

Industrial

## Thermo Scientific Gas Chromatograph Analyzers

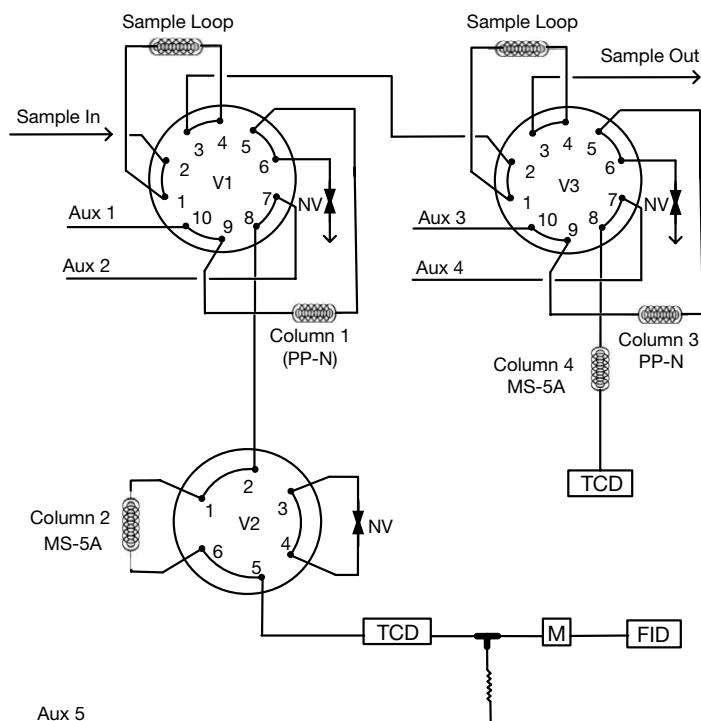
### Permanent Gas Analyzer including H<sub>2</sub> and low level CO and CO<sub>2</sub>

#### Overview

The Thermo Scientific™ Permanent Gas Analyzer is based on the Thermo Scientific™ TRACE™ 1610 gas chromatograph connected with the Thermo Scientific™ Auxiliary Oven with easy access to valves, rotors, and actuators. It analyzes industrial gas streams to provide a quantitative determination of individual permanent gases, hydrogen, carbon monoxide, and carbon dioxide. Permanent gases, CO and CO<sub>2</sub>, are detected on the Thermal Conductivity Detector (TCD) channel with an LOD of approximately 50 ppm. A methanizer-Flame Ionization Detector (FID) channel is used to detect CO and CO<sub>2</sub> at lower levels with an LOD of approximately 0.1 ppm. If required, this channel can be used to analyze light hydrocarbons C1-C4. He and H<sub>2</sub> are detected on a second TCD channel with an MDL <20 ppm.

#### Key features

- Modular Thermo Scientific™ iConnect™ detectors to facilitate troubleshooting and maintenance
- Simultaneous analysis of single sample injection on each channel to increase laboratory productivity
- Independently heated auxiliary oven with easy access to valves, actuators, and columns



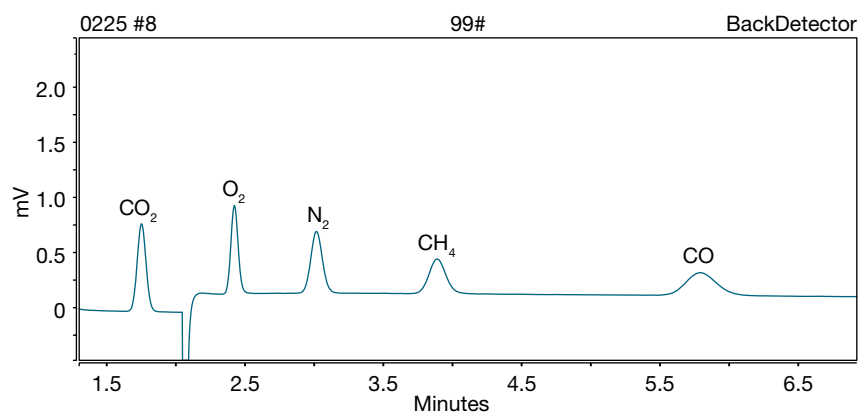
Schematic plumbing of the three-channel PGA analyzer

## Configurations available

Simplified single-channel and dual-channel PGA configurations are available for the detection of permanent gases, and permanent gases in combination with hydrogen only or in combination with low levels of CO and CO<sub>2</sub> only.

### Channel one: Thermal Conductivity Detector (TCD)

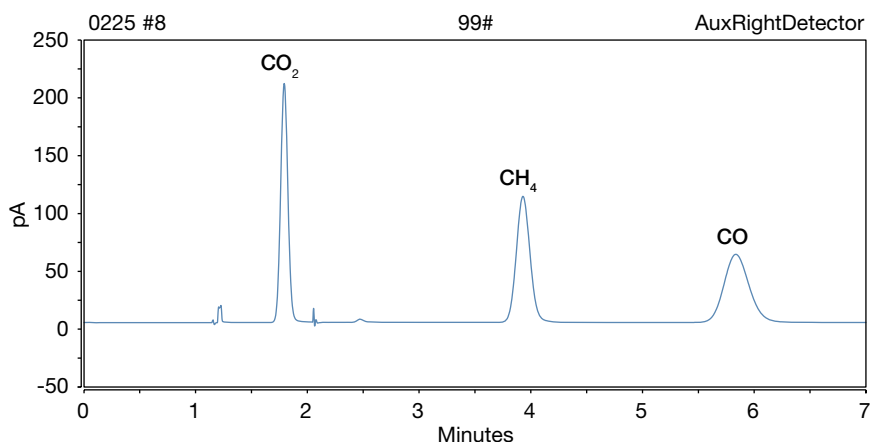
- 10-port heated gas sampling valve for gas injection and backflush and 6-port valve for series/bypass
- Components: Permanent gases (O<sub>2</sub>, N<sub>2</sub>, CH<sub>4</sub>, CO) and light hydrocarbons with TCD (or the FID in series). The light HC will elute after the CO<sub>2</sub> before releasing the air peak from the MS column.
- Carrier gas: Helium
- Two packed columns



Permanent gases on channel 1 (TCD with carrier helium)

### Channel two: Methanizer-Flame Ionization Detector (FID)

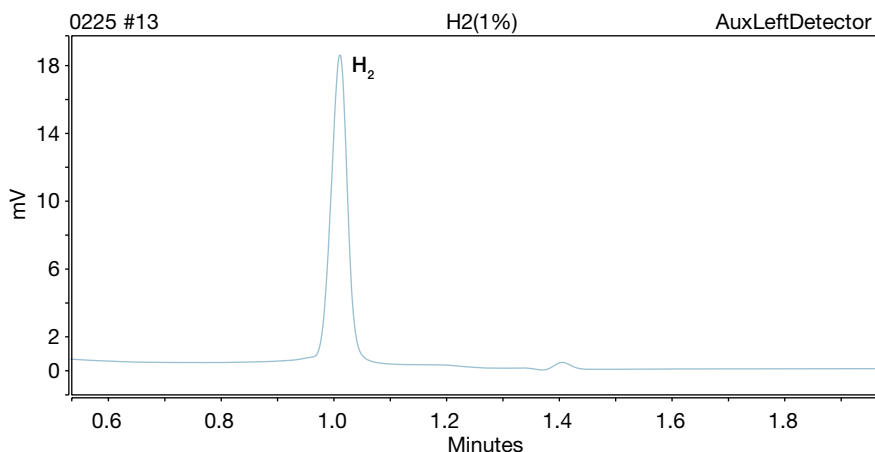
- In series with channel one to analyze low levels CO and CO<sub>2</sub>
- If required, light hydrocarbons can be detected on the FID channel



Low levels of CO and CO<sub>2</sub> on channel 2 (methanizer-FID)

### Channel three: Thermal Conductivity Detector (TCD)

- 10-port heated gas sampling valve for gas injection and backflush
- Components: He and H<sub>2</sub>
- Carrier gas: Nitrogen or argon
- Two packed columns



Hydrogen detection on channel 3 (TCD with carrier nitrogen)

### Three-channel PGA analyzer specifications

	Channel		
	CHN1 Permanent gases	CHN2 Low level CO/CO <sub>2</sub>	CHN3 Hydrogen
Valves	2	In-series w/ CHN1	1
Columns	2 packed	In-series w/ CHN1	2 packed
Detector	TCD	Methanizer-FID	TCD
O <sub>2</sub>	Yes	NA	NA
N <sub>2</sub>	Yes	NA	NA
CO	Yes	Yes – low levels	NA
CO <sub>2</sub>	Yes	Yes – low levels	NA
H <sub>2</sub>	No	NA	Yes
C1-C4	Yes	Yes	NA
Concentration range	0.005–100% v/v	0.0001–1% v/v	0.005–100% v/v

### Tailored analyzers for specific application needs

Thermo Fisher Scientific offers a suite of gas analyzers for industrial applications such as permanent gas analysis. TRACE 1610 GC Analyzers for PGA conduct analyses according to standard methods from regulatory agencies,

such as the EPA, ISO, ASTM, and EN, to ensure compliance with regulations, optimize processes, and enhance safety. Single channel, dual channel, or multi-method combination systems are available to meet your requirements.

 Learn more at [thermofisher.com/pga](https://thermofisher.com/pga)