

Greenhouse Gas Analysis Systems

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 start of the industrial revolution. The burning of fossil fuels, coal, and wood has increased carbon dioxide, carbon monoxide, methane and nitrous oxide concentrations in the atmosphere. These Greenhouse gases hold in infrared radiation, which would normally escape, and warm the lower atmosphere. 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 small and lightweight DPS Micro-TCD Greenhouse Gas GC Systems are well suited for monitoring ambient air, gases from natural sources, or use it anywhere you need to measure emissions. The sample is automatically loaded with the built-in vacuum pump and injected onto the latest designed capillary columns. The analysis time is less than 1 min.

The DPS Greenhouse Gas systems are available as an ultra-compact Micro-TCD GC for continuous monitoring in a fixed location. Or, as a Portable Companion 4 GC designed to "Go with you Anywhere!" Complete with built-in carrier and calibration gases, and a rechargeable battery.

The DPS Natural Gas GC specifications are on par with the biggest selling Micro GC's in the market, yet they are smaller, lighter, faster, and more portable.

Micro-TCD GC Applications

Continuous Monitoring Greenhouse Gas GC



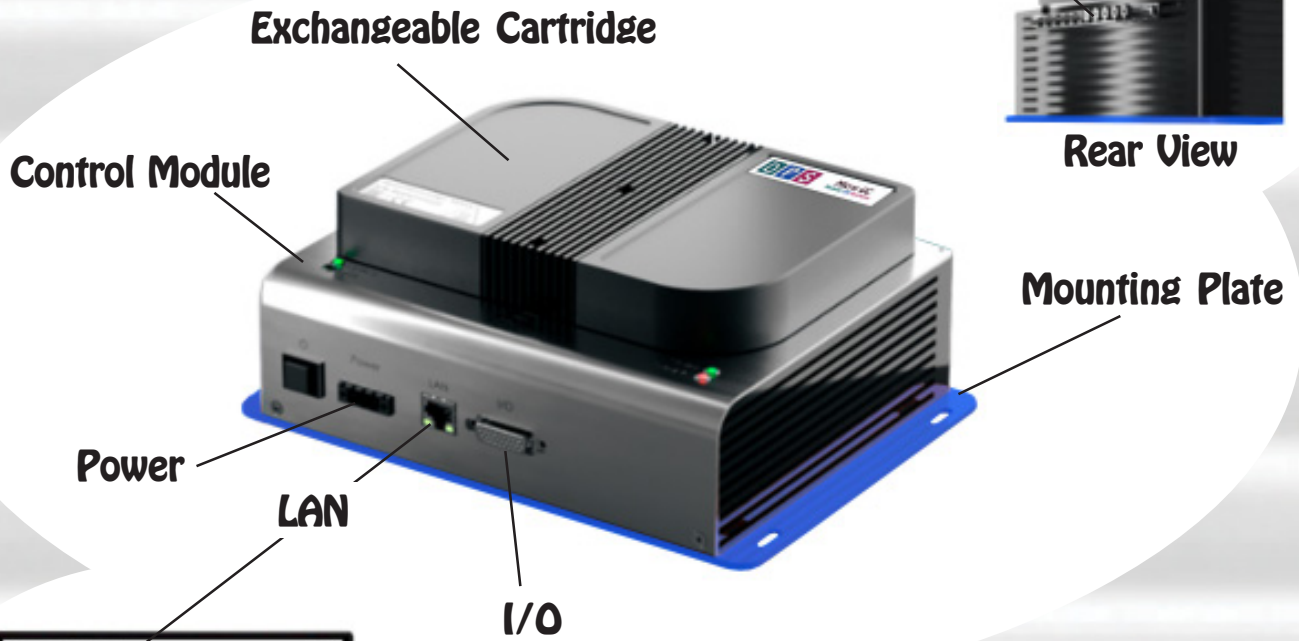
General Specifications:

- Micro-TCD Gas Chromatograph
- Greenhouse Gas analysis in less than 1 min
- 1-2 Channels - GC Column Oven/Micro-TCD's
- Fast & Accurate with Low Maintenance
- Easy Chromatography Data System
- Ultra Compact and Lightweight,
GC (20 x 15 x 10 cm), approximately 8 kg
Portable (52 x 40 x 21 cm), approximately 15 kg

Portable Greenhouse Gas GC
"It Goes with you Anywhere!"

DPS
Instruments, Inc.

DPS Micro-TCD GC Layout



Gas/Sample Connections

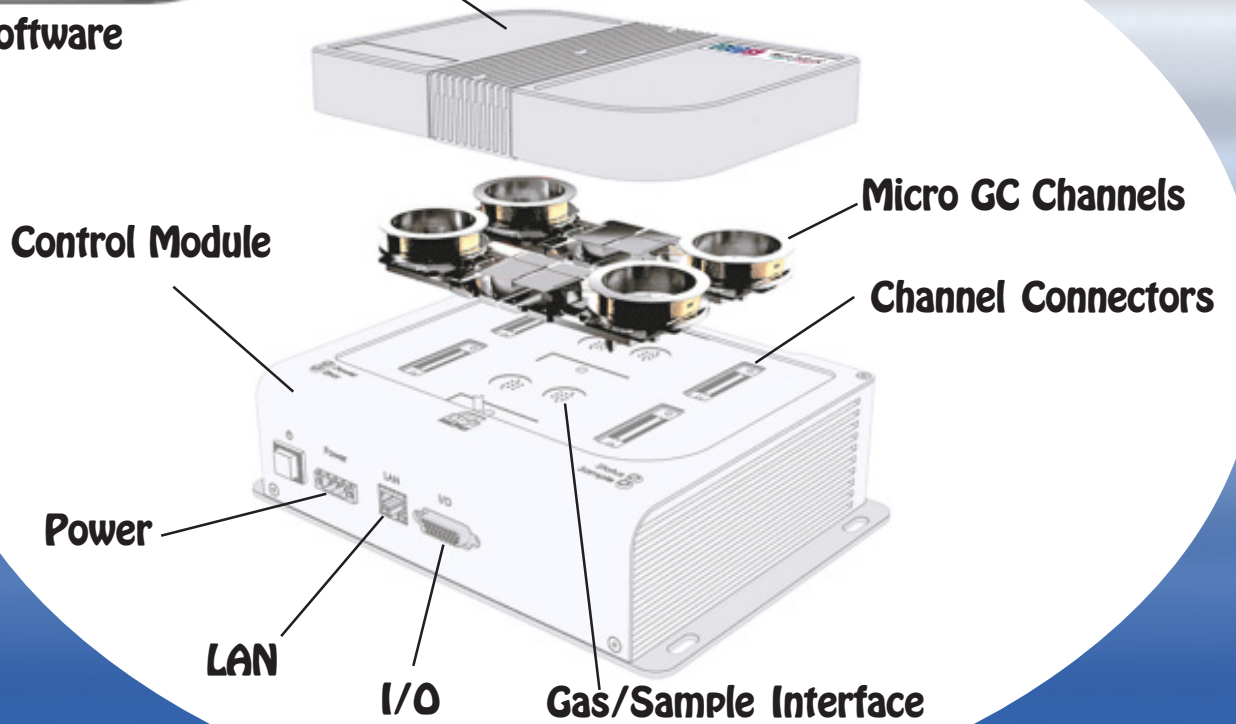


Rear View

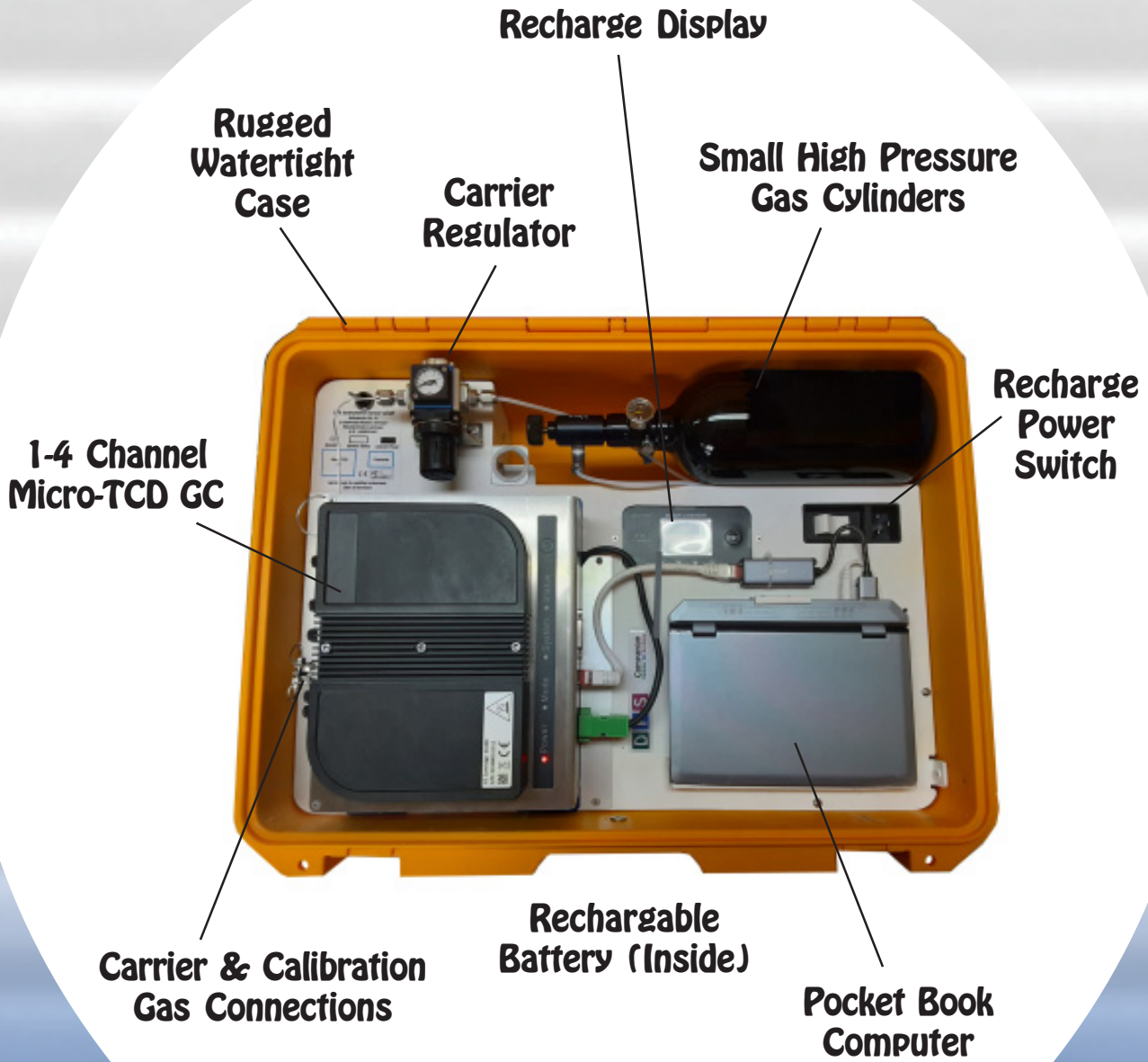


Control Software

4 Channel GC Cartridge

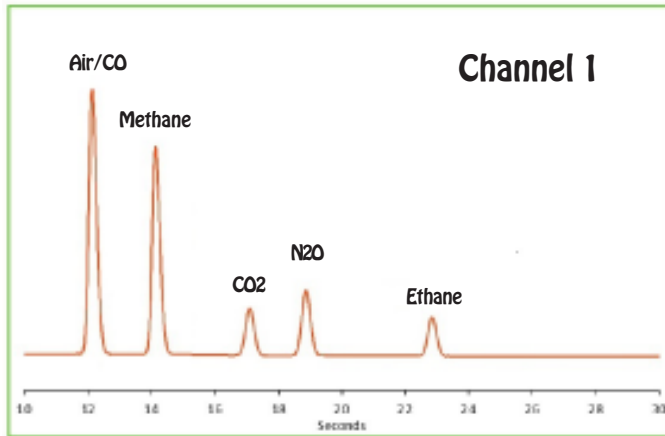


DPS Companion 4 Layout



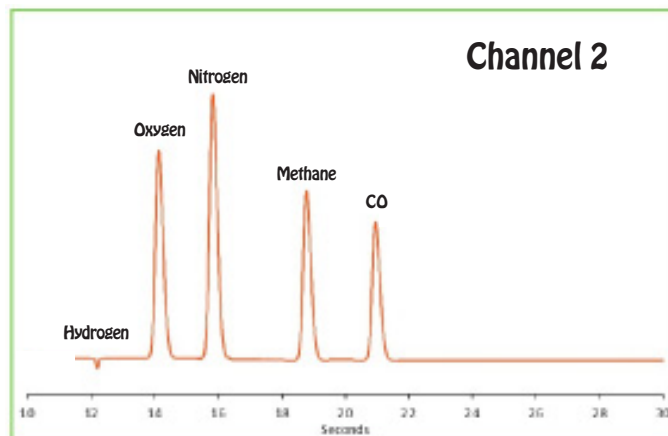
Greenhouse Gas Analyzer

1 Channel Micro-TCD GC - A U-Bond column separates air from Methane, Carbon Dioxide, Nitrous Oxide and other light hydrocarbons. Either hydrogen or helium can be used as the carrier gas.



Greenhouse Gases

2 Channel Micro-TCD GC - An optional 2nd channel can be added with a Molecular Sieve column to separate the permanent gases hydrogen, oxygen, nitrogen, methane and carbon monoxide. In this example helium is used as the carrier gas.



Permanent Gases

Every GC Channel includes 2 TCD detectors, one for the Analytical Column and the other for the Pre-column backflush. Using this to our advantage we backflush heavier compounds keeping the analytical column clean.

DPS Micro-TCD Greenhouse Gas GC System Specifications:

Fixed or Portable Greenhouse Gas GC:

Micro GC Channels:

- 1-2 Micro GC Channels in an Exchangeable Cartridge
- Each GC Channel contains GC Oven, Analytical Column, Pre-Column, 2X Micro-TCD Detectors, Injection and Back-Flush Valves, Electronic & Gas Connectors.

Software/GC Control Interface:

- Enter and store GC Methods via Computer connection
- Safety Limits on all user entered parameters
- Communications: RS232, RS485, Ethernet, Digital I/O
- Protocols: Modbus, TCP
- Sequencing for Sampling, Injection, Backflush, etc.
- Memory Storage - up to 256Gb
- Control for Carrier Gas(s)
- Control for Valves (Injection, Backflush, Sample)
- Universal voltage input (85 – 240 Vac, 50-60Hz)
- Power Supply - (20 – 28 Vdc)
- Power Consumption - 75 Watts maximum

Features:

- 150 °C Temperature Limit with 0.1 °C set-point resolution
- Isothermal Operation
- Repeatability - < 0.05% RSD
- Cycle Time (Typical) - 60 sec
- Detection Limit (500ppb - 100%)
- Sequence Controlled Injection Time
- 1 Micro-machined Injector per Channel
- 1 Pre-Column with Backflush per Channel
- 1 Analytical Column per Channel

Valve:

- 1 Micro-machined Injection & Back-Flush Valve per Channel

Columns:

- 1 Pre-Column with Back-Flush per Channel
- 1 Analytical Column
- Isothermal Operation
- Repeatability - < 0.05% RSD
- Cycle Time (Typical) - 15 - 60 sec
- Optional Temperature Program

Control Module:

- Moisture - (5 to 95 %)
- Operating Temperature - (5 to 55 °C)
- Storage Temperature - (-20 to 60 °C)
- Dimensions - 20 X 15 X 10 cm
- Weight - 8 Kg

Gas/Sampling:

- Gas Ports - 1/16"
- Carrier - Helium, Argon, Nitrogen, or Hydrogen
- Carrier Input Pressure - 450 kPa
- Carrier Consumption (Typical) - 15 mls/min
- Sampling - Pressurized, or internal Vacuum Pump
- 3 Sample Streams (more optional)
- Sample probe
- Sample Filter

Companion 4
Portable GC



Micro-TCD GC