

# INTELLIGENT GAS SENSORS /ANALYSZERS & CONTROLLERS

MGSC-series

**Introduction:**

MGSC series of gas sensors/controllers are available in more than 100 different modes, virtually offering solutions to flow measurement/control for any gas in varied concentration range i.e. 0.1-100000.0. These gas sensors are offered in material like SS-316 (ceramic/Teflon coating), polypropylene, derelin etc. It is advantageous for prediction/detection of fire ( i.e. before it take place) due to electric short circuit/overloading or whisper burn initiated by flammable material as it detects the gas molecule depending upon nature of fire material or detection of explosive. This gas/sensor is further useful in identification & analysis for fire safety of domestic/Industrial high rise building, spot gas concentration detection. Alcohol tester, detector and breath analyser and are useful in medical diagnostic, agro, biomedical, petrochemical, automobile, organic/inorganic chemical, milk plant, sugar, textiles, beverages, water management/treatment, academic and defense.

**Operating Principle OF Thick film gas sensor:**

When a metal oxide crystal such as SnO2 is heated at a certain high temperature in air, oxygen is adsorbed on the crystal surface with a negative charge. Then donor electrons in the crystal surface are transferred to the adsorbed oxygen, resulting in leaving positive charges in a space charge layer. Thus, surface potential is formed to serve as a potential barrier against electron flow inside the sensor, electric current flows through the conjunction parts (grain boundary) of oxide micro crystals. At grain boundaries, adsorbed oxygen forms a potential barrier which prevents carriers from moving freely. The electrical resistance of the sensor is attributed to this potential barrier. In the presence of a deoxidizing gas, the surface density of the negatively charged oxygen decreases, so the barrier height in the grain boundary is reduced. The reduced barrier height decreases sensor resistance.

**Operating Principle OF N.D.I.R. Gas sensor:**

Carbon dioxide gas and allied gasses has strong tendency to absorb infrared radiation at distinct wavelength. Infrared radiation source passing through gas under measurement generated differential thermal signal from two distantly placed thermopile. This differential signal is proportional to ppm level of gas.

**Benefits:**

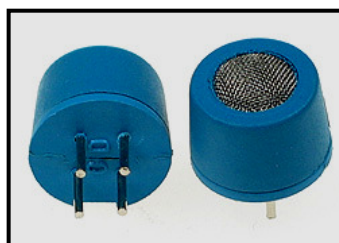
- Fast primary stability time, quick response
- Remarkable reproducibility and reliability.
- Goode selectivity, avoid smoke ethanol disturb
- Low consumption, miniature design



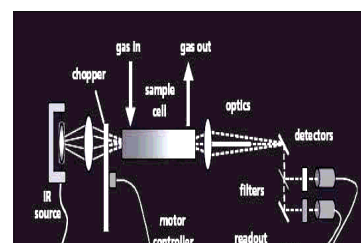
MGSC- 0001



MGSC-0002



MGSC-0005



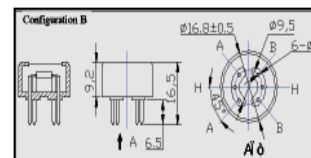
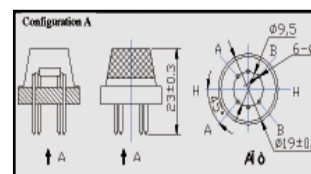
schematic of NDIR sensor  
SENSING RANGE <100,000.0 ppm

**ELECTRICAL/MECHANICAL SPECIFICATIONS OF GAS SENSOR**

model	SENSING RANGE PPM	Size inch	Accuracy	Repeatability	Response time	Amb-Temp °C	Output signal VOLT/D.C.
MGSC-0001	00000.1- 100000.0	½/option	99.5	100	Ceramic/PP	-50/option	0.0-5.0
MGSC-0002	00001.0- 100000.0	1.0/option	99.5	100	Ceramic/PP	-50/option	0.0-5.0
MGSC-0003	00010.0- 100000.0	1.0/option	99.5	100	Ceramic/PP	-50/option	0.0-5.0
MGSC-0004	00100.0- 100000.0	1.0/option	99.5	100	Ceramic/PP	-50/option	0.0-5.0
MGSC-0005	010,00.0- 100000.0	1.0/option	99.5	100	Ceramic/PP	-50/option	0.0-5.0

**DIGITAL INSERTION TYPE GAS SENSOR ANALYZER & CONTROLLER SPECIFICATION:**

- Operating voltage 220 volts A.C., 50Hz, 12/24 volts D.C.
- Excitation frequency 2.5/7.5/15.0/25.0 Hz
- V.A.: less than one watt
- Accuracy 98% of set point
- Repeatability 100 percent
- Response time 0.5 –1.1 milli-seconds
- Sensing material: multimetall oxide /NDIR
- Interface Signal 0.0-12.0 volts D.C. (proportional to sensing range)
- Packaging: high temperature polymers
- Sensing range as above
- Heater : high grade nichrome
- Tube pin material: nickel
- Electrode material Gold/titanium
- Control option Predictive gas ppm/ d(ppm)/dt ( against set point )  
Multi control synchronized control (interactively)
- Display 3½ & 4½ digit red glow LED/LCD display
- Controller size 96x96x192
- Interface: RS-232



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