Portable Gas Chromatographs- GC121/GC312

Measure

VOC's
ppb, ppm, %
in air, water, soil, waste
Solvents
1,3 BD
ETO
VCM
THC
S cpds
P cpds
H_2S
NH_3 PH_3
AsH_3
BTEX,
Inwet gases
othes:
Call us

Technologies

GC, Photoionization, w/l Photoionization, Flame Ionization, Thermal Conductivity, Far UV absorbance, Flame Photometric (S, P)

Features/Applications

Model 121

Leak Detection VOC's Simple Apps(1-10 cpds)
PID only single detector, starting @ $10,500
5" color touch screen, **cell phone programmable**, 5#, data storage on SD card, **ppm/ppb detection**

Model 312

Ambient air, stack gases
Apps 1 to >30 cpds, **ppm/ppb**
PID, FID, TCD, FPD, FUV
(1 or 2 det.) starting @ $18,000
Intel PC, Windows 10, Peakworks control and integration software, **concentrator for ppt detection of toxics** in ambient air

Portable GCs

WiFi

UPGRADE YOUR LAB WITH ONE OF OUR EXCELLENT PORTABLE GC'S

PID ANALYZERS

PID Analyzers, LLC

h·nu

GC Detectors- PID, FPD (S,P), FID, TCD

PID

The PID provides a response to a wide range of organic and some inorganic compounds at part per billion (ppb) levels. The HNU PID consists of an ultraviolet lamp and an ion chamber. The detector measures the concentration of gases present in a sample using photoionization. Photoionization occurs when a molecule absorbs a photon (light energy) of sufficient energy, creating a positive ion and an electron as shown below:

$$R + h\nu = R^+ + e^-$$

Carrier gas deliveresthe sample to the ion chamber where it is is exposed to photons generated by the ultraviolet lamp. Molecules in the sample with ionization potentials less than or equal to the energy level of the lamp are ionized. The ionization potential is that energy in electron volts (eV) needed to free an electron from a molecule. A positively biased accelerator electrode repels these ions, causing them to travel to the collecting electrode, where an analog signal proportional to the concentration of the sample is generated. Sealed ultraviolet lamps are available in four energies; 8.3, 9.5, 10.6, and 11.7 electron volts (eV). Detector selectivity (and sensitivity) varies with each lamp. The PID is nondestructive, and *can be used in series with other detectors* in the GC312.

Windowless (wl) PID

A high voltage atmospheric discharge without a window of a gas such as Ar will produce two lines at 11.6 and 11.8 eV. This allows detection of CH3OD, formaldehyds, chloroalkanes and ethane which are nor detected with the 10.6 eV lamp.

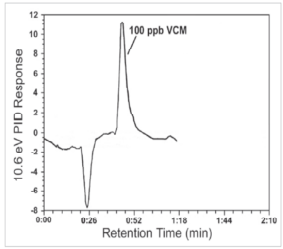
Why Purchase a GC/PID (GC 121)

Ideal for simple applications like leak detection or IH surveys of compounds with PEL's of ppb to ppm. Here, a GC is the only accurate field method to detect these compounds **in the field** and make decisions about reducing personnel exposures quickly.

Ideal for near process applications and quality control applications where VOC's are an issue. **Available with single detetor-PID, FID, or TCD for GC121.**

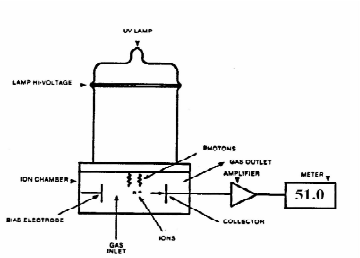
CHROMATOGRAMS
PID

Measure **VOC's and inorganic hydrides**

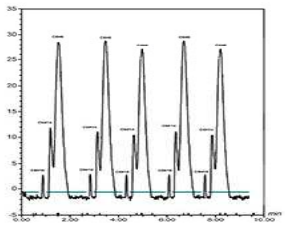


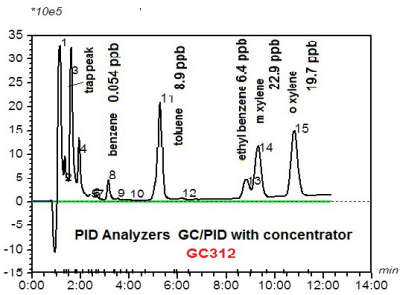
– GC-PID chromatogram obtained from analysis of 100 ppb vinyl chloride monomer (VCM) in air. Open tubular fused silica column (7.5 m x 0.32 mm i.d., 10 µm methylsilicone film).

Schematic of PID



Photoionization Detection Process





GC Detectors: FID, FPD (S, P), FUV, TCD)

FID

The flame ionization prosess occurs only for hydrocarbons when a carbon- carbon bond is broken via a thermal process in the flame. This results in the formation of carbon ions which are collected in the H_2/air flame in an ionization chamber. The response (current) is proportional to the concentration.

TCD

Measures the difference between the thermal transfer characteristics of the gas and a reference cell. The sample and reference filaments are two legs of a Wheatstone Bridge. A constant current is applied with a resultant rise/decrease in the filament temperature as the sample passes. This difference in resistance is proportional to the concentration.

FPD- only with the GC312

The sample is burned in a hydrogen rich flame which excites sulfur or phosphorus and produces chemiluminescence emission of a blue (S- 394 nm) or green (P- 524 nm) photon. This emission is detected by a PMT with an interference filter.

FUV-only with the GC312

The Far Ultraviolet Detector (FUV) provides a nearly universal response (except for the noble gases) to organic and inorganic compounds at low part per million (ppm) levels. The internal volume of the FUV is only 40 mL making it an ideal choice for use with capillary columns. The
FUVAD consists of a 10.2 eV ultraviolet lamp, an absorption cell, and a photodiode.

Why purchase a GC 312

This is a fully featured GC with an embedded PC and touch screen color display. It provides peak height, peak area, reintegration, 3 different methods of integration baseline proj., tangent skimming, and peak deconvolute. It has 3 or 4 ranges accessible from the keyboard and ananalog autozero.
Two different detectors can be run simultaneously and five different detectors are available,

FEATURES/RANGE

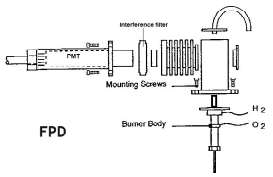
Model 54-00 FID

Measures: **selective for hydrocarbons**
Concentration: **sub ppm to %**
Destructive detector: mass flow the output of which is directly proportional to the ratio of the compound's carbon mass to the total compound mass. Range: 10^6
EPA Methods, OSHA Methods
Quality control

Model 55-00 TCD

Measures: **Universal Response- responds to any compound that conducts heat**
Range: high ppm to 100%, H2 and He can be detected at low ppm because of their high Thermal Conductivity
Linear range: > 10^4

Model 56-00 FPD (S, P)



Specific for S or P
Range S: > 10^3
Range P: > 10^5
ppb to ppm

Model 53-00 FUV

Non Destructive
Can be used in-series
Nearly Universal Response
Low dead volume- 40 uL
Dymanic Range: > 10^4

Specifications (121 & 312) & programming

Specifications

Feature	GC312	GC121
Processor	PC	micro contr.
Display	10" color	5" color
Detectors	5 any 1 or 2	PID 1
Weight	26 #	5 # with gas
Display	Color	Color
Dimensions	18x14x7.5"	10.5x3x4.5"
Battery hours	6-8	8-10
Battery type	NiMH	LiPO
Temp. Cont.	30-150 C	30-90 C
Dual Ovens	Y	Y
Data Proc.	PH or PA	PH
Columns	P or cap	P or cap
Length	to 60 M	to 30 M
# of Comp.	up to 30	up to 10
Availability	6-8 wks	Fall 2019

GC 312

The GC 312 is a fully featured field Portable GC that provides laboratory type results in the field. The PeakWorks software is used to control all the GC functions as well as, the display, reintegration, PH and PA. The 312 can be programmed in the lab to develop a method, then it is easily run in the field. Many methods can be developed then run at a later time.

GC121

The Model 121 is a handheld GC that is used for IH surveys, leak detection, fenceline surveys, remediation... The controls are run (analyze)/stop, observe data, calibrate and program. The latter function is done with the mini keyboard and is password protected. The program cannot be changed without the cell phone and the password.

GC 312 Programming

Easily change the method or open a new one

Edit screen:

Sample time, Oven Temp, Inj. Time, Equil. Time, Anal. Time

Detector A,B screen:

Set noise & baseline, Intergration, Reintegration, Range 1,10, 100, 1000

Components:

Compound, Ret. time, Window, Resp. Factor, Alarm

Standards:

Compound, Resp. Factor, 1-4 standards per compound

Run:

Single, continuous

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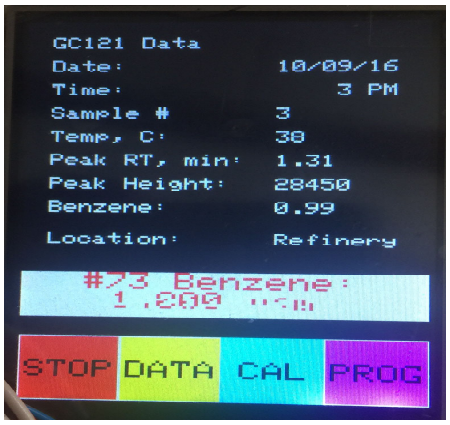
GC 121 Programming with cell phone



Password protection with CP

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