

ABB MEASUREMENT & ANALYTICS | DATA SHEET

PGC5000

Temperature programmed
gas chromatograph



Measurement & Analytics

The challenge

How to optimize your specialty analysis for separation of wide boiling range compounds without the need for complex column and analytical valve arrangements.

The solution

The PGC5000 Temperature Programmed (TP) gas chromatograph uses variable temperature for component separation to analyze gas or liquid samples. The analyzer operates unattended, automatically sampling and analyzing process streams in a highly repeatable fashion.

PGC5000 TP oven advantages

- Shorter analysis times for complex samples
- Better separation of wide boiling point range
- Improved detection limits, peak shapes and precision especially for late eluting peaks
- Excellent means of column maintenance and cleaning

Introduction

Specialty analysis for separation of wide boiling range compounds. The PGC5000 Temperature Programmed (TP) Gas Chromatograph uses component separation to analyze gas or liquid samples. The analyzer operates unattended, automatically sampling and analyzing process streams.

Description

An isothermal oven contains the temperature programmed oven assembly with a detector, either a Flame Ionization Detector (FID) or Thermal Conductivity Detector (TCD). The detector is mounted on top of the temperature programmed oven, and it is integrated with the TP oven in order to provide an optimal analytical flow path and eliminate potential cold spots. The sample valves, either a Liquid Sample Valve (LSV) or a Continuous Performance (CP) valve, can also be installed in the isothermal oven compartment. An optional air cleanup / methanizer unit may be used. Special columns (capillary or packed type) are installed inside the temperature programmed oven. The columns contain special packing material which separates the compounds to be analyzed so that they enter the detector in a predictable sequence.

Physical

Environmental (enclosure)

Protected from weather: IP 54, (NEMA Type 13) equivalent

Ambient temperature range

0 to +50 °C (32 to 122 °F)

Humidity

95% relative humidity, non-condensing

Dimensions (W x D x H)

496 x 340 x 1175 mm

(19.5 x 13.4 x 46.3 in.)

Weight

73 kg (160 lb) (minimum)

Mounting

Wall: 32 mm (1.3 in.) from wall with brackets

Floor: Optional wheeled dolly

EMI/RFI considerations

Conforms to Class A industrial environment

Electrical entries

Left side

Pneumatic entries

Right side

Sample entries

Liquid

Right side, 1 each model 791 LSV

Gas

Bottom and/or right side

Vents

Bottom and/or right side

Safety area classification

Class I, Division 1, Group B, C, D with Type X-Purge

Temperature Code T2 or T3

Ex Zone 1

CE 0344; II 2G; Ex db eb ib pxb IIB+H2 T2 or T3 Gb;

Conforms to EU Directives 2014/34/EU (ATEX), 2014/30/

EU (EMC) and 2014/35/EU (LVD)

EU Type Certificate LCIE 09ATEX 3006X

IECEX Certificate LCI09.0010X

Enclosure purge wait time

18.2 minutes

Power (hot, neutral, ground)

Voltage

100 VAC ± 10%

120 VAC ± 10%

230 VAC ± 10%

Frequency

50/60 Hz ± 10%

Power Consumption

1900 VA (maximum start-up)

1000 VA (steady-state)

Instrument air

Supply connection

3/8 inch tube, minimum

Supply pressure

552 to 690 kPa (80-100 psig)

Quality

Instrument grade

Clean, oil free and -34 °C, (-30 °F) dewpoint

An optional air clean up unit is available for FID burner air.

Flow rates

Startup

378 l / min (13.4 ft³/min)

Steady state310 l / min (11 ft³ / min)**Oven Cool-down**628 l / min (22.25 ft³ / min) During vortex cool-down

Analytical detectors**Standard detectors**

Flame ionization or thermal conductivity
Both are independently heated

Isothermal analytical oven**Oven liner**

Stainless Steel

Internal dimensions (W x H x D)

390 x 520 x 230 mm
(15.3 x 20.4 x 9.0 in.)

Number of valves

Standard provisions for one external liquid sample valve,
or one CP valve

Heat

Forced air

Temperature control method

Closed loop PID

Oven temperature

Ambient + 30 to 289 °C (86 to 356 °F)
(Settings and display in °C only)

Setpoint Resolution

1 °C

Temperature stability**Steady ambient**

±0.1 °C (32 °F)

Ambient Range

±1.0 °C (34 °F)

Temperature programmed column oven**Oven shell material**

Stainless Steel

Internal dimensions

225.8 Diameter x 108.8 mm Depth
(8.89 Diameter x 4.285 in. Depth)

Heat

Forced air

Temperature control method

Closed loop PID

Oven temperature

+ 30 to 289 °C (Settings and display in °C only)
(86 to 35 °F)

Setpoint resolution

1 °C

Analytical columns

Metal capillary, fused Silica capillary, or packed
Stainless Steel

Column oven cooling (When required by the application)

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

Gas Control**Control Method**

Closed loop PID; temperature stabilized

Number of pressure zones

1 to 5

Filtration

2 µm at inlet, provided

Inlet Pressure**Minimum**

Setpoint + 69 kPa (10 psig)

Maximum

1034 kPa (150 psig)

Range

0 to 100 psig, Bubble tight, non-venting

Gauges**Electronic readout**

0.01 psig resolution; Setpoint resolution:

0.01 psig

Accuracy

0 to 50 psig: 1.7%

50 to 100 psig: 2.7%

Repeatability

±0.1 psig

Allowable GasesH₂, He, N₂, Air, Ar**Quality**

GC Grade. an optional air clean up unit is available for FID
burner air.

Flow adjustment

Oven mounted needle valves with external adjustment

Tube fittings

316 SS Gyrolok (std.); 316 SS Swagelok (optional);

1/16, 1/8, 1/4 inch connections

Notes

Sales



Service



Software



Notes

—

ABB Inc.

Measurement & Analytics

3567 Jefferson Street North

Lewisburg, WV 24901

Tel: +1 304 647 4358

Email: analyzeit@us.abb.com

abb.com/measurement

—

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in parts – is forbidden without prior written consent of ABB.

© Copyright 2018
ABB.
All rights reserved.