



PhoCheck+PID

Whatever your application... Ion Science has the gas detector for you

PID Explained...

Common Gases Detectable by an Ion Science PID

1. All hydrocarbons, whose chemical names end in -ane, -ene or -yne except: Methane & Ethane
2. All alcohols, whose chemical names end in -ol
3. All aldehydes, whose names end in aldehyde
4. All ketones, whose names end in -one
5. All esters, whose names end in -ate

The PID PhoCheck Monitor

PhoCheck+ instruments from Ion Science Ltd are Photo Ionisation Detectors (PIDs) designed for the detection and measurement of Volatile Organic Compounds (VOCs).

By its nature, PID is a *non-specific* technology and giving a total VOC reading for the atmosphere examined. Therefore, PID's cannot give specific readings nor differentiate between each VOC present. However, PhoCheck+ instruments contain software that refers the reading to an inbuilt look-up table for over 250 gases. This gives an equivalent reading for the particular gas selected.

The gas table is pre-programmed into the PhoCheck+ range and a gas can be simply selected through an easy to use graphical display. PhoCheck+ 3000 and 5000 instruments also benefit from a data logging facility and a Health and Safety Mode for Short-term Exposure Limits (STEL) and Time Weighted Averages (TWA).

PhoCheck PID Advantages

- o Most Accurate of all PID's
- o Humidity Resistance
 - Stable Low Level Readings
- o Fast Response
 - Detects VOCs in <1 second
- o Fast Recovery
 - Rapid clear down, ideal for leak detection and monitoring high VOC concentrations
- o High Sensitivity
 - Ranges from 1 ppb up to 10,000 ppm on the 5000+ model
- o Long 14 Hour Battery Life
- o Easily upgraded in the field
 - No need to return the instrument
- o Detects thousands of gases



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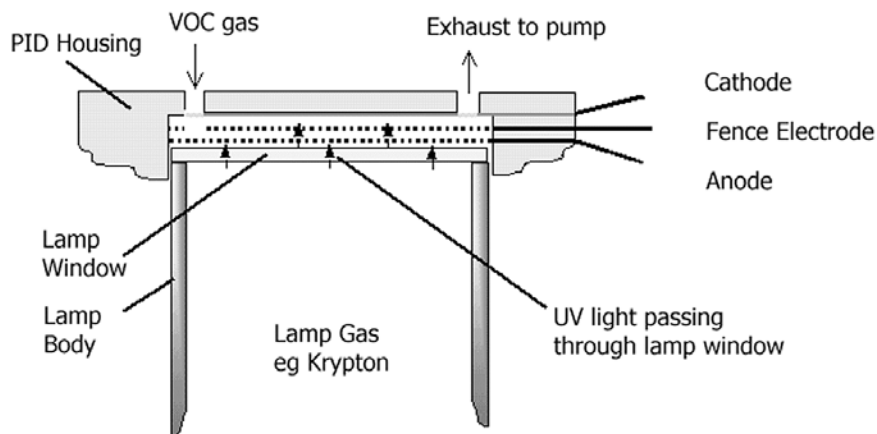
GasTech Australia
<http://www.gastech.com.au>



PID Sensors Explained...

Conventional PIDs incorporate just two electrodes. The sample gas is passed over the PID lamp window, which emits UV light. The UV light excites the gas molecules causing them to break into positively and negatively charged particles. A photoionisation current is generated by the neutralization of these charged particles at the two electrodes. This current is proportional to the number of particles collected by the electrodes and hence the concentration of the sample gas.

The most revolutionary development in PID has been the introduction of our patented Fence Electrode Technology, which virtually eliminates the humidity issues that has compromised conventional PID performance since its introduction. The Fence Electrode (shown in the diagram below) between the Anode and Cathode dramatically reduces the humidity effect within the sensor, making readings stable and more accurate at low levels.



What PID's do not measure...

- 1) Radiation
- 2) Air (N₂, O₂, CO₂ & H₂O)
- 3) Common Toxics (CO, HCN & SO₂)
- 4) Natural Gas (Methane and Ethane)
- 5) Acid Gases (HCL, HF & HNO₃)
- 6) Others: Freons, Ozone (O₃), Hydrogen Peroxide
- 7) Non-Volatiles: PCBs & Greases

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PID Lamps...

PIDs require an ultraviolet light to be shined on the sample gas, which is then measured in Electron Volts (eV). There are currently four different lamps available, 8.4 eV, 10.2 eV, 10.6 eV (fitted as standard) and 11.7 eV. The ultraviolet light will ionise the sample gas dependent on its Ionisation Potential (IP). For detection to occur the sample gas must have an IP equal to or lower than the eV of the lamp being used. E.g. Benzene has an IP of 9.24 eV and therefore is detectable with a 10.2 eV, 10.6 eV or an 11.7 eV lamp.

So why not just use one 11.7 eV lamp for all VOCs?

- 1) The life of an 11.7 eV lamp is considerably shorter than that of the other lamps typically 1-3 months
- 2) 10.6 eV and 10.2 eV lamps are more accurate and last up to 3 years

Therefore, 11.7 eV lamps should only be used when it is necessary to detect VOCs with IPs between 10.6 and 11.7 eV. E.g. Chlorine has an IP of 11.48 eV and therefore is detectable with only an 11.7 eV lamp.

