

# Agilent 990 Mobile Micro GC

## Introduction

Taking your lab to your sample has never been easier. With the Agilent 990 Mobile Micro GC, you can analyze your gas samples wherever and whenever it is needed.

The field case, containing up to four GC channels, provides fast, repeatable, and lab-quality analysis results like its 990 lab version. Equipped with batteries and gas canisters, you are independent of external gas and power for up to 16 hours.

The optional mobile license enables you to wirelessly connect through a phone or tablet, effectively eliminating the need to carry cables and a laptop. Analysis results can be viewed in full or reported in true/false. Configurable alarms further improve follow-up actions by the operator.

Some of the key features include:

- **Rugged field case.** An industry standard field case ensures that your valuable equipment arrives in ready-to-go condition at the analysis site.
- **Ultimate flexibility.** The one-size field case accommodates one to four 990 Micro GC channels. These are installed in minutes, and are compatible with the lab version 990 Micro GC system.
- **Enhanced usability.** Two high-performance batteries and two gas cannisters ensure up to 16 hours of operation.
- **Wireless connectivity.** The optional mobile license enables wireless connection with your phone or tablet, eliminating the use of cables and laptops, significantly reducing your carry-on luggage.

**Table 1.** Product dimensions and weight.

Instrument	Height		Width		Length		Weight*	
	in	cm	in	cm	in	cm	lb	kg
Micro GC	11.13	28.28	5.71	14.50	12.97	32.94	16.0	7.3
Micro GC with Channel Extension Cabinet Installed	11.13	28.28	11.83	30.04	12.97	32.94	34.5	15.6
Power Supply	1.8	4.6	3.3	8.5	8.3	21.0	2.4	1.1
Mobile Micro GC Quad Channel	10.6	26.9	16.0	40.6	21.2	53.8	82.67	37.5

\* The weight may vary due to different analytical configurations.

## Product features

### Field case configuration

- One to four analytical GC columns in one field case

### Field case handling

The field case is equipped with:

- Wheels and a trolley function for easy transportation
- Second handle bar for easy lifting

### Power, batteries, and charging

- The field case is equipped with a maximum of two high-performance batteries
- Expected up-time is up to 16 hours
- Alternatively, the field case can be operated by external power
- Advanced charging (fast and trickle, depending on status) automatically starts when connected to external power
- Real-time monitoring of status (temperature, charging/discharging current)
- Carrier gas, on-board and external
- The field case is equipped with a maximum of two gas modules and cannisters
- Quick-release levers for easy removal and refilling
- Per cylinder: 150 mL and 124 bar maximum pressure
- Suitable for He, N<sub>2</sub>, Ar
- External carrier gas: 550 ±10 kPa (80 ±1.5 psi) input

### Control

- Independent control of each analytical channel
- Pneumatics, including proportional column pressure programming
- Independent column, injector, and detector settings

### Injector

- Micro-machined injector with no moving parts
- Injection volume 1 to 10 µL, software selectable injection time
- Heated injector, up to 110 °C, including heated sample transfer line
- Optional backflush capability

### Column oven

Temperature range, up to 180 °C, isothermal

Available column chemistries:

- CP-Sil 5 CB
- CP-Sil 5 CB for NGA
- CP-Sil 13 CB for TBM
- CP-Sil 19 CB
- CP-Sil 19 CB for THT
- CP-WAX 52 CB
- Molesieve 5A
- Aluminumoxide
- PoraPLOT Q
- PoraPLOT U
- Hayesep A
- COX
- SilicaPLOT
- Proprietary MeS in NGA

### Detector

- Micro-machined thermal conductivity detector (TCD)
- Dual-channel (sample and reference flow)
- Internal volume: 200 nL per channel
- Four filaments

### Detection limits, TCD

Detection limits are typical for selected components, provided that the proper column length and chromatographic conditions are used.

- 0.5 ppm for WCOT capillary columns (CP-Sil 5 CB, CP-Sil 13 CB, CP-Sil 19 CB, and CP-WAX 52 CB) in 4 to 10 m length
- 2 ppm for PLOT columns (Molsieve 5A, PoraPLOT Q, PoraPLOT U, Aluminum oxide, SilicaPLOT, MeS)
- 10 ppm for Micropacked columns (Hayesep)
- 10 ppm for Micropacked columns (Carboxene)

### Operating range, TCD

- Concentration: 0.5 ppm to 100% level
- Linear dynamic range: 10<sup>5</sup> (0.5 ppm to 5% for propane on CP-Sil 5 CB channel)
- For full range (low ppm to 100%), multilevel calibration is advised

### Repeatability

- <0.5 % RSD for propane at 1 mol % level for WCOT columns at constant temperature and pressure

### Carrier gas

- He, H<sub>2</sub>, N<sub>2</sub>, or Ar, 550 ±10 kPa (80 ±1.5 psi) input
- Every channel can be operated with its own carrier gas.
- Inlet connection, 3.2 mm (1/8 in) stainless steel compression fitting

### Sampling

- Sample inlet: 1.6 mm (1/16 in) stainless steel Valco fitting with replaceable 5-µm stainless steel filter
- Sample conditions: noncondensing gas of 0 to 110 °C
- Maximum sample inlet pressure: 100 kPa (14.5 psi)

- Software selectable sample pump or continuous flow
- Relay control for stream selection (extension boards required)
- Support of up to three multiposition stream selection valves
- Optional manual sample inlet

## Communication

See Table 2.

## Data handling software

The 990 Micro GC is controlled by Agilent OpenLab CDS 2.x, Agilent OpenLab CDS EZChrom edition, and Agilent OpenLab CDS ChemStation edition.

- Natural gas physical properties calculations such as: calorific value, relative density, wobbe-index in accordance with ISO 6976, GPA 2172, and ASTM D3588
- OpenLab intelligent reporting provides custom reporting and calculations

## Environmental conditions

- Ambient operating temperature: 0 to 50 °C
- Ambient operating humidity: 5 to 95% RH (noncondensing)
- Storage extremes: -40 to 70 °C
- Altitude: Up to 2,000 m above sea level

## Power requirements

- Power source: 100 to 240 VAC, 50/60 Hz
- GC Input: 12 VDC, 180 W max
- Must only use the power supply provided with your Micro GC

**Table 2.** Communications.

Port	Connection	Agilent 990 Micro GC	Agilent 990 Mobile Micro GC	Agilent 990-PRO Micro GC
LAN	Ethernet	Interface with PC	Interface with PC	Interface with PC
COM1	RS232	VICI Valve	VICI Valve	VICI Valve, Modbus <sup>1</sup>
COM2 and COM3	RS232 RS422 RS485 2-wire RS485 4-wire	Not available	Not available	Modbus <sup>1,5</sup>
Digital and Analog I/O		Digital I/O <sup>2</sup> Ready in – ready out Start in – start out	Digital I/O <sup>2</sup> Ready in – ready out Start in – start out	Digital Analog I/O <sup>2</sup> Ready in – ready out Start in – start out Extension boards <sup>1,3</sup>
HDMI	HDMI	LCD <sup>3</sup>	LCD <sup>3,4</sup>	LCD <sup>3</sup>
USB	USB	VICI Valve <sup>6</sup> WIFI interface	VICI Valve <sup>6</sup> WIFI interface USB storage License dongle	VICI Valve <sup>6</sup> WIFI interface USB storage License dongle
CAN	CAN	Channel Extension Cabinet connection		Channel Extension Cabinet connection

1. Requires a PRO license.
2. Y cable is available (part number G3588-60825).
3. Optional accessory.
4. This port is hidden inside the case, only for internal connection.
5. The plastic cover on the side of top assembly must be removed.
6. Requires a USB-to-RS232 converter.

## Safety and regulatory certification

- Name: 990 Mobile Micro GC
- Regulatory model number: RMN3588F

## Conforms to the following safety standards:

- Canadian Standards Association (CSA): C22.2 No. 61010-1
- Nationally Recognized Test Laboratory (NRTL): ANSI/UL 61010-1
- International Electrotechnical Commission (IEC): 61010-1, 61010-2-010, 61010-2-081
- EuroNorm (EN): 61010-1

Conforms to the following regulations on Electromagnetic Compatibility (EMC) and Radio Frequency Interference (RFI):

- CISPR 11/EN 55011: Group 1, Class A
- IEC/EN 61326-1
- AS/NZS CISPR11
- This ISM device complies with Canadian ICES-001. Cet appareil ISM est conforme à la norme NMB-001 du Canada.
- Designed and manufactured under a quality system registered to ISO 9001; Declaration of Conformity available.
- This product complies with the EU RoHS Directive 2011/65/EU, and conforms to EN 50581.

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This information is subject to change without notice.