

INTRODUCTION

The Portable NGC 8206 is a natural gas chromatograph designed for installation in a vehicle, allowing it to be used for real-time analysis on any site that can be driven to. The NGC is easily



powered, either from the vehicle's 12Vdc system or from a 110VAC inverter. It's low power operation means you can maintain continuous power on the unit, thus keeping it at operating temperature and assuring it is ready for immediate use on site.

From the spot analysis the following are calculated:

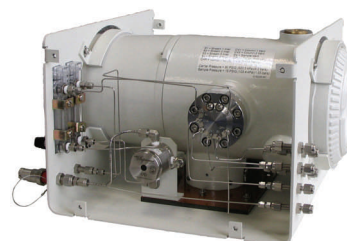
- Relative Density
- Heating Value
- VOS (Velocity of Sound)
- GPM (gallons of liquid per thousand Cubic Feet)
- Wobbe index

This data can be used for flow computers, RTU's, gas accounting systems, and SCADA systems for the Energy, AGA3, 7, 8 and 10 calculations at the meter site. This data output can be a CSV file format so that analysis data systems can easily incorporate the information. The number of runs and the number of averages can be selected. The averaged output can be formatted to be accepted by a 3rd party gas accounting software system, allowing automatic downloads of the analysis data. Analysis done on site is valuable because:

- Transportation of DOT regulated gas cylinders is avoided
- Time and cost of subsequent laboratory analysis
- Problems with sample handling
- Economic solution for gas quality measurement when the gas volumes are too low to justify on-line chromatography

STANDARD FEATURES

- Modular Design:
 - ◇ Portable GC interface allows user analysis customization
 - ◇ Modular software – application based plug in software modules
 - ◇ Manifold module (internal tubing now replaced by manifold)
 - ◇ Analysis section contains stream selection solenoids, pressure regulation, 32 bit digital detector electronics and a dual-train chromatograph in a single, replaceable module
 - ◇ 32 bit digital, low-power controlling electronics, using Windows CE® (internal to GC unit)
- Microsoft® Windows® 2000 or XP based man-machine interface software (PCCU 32)
- USB MMI port connectivity
- Ethernet connectivity
- Lithium battery-backed RAM
- Two remote serial digital communications ports; one local port



- Comprehensive diagnostics and wizards available to users
- Audit-quality historical data; date and time stamped
- Operational fault/warn alarms available
- Detectors - constant temperature, glass encapsulated thermister beads for rugged service and long life. Will not burn out on loss of carrier.
- Dual 10 port valves have no moving metal parts.
- Low utility usage - low-power, low-carrier, no instrument air required
- On demand or scheduled automatic calibration and diagnostics

DESCRIPTION

The truck is moved as close to the sample point as is practical. A flexible sample line is then uncoiled and attached to the probe in the flowing natural gas pipeline. If the dew point of the gas or the weather demands it, this flexible tubing must be heated. A sample of the gas is extracted from the probe in the line, purged through the flexible line and then transported to the analyzer. There it is processed for particle removal and phase integrity, injected onto the chromatographic columns where component separation occurs. These components are then quantified by peak integration and concentration is calculated. The other data of interest is then calculated from these concentrations.

The NGC 8200 analyzes each sample utilizing established chromatographic techniques. The resulting information consists of mole percent values for the following:

- Air (Contains N2, Ar, CO and O2 but not CO2)
- C1 CO2 C2 C3 IC4 NC4
- NeoC5 IC5 NC5 C6+

As an option, H2S, up to 1200ppm, (With an MDQ of 300ppm) may be added to this analysis

The NGC 8206 measures a C6+ (back flushed) peak. Users may input the results of a comprehensive lab analysis that reflects the split or ratio of C6 through C10 components. This ratio can be used in subsequent analyses and energy calculations.

Calculated values include:

- Relative Density (Specific Gravity)
- Btu/CV (Heating) Value
- GPM (gallons of liquid per thousand Cubic Feet)
- Wobbe Index

HISTORICAL DATA

The NGC 8206 is designed to retain historical data. This data can be used for custody transfer needs, verify transmitter operation over time, and provide a limited data backup for communication link reliability. In addition, various CSV file outputs are available to download the analysis data into spreadsheet based company specific data sheets, and outputs to 3rd party gas accounting packages.

Specifications	
Dimensions	9.5" high (24.13 cm) x 14.3" wide (36.32 cm) x 16" deep (40.64 cm)
Weight	Approximately 38 lb. (17 Kg) Shipping Weight: Approximately 45 lb. (20.4 Kg)
Weatherproof Construction	No classification
Power Consumption	Nominal operation @ 0°F (-18°C) = 7 Watts @ 650mA Start up @ less than 3 amps (45 Watts @ 15 VDC)
Carrier Gas	Helium (consumption rate <20 cc/minute during analysis cycle)
Analysis Time	Approximately five (5) minutes; cycles may be scheduled by user
Repeatability	±0.125 Btu @ 1,000 Btu (±0.0125%) at ambient; and ±0.25 Btu @ 1,000 Btu (±0.025%) over temperature range of 0 to 131°F (-18 to 55°C)
Temperature Range Temperature Range (Storage)	0 to 131°F (-18 to 55°C) -22°F to +140°F (-30°C to 60°C)
Moisture	95% Relative Humidity Non-condensing
Supply Voltage	110v AC, 60Hz or 250v AC 50 Hz, 24v DC (16-28V DC) or 12 V DC (10.5-16 V DC)
Certifications	General Purpose
Communications supported	Two Serial Digital Ports (software selectable RS-232, RS-485, RS-422) One Man Machine Interface (RS-232 or USB) Optional USB (host and client) and Ethernet Ports
Protocols supported	Totalflow Remote / Local MMI Totalflow / TCP Modbus / TCP Server Modbus / TCP Client Modbus ASCII or RTU (Modicon, WordSwap, or Danalyzer)
Other Specifications	<ul style="list-style-type: none"> • Designed for Pipeline-Quality Natural Gas. 800 to 1500 Btu per standard cubic foot (29.8 to 55.9 megajoules/meter³)¹ with less than 100 PPM H₂S • Calculations Per: GPA 2172-96 (Z by AGA 8 or single virial summation) and 2145-03, ISO 6976-95; meets ISO 12213-2 by AGA 8 detail: (in the future - ASTM D 3588, GOST and ISO mass) • Meet or exceeds GPA 2261-99 for linearity • Four stream capability. Manual calibration required with 4 sample streams. • Single auto calibration stream and 3 sample streams, or 2 auto calibration streams and 2 sample streams.

The default¹ memory configuration provides the most recent 480 analysis cycles containing:

- Normalized components
- Un-normalized components
- Ideal Btu/CV
- Real Btu (wet and dry) / CV (superior and inferior)
- Relative Density (Specific Gravity)
- Density
- GPM
- Wobbe index
- Alarms

Stream averages for the (default¹) 840 last hours, 35 last days and the most recent last month analyses.

Operational Parameters for the (default¹) last 480 cycles (Diagnostics Report):

- Selected peak times
- Selected peak areas
- Ideal Btu/CV
- Carrier regulator pressure
- Oven temperature
- Ambient temperature
- Sample pressure
- Detector noise values
- Detector balance values

Audit logs (Default¹)

- Last 480 alarms
- Last 480 events

Data retained by the NGC 8206 can be collected via a remote communication link or by the laptop PC local operator interface PCCU 32.

EQUIPMENT

The equipment used for this analysis consists of the standard NGC 8206 mounted in a powder-coated box. It is recommended that the unit be left in an operational mode while transporting.

All the valves, gauges, inlet ports, and PCCU32 (the laptop driven man-machine interface) connectors are bulkhead mounted on panel to provide the technician with ready access.

AVAILABLE OPTIONS

- Sample and GC Rotometers
- 120/240 VAC / 24 VDC to 12 VDC power supply
- Modular Sample System for Non-pipeline quality natural gas and Sample transport lag-time needs: Type 4 w/ liquid shut -off
- Temperature Compensation Probes:
 - ◊ Fixed
 - ◊ Retractable
- Regulators, carrier and calibration blend
- Start up/calibration/validation gas sample ($\pm 2\%$ Cal Blend)
- Export crating
- Tool kit
- Various maintenance kits
- On board digital 1/4 VGA display with multiple screen access
- USB (Host and Client) and Ethernet ports
- SD memory cards
- Feed-Through heater
- Heat trace internal and external tubing

¹ The default memory configuration will provide for the data storage above. User may reallocate memory

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