

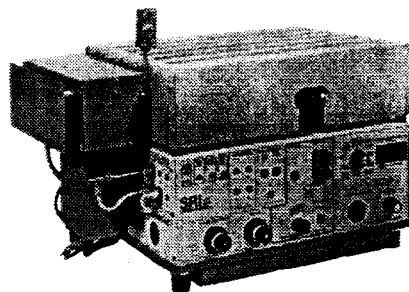
# MULTIPLE GAS ANALYZER GC

# GC DETECTORS

**Separates Hydrogen, Oxygen, Nitrogen, Methane, Carbon Dioxide, Carbon Monoxide, Ethane, Propane, Butanes and Pentanes AUTOMATICALLY in a single injection!**

The **SRI Multiple Gas Analyzer** is pre-plumbed and tested to resolve the fixed gases O<sub>2</sub>, N<sub>2</sub>, CO<sub>2</sub> plus hydrocarbons through C<sub>6</sub>. In the past, this analysis has required 3 valves, 3 to 4 columns, and a troublesome and complex sequence of critically timed valve actuations

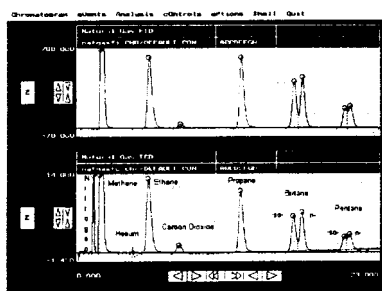
SRI has simplified the system down to 2 independent analytical columns, 1 gas sampling valve, for almost "bulletproof" operation. Other gases such as ethylene and N<sub>2</sub>O, may also be analyzed



**SRI 8610 MULTIPLE GAS ANALYZER**  
wrth TCD, 10 part valve, and 2 columns

### Special Features

- + The gas sample from the sample loop is delivered onto 2 independent analytical columns connected in series via a gas sampling valve.
- Ⓛ By temperature programming the silica gel-packed column & rotating the valve during the analysis, the sequence of the two columns is reversed & the components are eluted into the detector with a high level of separation.

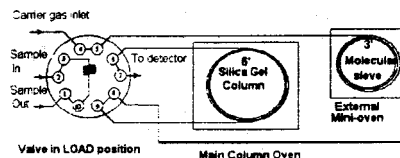


### Actual Chromatogram

Top: Flame Ionization Detector

Bottom: Thermal Conductivity Detector

Note : **sharp peak resolutm!**



## MULTIPLE GAS ANALYZER

### 8610-0070 MULTIPLE GAS ANALYZER with TCD

**Includes:** SRI 8610 GC with heated 10 port electrically operated gas sampling valve, TCD detector, two columns, PeakSimple II software and built-in serial data board. TCD detects most analytes to 200 ppm.

### 8610-0071 MULTIPLE GAS ANALYZER with TCD, FID plus methaniser

**Includes:** Same equipment as above plus an FID detector for hydrocarbon detection to 1 ppm and Sleanhizer to convert CO and CO<sub>2</sub> to methane for measurement by FID

MG020695.DOC

One, two, three or more detectors may be installed on the SRI 8610 and 9300 GC. Usually 2 to 3 detectors are more practical. Some detectors share components, for example the FID converts to NPD by replacing the ignitor with a thermionic bead. All detectors require factory installation. Upgrade kits may be user installed and include all necessary parts to convert from one detector type to another. For optional A/D *Bus Data board users*, detectors purchased at the time of the GC purchase include one **PeakSimple Model 110 A/D BOARD**. For subsequent detector and upgrade kit purchases, Model 110 A/D BOARDS must be purchased separately. The standard built-in **Serial Port Data Board** includes 4 channels.

### 8690-0007 THERMAL CONDUCTIVITY DETECTOR (TCD)

The TCD consists of four tiny coiled wires arranged in a Wheatstone bridge configuration. Electric current flows through the filaments making them glow hot, while carrier gas exiting the column flows past two of the hot filaments and reference gas flows past the other two. The gas flow carries away excess heat, and the filaments equilibrate. When a peak exits the column, the thermal conductivity of the gas flowing around the filaments is changed, thus the filaments get hotter, altering the balance of the Wheatstone bridge.

The TCDs biggest advantage is that it detects everything, because every compound has some thermal conductivity. The biggest disadvantage is that the TCD is not very sensitive with detection limits in the 100 ppm range for most compounds. The TCD is typically used for gas analyses and simple mixtures where the concentration of each analyte is between 1% and 100%. Since the TCD responds to oxygen, nitrogen, water and other non-hydrocarbons, it is often the only choice for compounds to which other more sensitive detectors do not respond.

### 8690-0010 FLAME IONIZATION DETECTOR (FID)

The FID consists of a stainless steel jet constructed so that carrier gas exiting the column flows through the jet, mixes with hydrogen gas, and burns at the tip of the jet. Hydrocarbons and other molecules which ionize in the flame (i.e. lose an electron) are attracted to a metal collector electrode located just to the side of the flame. The resulting electric current is amplified by a special electrometer amplifier which converts very small currents (pico-amperes) to millivolt level signals which are sent to the data system.

The FID is the most commonly used GC detector because it detects virtually all hydrocarbons down to .1 nanogram (100 ppb) and responds linearly as the amount increases to almost 100%. Unlike many other types of detectors, the FID is very stable, because the detector calibration stays constant as long as the gas flow rates don't change, and it is not susceptible to contamination by dirty samples or bleeding columns. The SRI designed FID is unique because it has a "state of the art" ceramic ignitor which may be left permanently glowing, thus preventing the flame-outs for which other manufacturer's FIDs are notorious. With the SRI you can even flood the detector with water, and the flame will simply re-ignite when the water has passed.