
ABB MEASUREMENT & ANALYTICS | DATA SHEET

PGC5009

Fast process gas chromatograph



Measurement made easy

The challenge

A relatively small shift in the cut point for any refinery product can cost refiners millions in profits. In the absence of fast, accurate and reproducible boiling point data, refinery product yields are not optimized and more importantly, profits are lost.

The solution

The PGC5009 represents the best in process analytics for simulated distillation analysis using fast temperature programmed process chromatography. With a patented resistively heated column design and rapid cooling system, the PGC5009 provides superior chromatography. The results are proven: accurate and reproducible retention times and weight percentage measurements required for boiling point curve calculation enabling optimized refinery process control.

Product features

- ASTM D3710 (Gasoline) in less than 4 minutes
- ASTM D2887 (Diesel) in less than 5 minutes
- Patented resistively heated micro packed column design for fast C1-C36 separation
- 7 days of chromatogram and report storage comes standard on the PGC5000A Master controller with a removable SD card
- Integrated sample system communication for remote health monitoring
- Connectivity to the STAR Data Management System
- Open accessible oven and electronics enclosure

Stakeholder benefits

- Tight cut point control for product yield optimization can save millions in refinery profits
- Blending to pipeline versus costly storage
- Significant savings in analyzer technician time through remote system diagnostics capability and an analyzer designed for ease of maintenance

Specifications

Physical

Oven

Environmental (enclosure)

Protected from weather: IP 54, (NEMA 12) equivalent

Ambient temperature range

0 to +50° C (32 to 122° F)

Humidity

95% relative humidity, non-condensing

Dimensions (W x D x H)

753 mm x 290 mm x 1283 mm

29.7 in. x 11.4 in. x 50.50 in.

(with X-purge assembly)

(38.6 in. x 11.4 in. x 50.50 in.)

Weight

73 kg (160 lb.) (minimum)

Mounting

Wall

41.3 mm (1.6 in.) from wall with brackets

Floor

Optional wheeled dolly

EMI/RFI considerations

Conforms to Class A industrial environment

Electrical entries

Top and right side

Pneumatic entries

Right side

Sample entries

Liquid

Bottom, 1 each special version Model 791 LSV

Vents

Left side and Bottom

Safety area classification

NEC, CSA/NRTL, ATEX/IEC

Class I, Divisions 1 Group B, C, D (T3 or T2)

Conforms to IECEx/ATEX Directive 2014/34/EU and EMC Directive 2014/30/EU

Zone 1: CE II 2G, Ex db eb ib pxb IIB+H2(T3 or T2) Gb

(T-code and protection method are dependent upon application.)

Safety Purge Control

X-purge required for all area classifications

Purge Timeout

18.2 minutes

Power (Hot, Neutral, Ground)

Voltage

100 VAC (+15, -6 VAC)

120 VAC ± 10%

230 VAC ± 10%

Frequency

50/60 Hz ± 10%

Power consumption

1200 VA Maximum, 240 VA Typical

Instrument air

Supply connection

3/8 inch tube, minimum

Supply pressure

Low Pressure: 414-690 kPa (60-100 psig) with 15 scfm vortec cooler

High Pressure: 586 - 690 kPa (85-100 psig) with 10 scfm vortec cooler

(Note: Not all applications can be performed with the low pressure version)

Quality

Instrument grade: Clean, Oil Free and -34° C, (-30° F) dewpoint

Flow rates

Maximum

l/min (12.0 ft³ /min)

Steady state

278 l/min (9.8 ft³ /min)

Analytical detectors

Standard detectors

Flame Ionization, Independently heated

Temperature programmed column section

Column section cabinet

Configuration

Painted steel housing independent of the Electronic Control section. Insulated for temperature stability. The LSV is attached through the bottom of the cabinet and connected on the inside to the micro-packed, electrically heated stainless column assembly. The heated FID is mounted at the top of the cabinet and connected to the effluent end of the measurement column.

Internal dimensions (W x D x H)

228 mm x 1165 mm x 199 mm
(9.00 in. x 45.85 in. x 7.85 in.)

Heat

Direct electrical connection to the measurement column

Temperature control method

Closed loop PID

Column temperature

+10° to 300° C (Settings and display in ° C only),
T3 or T2 Rating

Setpoint resolution

1° C

Analytical columns

Micro Packed Stainless Steel

Column cooling

At the end of the analysis cycle, the controller directs vortex cooled air into the column assembly to rapidly return this oven zone to the initial temperature, allowing the next the measurement cycle to begin.

(When required by application)

Gas control – Electronic pressure control

Electronic pressure control

Control method

Closed loop PID, temperature stabilized

Number of zones

1-5, Typically 4 used (carrier, makeup, H2 fuel, Burner Air)

Filtration

2mm at inlet, provided

Inlet pressure

Minimum: Setpoint + 69 kPa (10 psig)
Maximum: 1034 kPa (150 psig)

Range

0-100 psig, bubble tight, non-venting

Gauges

Electronic readout : 0.01 psig resolution
Setpoint resolution: 0.01 psig

Accuracy

0-50 psig: 1.7%
50-100 psig: 2.7%

Repeatability

+0.1 psig

Allowable gasses

H₂, H_e, N₂, Air

Quality

GC Grade

Flow adjustment

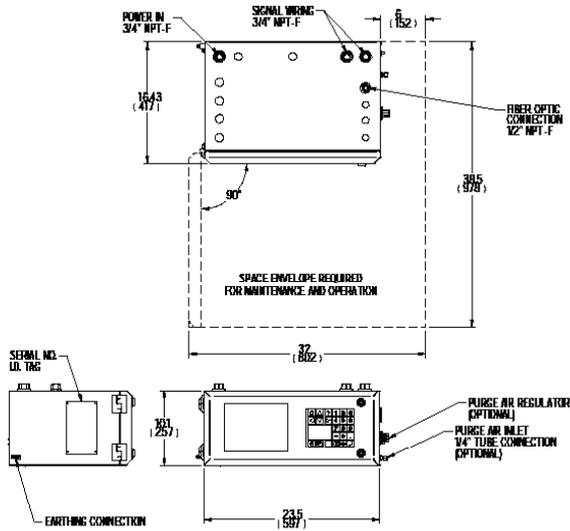
Needle valves, Split Flow only; EPC used for Column Flow

Tube fittings

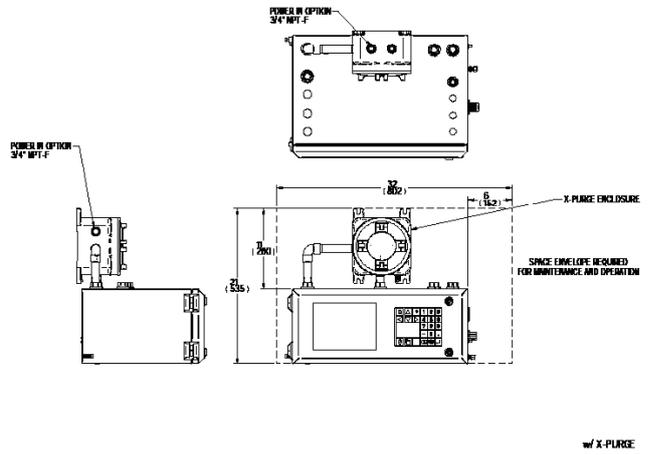
316 SS Gyrolok (standard) ; 316 SS Swagelok (optional)
1/16, 1/8, 1/4 inch connections

External Dimensions

PGC5000A



1. DIMENSIONS SHOWN IN PARENTHESIS (X(X)) ARE IN MILLIMETERS



Notes

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