VACGAS-G16
OXYGEN SENSOR

The Gencoa VACGAS-G16 sensing unit provides an industrially robust means to sense elements of group 16, which includes some of the most important species used in vacuum processing: oxygen, sulfur and selenium.

KEY FEATURES

1. Basic health of vacuum chamber and process to quickly identify contamination or problems

2. Monitoring of pump-down and system process readiness

3. Quality control data for each process cycle

4. Mass flow control adjustment of O_2 entering the chamber

5. Fast feedback control of sensor head to maintain measurement accuracy over time

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VACGAS-G16

APPLICATIONS

- General vacuum chamber health monitoring
- ITO layer deposition
- Reactive oxide processes
- Se and S monitoring of CIGS cell production
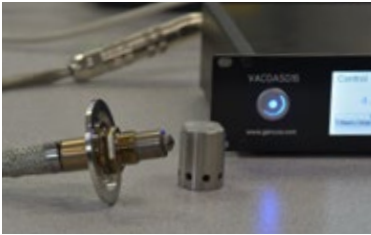
The sensing method uses a zirconium oxide ceramic (zirconia - lambda sensor) and is based on a solid-state electrochemical fuel cell called the Nernst cell. Its two electrodes provide an output voltage corresponding to the quantity of gas in the vacuum.

VACGAS-G16 combines feedback control of the sensor temperature with gas correction to provide the O_2 level as a precise partial pressure.

The basic technique is used in automotive engines to sample oxygen levels and ensure efficient combustion. Whilst Lambda sensors have been employed for many years to sense oxygen in vacuum, the speed and accuracy of the signal has not been as good as optical and mass spectrometry methods.

The Gencoa VACGAS-G16 matches the gas outputs from RGA and optical spectrum methods with greater sensitivity and less noise than differentially pumped RGA's. This signal accuracy is combined with the inherent robustness and low cost of the method when compared with other vacuum gas sensors.

The sensor head has an infinite life and the control ensures signal stability and accuracy. The sensor can be located on the chamber wall (KF40 as standard), or inserted into the vacuum chamber as part of a sealed assembly. There are no sensitive electronics, and therefore the sensor won't fail.

VACGAS-G16 SPECIFICATIONS	
DISPLAY	24 x 32mm touch screen
WARM-UP TIME	20 minutes
MAX OPERATING PRESSURE	Atmosphere
MEASUREMENT RANGE	3×10^{-6} mbar - 1 mbar (O_2)
HELIUM LEAK RATE	$< 4 \times 10^{-9}$ mbar l/s
RESPONSE TIME	~200ms
TEMPERATURE AT KF FLANGE	Max. 50 °C
POWER SUPPLY	9V DC / >1.5A
MECHANICAL CONNECTION	KF40 vacuum-flange – internal or external with variable connection cable lengths
OUTPUT	DB9 connector, RS 232 communication (0-10V or partial pressure (Pa, mbar or mTorr))

FURTHER INFORMATION

Contact: sales@gencoa.com or visit
www.gencoa.com/vacgas

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