

Gas Analyzer

MASS AIRFLOW

AP 00081

PRODUCT

AWM2300V

APPLICATION DESCRIPTION

This gas analyzer is used in the process industry. It is used to directly measure flow of various gases below 1 psig. If the flow drops below a set point the controls will adjust and/or sound an alarm. It has the capability of auditing nitrogen, argon, helium, hydrogen and air at 70° F ambient. The microbridge monitors and provides feedback to control inlet flow.

Oxygen Analyzers operate on a simple coulometric process whereby oxygen in the sample stream is reduced in an electrochemical cell. The use of this analytical technique is widely recognized for its capacity to provide the most accurate means of oxygen measurement.

The gas stream enters the cathode cavity, and oxygen is metered to the cathode through the diffusion barrier. Oxygen is electrochemically reduced at the cathode:

The electrolyte solution contains potassium hydroxide (KOH) which assists in the migration of hydroxyl ions (OH⁻) to the anode where they are oxidized to reform elemental oxygen:

An EMF of approximately 1.3 VDC, applied to the sensor electrodes, is the driving force for the reduction and oxidation reactions. The resulting cell current, which is directly proportional to the oxygen concentration in the gas stream, is

measured accurately using a solid-state electronic circuit, thus allowing the oxygen level to be displayed on an indicating panel meter. The combination of cell reading with sample size (provided by the microbridge) yields a PPM concentration reading.