

# CalorVal BTU Analyzer



Control Instruments' CalorVal BTU Analyzer is a micro-combustion calorimeter. Because of its unique construction and operating technology, it is the optimum analyzer for directly measuring the total heating value of varying waste gas streams of industrial processes.

## REAL-TIME

The CalorVal provides a continuous (not a batch sample), near real-time, direct measurement of heating value. Fuel is premixed with the process sample and incinerated by a carefully metered flame. A thermocouple measures changes in the flame temperature. An increase in the temperature is directly proportional to the heating value.

## UNIVERSAL

The CalorVal gives a uniform response to a wide range of combustible gases and vapors, including heavy hydrocarbons, carbon monoxide, hydrogen, and numerous other compounds found in waste gas streams. This universal response provides the ability to accurately measure the BTU content of different gases without having to re-calibrate the analyzer for different combustible gas combinations in a wide variety of background gases.

## HEATED

The CalorVal's fully heated assembly prevents condensation of water vapor and other heavier less volatile hydrocarbons. Keeping all sample wetted parts of the sampling system and analyzer at a high temperature will ensure that all combustible vapors are properly measured, eliminating inaccurate readings. The sample stays intact during measurement.

## MAINTENANCE

The CalorVal further avoids condensation and maintenance problems through its simple flow system. The analyzer collects the sample using an aspirator-driven system. There is no pump or other moving parts. This simple and extremely effective design requires very little maintenance, and its performance is unaffected by water, corrosives or other compounds in the sample stream.

## THEORY OF OPERATION

A carefully metered flame burns at a constant reference temperature inside an explosion proof measuring cell. A sample, drawn from the atmosphere to be monitored, is passed through the flame cell. A thermocouple measures changes in flame temperature. An increase in temperature is directly proportional to the Calorific Value (BTU).

**Rugged & reliable**, the CalorVal is built on a time-tested field proven design, capable of withstanding the rigors of the **industrial environment**.

## FIELD MOUNTED

The CalorVal is a compact (approximately a cubic foot), lightweight, NEMA 4X design suitable for field mounting on a freestanding rack or close proximity to the sample tap point/location, with no shelter required. This eliminates long & expensive heated sample lines and the need for a pump or other sample conditioning components. Mounting at the sample point decreases the sample transport delivery time, resulting in the fastest response time possible. This allows the CalorVal to quickly respond and adjust the make-up/assist fuel source as needed.

## OUTPUTS

The system includes six relays:

- Low Limit Alarm
- High Limit Alarm
- Fault
- Horn
- Calibration-in-Progress
- Service Needed

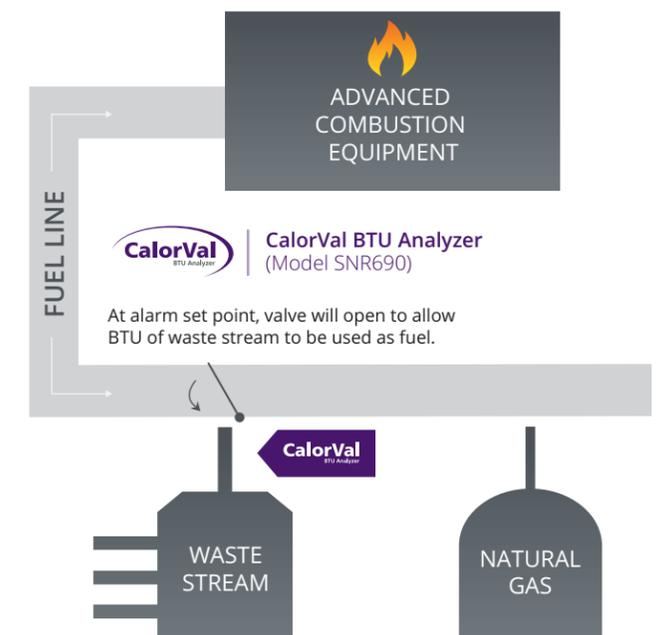
Other standard outputs include a 4-20mA analog output and an RS-485 serial port with Modbus protocol. Digital remote access and control is available.

## CODES/REQUIREMENTS

Continuous monitoring is necessary to identify the minimum heating value and ensure proper combustion efficiency. EPA codes state for optimum combustion efficiency the flare gas stream must run at or above a minimum heating value. With the CalorVal's real-time BTU measurements, operators can ensure they are meeting or exceeding their regulatory requirements. The CalorVal has also received FM, CE, and ATEX approvals.



CALORVAL DIMENSIONS



APPLICATION EXAMPLE



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25 Law Drive, Fairfield, NJ 07004 • 973.575.9114 • [controlinstruments.com](http://controlinstruments.com)