

Capital Controls® Series **1610**

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

Capital Controls® Single Point Gas Detectors are ideal for protection of personnel and property wherever chlorine, sulfur dioxide or ammonia is unloaded, stored or used.



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
- RFI/EMI protection
- Optional power back up

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 mAdc

Output to sensor: 18-24 Vdc

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

Bar graph indicator range: 0-100% of sensor range

Accuracy: ±1 bar segment

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

Indicator signal output: 4-20 mAdc into 900 ohms maximum impedance

Alarm and malfunction control rating: 10 amps @ 240 Vac maximum or 10 amps @ 28 Vdc 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 12

Chlorine and Sulfur Dioxide Sensors

Measuring Range: Chlorine (Cl₂) 0-5 ppm and 0-10 ppm or Sulfur Dioxide (SO₂) 0-5 ppm and 0-10 ppm

Minimum detectable concentration: 0.5 ppm by volume

Type: Electrochemical of the Micro Redox type

Response time: 60 seconds maximum for 80% of range to 10 ppm gas at 20°C, after stabilization.

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

Output signal: 4-20 mAdc

Operating temperature range: -4°F to 120°F (-20°C to 50°C).

Operating humidity range: 15% to 90% R.H.

Connection requirements: 3-conductor, shielded, 22 AWG cable

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

Enclosure: NEMA 12

Overall dimensions: 4 23/32" (120 mm) L x 5 5/32" (80 mm) D x 2 13/16" (71 mm) H

Weight: 9 oz. (.25 kgs)

Ammonia Sensor

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

Minimum detectable concentration: 6 ppm by volume

Linearity: <10% Full scale

Long term sensitivity drift: <5% per 6 months

Response time at 20°C:

- **t₅₀:** <20 s Calculated from 5 min. exposure time
- **t₉₀:** <60 s Calculated from 5 min. exposure time

Recovery Time: 5 minutes for 90% of the range at 100 ppm gas concentration

Type: Electrochemical

Output signal: 4-20 mAdc

Operating temperature range: -20°C to +40°C

Operating humidity range: 15-90% r.H, Non-condensing

Connection requirements: 3-conductor, shielded, 22 AWG cable

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

Enclosure: NEMA 12

Overall dimensions: 4 23/32" (120 mm) L x 5 5/32" (80 mm) D x 2 13/16" (71 mm) H

Weight: 9 oz. (.25 kgs)

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

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	21

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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 12 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 12 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 mAdc 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 60 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.

Warranty and Capability

De Nora Water Technologies warrants its gas detectors for eighteen (18) months from the date of invoice, or twelve (12) months from date of installation.

De Nora Water Technologies 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.

WATER MADE EASY

MARINE

ENERGY

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INDUSTRIAL



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