We all want clean water to drink for ourselves and our kids. The lakes, streams, springs, and wells that are the source of our drinking water have naturally occurring organic compounds from plant decomposition and contaminants from man made sources. When distribution companies and water treatment plants add chlorine or other disinfectants to purify the water, disinfection by-products are formed that can be harmful to human health. The most common of these are Trihalomethanes, such as Chloroform. However, Haloacetic Acids, Chlorophenols, and other chlorinated and brominated compounds can be formed. Water companies go to great lengths to reduce the concentrations of these harmful by-products, but they are always present. The Disinfection By-products GC Analyzers from DPS use the nonradioactive BCD detector to identify these by-products in the low part per billion (ppb) range. The fully integrated Disinfection By-products GC Analyzer Systems are small and lightweight and all DPS systems are modular for expandability, upgrades, and easy service.
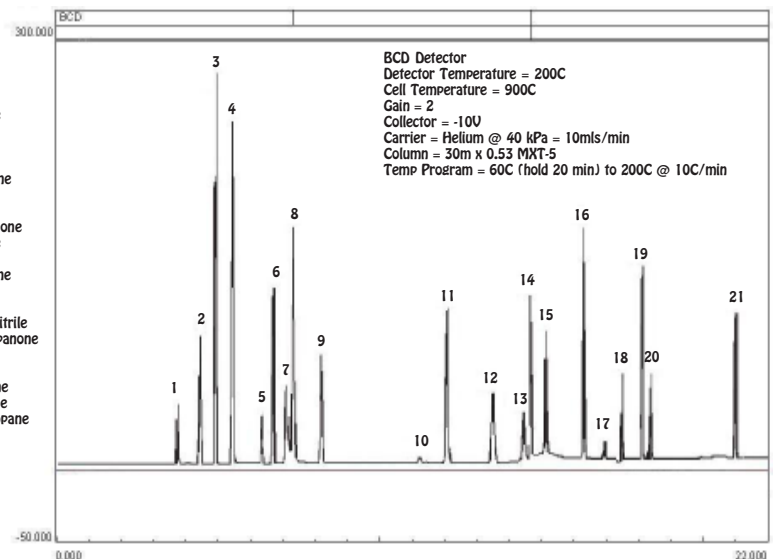
Available Configurations Include:

600-C-021 - Series 600 Disinfection By-products GC Analyzer (BCD, 30m)
500-C2-021 - Companion 2 Portable Disinfection By-products GC
            Analyzer (BCD, 30m)

Series 600 GC

Chlorinated Disinfection By-Products

1. Chloroform
2. 1,1,1-Trichloroethane
3. Carbon Tetrachloride
4. Trichloroacetonitrile
5. Trichloroethylene
6. Bromodichloromethane
7. Chloral Hydrate
8. Dichloroacetonitrile
9. 1,1-Dichloro-2-Propanone
10. 1,1,2-Trichloroethane
11. Chloropicrin
12. Dibromochloromethane
13. 1,2-Dibromomethane
14. Tetrachloroethylene
15. Bromodichloroacetonitrile
16. 1,1,1-Trichloro-2-Propanone
17. Bromoform
18. Dibromoacetonitrile
19. 1,2,3-Trichloropropane
20. 4-Bromofluorobenzene
21. 1,2-Dromo-3-Cloropropane

BCD Detector
Detector Temperature = 200C
Cell Temperature = 900C
Gain = 2
Collector = -10V
Carrier = Helium @ 40 kPa = 10mls/min
Column = 30m x 0.53 MXT-5
Temp Program = 60C (hold 20 min) to 200C @ 10C/min

Companion 2 Portable GC

Environmental
Diesel Range Organics

Diesel has been used for heating homes and as a fuel for trucks and engines for over 100 years. Diesel is not environmentally friendly when it leaks out of holding tanks and seeps into the soil and subsequent groundwater. Modern double layer tanks have a built-in second containment system to handle leaks and these have been installed underground in many areas. However, many older tanks are still in existence and these are prone to leaks causing local contamination and the need for thousands of sample analyses per year. For your convenience, DPS has configured the Diesel Range Organics Analyzers to help you define the extent of the contaminant plume as well as assist you in determining the age of the spill. The sensitive FID detector is ideal for identifying the hydrocarbon backbone found in Diesel and the fast heating and rapid cooling column oven in every DPS GC vastly increases your sample throughput. The fully integrated Diesel Range Organics GC Analyzer Systems are small, lightweight, and rugged to go where ever you need them. All DPS systems are modular for expandability, upgrades, and easy service.
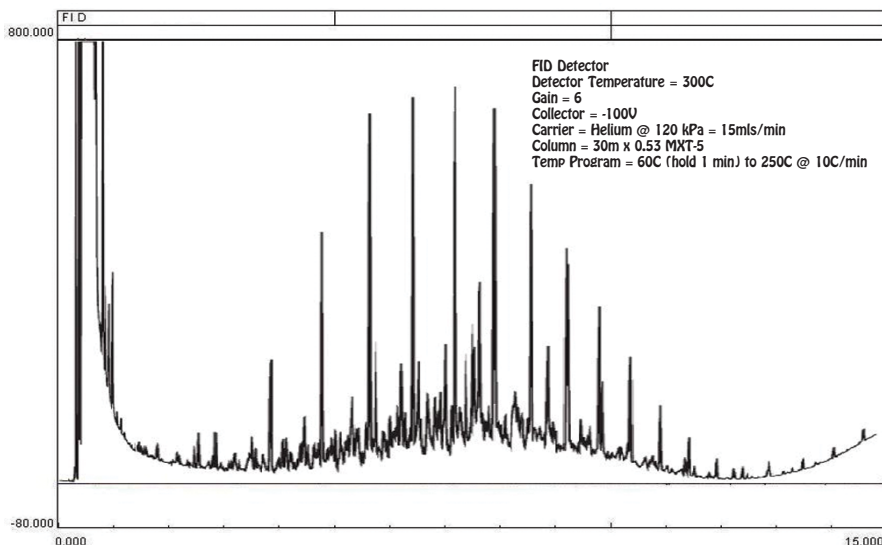
Available Configurations Include:

600-C-020 - Series 600 Diesel Range Organics GC Analyzer (FID, 30m)
500-C-020 - Companion 1 Portable Diesel Range Organics GC Analyzer (FID, 30m)

Series 600 GC

Diesel Range Organics

FID Detector
Detector Temperature = 300C
Gain = 6
Collector = -100V
Carrier = Helium @ 120 kPa = 15mls/min
Column = 30m x 0.53 MXT-5
Temp Program = 60C (hold 1 min) to 250C @ 10C/min

Companion 1 Portable GC

11/2015
Specifications may change without notice.

Some of the millions of gallons of chlorinated solvents used in industry over the years have spilled, polluting our air, soil, rivers, lakes, streams, and ground water. Environmentally conscious legislation has been passed in many parts of the world to limit future spills, clean up existing polluted sites, and lessen the overall risk to ourselves and to our children. DPS has configured a full range Environmental GC analyzers to assist in the detection of common pollutants. All of these Environmental GC Systems allow direct injection of sample extracts. However, DPS has also added a built-in Air Concentrator and Purge & Trap for low ppb level analysis of air, water, or soil samples all in one GC. The Series 600 GC is for analyses in the lab, or the Portable Companion 2 GC Systems are for analyses right where the samples are taken. The FID detector is sensitive to hydrocarbons, which can assist in defining the source of the pollutant, the PID is very sensitive to aromatics such as Benzene, and the BCD is ultra-sensitive to chlorinated compounds. A combination of detectors covers most environmental methods. All DPS GC systems are small, lightweight and modular for expandability, upgrades, and easy service.
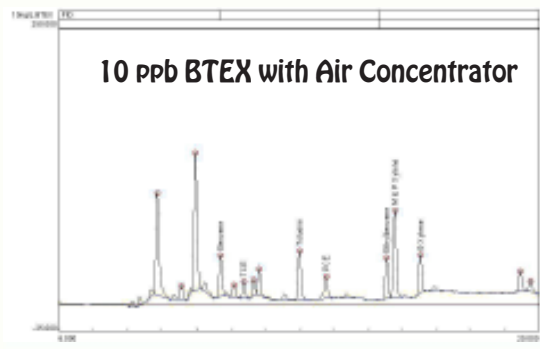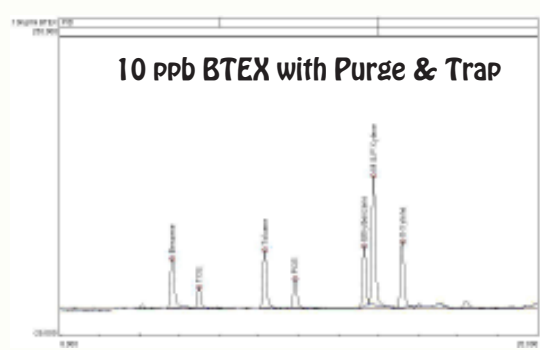
Available Configurations Include:

600-C-014 - Series 600 Environmental GC Analyzer (FID, PID, BCD, 2 x 30m, Air and Purge & Trap Concentrators)

500-C2-014 - Companion 2 Portable Environmental GC Analyzer (PID, BCD, 30m Air and Purge & Trap Concentrators)

Series 600 GC

Companion 2 Portable GC
(With Purge & Trap and Air Concentrators)

11/2015 Specifications may change without notice.

10 ppb BTEX with Purge & Trap

10 ppb BTEX with Air Concentrator

PID Detector
Detector Temperature = 150C
High Voltage = 600V
Gain = 3
Collector = -100V
Valve = 100C
Carrier = Helium @ 40 kPa = 10mls/min
Column = 30m x 0.53 MXT-624
Temperature Program = 60C (hold 9 min) to 150C @ 10C/min

Peak	Component	Area	Conc
1	Benzene	305.0	10.8
2	Trichloroethylene	105.3	10.6
3	Toluene	306.7	10.5
4	Tetrachloroethylene	162.0	10.5
5	Ethylbenzene	301.7	10.2
6	M & P Xylenes	686.6	20.2
7	O-Xylene	351.5	10.8

Peak	Component	Area	Conc
1	Benzene	296.1	10.2
2	Trichloroethylene	89.9	10.6
3	Toluene	288.6	11.0
4	Tetrachloroethylene	146.9	11.1
5	Ethylbenzene	287.1	10.2
6	M & P Xylenes	621.5	20.5
7	O-Xylene	278.6	9.7

Since the Chinese first mixed gun powder, people have been devising ways of harnessing it's power to move mountains in the name of progress, or to keep enemies at bay. For more than a century many parts of the world have been littered with un-exploded ordinances. Bombs, shells, and land mines create a current and future threat to ourselves and our kids. DPS has configured the Explosives Analyzers to identify the nature and type of explosive. We have specifically designed the portable and rugged Companion 1 GC to help detect explosives in the field. The sensitive TID detector is ideal for identifying the nitrosamines and nitro-aromatic compounds responsible for the deadly nature of the ordinances. The fast heating and rapid cooling column oven in every DPS GC vastly increases your sample throughput. The fully integrated Explosives GC Analyzer Systems are small, lightweight, and rugged to go where ever you need them. All DPS systems are modular for expandability, upgrades, and easy service.
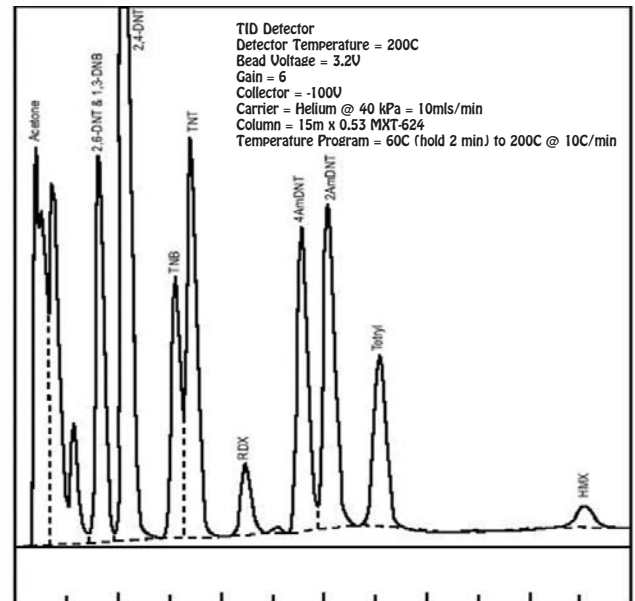
Available Configurations Include:

600-C-023 – Series 600 Explosives GC Analyzer (TID, 15m)
500-C-023 - Companion 1 Portable Explosives GC Analyzer (TID, 15m)

Series 600 GC

Explosives Analytes

Peak	Component
1	2,6-Dinitrotoluene & 1,3-Dinitrobenzene
2	2,4-Dinitrotoluene
3	1,3,5-Trinitrobenzene
4	2,4,6-Trinitrotoluene
5	Hexahydro-1,3,5-trinitro-1,3,5-triazine
6	4-Amino-4,6-dinitrotoluene
7	2-Amino-2,6-dinitrotoluene
8	2,4,6-Trinitrophenylmethylnitramine
9	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrotzocine

TID Detector
Detector Temperature = 200C
Bead Voltage = 3.2V
Gain = 6
Collector = -100V
Carrier = Helium @ 40 kPa = 10mls/min
Column = 15m x 0.53 MXT-624
Temperature Program = 60C (hold 2 min) to 200C @ 10C/min

Companion1 Portable GC

Environmental
Fast BTEX Analyzers

D P S Instruments, Inc.

When you need speedy BTEX (Benzene, Toluene, Ethylbenzene, and Xylenes) analyses to satisfy your clients choose one of our full range of BTEX Analyzers. We offer both Series 600 Lab GC's and Companion Portable GC's configured for Direct Injection for your extracts, or gas samples. The FID has sensitivity down to 1 ppm, while the PID is 20X more sensitive to aromatic compounds and has Detection Limits in the low to mid ppb range for BTEX compounds. You can run the detectors individually, or in Series to cover both the ppm and ppb ranges with one injection.

For the automated analysis of gas samples, choose the Gas Sample Valve option. The integrated Sample Loop is either filled using a sample bag, or an electronically controlled vacuum pump can automatically draw the sample through the Sample Loop for highly precise and reproducible analyses. All of the BTEX Analyzers are fully integrated GC Systems that are small and lightweight and all DPS systems are modular for expandability, upgrades, and easy service.
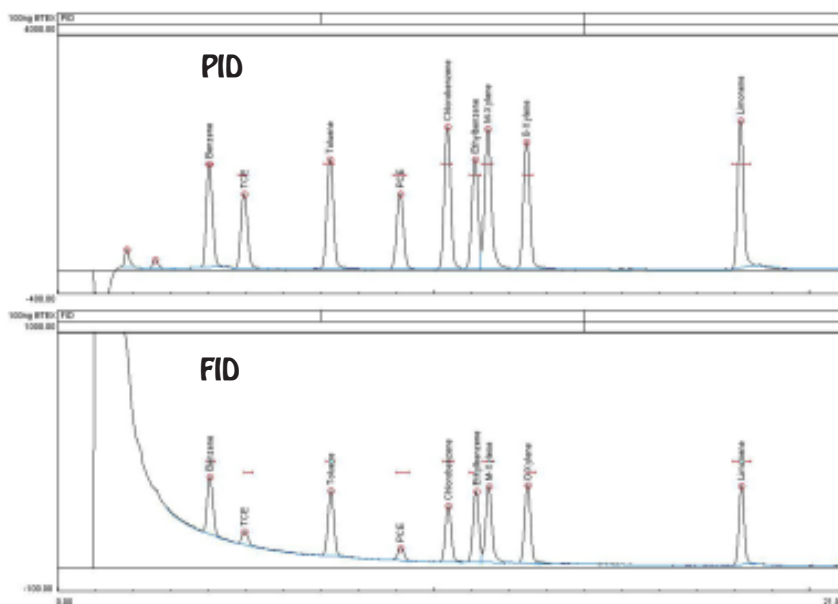
Available Configurations Include:

600-C-010 - Series 600 BTEX GC Analyzer (PID, FID, 30m)
500-C2-011 - Companion 1 Portable BTEX GC Analyzer (PID, FID, 30m)

Series 600 GC

100 ng BTEX with PID and FID in Series

PID

FID

Companion 2 Portable GC

Environmental
Greenhouse Gases

The earth has been naturally warming since the last ice age, however due to man's influence the warming process has significantly accelerated since the industrial revolution. The burning of fossil fuels, coal, and wood has increased carbon dioxide, carbon monoxide, and methane concentrations in the atmosphere. These Greenhouse gases hold in infrared radiation, which would normally escape, and warm the lower atmosphere. The small and lightweight DPS Greenhouse Gas GC Analyzers are well suited for monitoring ambient air, gases from stacks, atmospheric air, or use it anywhere you need to measure emissions. The Greenhouse configuration includes a sensitive FID detector with Methanizer for measuring methane, carbon dioxide and carbon monoxide. The sample is automatically loaded with the built-in vacuum pump and injected onto the latest designed capillary column with the gas sample valve. Let's all do our part to help lower the amount of Greenhouse gases released into the atmosphere; our kids and grand kids will appreciate that we did. The Greenhouse Gas GC Analyzers are fully integrated GC Systems that are small and lightweight and all DPS systems are modular for expandability, upgrades, and easy service.

Available Configurations Include:

600-C-032 - Series 600 Greenhouse Gas GC Analyzer (FID, Methanizer, Valve, 30m)
500-C-032 - Companion 1 Portable Greenhouse Gas GC Analyzer (FID, Methanizer, Valve, 30m)

Series 600 GC

Companion 1 Portable GC

Greenhouse Gases - 10 ppm

Peak	Component	Area	Conc
1	Carbon Monoxide	81.4	10.2
2	Methane	61.2	10.1
3	Carbon Dioxide	95.7	10.3

FID Detector
Detector Temperature = 375C
Igniter = 2V
Gain = 6
Collector = -100V
Valve = 100C
Methanizer
Carrier = Hydrogen @ 45 kPa = 10mls/min
Column = 30m x 0.53 MXT-QPLOT
Temperature Program = 50C Isothermal
250uL Injection
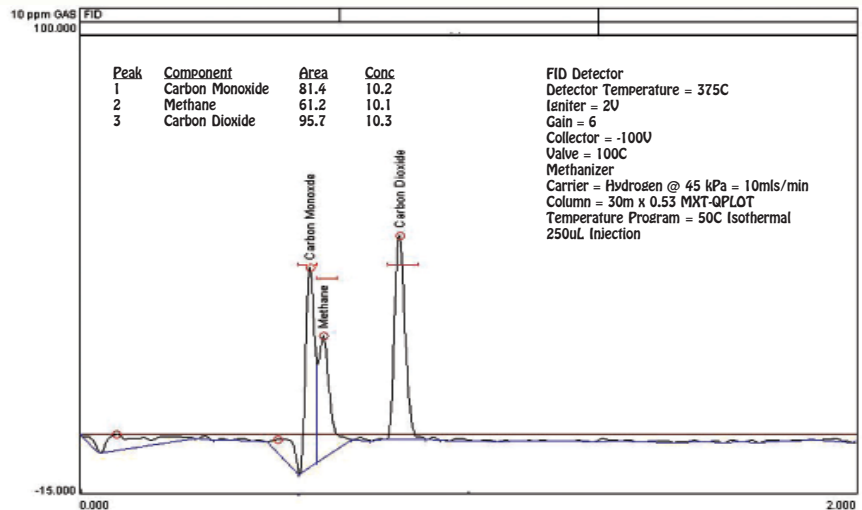
Environmental
Gasoline Range Organics & BTEX

When you need speedy BTEX (Benzene, Toluene, Ethylbenzene, and Xylenes) analyses to satisfy your clients choose one of our full range of BTEX Analyzers. We offer both Series 600 Lab GC's and Companion Portable GC's configured for Direct Injection of your extracts. For the analysis of BTEX in water samples choose the Purge & Trap BTEX Analyzers with compound sensitivities in the low part per billion (ppb) range. The integrated Purge & Trap is built right into the Series 600, or Companion chassis, so there is no need for a bulky heated transfer line. In some areas of the world the preferred method involves concentrating a soil gas sample on an absorbent trap. We have designed the Soil Gas BTEX Analyzers for this application. For your convenience, we build the Air Concentrator right in, which includes an electronically controlled vacuum pump with a flow controller for precise and reproducible air sampling. In other parts of the world the soil sample is placed in a vial, heated, and then a portion of the headspace is injected into the GC. We have configured the Headspace BTEX Analyzers for this method. All of the BTEX Analyzers are fully integrated GC Systems that are small and lightweight and all DPS systems are modular for expandability, upgrades, and easy service.

Available Configurations Include:

600-C-010 - Series 600 BTEX GC Analyzer (FID, PID, 30m)
500-C2-011 - Companion 2 Portable BTEX GC Analyzer (FID, PID, 30m)

Options:
   Purge & Trap Concentrator
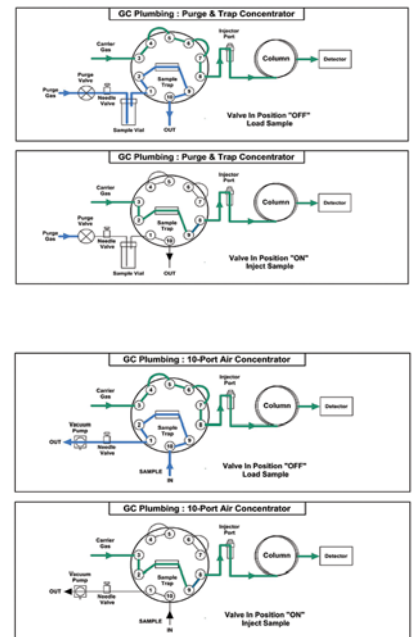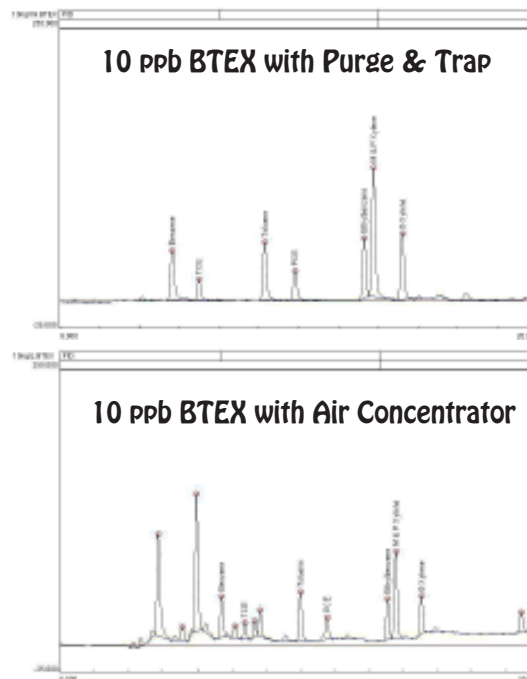   Air Sample Concentrator
   Headspace Concentrator

Series 600 GC

10 ppb BTEX with Purge & Trap

10 ppb BTEX with Air Concentrator

GC Plumbing : Purge & Trap Concentrator
Valve In Position "OFF" Load Sample

GC Plumbing : Purge & Trap Concentrator
Valve In Position "ON" Inject Sample

GC Plumbing : 10-Port Air Concentrator
Valve In Position "OFF" Load Sample

GC Plumbing : 10-Port Air Concentrator
Valve In Position "ON" Inject Sample

Companion 2 Portable GC
(with Purge & Trap Concentrator)

11/2015
Specifications may change without notice.

Environmental
Nitrogen/Phosphorus Pesticides

D P S Instruments, Inc.

www.dps-instruments.com

Nitrogen and Phosphorus containing pesticides, such as Diazinon have been produced extensively for decades for use in agriculture. Although production and use have decreasing in many countries, widespread occupational exposure to Nitrogen/Phosphorus Pesticides is known to have occurred during their production, formulation, application and disposal. It has been well documented that these chemicals cause nerve damage in humans and food from many countries may still be contaminated. The DPS Nitrogen/Phosphorus Pesticides GC Analyzers are configured using the selective NPD detector to identify these pesticides in food and other products. The fast heating and rapid cooling column oven in every DPS GC vastly increases your sample throughput. The fully integrated Nitrogen/Phosphorus Pesticides GC Analyzer Systems are small and lightweight and all DPS systems are modular for expandability, upgrades, and easy service.

Available Configurations Include:
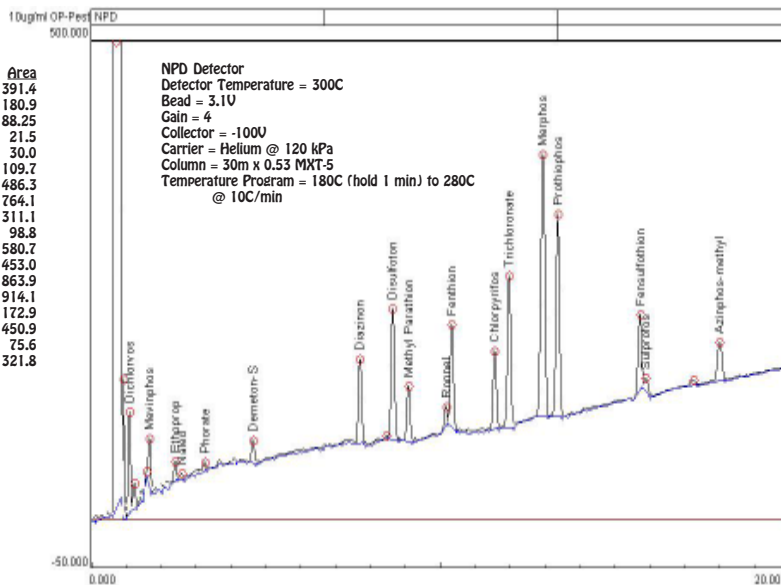
600-C-033 - Series 600 Nitrogen/Phosphorus GC Analyzer (NPD, 30m)
500-C-033 - Companion 1 Portable Nitrogen/Phosphorus GC Analyzer (NPD, 30m)

Series 600 GC

Companion 1 Portable GC

Nitrogen/Phosphorus Pesticides - 10 ng

Peak	Component	Area
1	Dichlorvos	391.4
2	Mevinphos	180.9
3	Ethoprop	88.25
4	Naled	21.5
5	Phorate	30.0
6	Demeton-S	109.7
7	Diazinon	486.3
8	Disulfoton	764.1
9	Methyl Parathion	311.1
10	Ronnel	98.8
11	Fenthion	580.7
12	Chlorpyrofos	453.0
13	Trichloronate	863.9
14	Merphos	1914.1
15	Prothiophos	1172.9
16	Fensulfothion	450.9
17	Sulprofos	75.6
18	Azinphos-methyl	321.8

NPD Detector
Detector Temperature = 300C
Bead = 3.1V
Gain = 4
Collector = -100V
Carrier = Helium @ 120 kPa
Column = 30m x 0.53 MXT-5
Temperature Program = 180C (hold 1 min) to 280C
@ 10C/min

DPS BTEX GC Layouts

Companion 2 GC

Gas Connections

Valve Oven

Rugged watertight case

GC Oven

Small High Pressure Gas Cylinder

Power connection with breaker and line filter

Detectors

Color Touchscreen

USB & Ethernet Connections

On-Column Injectors

Series 600 GC

3 Detector Positions (FID & PID, etc.)

Sample Valve and Valve Oven

USB & Ethernet Connections

Power connection with breaker and line filter

EPC Inlets

Flow Through Oven Cooling

Voltage Selection (120 or 240Vac)

Cooling Fan

Polychlorinated biphenyls (PCB's) are synthetic chemical compounds that are relatively fire-resistant, very stable, and do not conduct electricity. These properties have made them desirable components in a wide range of industrial and consumer products for the past 80 years. Unfortunately, PCB's have been routinely disposed of over the years, without any precautions being taken. As a result, large volumes of PCB's have been introduced into the environment through open burning, vaporization from paints and plastics, by dumping into sewers and streams, and by dumping into the oceans. Many of the PCB's dumped years ago are still around today because of their extreme resistance to chemical and biological breakdown. The DPS PCB's GC Analyzers are designed to help clean up this mess. The nonradioactive BCD Detector can detect and identify the specific PCB contamination quickly. The fully integrated PCB's GC Analyzer systems are small and lightweight and all DPS systems are modular for expandability, upgrades, and easy service.
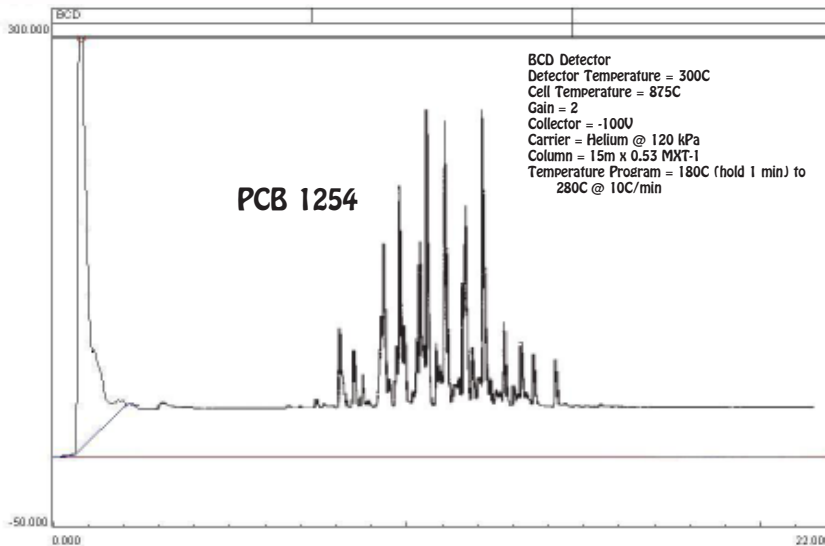
Available Configurations Include:

600-C-026 - Series 600 PCB's GC Analyzer (BCD, 15m)
500-C2-026 - Companion 2 Portable PCB's GC Analyzer (BCD, 15m)

Series 600 GC

PCB's - Arochlor Screening with BCD

PCB 1254

BCD Detector
Detector Temperature = 300C
Cell Temperature = 875C
Gain = 2
Collector = -100V
Carrier = Helium @ 120 kPa
Column = 15m x 0.53 MXT-1
Temperature Program = 180C (hold 1 min) to
280C @ 10C/min

Companion 2 Portable GC

DPS Instruments, Inc.

www.dps-instruments.com

Phthalates are used in a large variety of products, from coatings of pharmaceutical pills to viscosity control agents, gelling agents, film formers, stabilizers, dispersants, lubricants, binders, emulsifying agents, and suspending agents. Phthalates are found in adhesives and glues, building materials, personal-care products, medical devices, detergents, packaging, children's toys, modelling clay, waxes, paints and coatings, pharmaceuticals, food products, and textiles. Phthalates are also frequently used to soften Polyvinyl Chloride (PVC). Since the phthalate does not form a molecular bond with the plastic it can be removed with heat, or organic solvents creating a potential environmental risk. DPS configures the Phthalates GC Analyzers with the sensitive FID detector to identify Phthalates in these common products, or the environment. The fast heating and rapid cooling column oven in every DPS GC vastly increases your sample throughput. The fully integrated Phthalates GC Analyzer systems are small and lightweight and all DPS systems are modular for expandability, upgrades, and easy service.
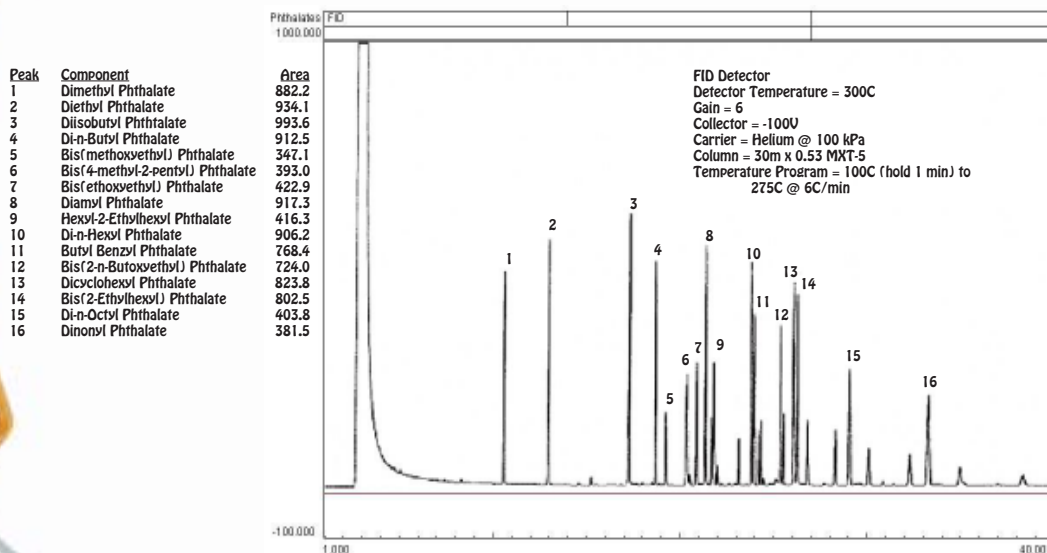
Available Configurations Include:

600-C-027 - Series 600 Phthalates GC Analyzer (FID, 30m)
500-C-027 - Companion 1 Portable Phthalates GC Analyzer (FID, 30m)

Series 600 GC

Companion 1 Portable GC

Phthalate Esters

Peak	Component	Area
1	Dimethyl Phthalate	882.2
2	Diethyl Phthalate	934.1
3	Diisobutyl Phthalate	993.6
4	Di-n-Butyl Phthalate	912.5
5	Bis(methoxyethyl) Phthalate	347.1
6	Bis(4-methyl-2-pentyl) Phthalate	393.0
7	Bis(ethoxyethyl) Phthalate	422.9
8	Diamyl Phthalate	917.3
9	Hexyl-2-Ethylhexyl Phthalate	416.3
10	Di-n-Hexyl Phthalate	906.2
11	Butyl Benzyl Phthalate	768.4
12	Bis(2-n-Butoxyethyl) Phthalate	724.0
13	Dicyclohexyl Phthalate	823.8
14	Bis(2-Ethylhexyl) Phthalate	802.5
15	Di-n-Octyl Phthalate	403.8
16	Dinonyl Phthalate	381.5

FID Detector
Detector Temperature = 300C
Gain = 6
Collector = -100V
Carrier = Helium @ 100 kPa
Column = 30m x 0.53 MXT-5
Temperature Program = 100C (hold 1 min) to
275C @ 6C/min

Phthalates FID
1,000.000

-100.000

1.000   40.000

Environmental
Semi-Volatiles

Semi-volatiles is a catch all phrase for many classes of higher boiling organic compounds. These can be Polynuclear Aromatics, Phenols, Phthalate Esters, Nitrosamines, Chlorinated Hydrocarbons, and others. Since everyone is looking for lower detection limits, these compounds are usually extracted, concentrated and shot by direct injection. The common link between these compounds is their hydrocarbon backbone, which can be easily detected by the FID detector. DPS configures the Semi-volatiles GC Analyzers with the sensitive FID detector and the column of your choice to separate and identify these classes of compounds. Or, let our experts assist you in selecting a good general purpose column to cover most of the applications. The fast heating and rapid cooling column oven in every DPS GC vastly increases your sample throughput. The fully integrated Semi-volatiles GC Analyzer systems are small and lightweight and all DPS systems are modular for expandability, upgrades, and easy service.
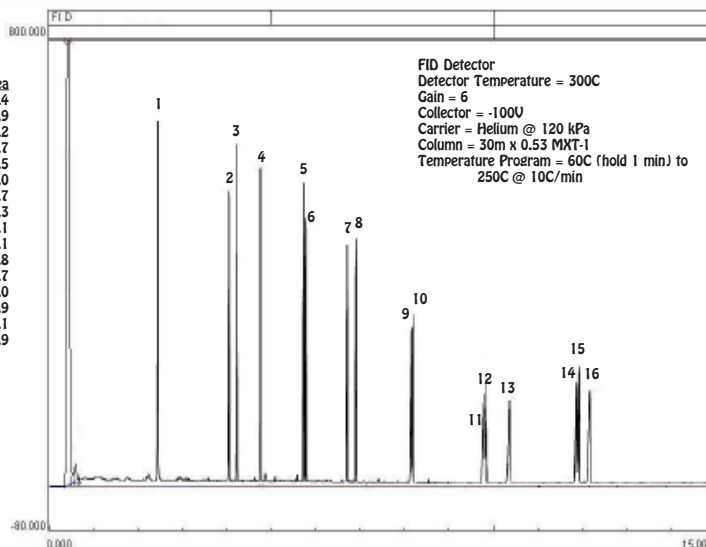
Available Configurations Include:

600-C-030 - Series 600 Semi-Volatiles GC Analyzer (FID, 30m)
500-C-030 - Companion 1 Portable Semi-Volatiles GC Analyzer (FID, 30m)

Series 600 GC

Companion 1 Portable GC

PNA's - Polynuclear Aromatic Hydrocarbons

Peak	Component	Area
1	Naphthalene	1439.4
2	Acenaphthylene	1243.9
3	Acenaphthene	1374.2
4	Fluorene	1284.7
5	Phenanthrene	1212.5
6	Anthracene	1165.0
7	Fluoranthene	1074.7
8	Pyrene	1103.3
9	Benzo(a)anthracene	827.1
10	Chrysene	940.1
11	Benzo(b)fluoranthene	498.8
12	Benzo(k)fluoranthene	632.7
13	Benzo(a)pyrene	399.0
14	Indeno(1,2,3-cd)pyrene	579.9
15	Dibenzo(a,h)anthracene	627.1
16	Benzo(ghi)perylene	428.9

FID Detector
Detector Temperature = 300C
Gain = 6
Collector = -100V
Carrier = Helium @ 120 kPa
Column = 30m x 0.53 MXT-1
Temperature Program = 60C (hold 1 min) to 250C @ 10C/min

Millions of liters of chlorinated solvents used in industry over the years have spilled, polluting our air, soil, rivers, lakes, and streams. Environmentally conscious legislation has been passed in many parts of the world to limit future spills, clean up existing polluted sites, and lessen the overall risk to ourselves and to our children.

Looking towards a greener world, DPS has configured a Companion 2 Portable Soil Gas GC Analyzer, enabling analysis in the field for Type 1 hazardous substances (11 compounds) specified in the Soil Contamination Countermeasures Law in Japan. The DPS Soil Gas GC has a built-in Sample Concentrator with Trap and dry purge functions for low ppb level analysis of these 11 compounds, and the newly added compound, Chloroethylene. The PID is very sensitive to aromatics and alkenes, and the BCD is ultra-sensitive to chlorinated and brominated compounds. This combination of detectors covers all of the compounds in the Countermeasures Law, and more. All DPS GC systems are small, lightweight and modular for expandability, upgrades, and easy service.
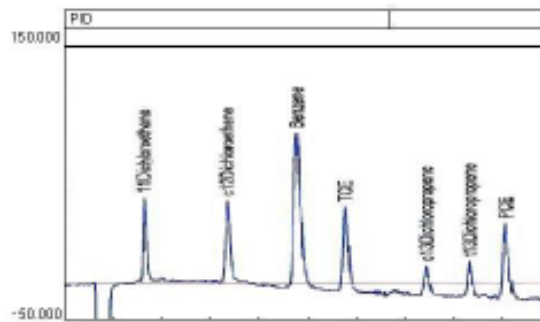
Available Configurations Include:

500-C2-013 - Companion 2 Portable Soil Gas GC Analyzer (PID, BCD, 30m)
500-C2-019 - Companion 2 Portable Low-Level GC Analyzer (PID, BCD, 30m, and Sample Concentrator)

Companion 2 Portable GC
(With Air Concentrator)

1 ppm Hazardous Substances

PID Detector
Detector Temperature = 175C
High Voltage = 800V
Gain = 6
Collector = -100V
Carrier = Helium @ 60 kPa = 10mls/min
Column = 30m x 0.53 MXT-502.2
Temperature Program = 50C (hold 3 min) to 120C @ 10C/min

Peak	Component	Area	ppm
1	1,1-Dichelroethene	195.6	1
2	cis-1,2,-Dichloroethene	295.2	1
3	Benzene	672.7	1
4	Trichloroethylene	322.4	1
5	cis-1,3-Dichloropropene	90.4	1
6	trans-1,3-Dichloropropene	106.2	1
7	Tetrachloroethylene	270.6	1
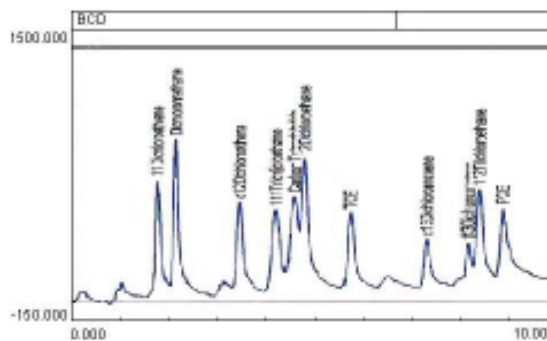
BCD Detector
Detector Temperature = 175C
Cell Temperature = 800C
Gain = 2
Collector = -100V

Peak	Component	Area	ppm
1	1,1-Dichelroethene	5598.7	1
2	Dichloromethane	7122.3	1
3	cis-1,2,-Dichloroethene	5880.7	1
4	1,1,1-Trichloroethane	5615.1	1
5	Carbon Tetrachloride	3126.5	1
6	1,2-Dichloroethane	4668.1	1
7	Trichloroethylene	5903.7	1
8	cis-1,3-Dichloropropene	3056.6	1
9	trans-1,3-Dichloropropene	1262.2	1
10	1,1,2-Trichloroethane	5295.4	1
11	Tetrachloroethylene	4838.6	1

8/2018 Specifications may change without notice.

When you need the lowest level air analyses possible count on the Air Analyzers from DPS Instruments. All of our Air Analyzers include detectors tuned to their highest sensitivity and the largest dynamic range. For your convenience, we build the Air Concentrator right into the system, which includes an electronically controlled vacuum pump with a flow controller for precise and reproducible air sampling, microelectronic sampling valve, and adsorbent trap. The Series 600 GC is ideal for analyses in the lab, or use the Portable Companion 2 GC Systems for analyses right where the samples are taken. Common configurations include a FID for hydrocarbons, PID for aromatics such as Benzene, and the ultra-sensitive BCD for chlorinated compounds. A combination of detectors covers most environmental methods. The fast heating and rapid cooling column oven in every DPS GC vastly increases your sample throughput. The fully integrated Air GC Analyzer Systems are small and lightweight and all DPS systems are modular for expandability, upgrades, and easy service.
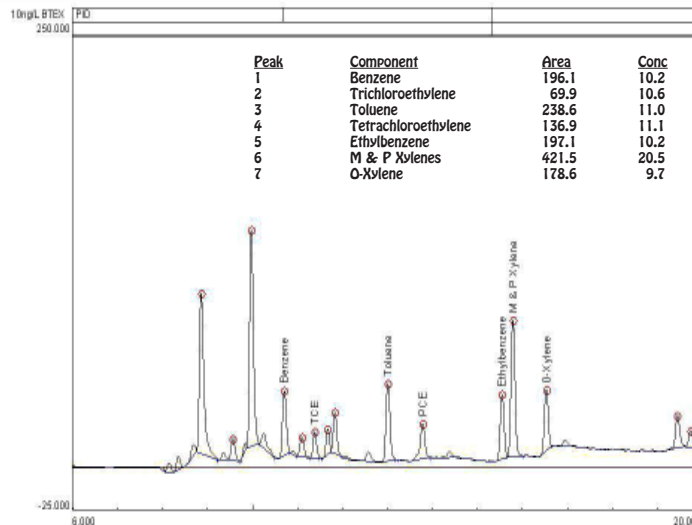
Available Configurations Include:

600-C-019 - Series 600 Air GC Analyzer (FID, PID, BCD, Air Concentrator, 2 x 30m)
600-C-018 - Series 600 Air Pollutants GC Analyzer (PID, BCD, Air Concentrator, 30m)
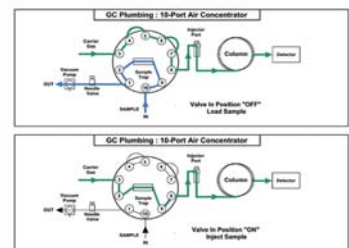500-C2-018 - Companion 2 Air GC Analyzer (PID, BCD, Air Concentrator, 30m)

Series 600 GC

BTEX with Air Concentrator - 10 ppb

Peak	Component	Area	Conc
1	Benzene	196.1	10.2
2	Trichloroethylene	69.9	10.6
3	Toluene	238.6	11.0
4	Tetrachloroethylene	136.9	11.1
5	Ethylbenzene	197.1	10.2
6	M & P Xylenes	421.5	20.5
7	O-Xylene	178.6	9.7

PID Detector
Detector Temperature = 150C
High Voltage = 600V
Gain = 4
Collector = -100V
Valve = 100C
Carrier = Helium @ 40 kPa = 10mls/min
Pump 5min @ 50mls/min = 250mls
Column = 30m x 0.53 MXT-624
Temp Program = 60C (hold 9 min) to 150C @ 10C/min

Companion 2 Portable GC
(with Air Concentrator)

When you need the lowest level air analyses possible count on the Air Analyzers from DPS Instruments. All of our Air Analyzers include detectors tuned to their highest sensitivity and the largest dynamic range. For your convenience, we build the Air Concentrator right into the system, which includes an electronically controlled vacuum pump with a flow controller for precise and reproducible air sampling, microelectronic sampling valve, and adsorbent trap. The Series 600 GC is ideal for analyses in the lab, or use the Portable Companion 2 GC Systems for analyses right where the samples are taken. Common configurations include a FID for hydrocarbons, PID for aromatics such as Benzene, and the ultra-sensitive BCD for chlorinated compounds. A combination of detectors covers most environmental methods. The fast heating and rapid cooling column oven in every DPS GC vastly increases your sample throughput. The fully integrated Air GC Analyzer Systems are small and lightweight and all DPS systems are modular for expandability, upgrades, and easy service.
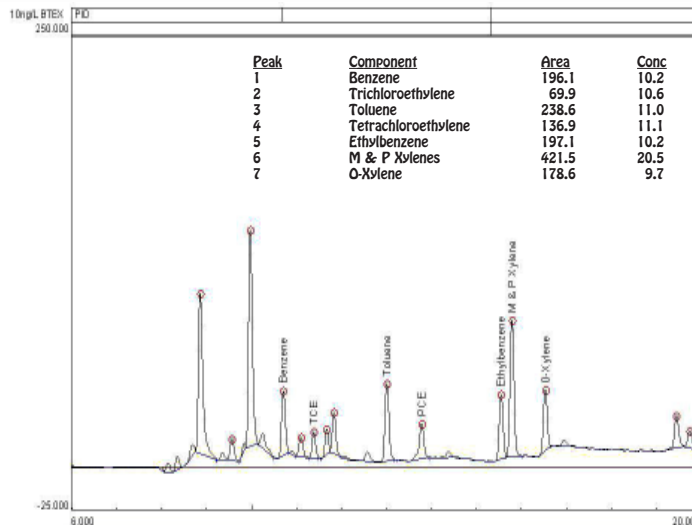
Available Configurations Include:

600-C-019 - Series 600 Air GC Analyzer (FID, PID, BCD, Air Concentrator, 2 x 30m)
600-C-018 - Series 600 Air Pollutants GC Analyzer (PID, BCD, Air Concentrator, 30m)
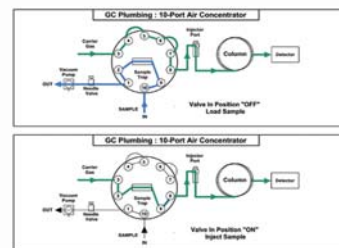500-C2-018 - Companion 2 Air GC Analyzer (PID, BCD, Air Concentrator, 30m)

Series 600 GC

BTEX with Air Concentrator - 10 ppb

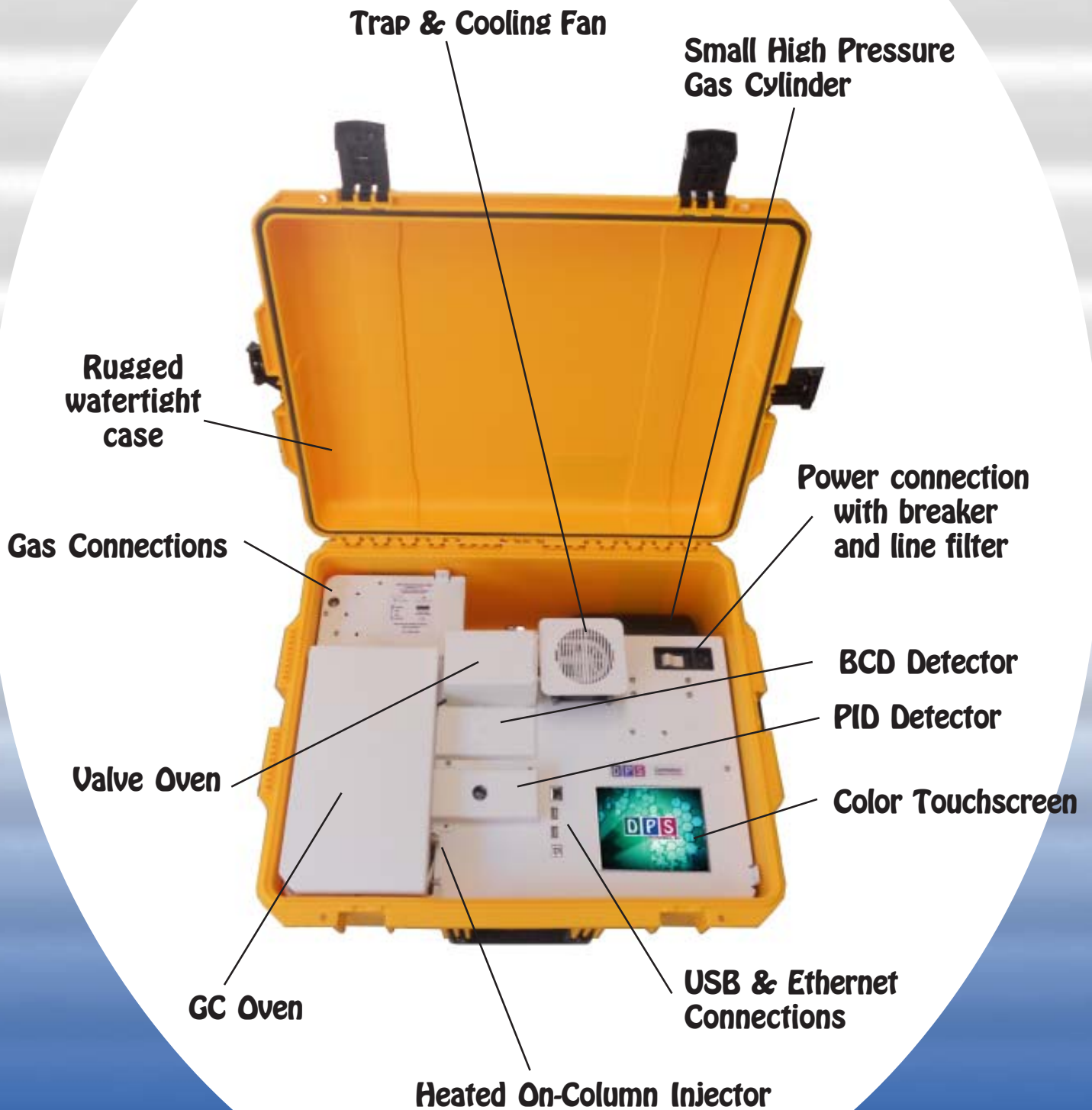| Peak	Component	Area	Conc
1	Benzene	196.1	10.2
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Column = 30m x 0.53 MXT-624
Temp Program = 60C (hold 9 min) to 150C @ 10C/min

GC Plumbing : 10-Port Air Concentrator
Valve in Position "OFF" Load Sample

GC Plumbing : 10-Port Air Concentrator
Valve in Position "ON" Inject Sample

Companion 2 Portable GC
(with Air Concentrator)

11/2015
Specifications may change without notice.

DPS Companion 2 Soil Gas GC Layout

Trap & Cooling Fan

Small High Pressure Gas Cylinder

Rugged watertight case

Gas Connections

Power connection with breaker and line filter

BCD Detector

PID Detector

Valve Oven

Color Touchscreen

GC Oven

USB & Ethernet Connections

Heated On-Column Injector

Plumbing Diagram

Sample Concentrator: The Air Sample Concentrator is built right into the Companion 2 GC Chassis to provide both a compact portable sample concentrator and a shortest possible sample path. The valve and sample lines are heated creating a inert sample path.

Load Sample: The vacuum pump draws the sample from the inlet through the Trap and then to the flow controller and pump to limit any possible cross contamination between samples. The entire sequence of the Air Sample Concentrator is automated through the Timeline of the DPS Control Software for the analysis of one sample at a time, or the system can be set up to run unattended 24/7, collecting and analyzing samples every hour, or so. A dry purge option can be added to eliminate extra water from the sample if needed.

Inject Sample: The carrier gas sweeps the components from the trap to the analytical column. The entire sample path is heated to facilitate a smooth transfer of components to the analytical column and to limit any potential carry-over from high concentation samples.
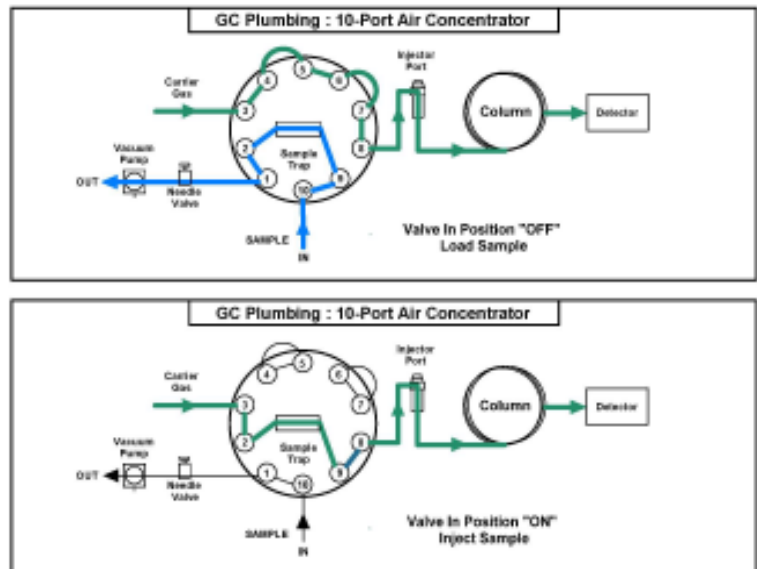
Built-in Air Concentrator Plumbing Diagram

Results, Data & Conncetivity

Results: In this unique plumbing configuration, which utilizes a precise sample flow path and precision metering, so you get the same peak areas on the chromatogram from run to run. Both detectors are stable, rugged, and reliable.

Data and Connectivity: The built-in computer is used to collect and store the data. Data can also be copied to a USB Stick to transfer to another computer. Data can be transferred from the built-in computer to another computer on the LAN through the Ethernet port using standard Windows protocols. Or, we can use a USB cable to connect the GC to the remote computer where the data can be collected and stored on that hard drive.

DPS Soil Gas Data Summary

Reproducibility Data - 3 Consecutive day Summary

Standard Preparation - 5 uL of the Original JEOL Standard diluted into 1L
200uL Direct Injection

PID Detector Data

Area

	Day 1	Day2	Day3	Average	AVE DEV	% DEV
1,1-Dichloroethene	202.6	195.0	226.1	207.9	12.2	5.85
cis-1,2-Dichloroethene	286.1	276.5	293.2	285.3	5.8	2.05
Benzene	680.8	665.8	732.7	693.1	26.4	3.81
TCE	316.9	306.0	328.1	317.0	7.4	2.33
cis-1,3-Dichloropropene	93.5	84.8	94.1	90.8	4.0	4.41
trans-1,3-Dichloropropene	101.0	86.1	98.4	95.2	6.0	6.33
PCE	276.0	279.6	287.5	281.0	4.3	1.54

Retention Time

	Day 1	Day2	Day3	Average	AVE DEV	% DEV
1,1-Dichloroethene	1.733	1.743	1.749	1.742	0.006	0.34
cis-1,2-Dichloroethene	3.450	3.459	3.462	3.457	0.005	0.14
Benzene	4.849	4.851	4.854	4.851	0.002	0.04
TCE	5.832	5.828	5.828	5.829	0.002	0.03
cis-1,3-Dichloropropene	7.465	7.462	7.453	7.460	0.005	0.07
trans-1,3-Dichloropropene	8.350	8.342	8.338	8.343	0.004	0.05
PCE	9.075	9.067	9.065	9.069	0.004	0.05

BCD Detector Data

Area

	Day 1	Day2	Day3	Average	AVE DEV	% DEV
1,1-Dichloroethene	4765	4140	4252	4386	252.7	5.76
Dichloromethane	7123	6711	7383	7072	240.8	3.40
cis-1,2-Dichloroethene	5419	5673	5132	5408	183.8	3.40
1,1,1-Trichloroethane	5666	4401	5060	5009	405.2	8.08
Carbon Tetrachloride	3253	3030	3548	3277	180.8	5.52
1,2-Dichloroethane	4055	4009	4295	4119	116.8	2.84
TCE	5627	4999	5004	5210	278.0	5.34
cis-1,3-Dichloropropene	2803	2161	2660	2541	253.5	9.98
trans-1,3-Dichloropropene	1235	1048	1163	1149	66.9	5.83
1,1,2-Trichloroethane	5147	5237	5142	5175	41.3	0.80
PCE	4411	4332	4006	4250	162.3	3.82

Retention Time

	Day 1	Day2	Day3	Average	AVE DEV	% DEV
1,1-Dichloroethene	1.872	1.876	1.888	1.879	0.006	0.33
Dichloromethane	2.217	2.216	2.231	2.222	0.006	0.29
cis-1,2-Dichloroethene	3.613	3.615	3.631	3.620	0.007	0.21
1,1,1-Trichloroethane	4.414	4.404	4.419	4.412	0.006	0.13
Carbon Tetrachloride	4.784	4.777	4.790	4.783	0.004	0.08
1,2-Dichloroethane	5.010	5.007	5.023	5.013	0.006	0.12
TCE	6.017	6.019	6.026	6.021	0.004	0.06
cis-1,3-Dichloropropene	7.663	7.643	7.649	7.651	0.007	0.10
trans-1,3-Dichloropropene	8.550	8.535	8.533	8.539	0.007	0.08
1,1,2-Trichloroethane	8.774	8.772	8.769	8.772	0.002	0.02
PCE	9.285	9.278	9.267	9.277	0.007	0.07

Results are Reproducible Day after Day

DPS Soil Gas Calibration Data

PID Detector Data

Calibration

Run	B156 1 vol	B157 0.5 vol	B159 0.1 vol	Average Calibration Factor	r2
1,1-Dichloroethene	210.3	110.3	21.5	215	0.999
cis-1,2-Dichloroethene	294.9	125.3	29.0	279	0.992
Benzene	679.1	336.0	65.6	669	1.000
TCE	306.5	139.9	37.8	321	0.995
cis-1,3-Dichloropropene	75.4	37.7	8.4	78	0.999
trans-1,3-Dichloropropene	71.2	31.3	7.8	71	0.993
PCE	256.4	130.0	25.1	256	0.999

Run	B156 1 vol	B157 0.5 vol	B159 0.1 vol	Average	AVE DEV	% DEV
1,1-Dichloroethene	1.763	1.736	1.753	1.751	0.010	0.56
cis-1,2-Dichloroethene	3.493	3.436	3.480	3.470	0.022	0.65
Benzene	4.900	4.836	4.883	4.873	0.025	0.51
TCE	5.886	5.813	5.863	5.854	0.027	0.47
cis-1,3-Dichloropropene	7.523	7.446	7.520	7.496	0.034	0.45
trans-1,3-Dichloropropene	8.416	8.346	8.400	8.387	0.028	0.33
PCE	9.146	9.080	9.116	9.114	0.023	0.25

BCD Detector Data

Run	B156 1 vol	B157 0.5 vol	B159 0.1 vol	Average Calibration Factor	r2
1,1-Dichloroethene	4533	1886	365	3985	0.992
Dichloromethane	7290	4164	546	7026	0.989
cis-1,2-Dichloroethene	4838	2977	461	5134	0.978
1,1,1-Trichloroethane	4641	1859	440	4253	0.986
Carbon Tetrachloride	3794	2051	356	3819	0.999
1,2-Dichloroethane	4379	2296	411	4360	0.997
TCE	5001	2671	424	4861	0.997
cis-1,3-Dichloropropene	2236	1031	320	2499	0.993
trans-1,3-Dichloropropene	919	561	105	1030	0.982
1,1,2-Trichloroethane	6672	2702	570	5925	0.988
PCE	4138	2220	159	3389	0.993

Run	B156 1 vol	B157 0.5 vol	B159 0.1 vol	Average	AVE DEV	% DEV
1,1-Dichloroethene	1.900	1.873	1.883	1.885	0.010	0.52
Dichloromethane	2.250	2.213	2.243	2.235	0.015	0.67
cis-1,2-Dichloroethene	3.663	3.610	3.663	3.645	0.024	0.65
1,1,1-Trichloroethane	4.446	4.386	4.410	4.414	0.021	0.48
Carbon Tetrachloride	4.830	4.760	4.841	4.810	0.034	0.70
1,2-Dichloroethane	5.063	4.996	5.043	5.034	0.025	0.50
TCE	6.073	6.003	6.041	6.039	0.024	0.40
cis-1,3-Dichloropropene	7.716	7.643	7.684	7.681	0.025	0.33
trans-1,3-Dichloropropene	8.616	8.543	8.584	8.581	0.025	0.30
1,1,2-Trichloroethane	8.856	8.783	8.710	8.783	0.049	0.55
PCE	9.360	9.290	9.320	9.323	0.024	0.26

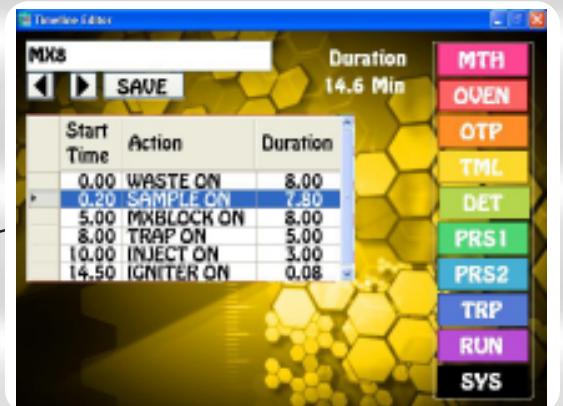**Calibrations are very Stable over Time**

DPS GC Control Software

Easy to learn and master using a Graphical User Interface (GUI) and Color Touch Screen.
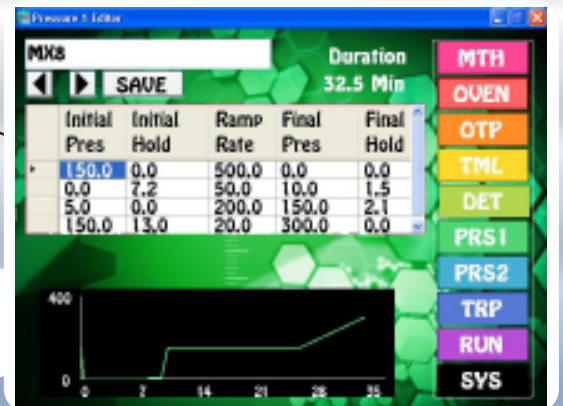
Editors let you customize the files associated with the GC Method.

Oven Temp Program Editor

Method Name

Save the current name or create a new one

File Selection Arrows

Timeline Editor

Navigation Buttons to Quickly jump from one screen to another.
Most pages are one button away!

Carrier Pressure 1 Editor

Keyboard to Enter Filenames

Number Pad for entering Values

Carrier Pressure 2 Editor

GC Status pages display the parameters in the method, both graphically and as text and values.

Oven Status

Method Editor

Detector Status

System Status
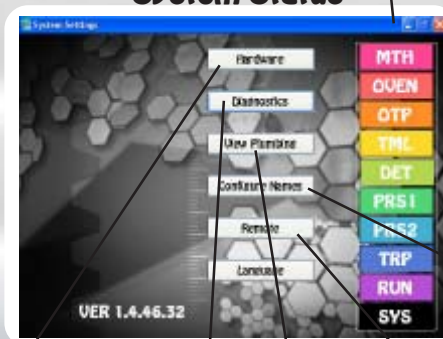
Run Status

System status pages display the health and viability of the GC instrument.
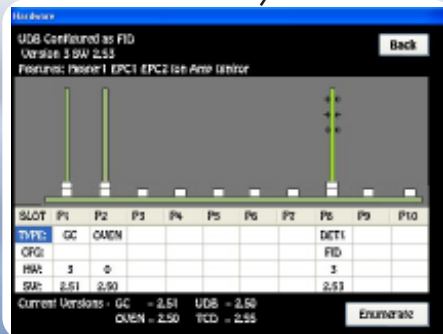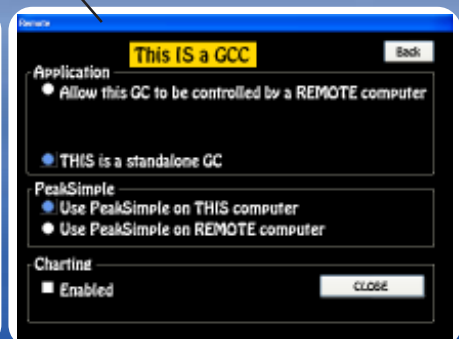
Hardware
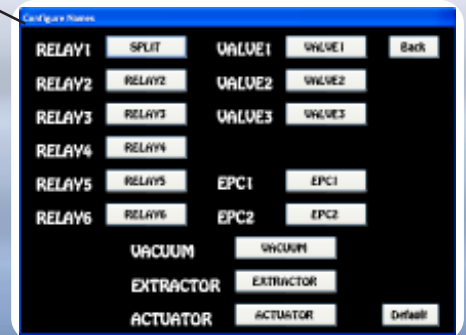
Configure Names

Diagnostics
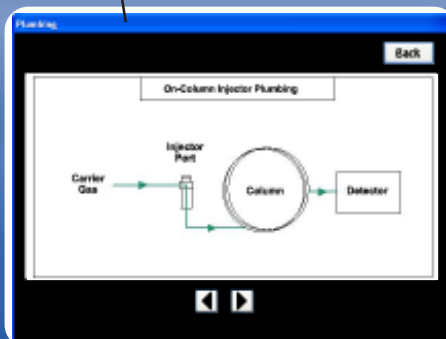
Plumbing

Remote Control

Companion 2 Portable Soil Gas GC Specifications:

Electronics Module:
- Enter and store GC Methods via Color Touch Screen
- Actual and set-point display of all GC parameters
- Safety Limits on all user entered parameters
- Oven Temperature Programs (OTP) with Multiple Ramps
- Pressure Programs for Carrier Gases with Multiple Ramps
- Timeline for sequencing Relays and Valve
- Detector Control of all Parameters on one page
- Electronic Pressure Controllers (EPC's):
     Atmospheric Pressure & Temperature Compensation
     EPC Pressure Control with 0.1 kPa set-point resolution
- Plug and Play GC Control, Oven, and Detector Board
- Microprocessor Controlled
- Proprietary Digital Signal Processing
- Digital Signal Outputs for each Detector
- Universal voltage input (85 – 240 Vac) with line
     filter and breaker.

Detectors:
PID – Photoionization Detector
BCD – Bromide Chloride Detector

- 400 ºC Temperature Limit with 0.1 ºC set-point resolution
- 24-bit Digital Outputs for the detector via USB
- EPC Pressure Control with 0.1 kPa set-point resolution

Columns:
15m, 30m, or 60m Capillary Columns

Results:
Automatically calibrated, corrected and reported

Companion 2 Oven Module:
- Ambient to 325 ºC Column Oven
- Up to 80 ºC per/min Oven Ramp
- Fast Cooldown 300 ºC to 50 ºC < 4 min
- 200 watt Heater Element
- Temperature Ramps with 0.1 ºC set-point resolution
- 12.5 x 10.5 x 12.5 cm area for Packed, or Capillary Columns
- 7 amps at 48 Vdc total power consumption

Built-In Accessories:
- Air Sample Concentrator

Injectors:
- Heated On-column Injectors
- Multiple Pressure Ramps with 0.1 kPa set-point resolution

Data Communications:
- Bi-directional communication with popular Data System

Network Connectivity:
- Enterprise Compatible Network GC running Windows XPe
- Ethernet Connection using Windows Network Protocol
- On Board ETX Computer for GC Control and
     Data Acquisition
- Remote Control of GC and Data Acquisition
     over LAN

Lab Quality Analyses in the Field,
"It Goes with you Anywhere!"

DPS
Instruments, Inc.

Plumbing Diagram

Gas Sample Valve: The Gas Sample Valve can be configured in many different ways. For example, it can be configured for a dual Sample Loops, where the gas sample fills 2 different size loops, that are subsequently injected onto 2 difrferent Injectors.

Load Air Sample: Eitjer positive pressure, or an optional vacuum pump can be used to draw the sample through each of the Sample Loops, which are in series. The entire sequence is automated through the Timeline of the DPS Control Software for the analysis of one sample, or the system can be set up to run unattended 24/7, collecting and analyzing samples every hour, or so.

Inject Sample: No matter how the sample was loaded on the Sample Loops, the carrier gas sweeps the components from the Loops to the analytical columns. Tghere is a separate carrier gas for each column, which means that 2 different carrier gases can be used in this configuration.
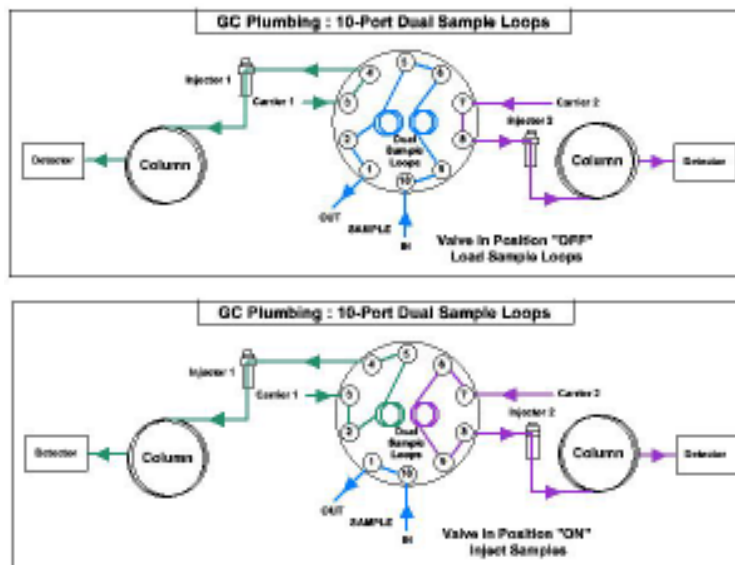
Dual Sample Loops,
two different size Sample
Loops going to 2 Injectors

Results, Data & Conncetivity

Results: In this unique plumbing configuration you get the same peak areas on the chromatogram no matter where the sample comes from. If the Sample is pushed through the Sample Loops, or pulled with the Vacuum Pump, the Sample Loops are filled in the same way.

Data and Connectivity: The built-in computer is used to collect and store the data. Data can also be copied to a USB Stick to transfer to another computer. Data can be transferred from the built-in computer to another computer on the LAN through the Ethernet port using standard Windows protocols. Or, we can use a USB cable to connect the GC to the remote computer where the data can be collected and stored on that hard drive.

BTEX GC Specifications:

Electronics Module:
- Enter and store GC Methods via Color Touch Screen
- Actual and set-point display of all GC parameters
- Safety Limits on all user entered parameters
- Oven Temperature Programs (OTP) with Multiple Ramps
- Pressure Programs for Carrier Gases with Multiple Ramps
- Timeline for sequencing Relays and Valve
- Detector Control of all Parameters on one page
- Electronic Pressure Controllers (EPC's):
  Atmospheric Pressure & Temperature Compensation
  EPC Pressure Control with 0.1 kPa set-point resolution
- Plug and Play GC Control, Oven, and Detector Board
- Microprocessor Controlled
- Proprietary Digital Signal Processing
- Digital Signal Outputs for each Detector
- Universal voltage input (85 – 240 Vac) with line
  filter and breaker.

Detectors:
FID – Flame Ionization Detector
PID – Photoionization Detector
BCD, HID, TID, NPD, FPD can also be added.

- 400 ºC Temperature Limit with 0.1 ºC set-point resolution
- 24-bit Digital Outputs for the detector via USB
- EPC Pressure Control with 0.1 kPa set-point resolution

Columns:
15m, 30m, or 60m Capillary Columns

Results:
Automatically calibration corrected and reported

Series 600 Oven Module:
- Ambient to 400ºC Column Oven
- Up to 100 ºC per/min Oven Ramp
- Fast Cooldown 300 ºC to 50 ºC in 3.5 min
- 1000 watt total Heater Elements
- Temperature Ramps with 0.1 ºC set-point resolution
- 23 x 23 x 20 cm area for Glass, SS, or Capillary Columns

Companion 2 Oven Module:
- Ambient to 325 ºC Column Oven
- Up to 80 ºC per/min Oven Ramp
- Fast Cooldown 300 ºC to 50 ºC < 4 min
- 200 watt Heater Element
- Temperature Ramps with 0.1 ºC set-point resolution
- 12.5 x 10.5 x 12.5 cm area for Packed, or Capillary Columns
- 7 amps at 48 Vdc total power consumption

Built-In Accessories:
- Gas Sample Valve
- Air Compressor for FID's

Injectors:
- Cool On-column Injectors
- Heated On-column Injectors
- Split/Splitless Injectors
- Multiple Pressure Ramps with 0.1 kPa set-point resolution

Data Communications:
- Bi-directional communication with popular Data System
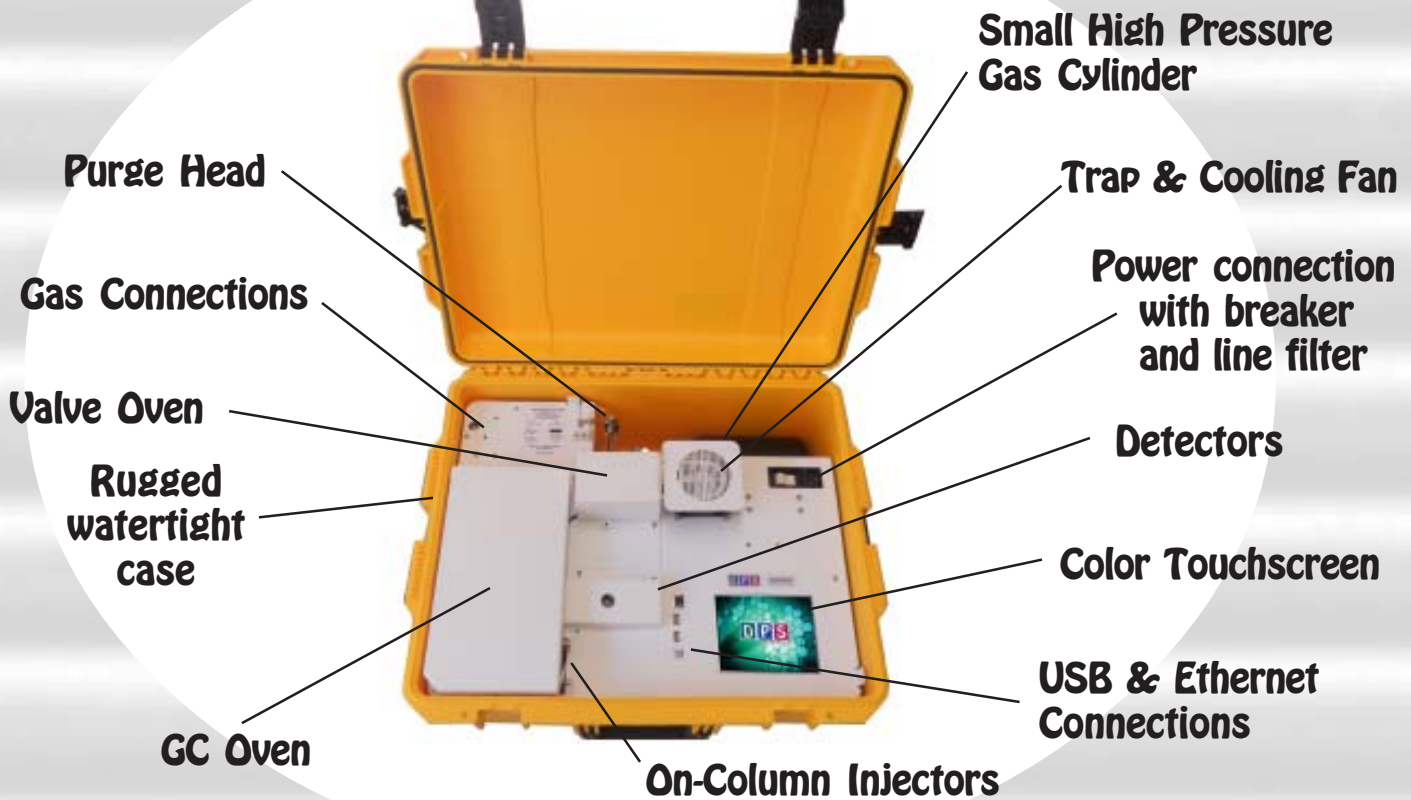
Network Connectivity:
- Enterprise Compatible Network GC running Windows XPe
- Ethernet Connection using Windows Network Protocol
- On Board ETX Computer for GC Control and
  Data Acquisition
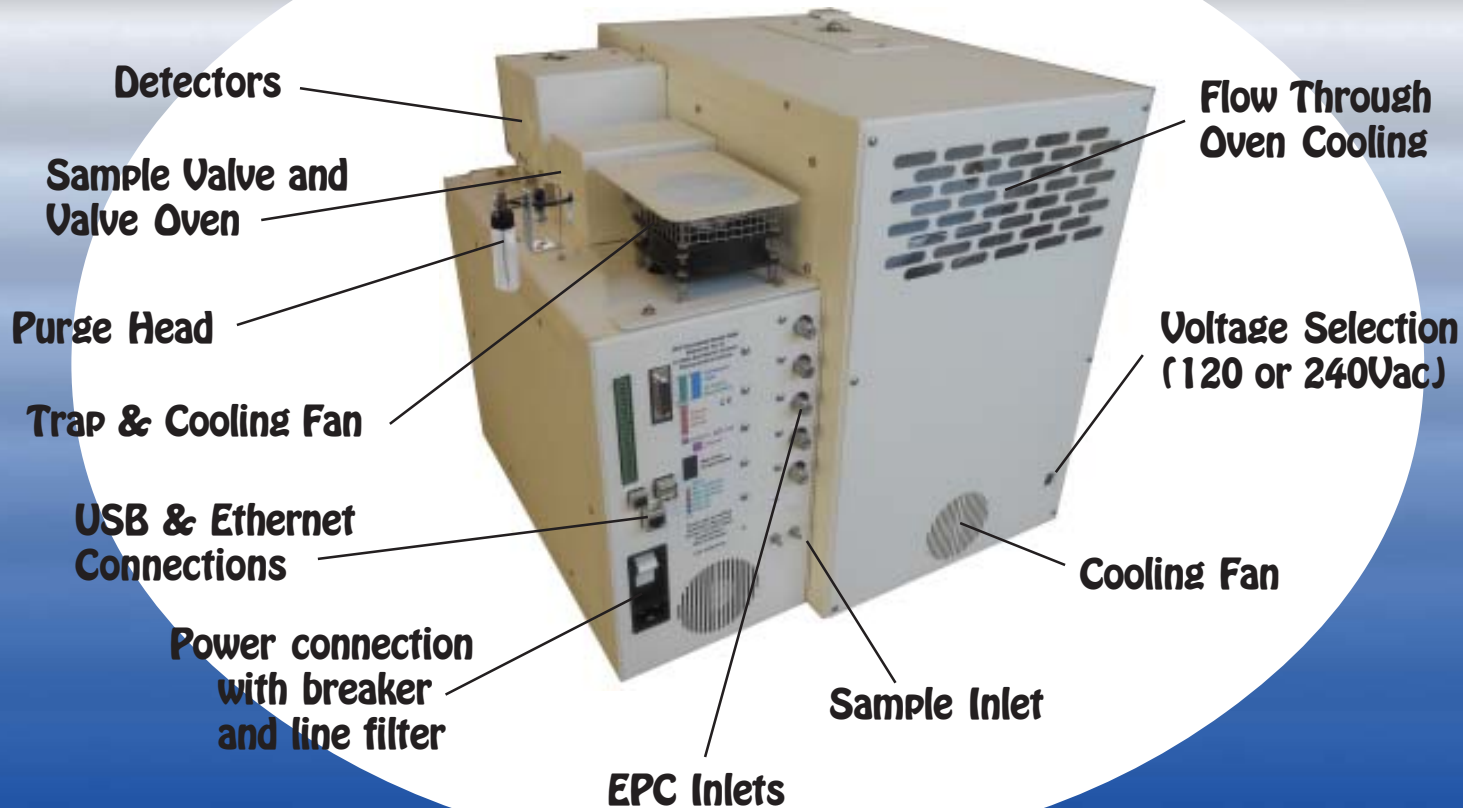- Remote Control of GC and Data Acquisition
  over LAN

Lab Quality Analyses in the Field,
"It Goes with you Anywhere!"

DPS
Instruments, Inc.

DPS Environmental GC Layouts

Companion 2 GC

- Purge Head
- Gas Connections
- Valve Oven
- Rugged watertight case
- GC Oven
- On-Column Injectors
- Small High Pressure Gas Cylinder
- Trap & Cooling Fan
- Power connection with breaker and line filter
- Detectors
- Color Touchscreen
- USB & Ethernet Connections

Series 600 GC

- Detectors
- Sample Valve and Valve Oven
- Purge Head
- Trap & Cooling Fan
- USB & Ethernet Connections
- Power connection with breaker and line filter
- EPC Inlets
- Sample Inlet
- Cooling Fan
- Voltage Selection (120 or 240Vac)
- Flow Through Oven Cooling

Plumbing Diagram

Sample Concentrators: Both the Purge & Trap Concentrator and Air Sample Concentrator are built right into the GC Chassis to provide both a compact portable sample concentrator and a shortest possible sample path. The valve and sample lines are heated creating a inert sample path. There is no need to change any plumbing to switch between analyzing water, or air samples. Simply loading a different GC Method in the DPS Control Software is all that you have to do. Both Sample Concentrators use the same flow control valve to precisely meter the amount of sample loading on the Trap.

Load Water Sample: The water sample is purged with inert gas to extract the sample compounds and load them onto the Trap. The entire sequence of the Purge & Trap Concentrator is automated through the Timeline of the DPS Control Software for the analysis of one sample at a time.

Load Air Sample: The vacuum pump draws the sample from the inlet through the Trap and then to the flow controller and pump to limit any possible cross contamination between samples. The entire sequence of the Air Sample Concentrator is automated through the Timeline of the DPS Control Software for the analysis of one sample, or the system can be set up to run unattended 24/7, collecting and analyzing samples every hour, or so.

Inject Sample: No matter how the sample was loaded on the Trap, the carrier gas sweeps the components from the trap to the analytical column.
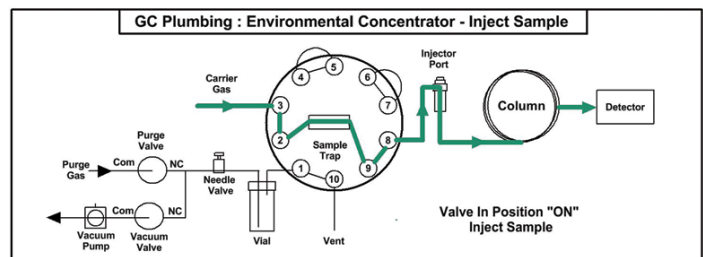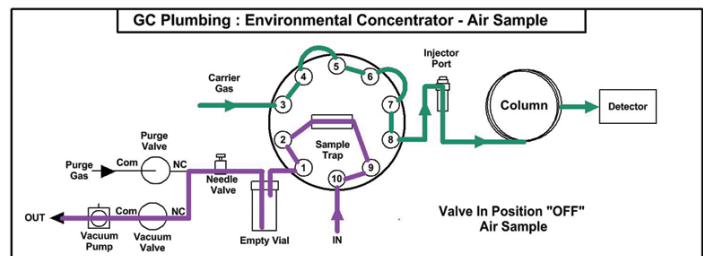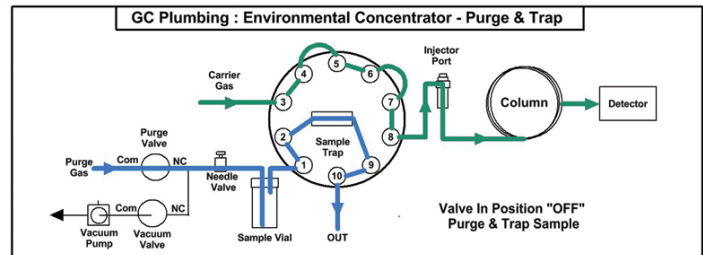
**Built-in Combination
Purge & Trap Concentrator,
& Air Concentrator
Plumbing Diagram**

Results, Data & Conncetivity

Results: In this unique plumbing configuration, which utilizes the same sample flow path and precision metering, you get the same peak areas on the chromatogram no matter which source the sample comes from. The results presented on the first page demonstrate this. A BTEX standard was spiked into clean water for the Purge & Trap analysis and the same standard was spiked into a 1L Tedlar bag containing room air for the Air Analysis. Since 10 nanograms of each component are loaded on the Trap in each case, the detector responds with the same value.

Data and Connectivity: The built-in computer is used to collect and store the data. Data can also be copied to a USB Stick to transfer to another computer. Data can be transferred from the built-in computer to another computer on the LAN through the Ethernet port using standard Windows protocols. Or, we can use a USB cable to connect the GC to the remote computer where the data can be collected and stored on that hard drive.

Environmental GC Specifications:

Electronics Module:
- Enter and store GC Methods via Color Touch Screen
- Actual and set-point display of all GC parameters
- Safety Limits on all user entered parameters
- Oven Temperature Programs (OTP) with Multiple Ramps
- Pressure Programs for Carrier Gases with Multiple Ramps
- Timeline for sequencing Relays and Valve
- Detector Control of all Parameters on one page
- Electronic Pressure Controllers (EPC's):
    Atmospheric Pressure & Temperature Compensation
    EPC Pressure Control with 0.1 kPa set-point resolution
- Plug and Play GC Control, Oven, and Detector Board
- Microprocessor Controlled
- Proprietary Digital Signal Processing
- Digital Signal Outputs for each Detector
- Universal voltage input (85 – 240 Vac) with line
    filter and breaker.

Detectors:
FID – Flame Ionization Detector
PID – Photoionization Detector
BCD – Bromide Chloride Detector

- 400 ºC Temperature Limit with 0.1 ºC set-point resolution
- 24-bit Digital Outputs for the detector via USB
- EPC Pressure Control with 0.1 kPa set-point resolution

Columns:
15m, 30m, or 60m Capillary Columns

Results:
Automatically calibration corrected and reported

Series 600 Oven Module:
- Ambient to 400ºC Column Oven
- Up to 100 ºC per/min Oven Ramp
- Fast Cooldown 300 ºC to 50 ºC in 3.5 min
- 1000 watt total Heater Elements
- Temperature Ramps with 0.1 ºC set-point resolution
- 23 x 23 x 20 cm area for Glass, SS, or Capillary Columns

Companion 2 Oven Module:
- Ambient to 325 ºC Column Oven
- Up to 80 ºC per/min Oven Ramp
- Fast Cooldown 300 ºC to 50 ºC < 4 min
- 200 watt Heater Element
- Temperature Ramps with 0.1 ºC set-point resolution
- 12.5 x 10.5 x 12.5 cm area for Packed, or Capillary Columns
- 7 amps at 48 Vdc total power consumption

Built-In Accessories:
- Purge & Trap Sample Concentrator
- Air Sample Concentrator
- Air Compressor for FID's

Injectors:
- Cool On-column Injectors
- Heated On-column Injectors
- Split/Splitless Injectors
- Multiple Pressure Ramps with 0.1 kPa set-point resolution

Data Communications:
- Bi-directional communication with popular Data System

Network Connectivity:
- Enterprise Compatible Network GC running Windows XPe
- Ethernet Connection using Windows Network Protocol
- On Board ETX Computer for GC Control and
    Data Acquisition
- Remote Control of GC and Data Acquisition
    over LAN

Lab Quality Analyses in the Field,
"It Goes with you Anywhere!"

D P S
Instruments, Inc.