

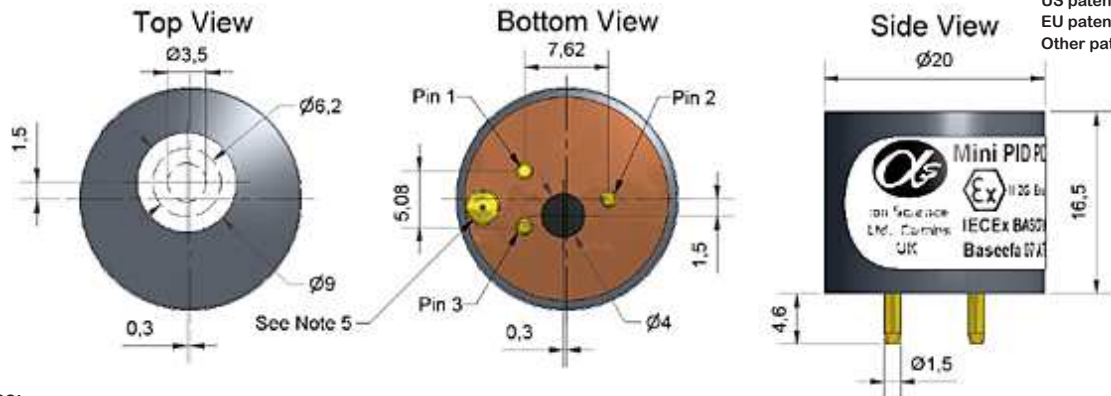


PID-A1 Photo Ionisation Detector



US patent 7,046,012
US patent 7,821,270
EU patent 1474681
Other patents

Figure 1 PID-A1 Schematic Diagram



Notes:

1. Do not obstruct $\varnothing 3.5$ sensing area
2. Seal between $\varnothing 6.2$ and $\varnothing 9.0$ (if different to atmosphere)
3. Pin out details:
Pin 1: + V supply (See note 5)
Pin 2: Signal output
Pin 3: 0 V supply
4. All dimensions ± 0.1 mm unless otherwise stated

5. Input voltage selector hole:

- a) When filled with solder the onboard regulator is disabled. A regulated supply of 3.2 - 3.6 V (typically 3.2 V) is then required.
- b) When not filled with solder the onboard regulator is enabled. A regulated or unregulated supply between 3.6 - 10 V is then required for IS applications, or up to 18 V for non-IS applications. These sensors will be internally regulated to 3.3V

Normally shipped with regulator disabled.

PERFORMANCE

Target gases	VOCs with ionisation potentials < 10.6 eV		
Minimum resolution	ppb isobutylene		< 50
Linear range	ppm isobutylene	5% deviation	300
Overrange	ppm isobutylene		6,000
Sensitivity	linear range	mV / ppm Isobutylene, see Table 1 for options	> 0.3
Full stabilisation time	minutes to 100 ppb		20
Warm up time	seconds	time to full operation	5
Offset voltage	mV		50 to 59
Response time (t_{90})	seconds	diffusion mode	< 3

ELECTRICAL

Power consumption	85 mW (max) at 3.2 V, 350 mW transient for 200 msec on switch-on 90 mW at 3.3 V, 460 mW transient for 200 msec on switch-on
Supply voltage	3.2 to 3.6 VDC Ideally regulated ± 0.01 V (onboard regulator disabled) 3.6 to 10 VDC (onboard regulator enabled) (maximum 10V for IS approval, maximum 18 V for non-IS)
Output signal	Offset voltage (minimum 50 mV) to V_{max} ($V_{max} = V_{supply} - 0.1$ V when regulator is enabled)

ENVIRONMENTAL

Temperature range	-40°C to +55°C (Intrinsically Safe); -40°C to +65°C (non-IS)	
Temperature dependence	0°C to 40°C 90% to 100% of signal at 20°C -20°C 140% of signal at 20°C	
Relative humidity range	Non-condensing	0 to 95%
Humidity sensitivity	During operations: 0% to 75% rh transient	near zero

KEY SPECIFICATIONS

Operating life	5 years (excluding replaceable lamp and electrode stack)
IS Approval	IECEX Ex ia IIC T4; ATEX Ex ia II 1G -40°C < Ta < +55°C (< 10VDC supply)
Onboard filter	To remove liquids and particulates
Lamp	User replaceable
Electrode stack	User replaceable
Error state signal	Lamp out: 32 \pm 4 mV Electronic error: 22 \pm 6 mV
Weight	< 8g
Position sensitivity	None
Warranty period	Electronics and housing: 24 months Lamp and electrode stack are user replaceable. 10.6eV lamp: 5,000 lit hours

Technical Specification