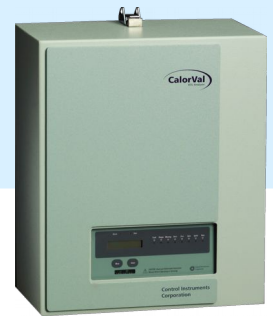




Calorific Value Analyzer Analyzer Model 690 BTU



Heated Analyzer for the Continuous Measurement of the Calorific Value of Gaseous Streams of Industrial Processes

The CalorVal Analyzer

The CalorVal analyzer model SNR690 is an industrial strength assembly consisting of a heated flame cell and integrated controller that continuously measures calorific values from 0 to 1300 BTU/ft³ of gaseous streams of industrial processes.

The sample is drawn into the flame cell and mixed with Hydrogen fuel before introduction to the burner. Directly above the burner is a thermocouple used to sense the heat produced by the burning gases and vapors. A temperature detector converts this temperature rise into an electrical signal that is proportional to the concentration of gas.

Uniform Response

The analyzer displays a uniform response to a wide range of combustible gases. It measures continuously over the entire measurement range from 0 BTU/ft³ up to the full scale of a variety of substances.

These close response factors allow accurate measurements of gas mixtures with variable compositions.

Heated Sampling System

To avoid condensation during sampling, the entire analyzer pneumatic assembly is heated up to 120°C. This eliminates both inaccurate readings as well as excessive maintenance time due to condensation and clogging.

It is suitable for monitoring many common gases and vapors. The analyzer is unaffected by the temperature of the process and can sample streams up to 700°C.

The CalorVal employs customer-supplied nitrogen to drive its integrated air-aspirated sampling system. This method is simple, has no moving parts and requires very little maintenance. Auto-calibration solenoids which allow remote activation of calibration tests are standard.

Diagnostics

The microprocessor-based control unit controls the sample flow and monitors many other functions of the analyzer such as operating temperature, calibration and the flame. Deviations or malfunctions are signaled as service-needed or fault events via LEDs and relays.

Outputs

The system includes six relays: single-pole, double-throw relays for Low Limit Alarm, High Limit Alarm, Fault; and single-pole, single-throw relays for Horn, Calibra-

tion-in-Progress and Service Needed. Other standard outputs include a 4-20mA analog output and an RS-485 serial port with Modbus RTU protocol. Digital remote access and control is available.

Specifications	
Part number	SNR692-T4
Measurement range	0 - 1300 BTU/ft ³ (equivalent to 48 MJ/m ³ or 13,4 kWh/m ³) optional: 0 – 2500 BTU/ft ³
Repeatability	Within ± 1% of measurement range
Zero stability	± 1% in 30 days
Span stability	± 5% per year
Accuracy	± 3% of full scale or 10% of applied gas whichever is greater
Response time	T ₉₀ ≤ 10 seconds (including sample transport from sample inlet)
Operating Temperature	Heated up to 120°C.
Power requirement	120 VAC +10%-15% 50/60 Hertz or 230 VAC +10%-15% 50/60 Hertz 400 Watts maximum, 200 Watt typical
Sample flow rate	Approx. 1,3 l/min ± 0,5 l/min
Sample pressure	Nominal range: 0 to +70 mbarg Maximum deviation to nominal: ± 35mbar
Fuel requirements	Hydrogen min. 99,99% purity Inlet pressure: 2,8-3,1 barg Consumption: 25 Nm ³ /min
Nitrogen	Clean, dry Nitrogen at 1,4 barg inlet pressure Consumption approx. 25 l/min
Compressed air for support air	Inlet pressure 1 barg, Consumption 700-800 ml/min
Humidity range	0-100% RH, non-condensing
Ambient Temperature	-20°C to +65°C
Relay functions	Six relays for: Low Limit Alarm; High Limit Alarm; Fault; Horn; Calibration-in-progress and Service needed Rated 60 Watt maximum
Analog output	4-20mA, non-isolated, 275 Ω max.
Serial interface	RS-485, half-duplex, Modbus RTU
Sample train material	Hard-coat aluminium, stainless steel, Viton
Enclosure rating	Standard: IP 54 (NEMA 12/13) for indoor use Optional: IP 65 (NEMA 4X), corrosion resistant, for outdoor use
Dimensions	406mm Height x 307mm Width x 216mm Depth
Weight	approx. 20 kg
Approval	ATEX: Ex II 3(2) G Ex nA nC d IIB+H2 T4, Ta = - 20°C to + 65°C, IP 54