**Co2**

****

Carbon dioxide (CO2) is a gaseous component of the earth's atmosphere. The concentration of CO2 in natural ambient air is about 0.04% or 400ppm. With each breath, humans convert oxygen (O2) into carbon dioxide. Although carbon dioxide is invisible and odorless, an increased CO2-content makes is apparent because humans will notice increased fatigue and reduced concentration. In rooms with high occupancy such as conference rooms and theatres, negative effects become all the more evident. Modern climate control can assure optimal air quality by adjusting the supply of fresh air based on the measurement of CO2 concentration in the indoor air. The CO2-concentration is regarded as an important measure of indoor air quality.



Structure and Testing Circuit:

Sensor Structure and Testing Circuit as Figure, It composed by solid electrolyte layer

（1），Gold electrodes（2），Platinum Lead （3），Heater（4），Porcelain Tube（5），100m double-layer steeless net（6），Nickel and copper plated ring（7），Bakelite (8)，Nickel and copper plated pin（9）

Working Principle:

Sensor adopt solid electrolyte cell Principle，It is composed by the following solid cells： Air，Au|NASICON|| carbonate|Au, air，CO2 When the sensor exposed to CO2，the following electrodes reaction occurs： Cathodic reaction：2Li + + CO2 + 1/2O2 + 2e - = Li2CO3 Anodic reaction：2Na+ + 1/2O2 + 2e- = Na2O

Overall chemical reaction：Li2CO3 + 2Na + = Na2O + 2Li + + CO2

The Electromotive force（EMF） result from the above electrode reaction, accord with according to Nernst’s equation:：

EMF = Ec - (R x T) / (2F) ln (P(CO2))

P(CO2)—CO2--- partial Pressure Ec—Constant Volume R—Gas Constant volume

T—Absolute Temperature （K）F—Faraday constant

From Figure 1B，Sensor Heating voltage supplied from other circuit ,When its surface temperature is high

Enough, the sensor equals to a cell, its two sides would output voltage signal ,and its result accord with

Nernst’s equation。In sensor testing, the impedance of amplifier should be within 100—1000GΩ，Its testing

Features:

* Good sensitivity and selectivity to CO2
* Low humidity and temperature dependency
* Long stability and reproducibility

Application:

* Air Quality Control
* Ferment Process Control
* Room Temperature CO2 concentration Detection