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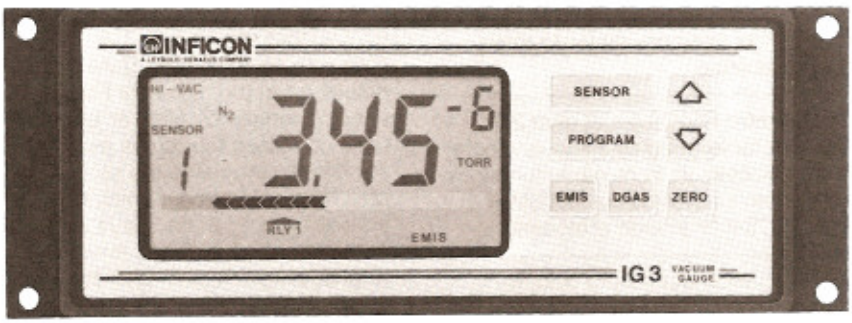
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IG 3 Gauge



Description

The primary sensor in the IG 3 gauge measures pressures from 1 x 10^{-10} to 1 x 10^{-2} torr. When equipped with optional Pirani or capacitance diaphragm gauge modules, the IG 3 can measure up to atmospheric pressure.

Principle of Operation

The IG 3's primary measuring device, a hot-cathode ionization (Bayard-Alpert) sensor, measures absolute pressures by ionizing residual gases. The ions are formed through collisions with electrons produced by a hot filament. The ions move toward a collector, and the gauge computes a pressure reading based on the ion current. The response of this type of gauge is dependent on the type of gas.

Features

If the pressure rises excessively or the primary sensor fails, the IG 3 automatically turns off the emission. This feature protects the sensors from burnout due to high pressures. Operators may activate the degas function either manually, by using front-panel or remote controls, or automatically, by configuring the IG 3 to start the degas cycle whenever the emission is turned on.

The emission may be turned on by front-panel control, through the RS232 interface, or, if the gauge is equipped with the appropriate board, through the I/O or IEEE488 interface.

Users may assign a sensitivity factor to the primary sensor. They may also enter multipliers to compensate for gases other than nitrogen or air.

AutoEmission – Capability for automatic emission of hot filament ionization sensor with optional Pirani board and sensor.

AutoZero – Capability for automatic zero adjustment of Pirani sensors with optional Pirani board.

Primary Sensors and Cables

The hot filament ionization sensor, the IG3's primary measuring device, may be either nude or glass-tubulated. Nude sensors are extremely accurate, especially at low pressures, and have replaceable filaments. Glass-tubulated sensors offer more durability.

Two types of filaments are available for both sensors to provide alternatives suited to different vacuum environments; thoria-coated iridium or tungsten. Thoria-coated iridium is resistant to burnout, but susceptible to decomposition when exposed to halogenated compounds such as chlorides or fluorides. Tungsten tends to run hotter, but is not halogen sensitive.

Glass-tubulated sensors are available with 3/4 in. or 1 in. tubes as well as with a 1 in. Kovar tube on a 2 3/4 in. ConFlat® flange. Each tubulated sensor's bulb is platinum-coated inside for protection against electrostatic charge build-up.

Cables for the IG 3's primary sensor are available in lengths up to 30 feet.

Optional Sensors and Cables

Up to two optional sensors may be added to the IG 3 allowing it to operate as many as three sensors simultaneously.

Pirani sensors, which contain replaceable tungsten-filament elements, can measure from 1 x 10^{-4} to 1 x 10^{3} torr. The TR 901 model comes with either a KF®10 or a 1/8 in. NPT fitting. The TR 905, bakeable up to 400°C, has a CF16 mini-ConFlat flange. Pirani sensors are electronically compensated for room-temperature variation. With a Pirani sensor, the IG 3 can automatically turn on the emission of the hot filament ionization sensor when the pressure drops below a preset pressure between 5 x 10^{-3} and 1 x 10^{-3} torr.

Two capacitance diaphragm gauge sensors are available: the CDG100 and the CDG120. The CDG100 provides electronic temperature compensation that offsets errors resulting from changes in ambient temperature. The heated jacket on the CDG120 makes the sensor more accurate because it is less susceptible to ambient temperature changes.

The CDG100 and CDG120 are both available in three versions, each measuring a specific four-decade pressure range: 1000 torr (1 x 10^{-1} to 1 x 10^{3}), 100 torr (1 x 10^{-2} to 1 x 10^{2}), and 10 torr (1 x 10^{-3} to 1 x 10^{1}). Using a combination of these sensors, a system can measure up to six decades of pressure. Both the CDG100 and the CDG120 are available in several fittings: 1/2 in. tube, Cajon 8VCR, Cajon 8VCO, KF16 flange, CF35 ConFlat flange, and CF16 ConFlat flange.

A system using two capacitance diaphragm gauges can be set to change the display automatically to the appropriate sensor as the pressure range changes.

Pirani sensor cables are available in lengths up to 150 feet, capacitance diaphragm gauge cables up to 100 feet.

See pages 14.10 to 14.17 for technical data and ordering information.

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