GC 6890

GC System

Description

- The GC 6890 is a new generation of fully automated EPC gas chromatograph, developed based on an internationally advanced technology platform and decades of industry-specific application experience. It leads the industry in reliability and application flexibility.

Features

Full EPC on Inlet & Detectors

- 6890's Electronic Pneumatics Control (EPC) digitally regulates carrier, inlet, and detector gas pressures, allowing users to select between constant pressure, constant flow, or ramped pressure/flow modes—up to three ramps—ideal for reproducible capillary chromatography.

Integrated Microchannel Pneumatics Manifold

- A compact, lowdeadvolume manifold houses microproportional valves and highprecision pressure/flow sensors, ensuring rapid stabilization and minimal gas path delay.

Imported HighPrecision Pressure/Flow Sensors

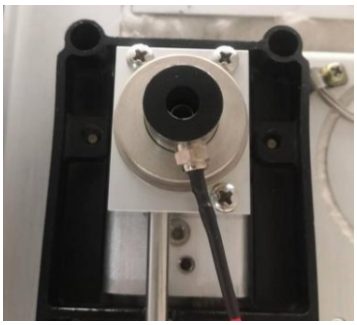
- Builtin sensors monitor gas conditions in real time, compensating for ambient pressure and temperature variations. Accurate to ±0.01 psi, this ensures consistent flow control and retention time stability.

Automatic Ambient Compensation

- The system automatically adjusts for changes in laboratory temperature and barometric pressure, preserving method integrity without manual recalibration.

IndustryLeading Detector Design

Advanced EPCControlled Detectors



- Each detector features highprecision EPC (Electronic Pneumatic Control) to regulate flow and pressure, delivering consistent gas delivery with digital accuracy—key for stable detector baseline and signal reproducibility.

Capillary & Packed Column Compatibility

- Detector modules are engineered to support both capillary and packed columns, providing versatile options to suit a range of analytical methods.

HumidityResistant Amplifier Board

- The detector electronics employ a ceramiccoated amplifier board, enhancing resistance to moisture and ensuring stable signal amplification and low baseline noise, even in highhumidity environments.

Automatic Flame Ignition

- The GC's flame detector and ignition module automatically light the flame at the detector (e.g., FID, FPD, NPD), providing consistent startup without manual intervention. It also detects flame loss and attempts an automatic relight.

Automatic Hydrogen Leak Protection (H_2Safety Shutdown)

- The GC continuously monitors gas streams for carrier and detector lines. If a hydrogenconfigured channel cannot achieve its set pressure or flow, the system interprets this as a potential hydrogen leak and initiates a safety shutdown. It automatically shuts off gas valves, opens inlet/split valves, turns off heated zones, and emits an alarm tone—preventing accidental hydrogen exposure.

Superior Oven Temperature Control

Supports up to eight valve drivers

- (Valve 1–8), enabling advanced method flexibility. Fully electronically controlled EPC valve drivers support sequenced events during runtime (e.g., timed switching, multi-dimensional chromatography, backflush). Flexible Valve Configurations, 4-, 6-, and 10-port switching valves, Gas and liquid sampling valves, Multiposition (stream selection) valves, And remote-control or event-based valves.

Easy Implementation of Gas-Switching (Valve Cutting)

- 6890 GC allows seamless integration of multidimensional (MDGC) techniques, including heart-cutting and Deans Switch operations, using EPC-controlled valves to precisely divert sample effluent between columns or detectors.

Column Backflush Functionality

- Following elution of target analytes, the system can automatically reverse carrier gas flow through the analytical column, directing residual high-boiling compounds out via the inlet or split vent. This reduces cycle time, prevents heavy residue buildup, and extends column and detector life by eliminating the need for lengthy high-temperature bake-outs.

Smart Power Sharing via UPS

- A 3 kW UPS (3,000 VA nominal) can simultaneously support up to 10 GC units (each ~2,250 W nominal power), ensuring uninterrupted operation and stable power during fluctuations—ideal for instrument rooms or lab clusters.

Seamless Integration with Agilent GC

- Fully compatible with Agilent GC systems, including the 6890N, via Agilent controllers and ChemStation (or OpenLAB). Compatible models include the 7683B and advanced 7693A Automated.

Applications

Oil exploration and refining

Petrochemicals and fine chemicals

Food safety testing

Environmental protection and monitoring

Workplace safety

Scientific research institutes

Quality inspection centers

High-purity gas analysis in the electronics industry

Specification

Column Oven	
Oven Dimensions	280 × 300 × 180 mm
Temperature Range	5°C – 450°C (above ambient) With LN2 trap: –80°C to 400°C With dry ice trap: –55°C to 400°C
Temperature Setting Accuracy	0.1°C
Max Heating Rate	120°C/min
Max Method Run Time	999.99 min
Temp Program Steps	Up to 7 steps
Ramp Rate Increment	0.1°C
Column Bleed Compensation	Dual channel supported
Heating Zones	6 independent zones (excluding oven) – includes 2 inlets, 2 detectors, 2 auxiliary zones
Max Auxiliary Zone Temp	300°C
Detector	
Flame Ionization Detector (FID)	
Max Operating Temp	450°C
Min Detectable Quantity	≤2.5 pg C/s (nC16)
Dynamic Range	10^7 (±10%)
Data Acquisition Rate	Up to 100 Hz
Thermal Conductivity Detector (TCD)	
Max Operating Temp	400°C
Min Detectable Quantity	<400 pg C_3H_8/mL (He)
Dynamic Range	10^5 (±5%)
Data Acquisition Rate	Up to 100 Hz

Flame Photometric Detector (FPD)	
Max Operating Temp	250°C
Min Detectable Quantity	<4 pg S/s, <1 pg P/s
Dynamic Range	$>10^3$ S, $>10^4$ P
Selectivity	10^5 g S/g C, 10^6 g P/g C
Electron Capture Detector (ECD)	
Max Operating Temp	400°C
Make-up Gas	<0.01 pg/s
Dynamic Range	$>5 \times 10^5$
Data Acquisition Rate	Up to 100 Hz
Radiation Source	<12 mCi ^{63}Ni
Nitrogen Phosphorus Detector (NPD)	
Max Operating Temp	450°C
Min Detectable Quantity	<0.2 pg N/s, <0.2 pg P/s
Dynamic Range	10^5 N, 10^5 P