Narrow Bore Capillary FID GC System - with OCPTV

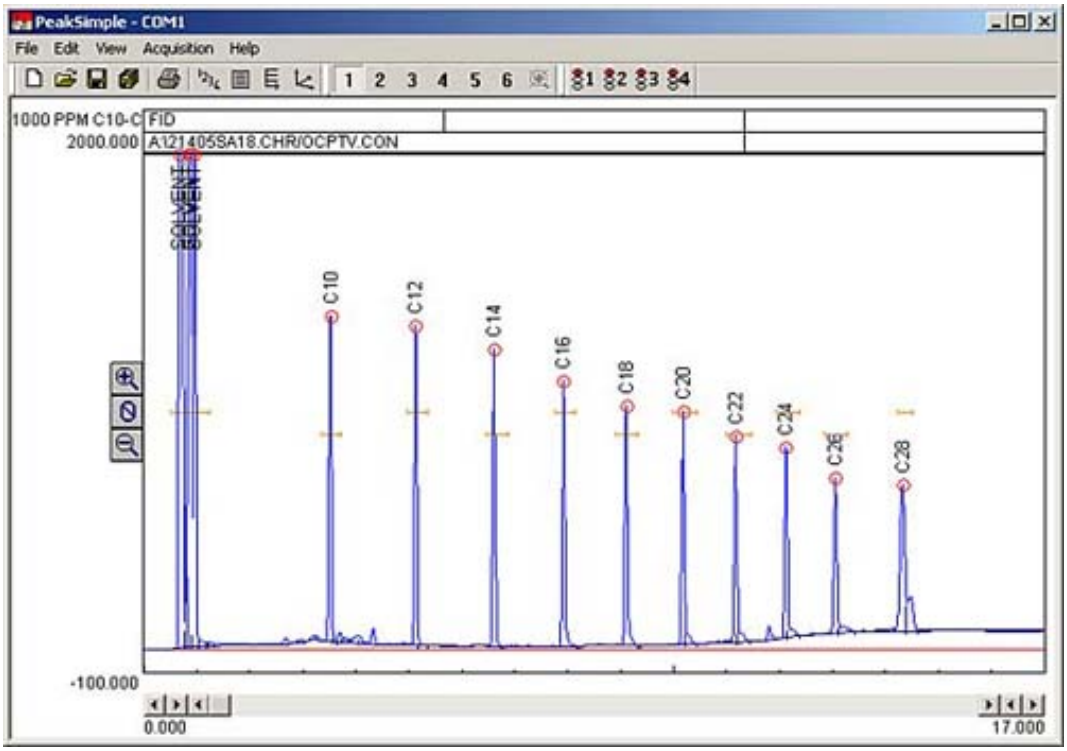
- **FID Detector**
- **On-Column PTV Injector**
- **30 meter Narrow Bore (0.25mm ID) Capillary Column**
- **Built-in, "whisper quiet" Air Compressor**
- **Temperature Programmable Column Oven**
- **1 Channel PeakSimple Data System**
  ...on the compact 8610C chassis

The Narrow Bore Capillary FID GC System includes everything you need for ultra high performance narrow bore capillary chromatography. In addition to a wide range of general gas chromatography applications, the Narrow Bore Capillary FID GC System is excellent for environmental testing and quality control applications.

The On-Column Programmable Temperature Vaporization (OCPTV) injector allows larger and simpler liquid injections than are otherwise possible with narrow bore columns. Like a traditional heated Split/Splitless injector, the OCPTV has a spilt vent and needle valve for venting solvent while concentrating sample. Unlike a heated Split/Splitless injector, the OCPTV vents the solvent without without rapid vaporization. Carrier gas flow is programmable from the PeakSimple data system.

The OCPTV discriminates in favor of semi-volatile analytes with boiling points higher than C_8. The chromatogram at right shows an analysis of diesel range organics (C_{10}-C_{-28}). The OCPTV causes the analytes to focus on the analytical column, resulting in sharp, well-defined peaks.

Traditional heated split injectors can usually only handle 1-2µL injections. The OCPTV's ability to accommodate larger (1-20µL) injections allows for detection limits an order of magnitude lower. For more information on the OCPTV.



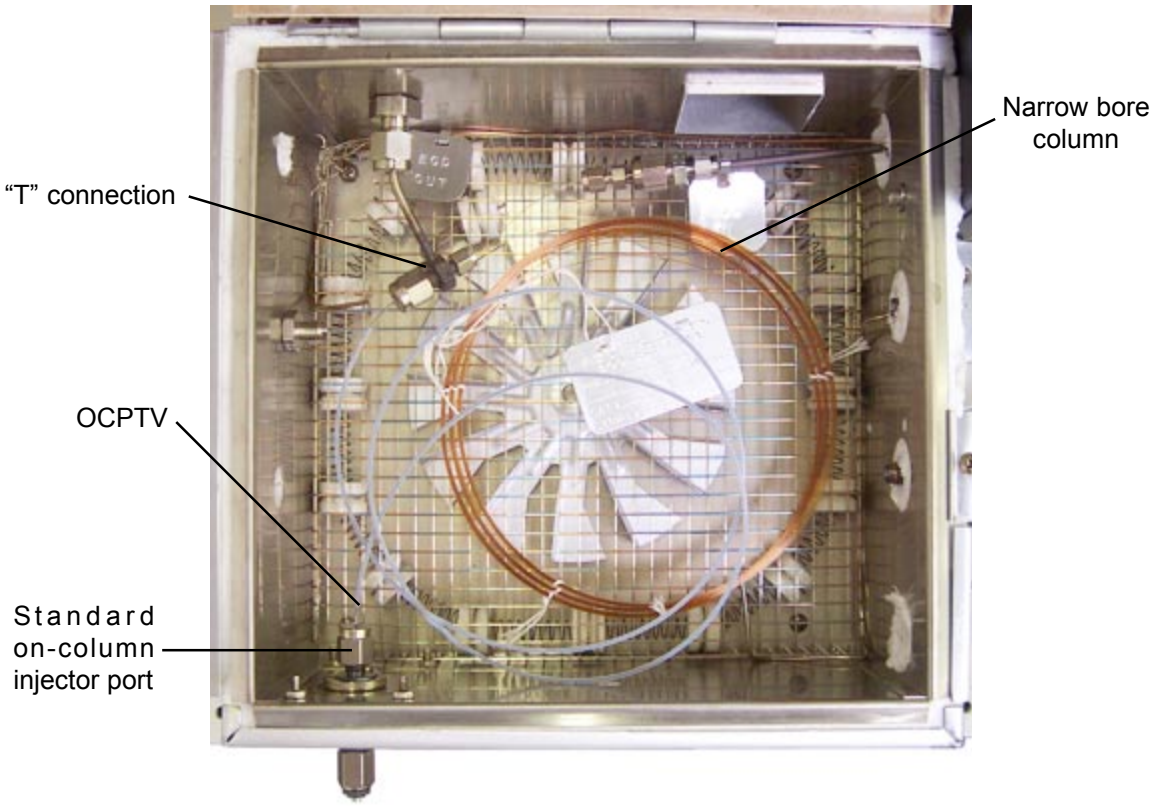
8610-5405 **Narrow Bore Capillary FID GC System** **USD 9,990.00**

(VOLTAGE: for 110VAC, use 8610-5405-1; for 220VAC, use 8610-5405-2)

Options & Upgrades: additional detectors with 4 channel serial or 6 channel USB PeakSimple data system, Methanizer, gas sampling valves, additional columns, H2-50XR hydrogen generator, autosampler

Overview

The On-Column PTV is a resistively heated pre-column, consisting of a1-meter long segment of 0.53ID metal capillary column (5µm film thickness), and insulating teflon sleeve. The pre-column is connected to the user's narrow bore column with a special, electrically insulated split "T" inside the GC column oven.



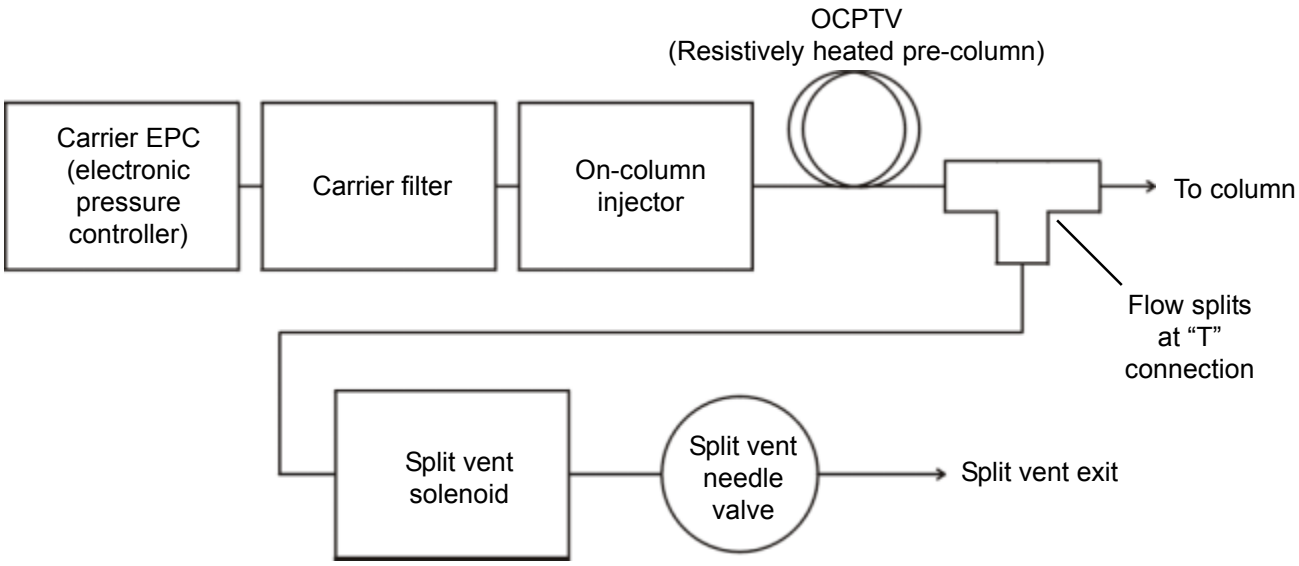
Like the Split/Splitless injector, the OCPTV has a split vent and needle valve for venting solvent while concentrating sample.

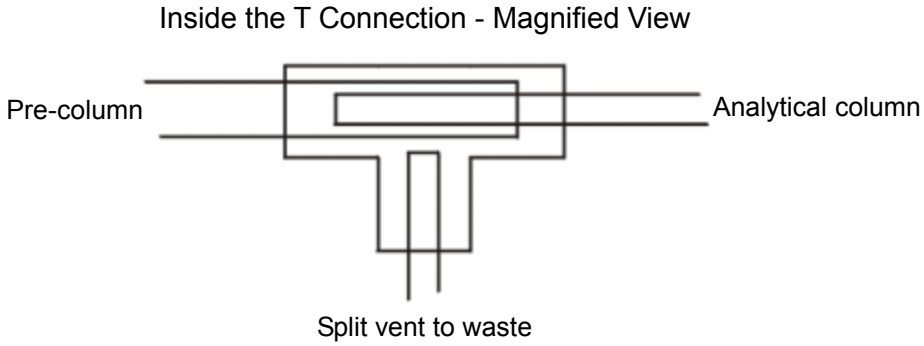
The pre-column will be factory installed. Should you need to disconnect it, simply loosen the injector port fitting inside the column oven and pull the pre-column out. Loosen the "T" fittings and remove both the pre-column and narrow bore column from the "T." Connect your replacement column to the injector port fitting inside the column oven.

INJECTORS
OCPTV - On-Column Programmed Temperature Vaporization Injector

Theory of Operation

The GC operator injects sample via syringe through the on-column injection port with the split vent open to vent the solvent. After injection and solvent venting, the pre-column heats up while the carrier gas flows through it to sweep focused analytes from the pre-column to the analytical column. At this point, the pre-column is hotter than the column oven. The temperature difference between the hotter pre-column and cooler analytical column causes the analytes to focus on the analytical column, resulting in sharp peaks on the chromatogram.

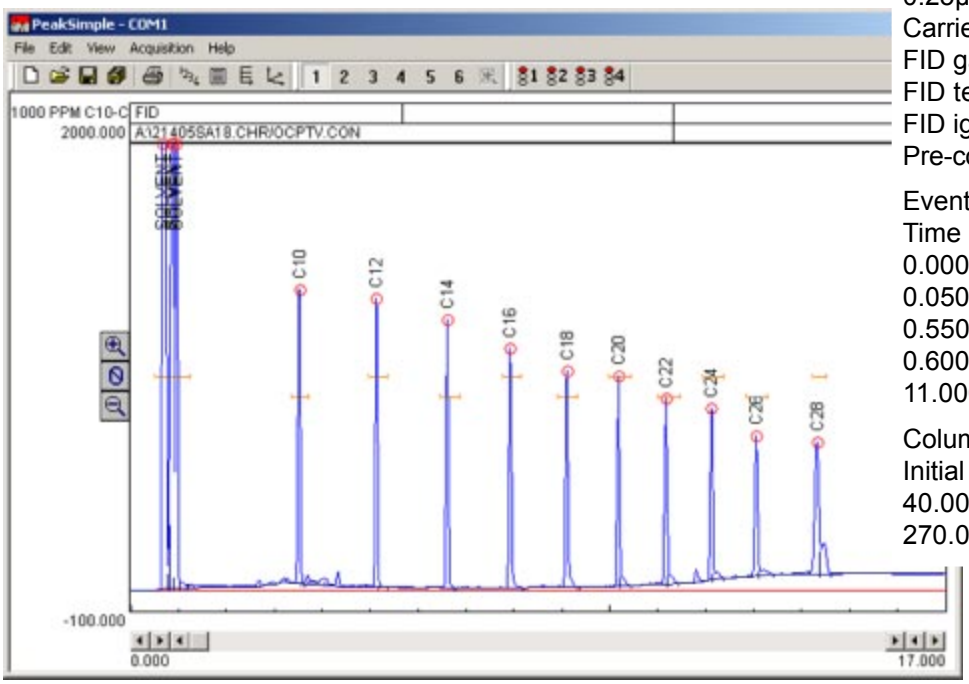




The 5 micron non-polar phase in the OCPTV pre-column has a high capacity to absorb high boiling compounds, and is stable at high temperatures. Like in-tube SPME, the pre-column discriminates in favor of high boiling semi-volatile analytes, concentrating them in the phase. Unlike a normal heated split/splitless injector, the OCPTV vents the solvent without expanding it to a gas. Therefore, the OCPTV can accommodate larger liquid injections than heated split/splitless injector.

Expected Performance

The following chromatogram from a GC equipped with an FID detector and OCPTV injector demonstrates the sharp peaks attainable from high boiling analytes with the OCPTV.



Sample: 2µL 100ppm diesel range organics in hexane
Column: 25-meter RXT-1 0.25mm 0.25µm
Carrier: hydrogen at 20psi
FID gain: HIGH
FID temperature: 300°C
FID ignitor: -400
Pre-column vent flow: 100mLs/minute

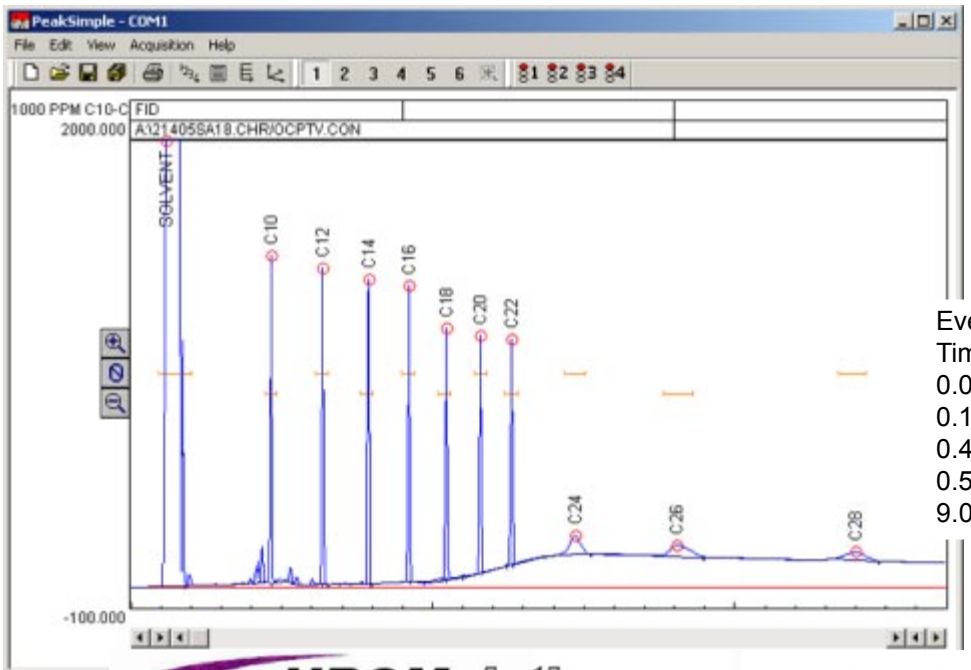
Event Table:

Time	Event
0.000	Zero signal
0.050	A ON (pre-column vent)
0.550	A OFF
0.600	F ON (pre-column heat)
11.000	F OFF

Column oven temperature program:

Initial	Hold	Ramp	Final
40.00	1.00	20.00	270.00
270.00	20.00	0.00	270.00

This chromatogram is from the same GC. It was made with the same analytical parameters, except a slightly different event table was used. In this event table, the pre-column heat was not kept on long enough to transfer the highest boiling analytes to the analytical column. The last three peaks are broad because the column oven heat is what drove them from the OCPTV pre-column, rather than the OCPTV heat itself, as in the first chromatogram.



Event Table:

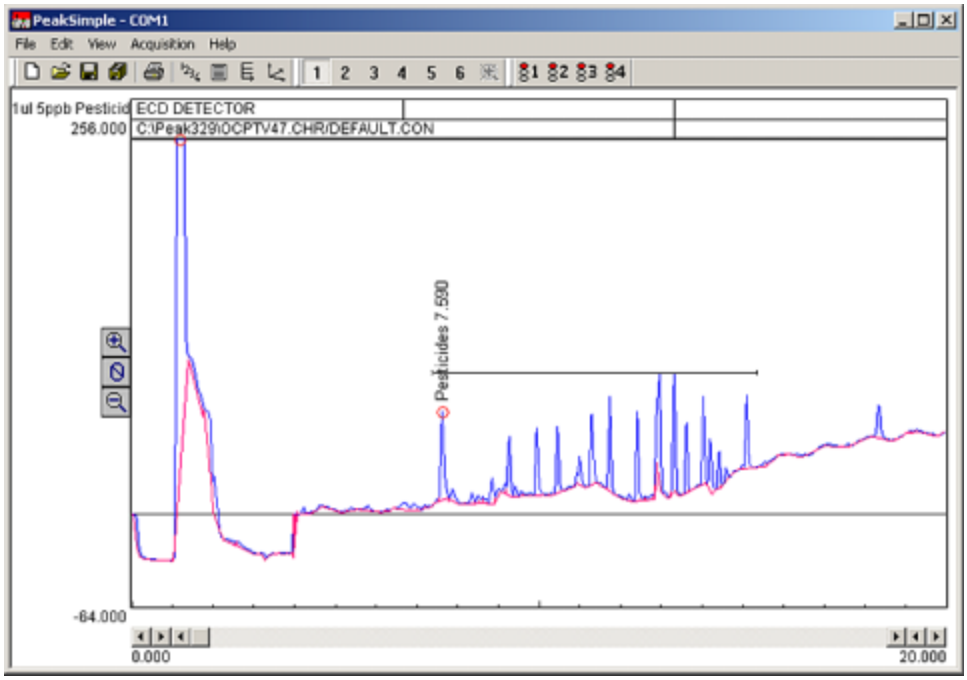
Time	Event
0.000	Zero signal
0.100	A ON (pre-column vent)
0.450	A OFF
0.500	F ON (pre-column heat)
9.000	F OFF

INJECTORS
OCPTV - On-Column Programmed Temperature Vaporization Injector

Expected Performance

The following chromatogram, from an SRI GC equipped with an OCPTV injector and an ECD detector, demonstrates the low detection levels achievable with the OCPTV. ***NOTE:*** Depending on the configuration, your GC may have different relay assignments than the examples used here.

Sample: 1µL 5ppb pesticides mix
Column: 15-meter XLB 0.25mm 0.25µm
Carrier: helium at 20psi
ECD temperature: 300°C
ECD current: 200



Event Table:

Time	Event
0.000	Zero signal
0.050	A ON (pre-column vent)
0.980	A OFF
1.000	B ON (pre-column heat)
11.000	B OFF

Column oven temperature program:

Initial	Hold	Ramp	Final
50.00	1.00	15.00	260.00
260.00	5.00	0.00	260.00

Results:

Component	Retention	Area
Pesticides	7.590	1864.6387