

Hybrid Air Quality Sensors

The Ministry of Economic Affairs, Department of Industrial Technology has commissioned the Industrial Technology Research Institute's Center for Smart Sensing and System Technology to develop a "Composite Long-Term Air Quality Sensor." This sensor is capable of simultaneously measuring particulate matter (PM2.5), ozone (O3), carbon monoxide (CO), volatile organic compounds (VOC), and other air quality monitoring parameters. The sensor utilizes optical detection methods to detect concentrations of suspended particulate matter (PM2.5) and ozone (O3) in the air. Innovative key technologies, including dual-channel micro-particle sieving, micro-particle signal feature recognition, LED dynamic light source stability, and multi-environmental factor compensation, are employed to enhance the sensor's lifespan and accuracy. Furthermore, semiconductor and micro-electromechanical (MEMS) technologies are utilized to create a micro-heating chip. This chip, combined with gas nano-sensing materials and a single-chip sensing control circuit, converts the detected gas sensing resistance changes into carbon monoxide concentration values for the detection of carbon monoxide (CO), total volatile organic compounds (TVOC), and other harmful and odorous gas concentrations.



