

Electrically-Heated Vaporizing Regulators

For Noncorrosive, Nonflammable Service
Model 211H

This electrically-heated two-stage regulator is designed to relieve or eliminate “freeze-up” problems, a common condition experienced with applications using carbon dioxide supplied in high-pressure cylinders. A first stage cavity serves as a boiler to vaporize CO₂ liquid and eliminate or minimize any CO₂ solids in the second stage. The second stage chamber is then available to heat the CO₂ vapor before it reaches the outlet. The regulator has 200 watts of heat to provide continuous 100 SCFH of CO₂ under the most severe freeze-up conditions, as well as higher flow rates under normal (intermittent) conditions.

The Model 211H can be used with gases (or mixtures) that encounter the Joule-Thompson (refrigerant) cooling effect created by a pressure drop at the regulator valve. It helps maintain the gas (or mixture) in the vapor state by supplying heat at the regulator control valve while providing constant pressure control.



Benefits/Features

Two-stage design ensures constant delivery pressure as the inlet pressure decreases.

Sintered-metal filters in the seat assembly trap foreign particles and extend regulator service life.

Chrome-plated outlet valve with diaphragm seal provides on/off flow control and helps maintain gas purity.

Chrome-plated surface provides polished appearance for easy cleaning.

Designed to handle continuous flow up to 100 SCFH of CO₂.

All electrical components are UL-listed.

Specifications

Inlet Pressure: 3000 psig (207 bar) maximum

Ambient Operating Temperature: -4°F to 140°F (-20°C to 60°C)

Heater: 200 watt cartridge-style

Power Requirements: 120 VAC or 240 VAC (optional order)

Heater Temperature: 90°F to 125°F (32°C to 52°C), ±8°F, nonadjustable

Flow Coefficient: C_v = 0.15

Supply Pressure Effect: 0.04 psi per 100 psi

Filter: 10 micron

Regulator Inlet Port: 1/4" NPT female

Inlet Connection: Specify CGA

Outlet Connection: 1/4" NPT female

Gauge Size: 2.5" (67 mm) face

Weight: 7 lbs. (3.2 kg)

Materials of Construction

Body: Chrome-plated brass

Diaphragm: Stainless steel

Piston: Brass

Seat: PCTFE

Seal: Buna-N

Bonnet: Chrome-plated die cast

Gauges: Chrome-plated brass

Model 211H	Delivery Pressure Range		Delivery Pressure Gauge (dual scale)		Cylinder Pressure Gauge (dual scale)	
	psig	bar	psig	bar	psig	bar
Chrome-Plated Brass						
Q1-211H-(*)	10 – 125	0.7 – 9	30" VAC– 0– 200	-1 – 0 – 14	0 – 4000	0 – 276

* Specify CGA. Other cylinder connections are available – please contact your Air Liquide representative.

Please note: This regulator is NOT designed for use with flammable gases or oxygen. For these applications, Air Liquide recommends Model 241 explosion-proof vaporizing regulators.

Vaporizing Regulators

Ultra-High-Purity, Steam or Electrically-Heated

Model 241

Model 241 Series “vaporizing” regulators are designed to offset the Joule-Thompson cooling effect that occurs when there is a pressure drop in a gas. They can also be used to vaporize a liquid into a gas in some applications. These spring-loaded, pressure reducing regulators available in steam or electrically heated versions, heat and vaporize media while passing through coiled tubes inside a heating chamber before and after pressure reduction.

The electric Model 241E has a LCD temperature display with temperature reading and window view. It also has a 4-20 mA analog output capability for remote temperature monitoring and data acquisition.



Benefits/Features

For Model 241E, the control circuit is housed in an explosion-proof, dust tight junction box compliant with NEC requirements for Class 1, Div. 1 – Groups B, C and D standards.

LCD temperature display and 4-20 mA analog output with Model 241E.

270° Turn potentiometer adjustment allows high resolution in temperature control (241E).

Metal-to-metal diaphragm to body seal (no backup O-Ring) assures maximum diffusion-resistance.

Pressure rated per criteria of ANSI/ASME B31.3.

Specifications

Inlet Pressure: 6000 psig (414 bar) maximum

Operating Steam Pressure:
Model 241S: 650 psig (45 bar)

Maximum Media Temperature: 500°F (260°C)

Ambient Temperature Range:
-4°F to 149°F (-20°C to 65°C)
-4°F to 122°F (-20°C to 50°C) 240 VAC option

Power Requirements:
Model 241E: 120 VAC or 240 VAC option
0.83 amps maximum
1.67 amps maximum (240 VAC option)

Heater Temperature Range:
Control Temperature: 270° turn 122°F to 572°F
(50°C to 300°C)

Analog Output Control: 176°F to 518°F
(80°C to 270°C) 4–20 mA

Flow Coefficient: Cv = 0.02

Cleaning: CGA 4.1 and ASTM G-93 Intermediate Level

Filter: 10 micron

Inlet Connection: 1/4" NPT Female

Outlet Connection: 1/4" NPT Female

Steam Ports:
Model 241S: 1/4" NPT Female

Weight:
Model 241E: 6 lbs. (2.7 kg)
Model 241S: 3 lbs. (1.4 kg)

Materials of Construction

Body: 316 Stainless Steel

Seat: Vespel SPI®

Bonnet: 316 Stainless Steel

Heat Exchanger Tube: 316 Stainless Steel

Diaphragm: Elgiloy®

Spring: Elgiloy®

Model 241	Delivery Pressure Range	
	psig	bar
Stainless Steel		
Steam		
Q1-241SA	0 – 25	0 – 1.7
Q1-241SB	0 – 50	0 – 3.4
Q1-241SC	0 – 100	0 – 7
Q1-241SD	0 – 250	0 – 17
Q1-241SE	0 – 500	0 – 35
Electric		
Q1-241EA	0 – 25	0 – 1.7
Q1-241EB	0 – 50	0 – 3.4
Q1-241EC	0 – 100	0 – 7
Q1-241ED	0 – 250	0 – 17
Q1-241EE	0 – 500	0 – 35

Option: Model No. Q1-PMNCP chrome-plated panel mounting nut