

PRODUCT DATASHEET

9800CXi™ Calorimeter

Zero Hydrocarbon Emissions –
Injection Measurement Calorimeter



Zero Hydrocarbon Emissions

Accurate Measurements

Low Maintenance

- Flare Stack Control
- Fuel Optimization
- Gas Blending
- Custody Transfer
- Flare Monitoring
- Biogas
- Natural gas
- Refinery gas
- Furnace at 1000°C for complete combustion of Sulfurs
- BTU without the need for a Specific Gravity Cell
- O₂ Cell mounted outside of furnace
- Wall mounted small footprint
- Direct Measurement of Calorific Value

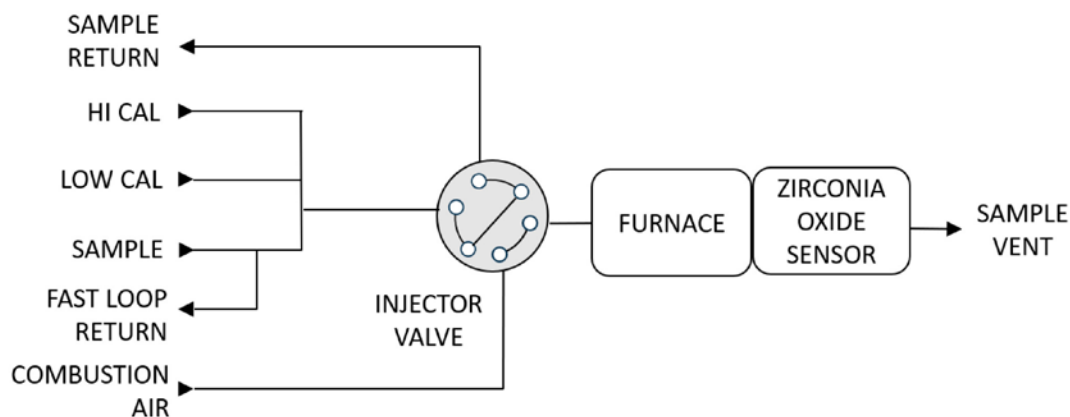
9800CXi Calorimeter

- Zero HC Emission
- Fast Response Injection Style
- Direct Measurement of Calorific Heating Value
- BTU Measurement Range 0-3000 BTU/SCFH
- Handles High Sulfur Concentrations
- H₂ Measurement Option
- Industrial PLC System, Touchscreen HMI
- High Temperature Combustion
- Flameless / No Flameouts
- Built for Indoor, Outdoor, Dirty, and Corrosive Environment
- Precise Measurement of Air Fuel Ratio

Measurement Principle: Residual Oxygen Measurement

The 9800CXi™ Calorimeter uses the measuring principle based on the analysis of the residual oxygen content in fuel or flare gas after combustion of the sample. A small constant volume of sample gas is injected into a continuous flow of combustion air with each measurement cycle, providing a precisely maintained fuel/air ratio profile.

The fuel air mixture is oxidized in the combustion furnace at 1000°C, and the residual oxygen concentration of the combustion sample is measured by a zirconia oxide sensor. The residual oxygen provides an accurate method of measuring Calorific Heating Value with optional measurement of Wobbe Index correlated to Specific Gravity of the sample gas. Higher Sample Compartment temperatures reduces maintenance of the instrument; varying temperature up to 100°C.



The majority of the sample gas will return to the process gas stream through the fast loop so there is no hazardous hydrocarbon emission. Only the small amount of sample gas and air mixture is completely burned in the combustion process resulting in extremely low, non-hazardous (CO₂) emissions.

Additional Features

- Compact, sturdy O₂ Cell is designed to be cost-effective, and for ease of maintenance and service
- Internal sample system up to 50°C with options to 100°C
- Full measurement range 0-3000 BTU/SCFH without the need of a specific gravity meter

Higher Temperatures, Reliability Improvements

The 9800CXi calorimeter maintenance requirements are low. It's easy to maintain. The zirconia oxide sensor is mounted in the electronics cabinet for added safety and speedy access. Higher furnace temperatures provide complete oxidization of any molecular-bound sulfur compounds, virtually eliminating the typical accumulation of uncombusted sulfur products in the furnace vent further reducing instrument maintenance. Combined with use of proper sample conditioning, the 9800CXi can operate unattended for several months. All compartments are easily accessible through separate doors on the front side of the enclosure.

SPECIFICATIONS

Analyzer Performance:	
Model	9800CXi Calorimeter
Sample gas	Natural gas, fuel gas, refinery gases, biogas, flare gas, etc.
Ranges	Heating Value: 0-3000 BTU/SCFH (0-118 MJ/Nm3), Wobbe Index: 0-2750 CARI Index: 0-20
Accuracy	± 1% full scale
Repeatability	±0.5% BTU/SCF (0.02 MJ/Nm3)
Response Time	< 30 sec
Ambient temperature	Base: 5°C (41°F) to +40°C (104°F), -20°C (-4°F) to +55°C (131°F) (optional)
Outputs	4 Analog Outputs, 4 Digital Outputs, 2 (optional)
Communication	Modbus over TCP/IP
Specific Gravity (optional)	Range: 0.2-2.2 RD
Enclosure	IP65 NEMA 4
Furnace Temperature	Up to 1000°C
Utilities:	
Power supply	110/220 V AC, 50/60 HZ
Power consumption	2000 V A Base
Air Consumption	31 SCFH (15lpm) Analyzer, 34 SCFH (17lpm) with Purge @ 80 psig (5.5barg)
Sample	Sample usage 400-600cc/min
Sample Pressure	5-100 psig (0.35-7barg)
Mounting	Wall mount with optional stand
Weight	250lbs. (115k kg)
Dimensions	30" H x 40" W x 14" D (762 mm x 1016 mm x 356 mm)

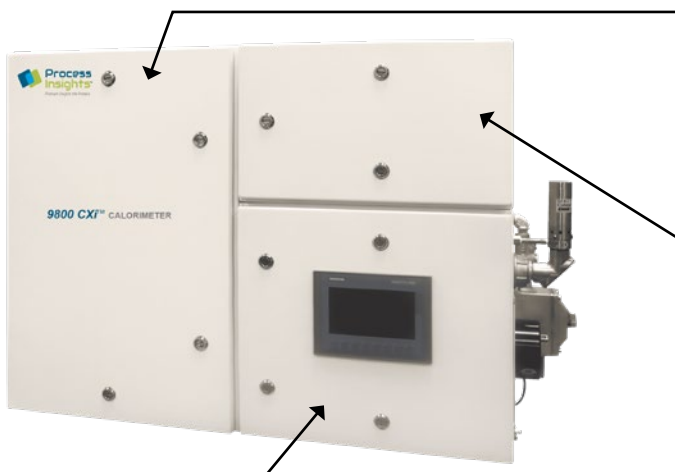


All features, functionality and other product specifications are subject to change without notice or obligation.

Analyzer Construction

The 9800CXi Calorimeter is housed in a powder coated NEMA4 (IP65) cabinet suitable for outdoor installations without additional temperature controlled shelter. For extreme climate conditions, the standard operating temperature range of the 9800CXi Calorimeter can be extended with the addition of a cabinet heater and/or vortex cooler. Enclosure is wall mounted with optional stand.

The analyzer cabinet has three compartments: the gas mixing compartment, the combustion furnace compartment, and the electronics compartment.



The **Sample Conditioning Enclosure** contains sample conditioning and the gas mixing system. Components in this compartment are intrinsically safe. The gas mixing compartment is heated to avoid condensation of heavier gas constituents.

The **Combustion Furnace Enclosure** contains the combustion furnace and the zirconia oxide sensor is located separately in electronics cabinet. Both electronics compartment and combustion furnace compartment can optionally be purged for Class 1 Div 2 / ATEX Ex Ib px IIC T3 Gb Ta applications.

The **Electronics Enclosure** contains the industrial PLC system and touchscreen HMI, which performs all instrument control functions and calculations. Results are available through digital and analog outputs and a touchscreen HMI, which displays Heating Values and Wobbe Index in BTU/SCFH or MJ/Nm3, residual O₂ in %, Cell voltage in mV, relative density (optional), and CARI (Combustion Air Requirement Index).

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REVOLUTIONIZING MEASUREMENT

EVERYWHERE