



Portable water quality analyzer based on electrode method



Introduction

The electrode-based water quality analysis instrument adopts fully digital electrode detection technology and can measure various water quality parameters. The instrument is equipped with its own self-developed FTIOT operating system and is equipped with a high-capacity rechargeable lithium battery, making it convenient for users to conduct water quality testing in the field or laboratory at any time.

Application fields

It can be used for water quality testing and general analysis in both laboratories and field settings. The instrument features a complete set of applications, data storage and output, as well as system management functions. It is widely applied in the monitoring and control of various water bodies, including but not limited to the following fields:
aquaculture monitoring; groundwater monitoring; river and lake monitoring;
marine monitoring; wastewater treatment; industrial production; water treatment plants;
scientific research.





Measurement principle

The device is equipped with sensitive electrodes corresponding to the parameters. When the electrodes are immersed in the water body, the target substance undergoes an electrochemical reaction with the sensitive membrane of the electrodes, generating an electrical signal related to the concentration of the substance.

The full digital module directly converts the electrical signal at the electrode end into digital form, and then through the calibration model built into the instrument, the digital signal is converted into the corresponding water quality parameters, ultimately outputting precise data.

Equipment specifications

Item	Details
Display & Hardware	3.5-inch 480×800 Touch Screen (MIPI DSI Interface) CPU: 2×Cortex-A7 CPU 650Hz RAM: 512M DDR38-64G FlashOpenGL: ES 2.0
Interface Configuration	USB×2 (for external mouse/keyboard/4G module, etc.) Type-C×1 (for external mouse/keyboard/4G module, etc.) RS485×2 (supports Modbus/json/asc input, etc.)
Power Supply Parameters	Charging: 4.5-5.5V/<2A External Sensor Power Supply: 12V/1A
System & Architecture	Operating System: friot (based on Linux-5.4) Software Architecture: B/S Supports web access, MTP mode, multi-terminal login, IPv6
Communication Capability	Built-in WiFi, optional 4G Sensor / Data Forwarding: RS485, TCP, UDP, Http
Interaction & Expansion	Supports capacitive touch screen, physical buttons Supports remote SSH, remote debugging





Sensor parameters

Sensor Type	Measuring Range	Accuracy
COD Sensor	0~500mg/L	±5%
PH Sensor	0~14pH	±0.1ph
Dissolved Oxygen Sensor	0~20mg/L	±2%
Turbidity Sensor	0~1000NTU	±3%
Electrical Conductivity Sensor	0~5000μS/cm	±1.5%
Ammonia Nitrogen Sensor	0~100mg/L	±10
ORP Sensor	-1500~+1500mV	±3mV
Water Hardness Sensor	0~1000mg/L	±10%
Residual Chlorine Sensor	0~20mg/L	±5%
Sludge Concentration Sensor	0~20g/L	±5%
Suspended Solids Sensor	0~2000mg/L	±5%
Oil-in-Water Sensor	0~40mg/L	±3%
Colority Sensor	0~2000Hazen	±5%
Salinity Sensor	0~2mg/L	±5%
Nitrate Nitrogen Sensor	0~100mg/L	±10%
Potassium Ion Sensor	0~100mg/L	±10%
Fluoride Ion Sensor	0~100mg/L	±10%
Chloride Ion Sensor	0~35000mg/L	±5%
Chlorophyll Sensor	0~400μg/L	±3%
Cyanobacteria Sensor	0~300Kcells/mL	±3%





Introduction to the upper computer software

Function Category	Specific Description
Core Functions	Realize integrated management of data reception, storage, viewing and analysis in the PC standalone environment
Data Reception and Processing	1. Support data reception via serial port, as well as data processing and visual display 2. Compatible with communication methods such as JSON string and MODBUS485
Parameter Configuration	1. Allow independent setting of data storage time 2. Support custom collection time in MODBUS485 collection mode
Monitoring Parameter Management	Support users to independently add, delete and modify monitoring parameters, including information such as parameter protocols, names and icons
Data Processing Expansion	1. Equipped with data post-processing function 2. Support external running of JAVASCRIPT scripts



Introduction to Cloud Platform

Function Category	Specific Description
Architecture & Access Method	Adopts a CS architecture software platform, supporting direct access and observation via mobile phones and PC browsers without additional software installation
Account & Device Management	Supports multi-account and multi-device login, meeting the collaborative management needs of multiple users and terminals
Data Display Function	1. Provides dashboards for real-time data display and historical data display 2. Supports data curve analysis 3. Supports map display and device information viewing
Data Storage & Stability	Implements cloud data storage based on cloud servers, featuring stability, reliability, easy scalability and load balancing
Alarm & Threshold Management	Supports SMS alarm function, allowing custom alarm threshold settings to respond to abnormal data in a timely manner
Data Processing & Output	1. Supports data export in table format 2. Has data post-processing function 3. Supports external running of JAVASCRIPT scripts to enhance customization capabilities
Data Forwarding Function	Supports data forwarding via multiple protocols, including HJ-212 protocol, TCP forwarding, HTTP protocol, etc.

