

ABB MEASUREMENT & ANALYTICS | DATA SHEET

NGC8207

Natural gas chromatograph



Measurement made easy

The NGC combines simplicity with low installation costs and unmatched performance, making it the ideal solution for natural gas custody transfer. The NGC8207 is a field mounted GC which sets a new standard for determining the heating value of natural gas.

The NGC (Natural Gas Chromatograph) performs on-site gas analysis and heating value computation where current chromatograph technology has been either impractical or unaffordable. This truly “transmitter-like” GC takes up no more room on the pipeline than most multivariable transmitters.

- New design, more compact, more reliable, more precise
- Custody transfer/metrology quality GC for heating value and composition
- Lower cost to purchase, install and operate

Description

Components measured

| Component | Symbol | Range (Mol %) |
|---------------------|--------|---------------|
| Nitrogen | N2 | 0.001 - 100 |
| Methane | C1 | 0.01 - 100 |
| Carbon Dioxide | CO2 | 0.01 - 100 |
| Ethane | C2 | 0.01 - 50 |
| Propane | C3 | 0.05 - 15 |
| Isobutane | IC4 | 0.05 - 10 |
| Butane | NC4 | 0.05 - 10 |
| NeoPentane | Neo | 0.05 - 15 |
| IsoPentane | IC5 | 0.05 - 10 |
| Pentane | NC5 | 0.05 - 10 |
| Hexanes | C6's | 0.05 - 10 |
| Heptane and heavier | C7's | 0.05 - 5 |

Calculations supported

- Gas compressibility per AGA 8
- Real Relative Density (Specific Gravity)
- Btu/CV Value
- GPM (gallons of liquid per thousand cubic ft)
- Wobbe Index
- Methane Number
- Optional: AGA 10 speed of sound, Hydrocarbon Dew Point

Installation

The NGC8207 is a weatherproof device designed for installation "on the pipe" near to the sampling point. This means it is acceptable to mount outside - in a temperature range of 0°F to 130°F (-18°C to 55°C) [provides reliable operation for -20°F to 130°F (-29°C to 55°C) with low temperature option] onto a pipeline with 2" to 12" pipe sizes or with an optional pole mount configuration. A cold weather enclosure is also available if ambient conditions are below either the sampled gas dew point or the operational specifications of the unit.



Integrated stream switching

The integral stream selector for the NGC8207 allows sampling up to four (4) different natural gas streams. Up to two of these sample streams can be designated as the "calibration/validation sample".

Operator interface

Functional setup and operation of the NGC8207 is accomplished by using a graphical user's interface software package named PCCU 32 (supplied with each unit) operating on a laptop PC in a Microsoft® Windows® environment. The "Windows®" utilities, combined with software designed specifically for the NGC8207, provide a powerful tool for operations, diagnostics, and downstream data handling. The PC can be directly connected to the NGC8207 via an RS-232, USB, or Ethernet connection, or indirectly by remote telemetry (phone modem, radio, cell phone, satellite, etc.).

Standard features

Modular design includes

- 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)
- On board digital ¼ VGA display with multiple screen access
- Microsoft® Windows® based man-machine interface software (PCCU 32)
- Lithium battery-backed RAM
- Two remote serial digital communications ports; one local port
- Comprehensive diagnostics and wizards available to users
- Three-level security for user access control
- Audit-quality historical data; date and time stamped
- Auto-start cycle automatically:
 - Stabilizes oven temperature
 - Confirms modules' functions
 - Validates/calibrates
 - Returns to pipeline streams
- Operational alarms and events, time, and data stamped in a log
- Memory: up to 2.052 GB
- 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

Available options

- H₂S measurement from 0.02% up to 1%
- Sample Conditioning System
- On board digital ¼ VGA display with multiple screen access
- USB (Host and Client) and Ethernet ports
- Calculation packages (eg, V.O.S., HCDP, Etc.)
- SD memory cards (up to 2 GB)
- Feed-Through heater
- AI/DI, AO/DO per customer requirements
- 24 hour temperature testing

Maintenance

The NGC8207 was designed from the ground up to be maintained by personnel with little or no prior knowledge of gas chromatography.

Both hardware and software are designed to provide low maintenance through easily replaceable electro-mechanical modules such as:

- NGC termination panel
- NGC analytical module, an easily removable chromatograph subassembly, containing:
 - NGC manifold
 - Stream selector solenoid valves
 - GC module
 - Dual electronic carrier pressure regulator valves
 - Chromatograph pilot valve
 - NGC analytical processor
- NGC feed-through (heater optional)
- Sample conditioning module (SCM)
- NGC controller, (32 bit processor)
- NGC ¼ VGA display (optional)

Historical data

The NGC8207 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.

The user is allowed to configure the period of the data retained by the NGC8207 via the Operator Interface.

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 NGC8207 can be collected via a remote communication link or by the laptop PC local operator interface PCCU 32.

—
default¹

The default memory configuration will provide for the data storage above. Users may reallocate the memory that is available.

Available accessories or options

- 120/240 V AC to 12 V DC GP and Exp power supplies
- Pole or pipeline mounting kits
- Cold weather enclosure (also available in pipe mount configuration)
- Modular Sample System Conditioner options for
 - Non-pipeline quality natural gas sample
 - Sample transport lag-time needs
- Probes
 - Temperature compensating fixed
 - Temperature compensating retractable
 - Liquid rejection
 - Electrically heated, retractable
- Regulators (carrier and calibration blend)
- Start-up calibration/validation gas sample ($\pm 2\%$ accuracy)
- Carrier Gas: 99.995% pure helium (chromatographic grade)
- Hydrogen carrier (optional)
- SD memory card
- Export crating
- Tool kit
- Welker liquid shut-offs
- Various maintenance kits
- Customer Factory Acceptance Test (FAT)



Specifications



- Designed for pipeline-quality natural gas
- Environmental temperature
- 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

NGC8207 specifications

| | |
|--|---|
| Dimensions | 6.75" diameter x 16" long x 9.00" tall 17.1 cm x 40.6 cm x 22.9 cm |
| Weight | Approximately 28 lb. / 12.7 Kg |
| Shipping weight | Approximately 47 lb. / 21.3 Kg |
| Weatherproof construction | CSA Type 4X, IECEx IP56, ATEX Type 4X (IP66 Equivalent), aluminum alloy with white polyester powder coating. |
| Carrier gas | Helium (consumption rate < 20 cc/minute during analysis cycle) |
| Analysis time | Approximately six (6) minutes; cycles may be scheduled by user |
| Repeatability | ± 0.125 Btu @ 1,000 Btu (± 0.0125%) @ ambient ± 0.5 Btu @ 1,000 Btu (± 0.05%) over temperature range of 0°F to 131°F (-18°C to 55°C) |
| Temperature range (storage) | -22°F to +140°F (-30°C to 60°C) |
| Temperature range (normal) | 0°F to 130°F (-18°C to 55°C) |
| Temperature range (cold weather enclosure) | -40°F to +130°F (-40°C to 55°C) |
| Moisture | 95% relative humidity non-condensing |
| Supply voltage | 10.5 to 16 V DC (Optional: 21 to 28 V DC) |
| Certifications | NEC & CEC Class I, Div. 1, Groups B, C and D, T6: CFR 47, Part 15 CE: ATEX Ⓢ II 2G : Ex d, IIB+H2 T6; Class I, Zone 1 EMC - EMI/RFI: EN 55022, EN 61000-6-1, EN 61000-4-2, 4-3, 4-4, 4-6, 4-8, CISPR 22-2004 IECEx Exd IIB + H2 T6; Class I, Zone 1 INMETRO Exd 11B + H2 T6; Class 1 Zone 1 |
| Communications supported | Two serial digital ports, software selectable for RS-232, RS-485, or RS-422. One USB MMI (RS-232 or USB). Optional USB hub (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) DSFG |
| Memory | Up to a total 2.052 GB of RAM. CPU RAM Memory 20 MB. Nand Flash 32 MB. Data storage 128 MB to 2 GB |

Sales



Service



Software



Installation dimensions

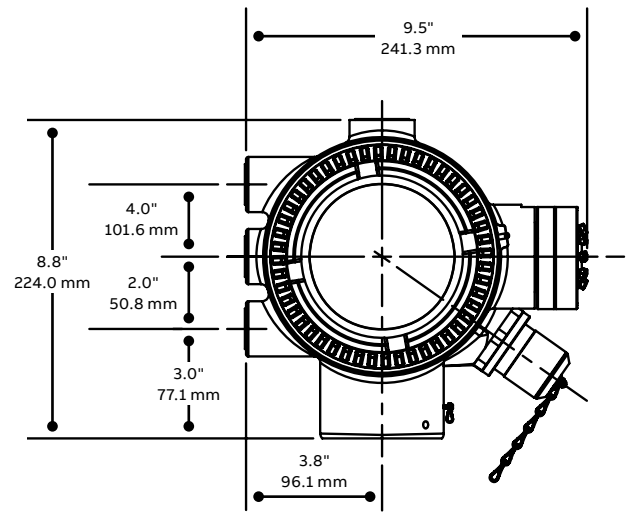
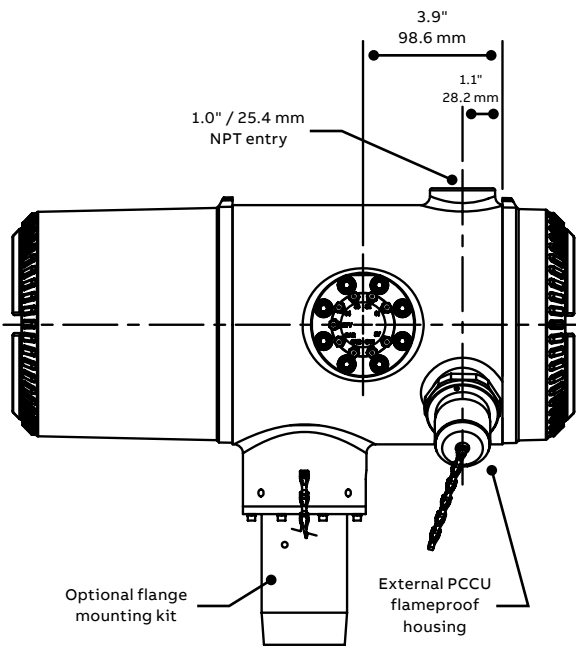
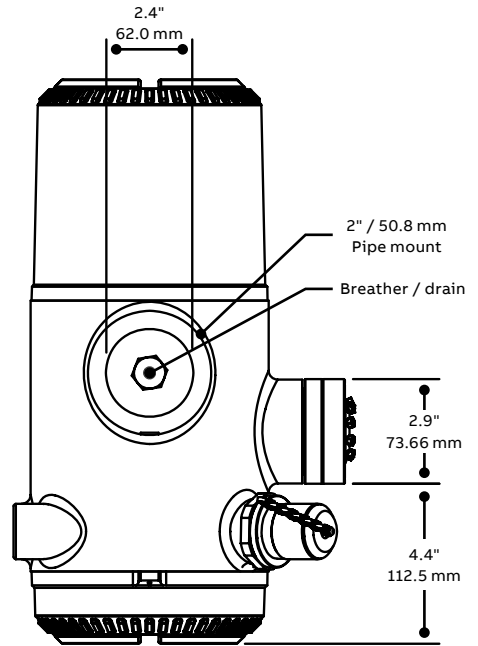
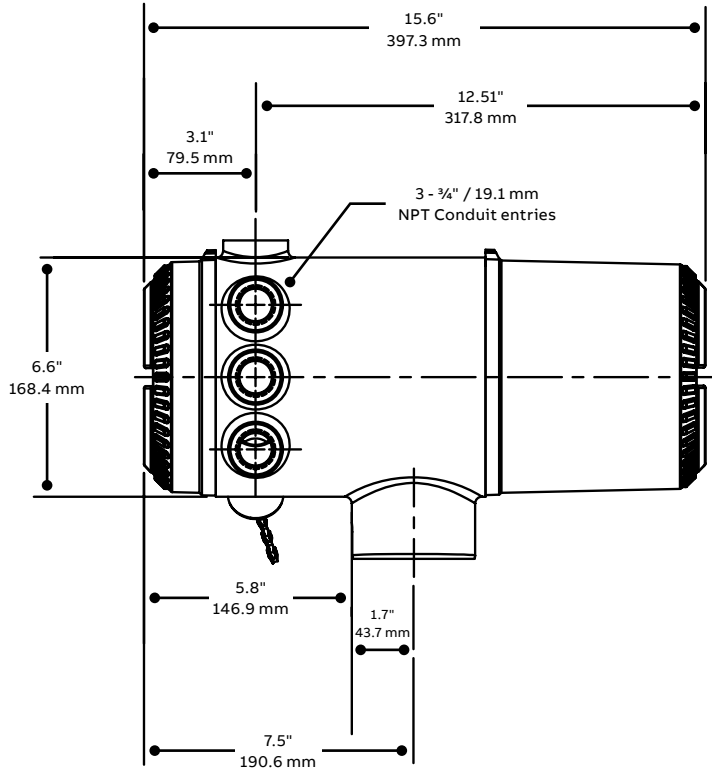


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