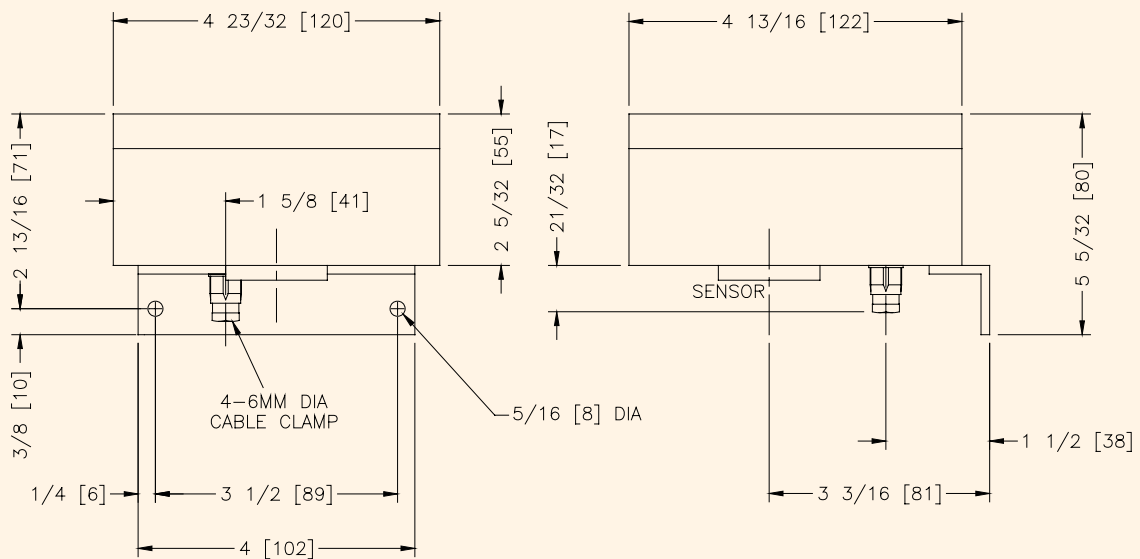


- ◆ Maintenance-free, long-life sensor
- ◆ Dual alarm output for remote warning and device control
- ◆ Audible and visual alarms
- ◆ Rapid response to chlorine, sulfur dioxide or ammonia
- ◆ NEMA 4X enclosure
- ◆ Power backup for continuous operation
- ◆ Indicator for remote monitoring
- ◆ RFI/EMI protection





Receiver Dimensions (for reference only)



Sensor Dimensions (for reference only)

# TECHNICAL DATA RECEIVER

**Quality standard:** ISO 9001

**Compliance:** CE

**Power requirements:** 120 or 240 Vac, 50/60 Hz, single phase

**Power consumption:** 12 watts

**Input from sensor:** 4-20 mA<sub>dc</sub>

**Output to sensor:** 18-24 V<sub>dc</sub>

**Sensor stabilization timer:** Jumper selectable 1/2, 1, 2, 4, 8, 16 minutes

**Bar graph indicator range:** 0-10 ppm CL<sub>2</sub> & SO<sub>2</sub>; 0-50 ppm; 0-100 ppm NH<sub>3</sub>

**Accuracy:** ±1 bar segment

**LED indicators:** Power, Ready, Alarm, Malfunction, Bar Graph Indicator

**Indicator signal output:** 4-20 mA<sub>dc</sub> into 900 ohms maximum impedance

**Alarm and malfunction control rating:** 10 amps @240 Vac maximum or 10 amps @ 28 V<sub>dc</sub> maximum resistive or inductive load, SPDT (N.O./N.C.); DPDT (N.O./N.C.) by jumper selection for dual alarm output

Alarm and malfunction contact type: Jumper selectable latching (manual reset) or unlatching (automatic reset)

**Enclosure:** NEMA 4X

Gas	Interference Gases for Ammonia	
	Concentration	Reading ppm
Alcohols	1000 ppm	0
Carbon Dioxide	5000 ppm	0
Carbon Monoxide	100 ppm	0
Hydrocarbons	% range	0
Hydrogen	10000 ppm	0
Hydrogen Sulfide	20 ppm	2 <sup>1</sup>

<sup>1</sup> Short gas exposure in minute range.

Gas	Interference Gases for Chlorine Sensor		Interference Gases for Sulfur Dioxide	
	Concentration	Approximate Equivalent to Chlorine Signal	Concentration	Approximate Equivalent to Sulfur Dioxide
Hydrogen	100 ppm	-1 ppm	100 ppm	1 ppm
Carbon Monoxide	100 ppm	-1 ppm	—	—
Ethylene	100 ppm	-1 ppm	—	—
Sulfur Dioxide	100 ppm	-5 ppm	—	—
Nitric Oxide	100 ppm	+1 ppm	—	—
Chlorine	—	—	10 ppm	< 0.6 ppm
Hydrogen Sulfide	—	—	100 ppm	200 ppm
Alcohols	—	—	100 ppm	< 1 ppm
Nitrous Dioxide (Internal combustion engine exhaust)	10 ppm	+16 ppm	10 ppm	-10 ppm

# CHLORINE AND SULFUR DIOXIDE SENSORS

**Response time:** 30 seconds maximum for 80% of range to 10 ppm gas at 20°C, after stabilization

**Type:** Electrochemical of the micro-redox type

**Gases and Range:** Chlorine (Cl<sub>2</sub>) 0-10 ppm or Sulfur Dioxide (SO<sub>2</sub>) 0-10 ppm

**Minimum detectable concentration:** 0.5 by volume

**Operating temperature range:** -2°F to 131°F (-20°C to 55°C)

**Operating humidity range:** 2% to 98% R.H.

**Recovery time:** 3 minutes for 90% of range at 10 ppm gas concentration

**Maximum separation between receiver and sensor:** 1000 feet (305 meters)

**Enclosure:** NEMA 4X

**Weight:** 9 oz. (.25 kg)

## AMMONIA SENSOR

**Type:** Electrochemical

**Measuring range:** 0-50 ppm and 0-100 ppm

**Bias potential:** 0 mV

**Linearity:** <10% FULL SCALE

**Response time at 20°C:**

t50: <20 s Calculated from 5 min. exposure time

t90: <60 s Calculated from 5 min. exposure time

**Long term sensitivity drift:** <5% PER 6 MONTHS

**OPERATION CONDITIONS:**

**Temperature range:** -20°CdC TO +40°CdC

**Temperature range:** -20°C TO +40°CdC

**Humidity range:** 15-90% r.H, Non-condensing

## Warranty and Capability

Severn Trent Services warrants its gas detectors for eighteen (18) months from the date of invoice, or twelve (12) months from date of installation.

Severn Trent Services is ISO 9001 certified to provide quality and precision materials. Disinfection technologies, water quality monitors and instrumentation for water and wastewater are areas of specialization. Over 35 years of industrial and municipal application experience in the water and wastewater industries is incorporated into the equipment design to provide high quality comprehensive solutions for the global market.

## Brief Specification

The single point gas detection system for (chlorine) (sulfur dioxide) (ammonia) shall consist of an electrochemical type sensor (requiring no chemical additions), housed in a corrosion-resistant, NEMA 4X enclosure suitable for wall mounting. In the presence of gas, a current flow will develop and be transmitted through electrical wiring to the receiver. The maximum separation between the receiver and sensor shall be 1000 feet (305 meters).

The receiver shall process and display incoming signals from the sensor module, and be housed in a NEMA 4X enclosure suitable for wall mounting. The receiver shall contain the following components: a power switch and LED indicators for power and ready; set point alarm level, field set via push button on the front of the receiver and indicated by on the color bar graph by a flashing bar segment; an LED alarm indicator and annunciator with corresponding contact; an LED malfunction indicator with jumper-selectable manual or automatic reset relay contact; a RESET button for clearing alarm and malfunction circuits; a timer for sensor stabilization, and an LED bar graph display in the range of 0-10 ppm for chlorine and sulfur dioxide; 0-50 ppm and 0-100 ppm for ammonia. A 4-20 mA dc output signal shall be provided to transmit scanned levels.

The minimum detectable concentration of chlorine or sulfur dioxide gas shall be 0.5 ppm by volume, The response time shall be 30 seconds for 80% of range to 10 ppm gas at 20°C, after stabilization. Protection shall be provided against radio frequency/electromagnetic interference typically present at industrial and municipal plants. The unit shall operate from a (120 Vac) (240) 50/60 Hz single phase power supply. Battery terminals shall be provided for use in the event of a power failure. The gas detector shall be Capital Controls Series 1610B.

An optional power backup shall be provided, with internal 18 Vdc battery and shall automatically provide power in the event of a power failure. No manual switching shall be required. The unit shall automatically and continuously recharge to supply maximum support to the gas detector and/or the remote indicator. The power backup shall be Capital Controls Model 1640.

An optional remote indicator shall be provided to remotely indicate and alarm when a preset gas level is exceeded. A cumulative bar graph indicator shall provide level indication. An annunciator shall provide audible indication of an alarm condition and can be turned off but the indicator ALARM light will flash until the condition is cleared. The remote indicator shall be Capital Controls Model 1630.

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