IoT-based Water quality monitoring system

The Ministry of Economic Affairs, Industrial Technology Bureau, has commissioned the Smart Sensing and System Technology Center at the Industrial Technology Research Institute (ITRI) to develop a "Composite Water Quality Sensing System." This system enables simultaneous measurement and detection of parameters such as Chemical Oxygen Demand (COD), Suspended Solid Concentration (SS), Copper Ion (Cu2+) concentration, conductivity, pH value, temperature, and more. Employing UV light sterilization, it inhibits the attachment and growth of biological films on the sensing interface, preventing interference with sensor accuracy and extending the sensor cleaning cycle. With a design incorporating water sampling, optimized power management technology, and reduced reliance on frequent manual maintenance, the system achieves long-term operational efficiency. It has been successfully applied in various settings, including industrial zones, aquaculture, chemical plating lines, metal electroplating industries, and landfill sites. The system provides intelligent wastewater discharge management and real-time monitoring of processes, meeting the demands of low-carbon management and waste reduction.