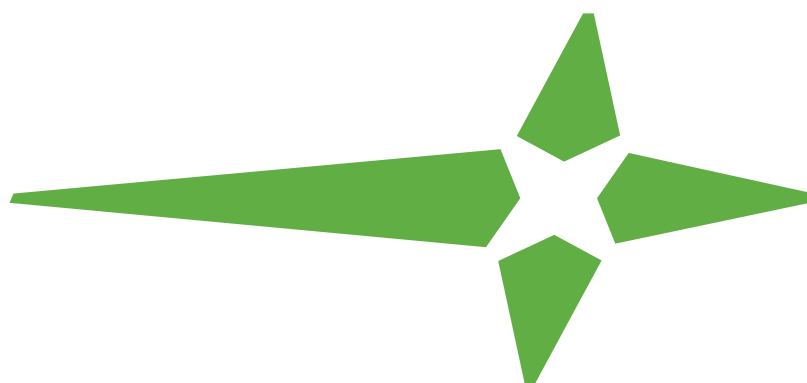


High Quality Photoionisation Detector (PID) Lamps

Complete range of DC and RF operated lamps





About Excelitas®

Excelitas is a leading provider of advanced, life-enriching technologies that make a difference, serving global market leaders in the life sciences, advanced industrial, next-generation semiconductor and avionics end markets. Headquartered in Pittsburgh, PA, USA, Excelitas is an essential partner in the design, development and manufacture of advanced technologies, offering leading-edge innovation in sensing, detection, imaging, optics and specialty illumination for customers worldwide.

Excelitas is at the forefront of addressing many of the relevant megatrends impacting the world today, including precision medicine, industrial automation, artificial intelligence, and connected devices (IoT).



Table of Contents

2 About Excelitas

4 Applications and advantages of PID lamps

5 Product range & focus on VOC gas detection

6 Contact details



PID LAMPS FOR SAFER WORK ENVIRONMENTS

With increasing awareness of the dangers of chemical hazards and the need for personal and environmental protection, the demand for hazardous material (hazmat) monitoring has also increased.

Volatile Organic Compounds (VOCs) can be detected with exceptional sensitivity using Photoionisation Detection (PID), fueling demand for PID lamps from Excelitas.

Photoionisation is the term for the absorption of high energy photons by a gas or vapour molecule, which has an ionisation potential lower or approximate to the photon energy provided by the source. This results in ionisation of that molecule. If an electric field is applied in the region of the ionised molecular species, then the current generated is proportional to the concentration of the molecules within the sample environment; this provides a simple method for quantitative analysis of a variety of gaseous or vapour compounds with lower ionisation potential than the photon energy of the source / lamp.

The technique is non destructive so can be used in conjunction with other detectors for extending the analysis. PID lamps are available in both DC operated and RF operated versions.

In general DC operation is the preferred option for fixed-installation instruments such as Gas Chromatographs (GC), where continuous monitoring is required and high voltage power supplies can be supported. For hand-held detectors, RF versions provide the solution to demands for smaller size and low-power drive circuitry. Excelitas manufactures a wide range of PID lamps to standard design in both RF and DC versions. Customers can also benefit from our design expertise, as the Excelitas Technical Team can work with OEMs to design and build product to their specific dimensional and performance requirements.

Your advantages with Excelitas PID lamps

- DC or RF driven PID lamps for hand-held and fixed installations
- Customized lamp designs and dimensions to fit your specific application
- Different gas fills and window materials with photon energies from 8.4 – 10.6 eV for more selectivity in gas detection
- High purity window material for better transmission and higher intensity
- Proprietary getter technology and high purity gas fill for longer lamp life
- Highest quality lamps due to automated production processes
- Compact size

VOC Gas Detection

Photoionisation detector lamps are most commonly used in VOC detection, gas chromatography, trace gas monitoring and sample ionisation for mass spectrometry. They are available with a variety of gas fills including krypton and xenon gas.



Multi-gas monitors are capable of detecting VOC's with a PID sensor.

Picture courtesy of Crowcon Detection Instruments Ltd.


PID LAMPS FOR VOC GAS DETECTION

PID monitoring is increasingly being combined with other techniques to provide safe monitoring of hazardous materials for emergency response teams, industrial maintenance, public safety, and military protection.

Applications

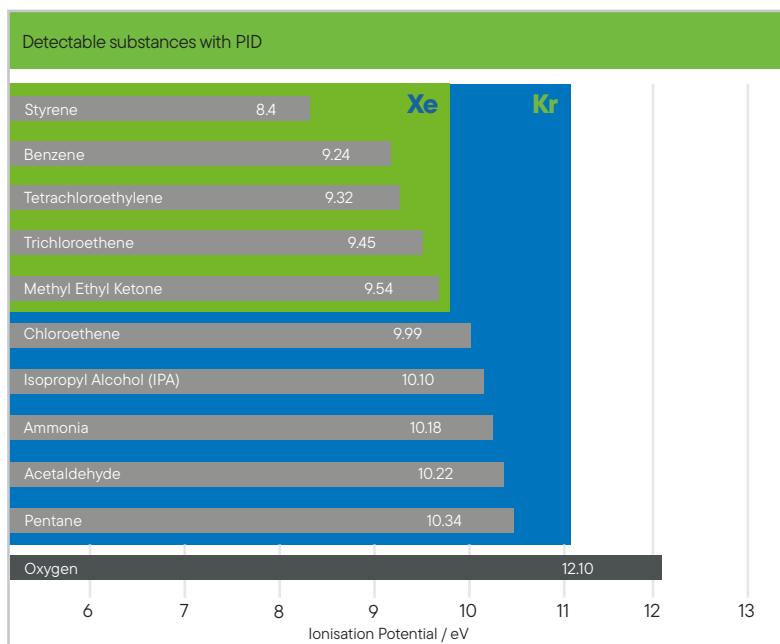
- VOC gas detection
- Gas Chromatography (GC)
- Mass Spectrometry (MS)
- Field monitoring of air and soil
- Emergency first response
- Jar headspace screening
- Leak detection
- Personnel safety in confined spaces

Excelitas has extensively tested and selected materials to establish a quality standard in PID manufacture. Excelitas' proprietary manufacturing processes ensure state-of-art performance and consistency over the lifetime of the lamps. A unique sealing technique enables the use of thinner MgF_2 windows, providing improved transmission and life. High purity of the gas spectrum is achieved throughout the life of the lamp by the use of an internal getter in the RF version. A programme of Continuous Improvement Processes ensures that performance and capacity are increased, thereby maintaining Excelitas' position as the leader in this market.

Product range RF PID lamps				DC PID lamp	Product images		
Lamp type	PKR 100-6-14 ①	PKR 106-6-14 ①	PKR 106 ②	PKS 106 ③	PID RF excited		PID DC excited
Photon energy (eV)	10.0	10.6	10.6	10.6	①	②	③
Gas Fill	Krypton	Krypton	Krypton	Krypton			
Diameter (mm)	6	6	12.7	19.6	Auto	Manual	Manual
Length (mm)	14	14	53	53.5	6 x 14	12 x 53	19.6 x 53.5
Operating current (mA)	26*	26*	150**	0.2 - 2			
Typical power input	<0.5 (RF)	<0.5 (RF)	0.5 (RF)	0.5 (DC)			
Ignition time (s)	1-10	1-10	1-10	<2			

* As measured using the standard C220 100Hz circuit

** As measured using the standard C210 13MHz circuit



PID lamp spectra - Table in eV

Gas	Energy / eV	λ / nm	Window Material
Xenon	9.6 / 8.4	129 / 147	MgF_2
Krypton	10.0	124	$MgF_2 + CaF_2$
Krypton	10.6 / 10.0	117 / 124	MgF_2





(+49) 6023-405-9600

hng-analyticalamps@excelitas.com

excelitas.com

For a complete listing of our global offices, visit www.excelitas.com/locations

©2025 Excelitas Technologies Corp. All rights reserved. The Excelitas logo and design, and Excelitas® are registered trademarks of the Excelitas group of companies. All other products and services are either trademarks or registered trademarks of their respective owners.

Excelitas reserves the right to change this document at any time without notice and disclaims liability for editorial, pictorial or typographical errors.

Version: v1.0 Rev. Date: 09/12/2025