

Agilent 7820A Gas Chromatograph System

Data Sheet

The 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. Options include EZChrom Elite Compact software and a 16-sample automatic liquid sampler (ALS).

Dimensions and Weight

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

GC Front Panel Keys and Display

Available in Chinese or English

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: 3100 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 tri-decane (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 (+5%, -10%)
- 120 V (+5%, -10%)
- 200 V (+5%, -10%)
- 220 V (+10%, -10%)
- 230 V (+5%, -10%)
- 240 V (+5%, -10%)
- Frequency: 47.5~63 Hz
- 1500 W (max) at 100 V, 2250 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%

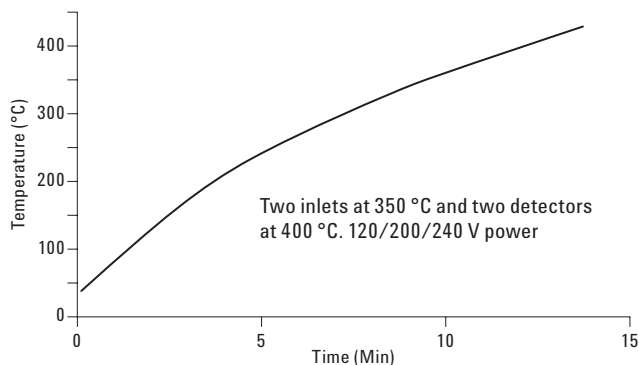


Figure 1. Typical oven heat up profile.

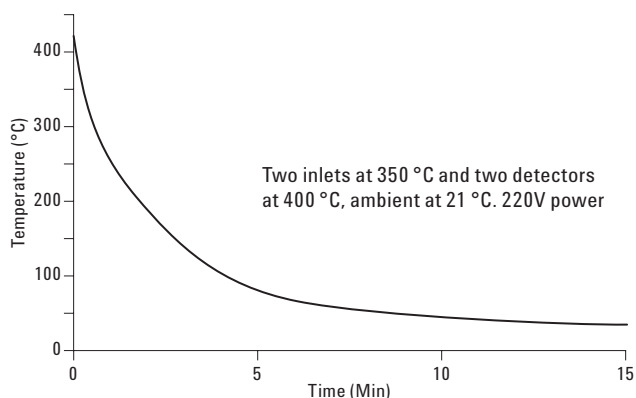


Figure 2. Typical oven cooldown profile.

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.

- Column bleed compensation for two channels
- Typical heating-up profile and cooldown rate are shown in Figure 1 and Figure 2.

Heated Zones

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

Electronic Pneumatics Control (EPC)

- Available on all inlet and all detectors

Inlet Module

- Pressure setpoint and control precision to 0.01 psi
- Flow sensor accuracy: $< \pm 5\%$

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
- 400 °C maximum operating temperature
- Pressure range: 0 to 60 psi
- Maximum split ratio: 250:1
- Total flow setting range: 0 to 200 mL/min N₂; 0 to 500 mL/min H₂ or He

Detectors

All detectors use electronic pneumatic control (EPC) for detector gases. Up to two detectors may be installed. When two detectors need to be operating simultaneously, a second universal detector EPC module will be required.

Available Detectors

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

FID

- Electronic pressure/flow control
- 425 °C maximum operating temperature
- MDL: < 3 pg carbon/s as tridecane

- Linear dynamic range: $> 10^7$ range with N₂ carrier and 0.29-mm id jet
- 100 Hz maximum data acquisition rate

TCD

- Electronic pressure/flow control
- 400 °C maximum operating temperature
- MDL: < 800 pg propane/mL using He carrier (MDL may be affected by laboratory environment)
- Linear dynamic range: $10^5 (\pm 10\%)$

ECD*

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

*ECD not supported in Japan

NPD

- Electronic pressure/flow control
- 400 °C maximum operating temperature
- 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: $> 10^4$ N, $> 10^4$ P with azobenzene/malathion mixture
- Data acquisition rate: up to 100 Hz

Optional ALS

Will support one G4513A autoinjector with capacity for 16 sample vials

Data Communications

- RS-232-C with adjustable baud rate
- One analog output channel (1 mV, 1 V, and 10 V output available) as standard
- Remote start/stop
- LAN

EZChrom Elite Compact Hardware and Software Requirements

EZChrom Elite Compact software is necessary for complete 7820 system control, data analysis, and reporting.

The table below lists the hardware and software requirements for EZChrom Elite installations.

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

Product	Operating system	CPU (minimum)	RAM (minimum available to EZChrom)	Disk space (minimum available to EZChrom)	Available PC slots
EZChrom Compact Workstation	Windows XP Professional (SP2) Internet Explorer 6.0 or 7.0 Microsoft.NET version 3.0	1.0 GHz	1.0 GB	10 GB	PCI slots for GPIB, SCSI. Multiport serial or Ethernet cards may be required.

GC Operation Without Optional EZChrom 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.

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