

# $\mu$ GC-3001

## Online Portable Micro Gas Chromatograph



EPCC / PRODUCTS / APPLICATION / SOFTWARE / ACCESSORIES / CONSUMABLES / SERVICES

**Analytical Technologies Limited**

An ISO 9001 Certified Company

[www.analyticalgroup.net](http://www.analyticalgroup.net)

## ►► Technical Specifications:

- Composition analysis by micro gas chromatography
- Designed for continuous monitoring & system integration
- Compact and OEM configurable up to 4 GC ovens
- Fast and accurate
- Low consumption and easy maintenance
- 3-stream selector integrated
- Calculations included
- Automatic sequence programming, autocalibration

## ►► Specifications:

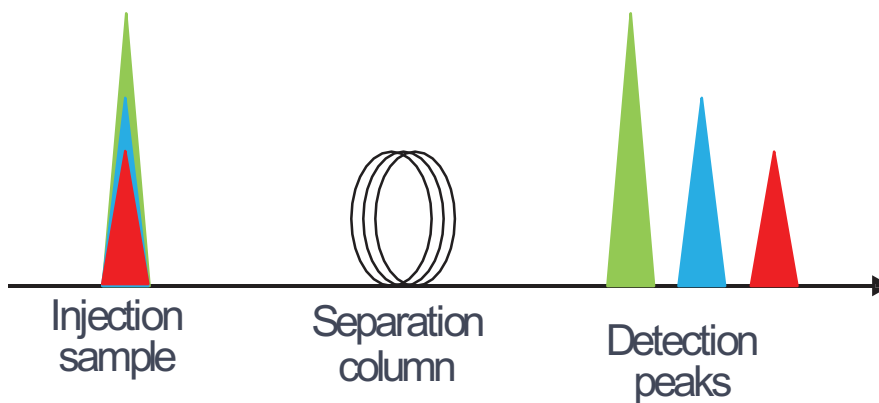
Operating temperature	5 ... 55 °C / 41 ... 131 °F
Storage temperature	-20 ... 60 °C / -4 ... 140 °F
Moisture	5 ... 95 %
injector temperature	30°C to 100°C
Column oven temperature	30°C to 175°C
injection volume	1µL to 10µL (software selectable)
Power supply	20 ... 28 VDC
Power consumption	75 W max
Dimensions	250 x 182 x 96 mm / 9.8 x 7.2 x 3.8 "
Weight	< 8 kg / 17.6 lb.
Gas ports	1/16" VICI
Carrier gas	He, Ar, N <sub>2</sub> , or H <sub>2</sub>
Carrier gas input pressure	450 ± 5% kPa
Carrier gas consumption	2-5 ml/min per GC channel
Sampling	Pressurized or atmospheric (integrated pump)
Sample pressure	10 ... 200 kPa
Sample streams	3 (optional more)
Detectors	Fore flush and backflush micro TCD
Detection limit	100ppm....100% (application dependent)
Cycle time	15 ... 60 s (typical) <0.05 % RSD
Repeatability	(typical)
Communications supported	Digital I/O, RS232, RS485, Ethernet
Protocols supported	Modbus / TCP
Memory storage	Up to 256 GB
Conducted emission, test with a LISN	EN 55011 (2009) + A1 (2010)
Radiated emission up to 1 GHz (SAC)	EN 55011 (2009) + A1 (2010)
ESD	EN-IEC 61000-4-2 (2009)
Radiated Immunity	EN-IEC 61000-4-3 (2006) + A1 (2008) + A2 (2010)
EFT	EN-IEC 61000-4-4 (2012)
Surge	EN-IEC 61000-4-5 (2014)
Conducted Immunity	EN-IEC 61000-4-6 (2014)
Power frequency magnetic field	EN-IEC 61000-4-8 (2010)
Three Channel	One Molsieve, One Pora plot and One CP Sil
Detection limit for other gases	H <sub>2</sub> S, ethylene etc.: 50 ppm & 500 ppm
Back flush	Each Channel with back flush system having independent control for each channel with its separate pneumatics, injector, column and detector

## ►► Gas Chromatography

### GC principle:

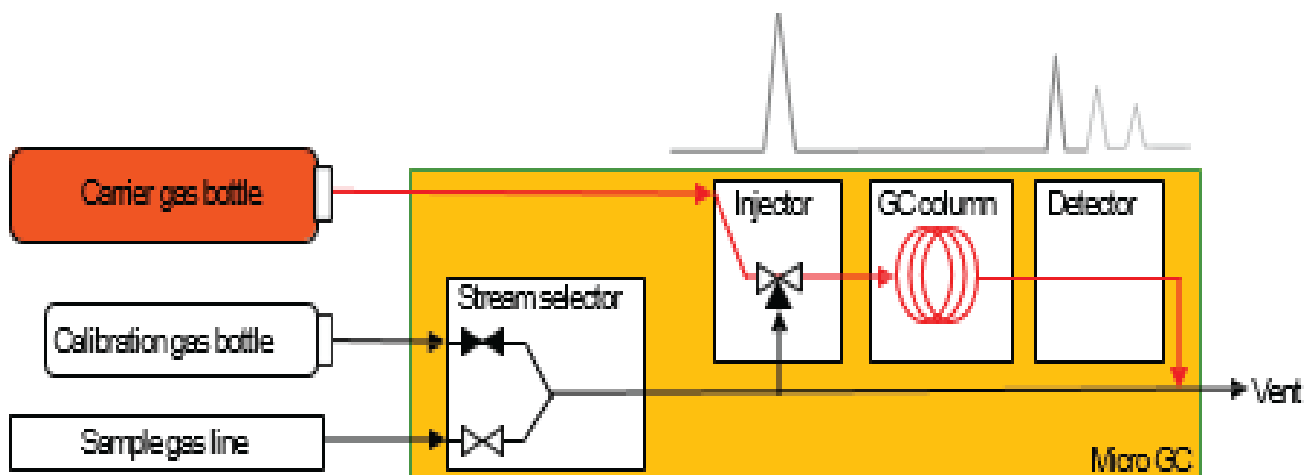
Gas Chromatography = separation and detection of gas components in a gas mixture

- 1) Injection of sample peak in carrier flow
- 2) Separation of gas components in heated GC column
- 3) Detection in time by separated peak components



### GC instrument:

- Continuous flow of SAMPLE gas and CARRIER gas
- Gas components separated in time flow out 1 by 1
- Component and concentration definition by calibration gas
- Different GC columns for different gas components



## Online GC



- micro GC
- Lab or automation
- Module for system integration
- Potential as lab instrument (versatile)

## Replaceable cartridge



- Cartridge contains 1 -4 GC channels with:
  - Injectors (chip)
  - Heated columns
  - Detectors (chips)
- More (types of) columns => more gas components

## Connections



Electrical connections



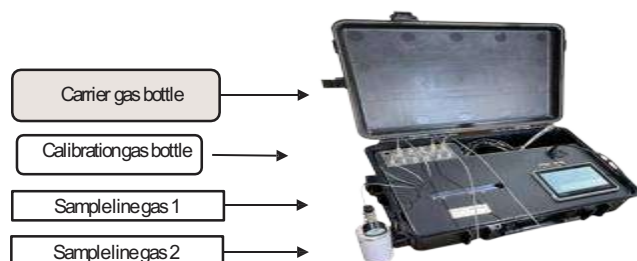
Gas connections

## General usage

### 1. Set method parameters with PC Software, program sequence



### 2. Run the GC analyzer automatic:



### DCS Data system



## CVP

- Compact = small, low weight, easy shippable, easy to built-in
- Fast = 20 seconds.. 2 minutes per analysis
- Functional = up to 4 parallel GC analysis, since 4 columns (channels)
- Robust = reliable, reproducible, long lifetime, tubeless!
- Support = “just” change a cartridge, have a back -up locally on the shelf

## Specification

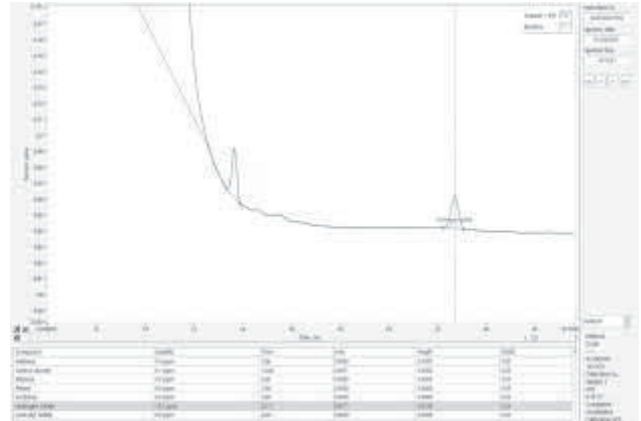
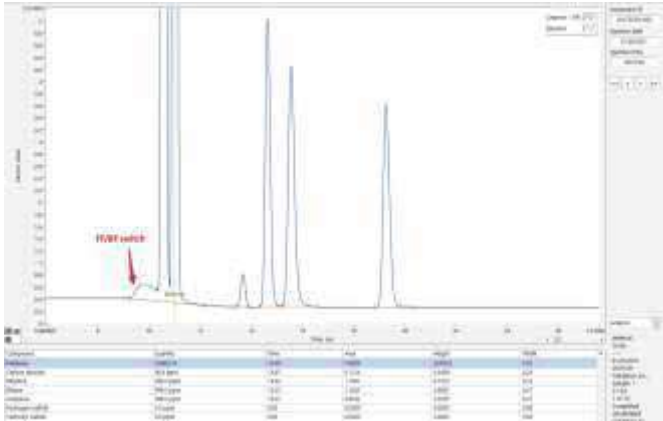
- Only for gases, typical for hydrocarbons, permanent gases, sulphurs
- 1 ppm – 100%, RSD 0.1%, ‘whole spectrum of gas composition’
- Often built in a system, can be applied as an unmanned continuous monitor
- Fast and accurate : 20 second / run
- Automatic sequence programming, autocalibration
- Can also be used in a laboratory, connected to a PC

## gas application examples

### Applications

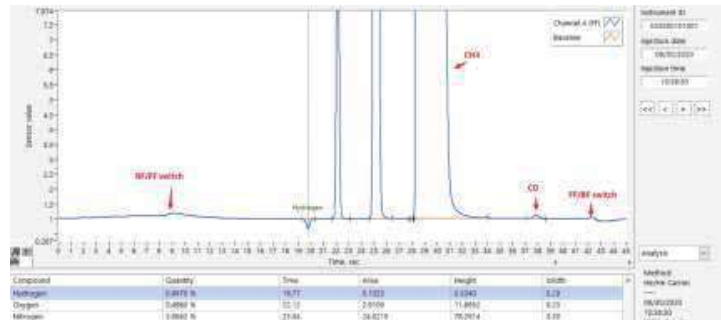
- Coal Mining Gases like Methane,  $\text{CO}_2$ ,  $\text{O}_2$ ,  $\text{H}_2$ ,  $\text{CO}$ ,  $\text{H}_2\text{S}$  & Higher Hydrocarbons  $\text{C}_2\text{H}_2$  (Acetylene),  $\text{C}_2\text{H}_4$  (Ethylene),  $\text{C}_2\text{H}_6$  (Ethane).
- Coal Mining Applications hydrogen ( $\text{H}_2$ ), Carbon dioxide ( $\text{CO}_2$ ), carbon monoxide ( $\text{CO}$ ), Nitrogen oxides ( $\text{NO}_x$ ), methane ( $\text{CH}_4$ ), nitrogen ( $\text{N}_2$ ), hydrogen sulfide ( $\text{H}_2\text{S}$ )
- Environmental Pollution Control
- Natural gas analysis:  $\text{C}_6+$  for caloric value / BTU, sulphurs, odorants, BTX
- Biogas: Methane,  $\text{CO}_2$ , sulphurs
- Flare gas:  $\text{H}_2$ ,  $\text{O}_2$  in burnt natural gas
- Exhaust gas for carbonizing: Hydrocarbons, sulphurs, BTX
- Process gas: running in factory’s, VOC;s and permanent gases,
- TOGA/DGA (Transformer Oil Gas Analysis): Hydrocarbons, ethylene

## gas application examples



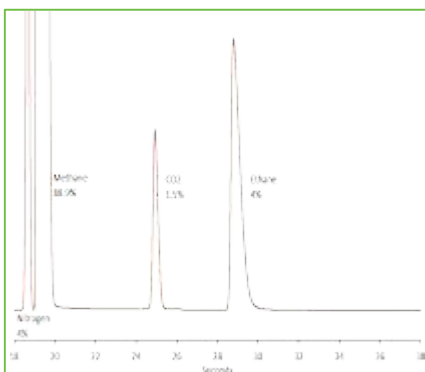
### Syngas components

- Methane, Ethylene, Acetylene, Ethane
- CO<sub>2</sub>
- H<sub>2</sub>, N<sub>2</sub>, CO



## gas application examples

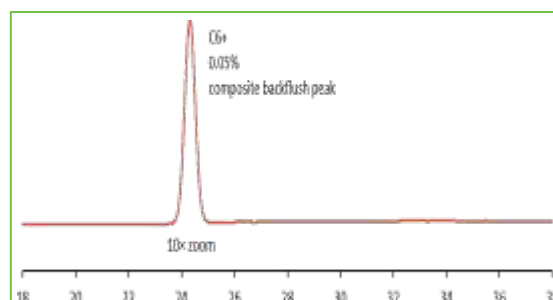
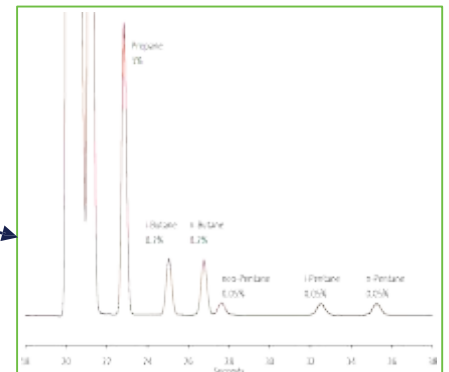
### Example of natural gas chromatograms



C<sub>1</sub>-C<sub>2</sub>

C<sub>3</sub>-C<sub>5</sub>

C<sub>6</sub>+



## Various natural gas applications

- Natural gas analysis standard: C<sub>6</sub>+ for caloric value
- Natural gas analysis extended: C<sub>6</sub>+ for caloric value & hydrogen/oxygen
- Natural gas analysis extended: C<sub>9</sub>+ for caloric value
- Natural gas analysis extended: C<sub>6/9</sub>+ & sulfurs
- Natural gas analysis extended: C<sub>6/9</sub>+ & BTEX
- Natural gas analysis extended: C<sub>6/9</sub>+ & odorants
- Biogas: Methane, CO<sub>2</sub>, sulfurs
- Flare gas: H<sub>2</sub>, O<sub>2</sub> in burnt natural gas



## HPLC Servicing, Validation, Trainings and Preventive Maintenance :

**HPLC Servicing** :HPLC Servicing : We have team of service engineers who can attend to any make of HPLC promptly @the most affordable cost.

**Trainings** :We also take up preventive Maintenance to reduce downtime of HPLC's Trainings.

**AMC's/CMC** :AMC's/CMC :We offer user training both in-House and at customer sites on HPLC principles, operations, trouble-shooting.

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**Instruments** :Instruments :We offer instruments/Renting Services Modules like pumps,detector etc. on Rent.



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Analyzer



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Size Analyzer



Ion Chromatograph



Water purification  
system



## Regulatory compliances



## Corporate Social Responsibility

Analytical Foundation is a nonprofit organization (NGO) found for the purpose of:



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1. Research & Innovation Scientist's awards/QC Professional Award : Quality life is possible by innovation only and the innovation is possible by research only, hence ANALYTICAL FOUNDATION is committed to identify such personalities for their contributions across various field of Science and Technology and awarding them yearly. To participate for award, send us your details of research / testing / publication at [Info@analyticalfoundation.org](mailto:Info@analyticalfoundation.org)

2. Improving quality of life by offering YOGA Training courses, Work shops/Seminars etc.

3. ANALYTICAL FOUNDATION aims to DETOXYFY human minds,souls and body by means of yoga, Meditation, Ayurveda, Health Care, Awards, Media, Events, Camps etc.

## Reach us @



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