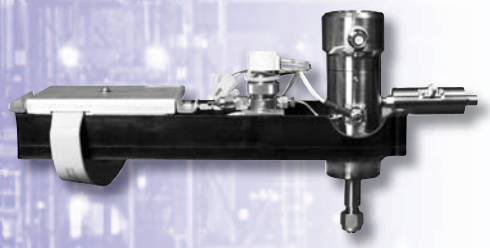
Model 4450 Tandem PID/FID



- Patented tandem design uses only one GC detector port
- Tandem design obtains screening and confirmatory information from one sample injection
- Eliminating transfer lines between detectors improves peak shape and performance
- System uses GC electronics or OI Analytical's dual channel electrometer

Principal Applications

- USEPA Methods 602, 604, 609, 8030, 8060, and 8090
- BTEX
- GRO/DRO
- Massachusetts VPH
- ISO 15009 and 15680
- Standard Methods 6200C
- Underground storage tank monitoring

The Model 4450 Tandem PID/FID is a combination detector system incorporating the Model 4430 Photoionization and Model 4410 Flame-Ionization Detectors. The two detectors in tandem produce simultaneous detector traces for aromatics and aliphatics, eliminating the need for two separate analyses. Since the Tandem PID/FID occupies only one detector port, two Model 4450s can be installed on one GC, providing twice the throughput using an OI Analytical dual channel electrometer. The Tandem PID/FID obtains excellent results with either packed or capillary columns.

Operating Principles

The sample stream elutes from the column into the Model 4430 PID's reaction chamber where it is continuously irradiated with high-energy ultraviolet light. Compounds with a lower ionization potential than that of the irradiation energy (10.2 electron volts with a standard lamp) become ionized. An electronic field collects the ions formed, producing an ion current that is amplified and output by the GC's electrometer.

The sample stream passes directly from the Model 4430 PID into the Model 4410 FID flame, which is produced by combusting hydrogen and air. As the analytes pass through this flame, they become ionized and are attracted to the collector electrode with an applied electric field in the ionization chamber. The collected ions produce a current proportional to the sample concentration in the flame.

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Model 4430 PID Specifications

Dynamic Range
- >10^6

Minimum Detection Limit
- <40 pg benzene*

Maximum Operating Temperature
- 275 °C

Construction Materials
- Inlet: glass-lined stainless steel
- Ion chamber: gold-plated stainless steel

Vent
- Remotely controlled

Detector Volume
- Approximately 50 µL

Dimensions (Controller)
- 14.74 cm H x 7.05 cm W x 23.08 cm D (5.75" H x 2.75" W x 9.0" D)

Model 4410 FID Specifications

Dynamic Range
- >10^6

Minimum Detection Limit
- 5 pg carbon/second propane

Maximum Linear Level
- 100 µg

Maximum Operating Temperature
- 270 °C

Jet Tip
- 0.30 mm I.D. (0.012")

Construction Materials
- Jet: glass-lined stainless steel
- Collector: stainless steel

General Specifications

Weight
- 3 kg (5.5 lbs)

Lamp Current
- 0–1.60 mA in 0.15 mA steps

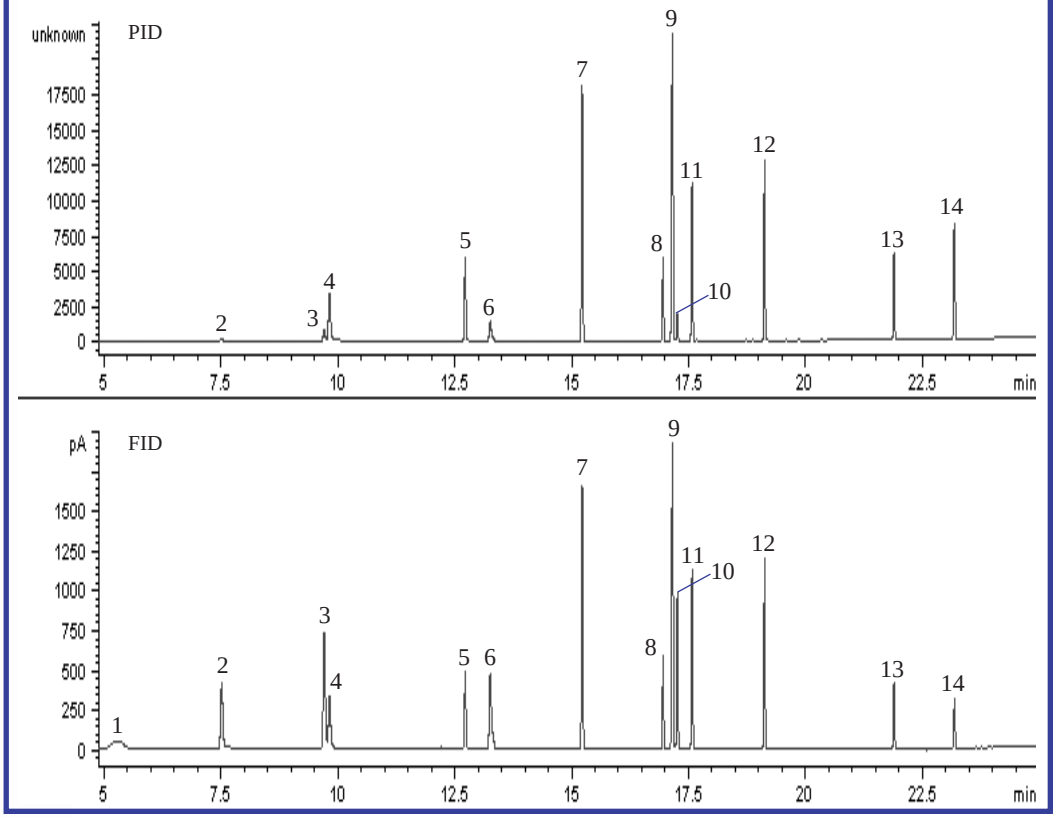
Gas Requirements
- PID: helium (99.999% purity)
- FID: hydrogen (99.999% purity), 30 ±2 mL/minute; air (dry, best available purity), 165 ±15 mL/minute

* Based on the USEPA minimum detection limit protocol. Several factors including GC, column, and compound class can affect performance.

The OI Analytical Model 4450 Tandem PID/FID is protected under U.S. Patent number 4,804,846.

1.	Methanol
2.	Pentane
3.	2-Methylpentane
4.	MTBE
5.	Benzene
6.	2,2,4-Trimethylpentane
7.	Toluene
8.	Ethylbenzene
9.	*m*/p-Xylene
10.	Nonane
11.	*o*-Xylene
12.	1,2,4-Trimethylbenzene
13.	Naphthalene
14.	2,5-Dibromotoluene

Standard: Massachusetts VPH standard
Eclipse Sample Concentrator: 25-mL sample, 100–300 ppb range for each component; purge 11 minutes at 40 °C sample temperature; split 20:1
Column: DB-VRX, 60 m x 0.32-mm I.D. x 1.8-µm film thickness



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