

# Agilent 7820A Gas Chromatograph System

## Data Sheet

The Agilent 7820A gas chromatograph, inheriting Agilent's legendary expertise in GC and proven quality as industry leader, generates reliable results with the minimized complexity for customers' routine analyses, run after run, day after day.

The simplified GC front panel keys and display provide sequence information, instrument conditions, and run status. Full electronic pneumatics control (EPC) is available for all inlets and detectors.

Configurable with either a 50-vial injector (as option) or a 16-vial injector.

A flexible software choice is provided. From OpenLAB CDS ChemStation Edition or EZChrom Edition, OpenLAB CDS ChemStation VL or EZChrom VL, to OpenLAB CDS EZChrom Compact, everything is designed to help you make the most of every run, and every workday.

### Dimensions and Weight

Height	49 cm
Width	56 cm
Depth	51 cm
Average weight	50 kg

### GC Front Panel Keys and Display

Available in English or Chinese

### Environmental Conditions

Indoor use	
Ambient operating temperature	15 to 30 °C
Ambient operating humidity	30 to 70%
Storage extremes	-40 to 70 °C
Operating altitude	3,100 m



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## Safety and Regulatory Certifications

### Safety Standards

Canadian Standards Association (CSA)	C22.2 No. 61010
CSA/Nationally Recognized Test Laboratory (NRTL)	UL61010
International Electrotechnical Commission (IEC)	61010
EuroNorm (EN)	EN61010

Electromagnetic compatibility (EMC) and radio frequency interference (RFI) regulation conformity

CISPR 11/EN 55011	Group 1, Class A
IEC/EN 61326	

Designed and manufactured under a quality system registered to ISO 9001. The Declaration of Conformity is available.

### System Overall Performance\*

\* Using 7820A with EPC (splitless), ALS, and Agilent Data System for analysis of tridecane (2 ng to the column). Results may vary with other samples and conditions.

Retention time repeatability	< 0.06%
Peak area repeatability	< 2%

### Power Requirements

100 V (+10%, -10%)	
120 V (+10%, -10%)	
200 V (+10%, -10%)	
220 V (+10%, -10%)	
230 V (+10%, -10%)	
240 V (+10%, -10%)	
Frequency	47.5~63 Hz
1,500 W (max) at 100 V, 2,250 W (max) at all other voltages	

### Column Oven

Dimensions	28.0 × 30.5 × 16.5 cm
Operating temperature	8 °C above ambient to 425 °C
Temperature setpoint resolution	1 °C
Maximum temperature ramp rate	75 °C/min (see Table 1)
Maximum run time	999.99 min
Temperature programming ramps	5
Ambient rejection	< 0.01 °C per 1 °C
Oven temperature ramp	≤ 2%
Programming temperature repeatability	≤ 1%

Typical heating-up profile and cooldown rate are shown in Figures 1 and 2.

### Heated Zones

- Five independent heated zones, not including oven (two inlets, two detectors, and one auxiliary)
- 350 °C Maximum operating temperatures for auxiliary zone
- Support up to two heated valves

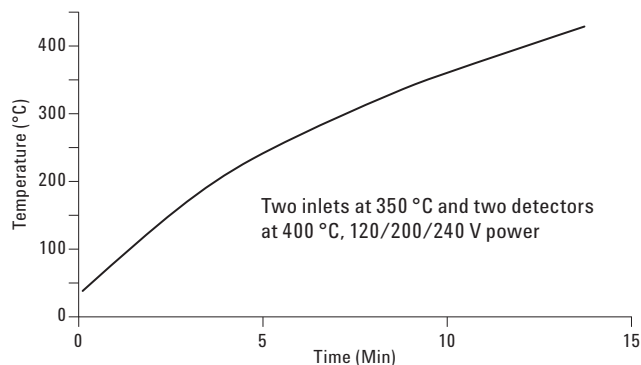


Figure 1. Typical oven heat up profile.

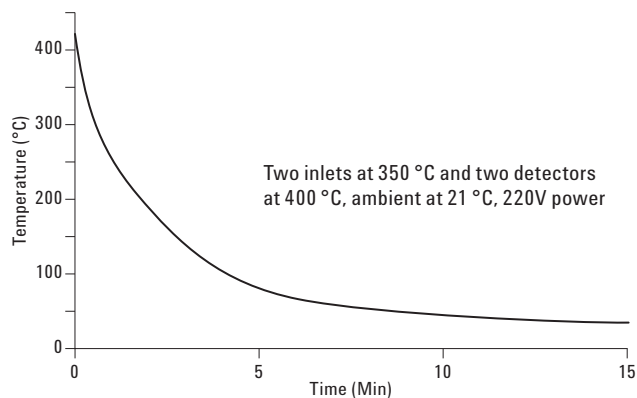


Figure 2. Typical oven cooldown profile.

Table 1. Typical 7820A GC Oven Ramp Rates

Temperature (°C)	220 V oven rates (°C/min)
50 to 70	75
70 to 115	45
115 to 175	40
175 to 300	30
300 to 425	20

For 100 V oven, the maximum temperature is 350 °C with a maximum ramp rate of 30 °C/min.

## Electronic Pneumatics Control (EPC)

Available on all inlet and all detectors

### Inlet Module

Pressure setpoint and control precision	0.01 psi or 0.069 KPa
Flow sensor accuracy	< ± 5%

### Detector Module Accuracy

8% of setpoint

### Inlets

Maximum inlets installed	two
Inlets available	Purged packed (PP) Split/splitless capillary (S/SL)

### Purged Packed

- Electronic flow control
- 400 °C maximum operating temperature
- Maximum flow < 100 mL/min
- Adapters included for 1/4-inch and 1/8-inch packed columns and for 0.530-mm capillary columns

### S/SL

Electronic pressure/flow control	
Maximum operating temperature	400 °C
Pressure range	0 to 60 psi or 0 to 413.69 KPa
Maximum split ratio	250:1
Total flow setting range	0 to 200 mL/min N <sub>2</sub> 0 to 500 mL/min H <sub>2</sub> or He

## Detectors

All detectors use electronic pneumatic control (EPC) for detector gases. Up to two detectors may be installed.

### Available Detectors

- Flame ionization detector (FID)
- Thermal conductivity detector (TCD)
- Electron capture detector (ECD)\*
- Nitrogen phosphorous detector (NPD)
- Flame Photometric detector (FPD)

### FID

Electronic pressure/flow control	
Maximum operating temperature	425 °C
MDL	< 3 pg carbon/s as tridecane
Linear dynamic range	> 10 <sup>7</sup> range with N <sub>2</sub> carrier and 0.29-mm id jet
Maximum data acquisition rate	100 Hz

### TCD

Electronic pressure/flow control	
Maximum operating temperature	400 °C
MDL	< 800 pg propane/mL using He carrier (MDL may be affected by laboratory environment)
Linear dynamic range	10 <sup>5</sup> (± 10%)

### ECD\*

Electronic pressure/flow control	
Equipped with hidden anode and high-velocity flows for contamination resistance	
Maximum operating temperature	400 °C
Makeup gas types	argon/5% methane or nitrogen
Radioactive source	< 15 mCi <sup>63</sup> Ni
MDL	< 0.02 pg/mL lindane
Dynamic range	> 10 <sup>4</sup> with lindane
50 Hz maximum data acquisition rate	

\*ECD not supported in Japan

### NPD

Electronic pressure/flow control	
Maximum operating temperature	400 °C
MDL	< 0.4 pg N/s, < 0.2 pg P/s with azobenzene/malathion mixture
Selectivity	25,000 to 1 gN/gC, 75,000 to 1 gP/gC with azobenzene/malathion mixture
Dynamic range	> 10 <sup>4</sup> N, > 10 <sup>4</sup> P with azobenzene/malathion mixture
Data acquisition rate	up to 100 Hz

### FPD

Single wavelength	
MDL	< 200 fg P/s, < 6 pg S/s with methylparathion
Dynamic range	> 5 × 10 <sup>2</sup> S, 10 <sup>4</sup> P with methylparathion
Selectivity	10 <sup>6</sup> g S/g C, 10 <sup>6</sup> g P/g C
Data acquisition rate	up to 200 Hz
Standard EPC for three gases	Air 0 to 200 mL/min H <sub>2</sub> 0 to 250 mL/min Makeup gas 0 to 130 mL/min
Maximum operating temperature	250 °C

## Optional ALS

Supports one 7650A autoinjector with capacity for 50 sample vials  
or  
Supports one 7693A autoinjector with capacity for 16 sample vials

## Data Communications

- One analog output channel (1 mV, 1 V, and 10 V output available) as standard
- Remote start/stop
- LAN

## OpenLAB CDS Software Platform Hardware and Software Requirements

OpenLAB CDS software platform is necessary for complete 7820 system control, data analysis, and reporting.

The table below lists the hardware and software requirements for OpenLAB CDS software platform installations.

Product	Operating system	CPU (minimum)	RAM (minimum available to EZChrom)	Disk space (minimum available to EZChrom)	Ports available
OpenLAB CDS Workstation	Windows XP Professional (SP2) Internet Explorer 6.0 or 7.0 Microsoft.NET version 3.0	1.0 GHz	2.0 GB	10 GB	One Ethernet LAN port per system

- English version of OpenLAB CDS is validated on Chinese, Japanese, English, and Western European language versions of Windows.
- Japanese version of OpenLAB CDS is validated on Japanese and English language versions of Windows.
- Chinese version of OpenLAB CDS is validated on Chinese and English language versions of Windows.

## GC Operation Without OpenLAB CDS Software

If an integrator or a third-party software package is being utilized for data analysis, a software virtual keyboard will be shipped with the 7820 GC. This standalone utility can run on a PC and allow creation of GC methods, which are then downloaded to the GC via a LAN cable.

## For More Information

For more information on our products and services, visit our Web site at [www.agilent.com/chem](http://www.agilent.com/chem).

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