Automatic Gas Control Valve Series 1410

- **Self-contained flow proportioning control**
- **Manual backup**
- **Capacities up to 500 PPD (10 kg/h)**
- **LED bar graph display**
- **Compact, space-saving design**

SEVERN TRENT SERVICES

CAPITAL CONTROLS

The Capital Controls automatic Gas Control Valve, Series 1410 combines flow proportioning control with a valve in a compact, easy-to-install, easy-to-operate unit for automating vacuum-operated, manual gas feed systems. Automatic flow proportioning control eliminates the need for continuous operator monitoring and manual adjustment of the gas feed rate with changes in flow, especially where chemical discharge levels are regulated. And since manual system feed rates are based on peak flows, automatic feed reduces gas consumption.

Further benefits to using the automatic gas control valve include:

- No extra cost or mounting space requirement for a separate controller.
- No extra cost for a cabinet. The automatic gas control valve is wall mounted
- No cost or mounting space requirements for a differential pressure regulator for feed rates above 25 PPD (0.5 kg/h).
- Designed to meet a broad range of gas feed requirements, the automatic gas control valve will control chlorine, sulfur dioxide, ammonia, or carbon dioxide gas in six capacities to 500 PPD (10 kg/h).

The automatic gas control valve can be included in a new vacuum-operated gas feed system or easily and rapidly added to an existing manual gas feeder. A typical vacuum-operated gas feed system consists of direct cylinder mounted vacuum regulators with an automatic vacuum switchover and an ejector. Addition of an automatic gas control valve is as simple as cutting the vacuum line, connecting the line from the vacuum regulator to the valve inlet and the line to the ejector to the valve outlet. All that remains is to connect power and the flow signal.

Operation

As flow changes, the valve responds immediately and in direct proportion to the flow input signal. The result is a linear gas feed rate adjustment. A dosage control knob, conveniently located at the front of the unit, allows the operator to increase or decrease dosage for a range of flow input signals. Dosage adjustments can be made down to 20% of design dosage and up to 200% of design dosage. Once set, dosage will remain constant over the flow range. An LED bar graph indicator, readily visible from the front, provides a clear, easily read 0-100% display of valve position. On 10 PPD (200 g/h) and 25 PPD (0.5 kg/h) models, a differential pressure regulator is included for precise control at low feed rates.

In the event of a loss of input signal, or need for manual override, an electronic manual adjustment switch is provided to manually operate the valve. An alarm contact is provided to indicate a fully closed valve alerting the operator to a zero gas feed condition.

Technical Data

Automatic Gas Control Valve

GENERAL

Control Modes:
Flow Proportioning
Manual

Gases:

Chlorine
Sulfur Dioxide
Ammonia
Carbon Dioxide

Maximum Capacity:
100 PPD (2 kg/h)
200 PPD (4 kg/h)
500 PPD (10 kg/h)

Ranges (chlorine)[2]:
500 PPD (10 kg/h)
200 PPD (4 kg/h)
100 PPD (2 kg/h)
50 PPD (1 kg/h)
25 PPD (0.5 kg/h)
10 PPD (200 g/h)

Vacuum Requirements: Minimum 14.6 inches of mercury at valve outlet

Signal Input:
0-20 mAdc
4-20 mAdc
10-50 mAdc
1-5 Vdc
0-5 Vdc

Input Impedance: 250 ohms

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

Power Consumption: 15 watts

Display: LED bar graph, 0-100% of full capacity

Controls:
Dosage
Auto/Manual
Manual Adjustment**Gas Flow Across Valve:**
Sonic velocity

Alarm Contact: Rated 0.5 amps @ 240 Vac maximum

Dosage Ratios:
Maximum: 2:1
Minimum: 1:5

Accuracy: ±4% of maximum capacity for 50-500 PPD
(1-10 kg/h) valves; ±10% of maximum capacity for 10 PPD (200 g/h) and 25 PPD (0.5 kg/h) valves

Range of Operation: 10 to 1

Enclosure: NEMA 12, drip-proof for wall mounting

Certification:
ISO 9001
CE

Shipping Weight: 7 lbs. (3 kgs)

Notes:

1. Valves 50 PPD (1 kg/h) and over require a minimum vacuum at the outlet of 14.6 inches of mercury to operate at sonic flow. To assure this vacuum level, selection of the next higher capacity ejector is recommended.

2. Capacities are listed for chlorine gas. To determine capacities for sulfur dioxide, multiply each value by 0.95, for ammonia, by 0.5 and for carbon dioxide, by 0.78.

Vacuum Line Tubing or Pipe Size:

Feed Rate	Length of Vacuum Line		
	100 ft. (30 m)	200 ft. (60 m)	500 ft. (150 m)
up to 50 PPD (1 kg/h)	3/8"	3/8"	1/2"
100 PPD (2 kg/h)	1/2"	1/2"	5/8"
200 PPD (4 kg/h)	1/2"	5/8"	3/4"
500 PPD (10 kg/h)	5/8"	3/4"	1"

Options:
1. Valve position output signal (20-480 ohms approximate range. To convert to current signal, R to I converter required).

2. Vacuum regulator and ejector

3. 6 foot (2 meter) power cord with 3-prong plug

4. ±4% accuracy for 10 PPD (200 g/h) or 25 PPD (0.5 kg/h) valves.

Warranty and Capability

Capital Controls offers a limited one (1) year warranty on the Series 1410 Automatic Gas Control Valve.

Capital Controls 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 Series 1410 Automatic Gas Valve shall be a component of an all-vacuum operated gas feed system that includes a vacuum regulator and ejector. A self-contained controller shall automatically control the gas feed rate in proportion to flow signal input. The automatic gas control valve shall accept a (0-20 mAdc) (4-20 mAdc) (10-50 mAdc) (1-5 Vdc) (0-5 Vdc) signal input directly from a separate flow transmitter. The (chlorine) (sulfur dioxide) (ammonia) (carbon dioxide) gas flow shall be totally linear from the fully opened to the fully closed valve position. The maximum gas feed rate shall be (500 PPD/10 kg/h chlorine) (475 PPD/9.5 kg/h sulfur dioxide) (250 PPD/5 kg/h ammonia) (390 PPD/7.8 kg/h carbon dioxide). The automatic gas control valve range shall be ___(PPD) (kg/h) (g/h), to match the vacuum regulator gas flowmeter. The manual dosage adjustment shall provide for gas flow rates to be 20% of maximum feed rate (minimum dosage) with a 100% input signal to 100% of the vacuum regulator capacity (maximum dosage) with a 50% input signal. The electronic manual adjustment switch shall be easily accessible to provide for manually increasing or decreasing the valve position in the event of a loss of input signal or manual override. A LED bar graph indicator shall display 0-100% of full valve capacity. An alarm contact shall be provided to indicate a fully closed valve condition. The alarm contact shall be rated 0.5 amp @240 Vac maximum. The power requirements shall be (120) or (240) Vac, 50/60 Hz., single phase. The vacuum regulator and ejector shall be specified separately.

Design improvements may be made without notice.

Represented by:

SEVERN TRENT SERVICES

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Severn Trent Water Purification, Inc.
3000 Advance Lane Colmar, PA 18915
Tel: 215-997-4000 • Fax: 215-997-4062
Web: www.severntrentservices.com
E-mail: marketing@severntrentservices.com

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INDIA • ITALY • MALAYSIA