

## The people for Process Analytics

**MZD Analytik GmbH** is located near Dresden, Europe's Silicon Valley, the capital of Saxony, Germany. It has set itself the goal of offering modern measuring and automation technology in process analytics. The leading employees of **MZD** have a Doctorate or Master's degree in technical discipline and, thanks to many years of experience, are able to competently solve the problems of measurement and automation technology that are pending in the industry. We place great value on certified quality standards for the products we developed and produced. **MZD** has a well-developed network in Europe and Asia (China) in order to be able to respond competently to all questions of our industrial customers.

Our engineers work in partnership with OEM/ODM's (and customers) from the initial design stage through post-production to ensure customer satisfaction throughout all phases of product development.

**MZD** offers for you both in Europe and Asia

- Project planning, construction and commissioning of measuring equipment, which we plan and act according to your task
- Coordination of all services, including our cooperation partners in some more complex tasks (general contractor)
- Calibration and adjustment of our measuring instruments



**MZD Analytik GmbH** supply products as follows :

<b>Moisture in Gas</b>	0~20,000ppb or 2,000ppm		
<b>H2S Gas Analyzer</b>	0~100ppm up to 5000ppm	<b>Cl2 Gas Analyzer</b>	0~500ppm up to 30%
<b>HCl Gas Analyzer</b>	0~50ppm up to 500ppm	<b>NH3 Gas Analyzer</b>	0~15ppm up to 500ppm
<b>O2 Gas Analyzer</b>	0~10ppm up to 100%	<b>O3 Gas Analyzer</b>	0~10ppm up to 5000ppm
<b>H2 Gas Analyzer</b>	0~100%	<b>CH4 Gas Analyzer</b>	0~500ppm up to 100%
<b>C2H2 Gas Analyzer</b>	0~500ppm up to 100%	<b>CmHn Gas Analyzer</b>	0~500ppm up to 100%
<b>CO Gas Analyzer</b>	0~200ppm up to 100%	<b>CO2 Gas Analyzer</b>	0~50ppm up to 100%
<b>SO2 Gas Analyzer</b>	0~50ppm up to 100%	<b>NOx Gas Analyzer</b>	0~50ppm up to 100%
<b>He/Ne/Kr/D2/SF6/R125 Gas</b>	0~100%		
<b>Thermal Conductivity analyzer</b>			two-component gas (%)
<b>Infrared photometry analyzer</b>			CO,CO2,CmHn,N2O,SO2
<b>Ultraviolet photometry analyzer</b>			SO2,NO,NO2,O3,Cl2,H2S
<b>Laser analyzer</b>			H2O2,NH3,H2O,CO,CH2O...
<b>Medical Oxygen Analyzer</b>			H2O,O2,CO,CO2
<b>Mutigas Analyzer</b>	Up to six gases components		
<b>Bulk Moisture</b>	0~100%	<b>Moisture in Oil</b>	0~100%
<b>Water quality analyzer</b>			
<b>Fouling Monitoring</b>	0~1000µm	<b>Turbidity</b>	0~4000NTU/FNU
<b>Dissolved Oxygen</b>	0~20mg/L or 200ppm or 200%SAT	<b>PH</b>	0~14pH
<b>ORP</b>	-1000~1000mv	<b>Conductivity</b>	0~700ms/cm
<b>Salinity</b>	0~133000ppm	<b>Total dissolved solids</b>	0~78g/Kg
<b>SS/MLSS</b>	0~50g/L	<b>Chlorine/Dioxide Chlorine</b>	0~2/5/10ppm
<b>COD</b>	0~50mg/L or 1300mg/L	<b>BOD</b>	0~15mg/L or 350mg/L
<b>TOC</b>	0~20mg/L or 500mg/L		

If you have any demand for different measuring applications, please contact us. We can develop and customize the measuring system to fit your applications and wishes, for your private labeled products!

The basis of our work is the mutual trust between the partners in a long-term successful cooperation. Our service goal is to uncompromisingly achieve the satisfaction of our customers and to be the most important partner concerning industrial measurement technology in the world.

## Fouling Monitoring Analyzer

### Overview

It's a innovative invention based on MEMS technology, is adopted to provide an industrial measurement solution for continuous monitoring and alarming of the trend phenomenon of scaling (scale, biological bacteria, etc.) in the water treatment process, which can continuously, online and real-time monitor the fouling phenomenon of various industrial processes!

### Hazards of scale and biofilm

- ▲ The product quality control is degraded
- ▲ Increased process running time
- ▲ Decreased production efficiency and competitiveness
- ▲ Hygiene and safety control
- ▲ Increased energy consumption
- ▲ Increased chemical emissions
- ▲ The increase of waste...

### Effect

- ★ Improve the heat exchange coefficient of the critical point in time to save energy
- ★ Optimize and control water treatment efficiency
- ★ Optimize and reduce chemical products, reduce emissions
- ★ The risk of germs can be avoided, and biological contamination can be implanted
- ★ Alarm when dirt and biofilm increase abnormally

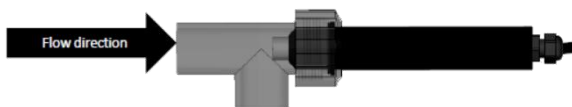
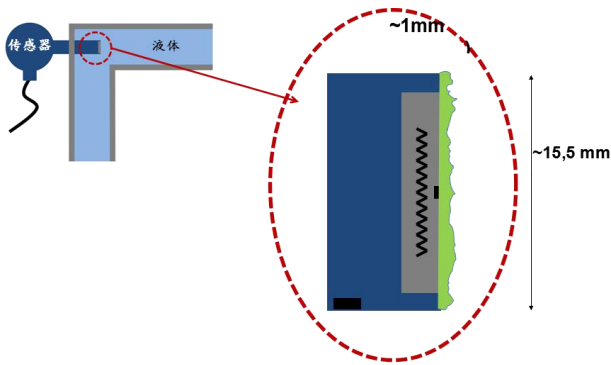
### Typical application

- ▲ Cooling tower
- ▲ Heat exchanger
- ▲ Filter and membrane
- ▲ Industrial water treatment
- ▲ Boiler water treatment
- ▲ Pure water treatment
- ▲ Drinking water supply
- ▲ Chemical industry
- ▲ Power plant
- ▲ Biopharmaceutical industry





# Fouling Monitoring Analyzer



## Measuring range

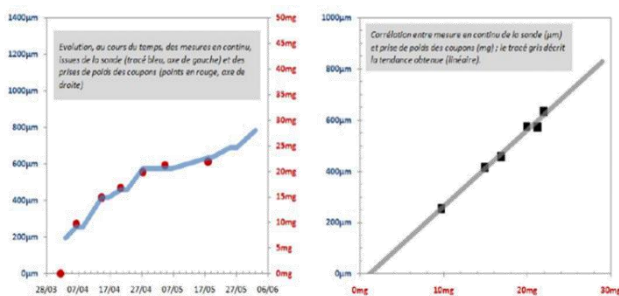
Using a tiny pulse heater, the surface temperature rises due to the increase in the deposition thickness of fouling and biological bacteria. Continuous measurement of the surface temperature is used to monitor the deposition thickness of the fouling and biological bacteria. **The function of scale membrane/biological bacteria sensor is not only to "analyze and measure", but also to provide a solution for monitoring, alarm and adjustment!**

## Installation

The sensor can be installed to a bypass pipe to monitor system operation status. It is recommended to use flow meter and valve, one-way valve and others for bypass measuring system.

## Application case

Installed in the tertiary cooling system and circulating water cooling tower system to monitor organic fouling and disinfectant treatment efficiency. The monitoring of scale biological bacteria proves to reduce the amount of disinfectant added, optimize the disinfectant treatment, and ensure safe production while reducing. The use of chemicals reduces the impact on the environment and saves energy.



# Fouling Monitoring Analyzer

## Features

### ❖ Quick and convenient

The navigation menu contains 6 languages, which can be operated easily.

### ❖ Process safety

4.3" or 7" large size color LCD touch screen, convenient and safe touch operation and debugging

Large size screen with red flashing alarm, clearly visible from long distances and in dark areas

Alarm immediately, safe the process

### ❖ Alarm event record

Real-time data curve display

Record function for up to 6,000 alarms

### ❖ Expert calibration function

Multi-point calibration function up to 9 point

### ❖ Powerful self-diagnosis function

Built-in heartbeat monitoring function and watchdog

Monitor the status of analyzer and sensors, and promptly remind customers to take necessary maintenance

High-standard hardware and software security and password protection

### ❖ Powerful control function

High(low) limit control function

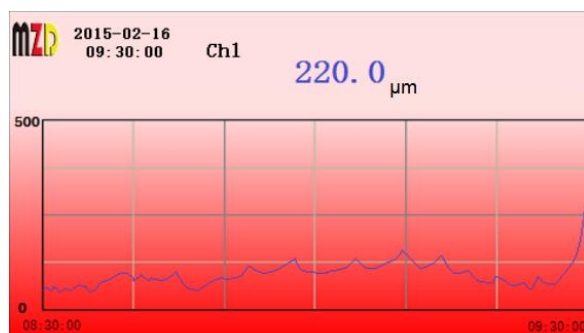
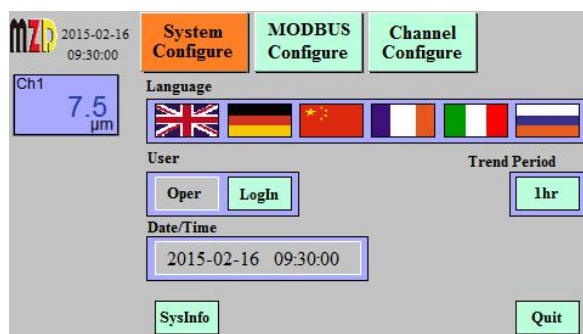
Optional: Timer control(automatic cleaning) function

Optional: analog PID control function

Optional: PWM control function

### ❖ Flexible fieldbus communication functions for IOT4.0

Optional fieldbus MODBUS, HART, Foundation Fieldbus FF, PROFIBUS PA, PROFIBUS DP, etc.

2015-02-16 09:30:00 Ch1 7.5 μm

System Configure MODBUS Configure Channel Configure

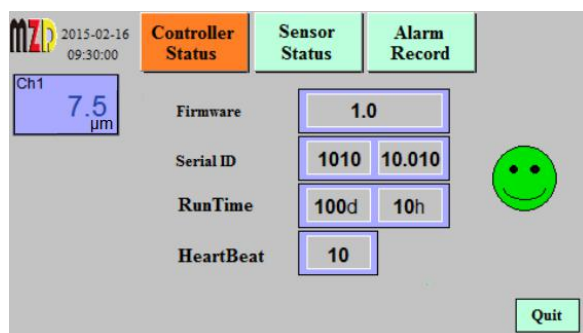
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User: Oper, LogIn

Date/Time: 2015-02-16 09:30:00

Trend Period: 1hr

SysInfo Quit



2015-02-16 09:30:00 Ch1 7.5 μm

Controller Status Sensor Status Alarm Record

Firmware: 1.0

Serial ID: 1010 10.010

RunTime: 100d 10h

HeartBeat: 10

Quit



## Fouling Monitoring Analyzer

### Parameters

<b>Sensor Type</b>	Fouling Monitoring			
<b>Range</b>	0~1000µm			
<b>Accuracy</b>	5% FS			
<b>Resolution</b>	1µm			
<b>Working temperature</b>	0~60°C			
<b>Maximum temperature change rate</b>	10°C/minute			
<b>Pressure</b>	Max. 5Bar			
<b>Min. Flow rate</b>	>1000l/h (1" pipe)			
<b>Ambient Temperature</b>	5~50°C			
<b>Ambient humidity</b>	0~90%			
<b>Sensor Size</b>	Φ28mm*190mm			
<b>Sensor Weight</b>	250g			
<b>Process connection</b>	3/4" T-shaped sliding sleeve			
<b>Sensor Material</b>	PVC			
<b>Sensor Ingress Protection</b>	IP65			
<b>Sensor cable length</b>	3m			
<b>Display</b>	4.3" or 7" industrial color touch screen			
<b>Language</b>	Multi-Language (English, German, Chinese, French, Italian, Russian or Customized)			
<b>Diagnosis function</b>	Sensor and controller self-diagnosis, Heartbeat monitoring			
<b>Event Logger</b>	Internal Flash, up to 6,000 alarm records			
<b>Analog Output(Galvanic)</b>	4~20mA, maximum load 500Ω			
<b>Relay Output(Galvanic)</b>	Relay(2A, 230V AC freely set alarm), System alarm			
<b>Control function</b>	Optional Timer controller, PID analog controller, PWM controller			
<b>Calibration</b>	Can store 6 calibration curves of different materials, Multi-point calibration function up to 9 point			
<b>Communication</b>	RS485 MODBUS RTU, HART, Foundation Fieldbus FF, PROFIBUS PA, PROFIBUS DP, MODBUS TCP/IP, etc			
<b>Power</b>	80~264V AC, 1A or 19~28V DC, 3A			
<b>Electrical protection</b>	EMI / RFI CEI-EN55011 – 05/99			
<b>Ambient Temperature</b>	-15 ~ 60°C			
<b>Storage and transport temperature</b>	-25 ~ 70°C			
<b>Ambient humidity</b>	0~90%RH			
<b>Wall-mounted(1~2Channels)</b>	4.3" color touchscreen	ABS, Gray	213*185*84mm	IP65, Ex d IICT4
	7" color touchscreen	RAL7045	323x237x172mm	optional



## Turbidity/Suspended Solids Concentration Analyzer

### Overview

SMART series intelligent multi-parameter universal controller has high accuracy, its unique professional design can be applied in water, chemical, pharmaceutical, food and hygiene in the production process of the most extreme physical and chemical environments. SMART series intelligent multi-parameter universal controller has modular bus structure, highly scalable functionality, high reliability and comfortable operation.

### Principle

Turbidity/Suspended Solids Concentration refers to the degree of hindrance of suspended solids in water to light transmission.

Turbidity means that when a beam of light passes through a liquid medium, part of the light will be refracted on the surface of the insoluble particles. The degree of light refraction is related to the size and shape of the particle. The intensity of the scattered light has a certain proportional relationship with the size of the particles.

When a beam of light passes through the suspended object to be measured, the light is absorbed by the measured object, and only a small part of the light is transmitted through after reflection and scattering. According to Lambert-Beer law  $\ln S = CK * MLSS$ , the concentration of suspended matter has a certain proportional relationship with the transmittance of transmitted light.

### Typical application

- ▲ Source water monitoring
- ▲ Filter backwash detection
- ▲ Filter monitoring
- ▲ Drinking-water quality monitoring
- ▲ Separation process monitoring
- ▲ Cooling water monitoring
- ▲ Circulating water detection
- ▲ Sludge treatment monitoring
- ▲ Aeration tank monitoring



## Fouling Monitoring Analyzer



### Feature

- ★ Directly measure the turbidity value and the suspended matter concentration
- ★ Smart digital MEMS sensor
- ★ Sensor self-diagnosis, proactively reminding maintenance and management
- ★ Quick response
- ★ IP68 sensor
- ★ Automatic temperature compensation
- ★ Good robustness
- ★ Infrared optical sensor
- ★ Comply with ISO 7027/ISO7020/EN27027 standards

### Installation

- ▲ Avoid bubble interference
- ▲ The inclined surface of the probe faces the direction of the fluid, and the smooth sensor surface has a self-cleaning effect
- ▲ Keep a distance of 20cm from the side wall or bottom, try to avoid the interference caused by the side wall
- ▲ It is forbidden to install where suspended solid particles are easy to settle

### Calibration

The turbidity measurement with NTU or FNU as the unit of measurement does not require calibration.

### Application Case

- ★ Chlor-alkali: monitor the working status of the secondary brine filtration membrane
- ★ Sewage: inlet, sludge treatment, dehydration, aeration tank and outlet, detection and control of water treatment process
- ★ Drinking water: detect and control all steps of the drinking water treatment process



# Turbidity/Suspended Solids Concentration Analyzer

## Features

### ❖ Quick and convenient

The navigation menu contains 6 languages, which can be operated easily.

### ❖ Process safety

4.3" or 7" large size color LCD touch screen, convenient and safe touch operation and debugging

Large size screen with red flashing alarm, clearly visible from long distances and in dark areas

Alarm immediately, safe the process

### ❖ Alarm event record

Real-time data curve display

Record function for up to 6,000 alarms

### ❖ Expert calibration function

Multi-point calibration function up to 9 point

### ❖ Powerful self-diagnosis function

Built-in heartbeat monitoring function and watchdog

Monitor the status of analyzer and sensors, and promptly remind customers to take necessary maintenance

High-standard hardware and software security and password protection

### ❖ Powerful control function

High(low) limit control function

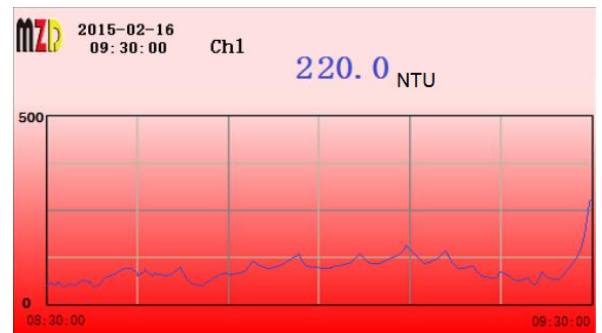
Optional: Timer control(automatic cleaning) function

Optional: analog PID control function

Optional: PWM control function

### ❖ Flexible fieldbus communication functions for IOT4.0

Optional fieldbus MODBUS, HART, Foundation Fieldbus FF, PROFIBUS PA, PROFIBUS DP, etc.




## Fouling Monitoring Analyzer

### Parameters

<b>Sensor Type</b>	Turbidity_Suspended Solids Concentration(IR90° Optical)			
<b>Range</b>	0~4000NTU/FNU or 0~50g/L			
<b>Accuracy</b>	1% FS			
<b>Resolution</b>	0.1NTU/FNU or 0.01g/L			
<b>Response Time T90</b>	<1 s			
<b>Temperature compensation</b>	Automatic			
<b>Working temperature</b>	0~55°C			
<b>Temperature Sensor</b>	CTN Thermistor			
<b>Pressure</b>	Max. 5Bar			
<b>Ambient Temperature</b>	-10~50°C			
<b>Ambient humidity</b>	0~90%			
<b>Sensor Size</b>	Φ27mm*150mm			
<b>Sensor Weight</b>	350g			
<b>Sensor Material</b>	PVC			
<b>Sensor Ingress Protection</b>	IP68			
<b>Sensor cable length</b>	7m			
<b>Display</b>	4.3" or 7" industrial color touch screen			
<b>Language</b>	Multi-Language (English, German, Chinese, French,Italian, Russian or Customized)			
<b>Diagnosis function</b>	Sensor and controller self-diagnosis,Heartbeat monitoring			
<b>Event Logger</b>	Internal Flash,up to 6,000 alarm records			
<b>Analog Output(Galvanic)</b>	4~20mA, maximum load 500Ω			
<b>Relay Output(Galvanic)</b>	Relay(2A, 230V AC freely set alarm), System alarm			
<b>Control function</b>	Optional Timer controller,PID analog controller,PWM controller			
<b>Calibration</b>	Can store 6 calibration curves of different materials, Multi-point calibration function up to 9 point			
<b>Communication</b>	RS485 MODBUS RTU, HART, Foundation Fieldbus FF, PROFIBUS PA, PROFIBUS DP, MODBUS TCP/IP, etc			
<b>Power</b>	80~264V AC,1A or 19~28V DC,3A			
<b>Electrical protection</b>	EMI / RFI CEI-EN55011 – 05/99			
<b>Ambient Temperature</b>	-15 ~ 60°C			
<b>Storage and transport temperature</b>	-25 ~ 70°C			
<b>Ambient humidity</b>	0~90%RH			
<b>Wall-mounted(1~2Channels)</b>	4.3" color touchscreen	ABS,Gray	213*185*84mm	IP65,Ex d IICT4 optional
	7" color touchscreen	RAL7045	323x237x172mm	

## Dissolved oxygen Analyzer

### Overview

SMART series intelligent multi-parameter universal controller has high accuracy, its unique professional design can be applied in water, chemical, pharmaceutical, food and hygiene in the production process of the most extreme physical and chemical environments. SMART series intelligent multi-parameter universal controller has modular bus structure, highly scalable functionality, high reliability and comfortable operation.

### Principle

Dissolved oxygen is the content of gaseous molecular oxygen dissolved in water. The content of dissolved oxygen in water is closely related to the partial pressure of oxygen in the air and the temperature of water.

Luminescent optical method: The blue pulsating light beam emitted by the internal optical system of the sensor hits the fluorescent layer, and the marker "responds" (produces fluorescence) with pulsating red light. The duration and intensity of the excited response signal are directly related to oxygen. The composition is related to the partial pressure. (\*Amperometric method: Oxygen molecules penetrate the gas permeable membrane at the front of the sensor and are reduced by the working electrode to generate a diffusion current proportional to the oxygen concentration.)

### Typical application

- ▲ Sewage treatment plant
- ▲ Drinking water plant
- ▲ Rivers and lakes
- ▲ Fishing
- ▲ Circulating water of power plant boiler
- ▲ Fermentation tank product quality monitoring in the food and pharmaceutical industry





## Dissolved oxygen Analyzer



### Feature

- ★ Smart digital MEMS sensor
- ★ Sensor self-diagnosis, proactively reminding maintenance and management
- ★ Automatically completes all compensation and measurement algorithms
- ★ Real-time temperature, salinity and pressure compensation
- ★ Quick response sensor
- ★ IP68 Sensor
- ★ Luminescent optical sensor
- ★ Good robustness
- ★ No calibration, no film, no fluoride, no drift
- ★ Unlimited PH value, CO<sub>2</sub>, H<sub>2</sub>S, SO<sub>2</sub> influence
- ★ High-precision measurement under low dissolved oxygen concentration
- ★ No oxygen consumption
- ★ Comply with ASTM standard D888-05

### Installation

- ▲ No need to wait for polarization, measure immediately!
- ▲ No need to replace the membrane and fluorocarbon, saving cost!
- ▲ No need to disassemble, convenient!
- ▲ No regeneration, it is impossible to predict the decay from sewage on the surface of the thermometer
- ▲ H<sub>2</sub>S or ammonia in the liquid does not affect the measurement
- ▲ No need to replace the film and carbon dioxide
- ▲ No need to continuously perform on-site calibration
- ▲ Clean the sensor surface: every month
- ▲ Sensor calibration: every quarter
- ▲ Replace the fluorescent cap: about every 2 years

### Application Case

- ★ Sewage aeration tank: Nitrogen and phosphorus removal, COD degradation, and dissolved oxygen as an important parameter for controlling aeration.
- ★ Ion: Dissolved oxygen detection during iron and manganese ion removal process
- ★ Power plant: boiler water supply

## Dissolved oxygen Analyzer

### Features

#### ❖ Quick and convenient

The navigation menu contains 6 languages, which can be operated easily.

#### ❖ Process safety

4.3" or 7" large size color LCD touch screen, convenient and safe touch operation and debugging

Large size screen with red flashing alarm, clearly visible from long distances and in dark areas

Alarm immediately, safe the process

#### ❖ Alarm event record

Real-time data curve display

Record function for up to 6,000 alarms

#### ❖ Expert calibration function

Multi-point calibration function up to 9 point

#### ❖ Powerful self-diagnosis function

Built-in heartbeat monitoring function and watchdog

Monitor the status of analyzer and sensors, and promptly remind customers to take necessary maintenance

High-standard hardware and software security and password protection

#### ❖ Powerful control function

High(low) limit control function

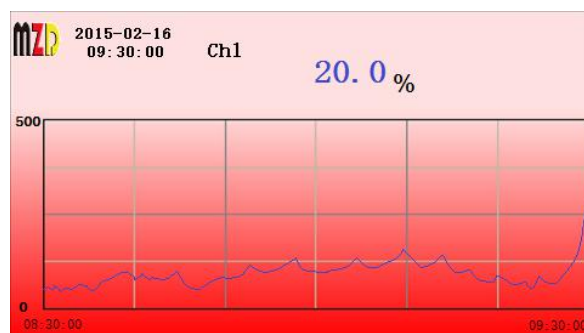
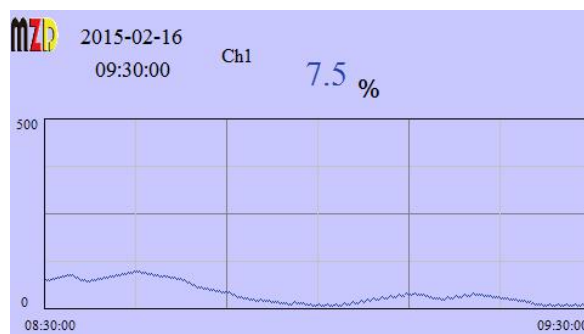
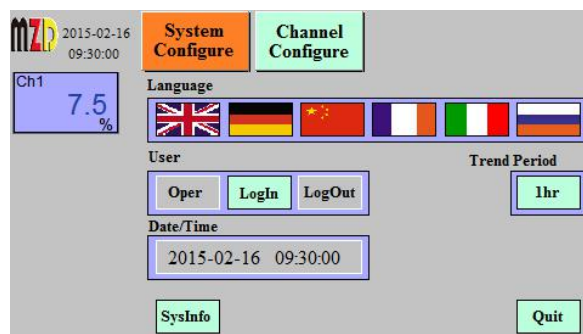
Optional: Timer control(automatic cleaning) function

Optional: analog PID control function

Optional: PWM control function

#### ❖ Flexible fieldbus communication functions for IOT4.0

Optional fieldbus MODBUS, HART, Foundation Fieldbus FF, PROFIBUS PA, PROFIBUS DP, etc.

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System Configure Channel Configure

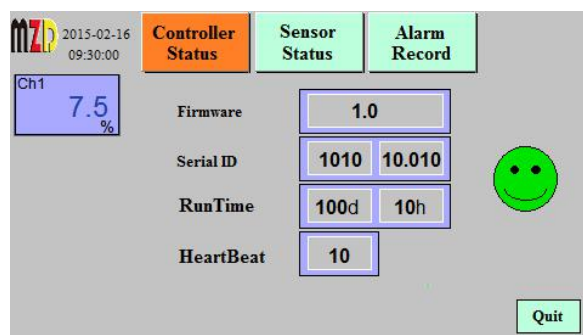
Language

User Oper LogIn LogOut

Date/Time 2015-02-16 09:30:00

Trend Period 1hr

SysInfo Quit



2015-02-16 09:30:00 Ch1 7.5 %

Controller Status Sensor Status Alarm Record

Firmware 1.0

Serial ID 1010 10.010

RunTime 100d 10h

HeartBeat 10

Quit



## Dissolved oxygen Analyzer

### Parameters

<b>Sensor Type</b>	Dissolved oxygen(luminescent optical)			
<b>Range</b>	0~20mg/L, 0~200ppm, 0~200%SAT			
<b>Accuracy</b>	0.1%, 0.1°C			
<b>Resolution</b>	0.01mg/L, 1%SAT			
<b>Response Time T90</b>	< 1 s			
<b>Compensation</b>	Atmospheric pressure,Salinity,Temperature			
<b>Working temperature</b>	0~50°C			
<b>Temperature Sensor</b>	CTN Thermistor			
<b>Pressure</b>	Max. 5Bar			
<b>Ambient Temperature</b>	-10~50°C			
<b>Ambient humidity</b>	0~90%			
<b>Sensor Size</b>	Φ25mm*150mm			
<b>Sensor Weight</b>	450g			
<b>Sensor Material</b>	SS16L/Ti(Sea water)			
<b>Sensor Ingress Protection</b>	IP68			
<b>Sensor cable length</b>	7m			
<b>Spare parts</b>	Sensor cap (fluorescent film)			
<b>Display</b>	4.3" or 7" industrial color touch screen			
<b>Language</b>	Multi-Language (English, German, Chinese, French,Italian, Russian or Customized)			
<b>Diagnosis function</b>	Sensor and controller self-diagnosis,Heartbeat monitoring			
<b>Event Logger</b>	Internal Flash,up to 6,000 alarm records			
<b>Analog Output(Galvanic)</b>	4~20mA, maximum load 500Ω			
<b>Relay Output(Galvanic)</b>	Relay(2A, 230V AC freely set alarm), System alarm			
<b>Control function</b>	Optional Timer controller,PID analog controller,PWM controller			
<b>Calibration</b>	Can store 6 calibration curves of different materials, Multi-point calibration function up to 9 point			
<b>Communication</b>	RS485 MODBUS RTU, HART, Foundation Fieldbus FF, PROFIBUS PA, PROFIBUS DP, MODBUS TCP/IP, etc			
<b>Power</b>	80~264V AC,1A or 19~28V DC,3A			
<b>Electrical protection</b>	EMI / RFI CEI-EN55011 – 05/99			
<b>Ambient Temperature</b>	-15 ~ 60°C			
<b>Storage and transport temperature</b>	-25 ~ 70°C			
<b>Ambient humidity</b>	0~90%RH			
<b>Wall-mounted(1~2Channels)</b>	4.3" color touchscreen	ABS,Gray RAL7045	213*185*84mm	IP65,Ex d IICT4 optional
	7" color touchscreen		323x237x172mm	



## COD\_TOC\_BOD Analyzer

### Overview

SMART series intelligent multi-parameter universal controller has high accuracy, its unique professional design can be applied in water, chemical, pharmaceutical, food and hygiene in the production process of the most extreme physical and chemical environments. SMART series intelligent multi-parameter universal controller has modular bus structure, highly scalable functionality, high reliability and comfortable operation.

The Spectral Absorption Coefficient (SAC) at 254 nm helps determine the Organic Content of a water sample, but also the COD, TOC and BOD parameters by applying the appropriate correlation coefficients.



### Principle

The sensor uses UV absorption at 254 nm to measure organic compounds dissolved in water. This absorbance is correlated with the concentration of TOC, COD and BOD to provide a high-performance sensor requiring no consumables. A reference measurement at 530 nm is used to compensate for the presence of particles in the sample that also absorb UV light and to establish the Turbidity parameter. The use of a state-of-the-art high-performance UV LED, combined with rigorous ignition management, offers an optimal variance of the signal.

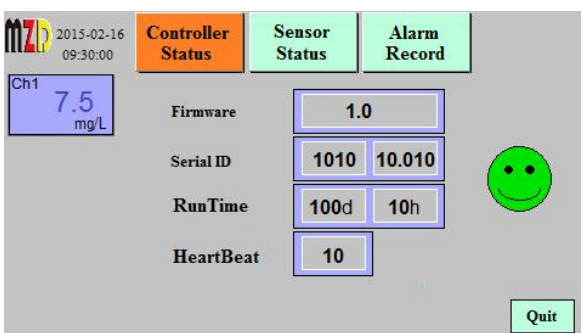
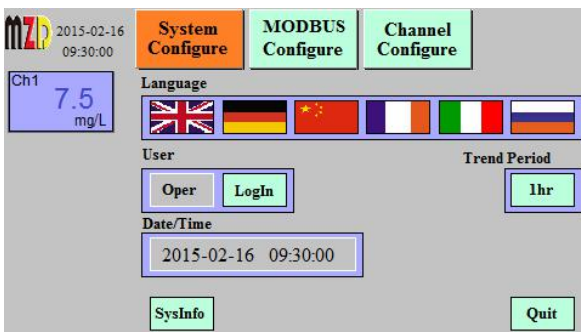
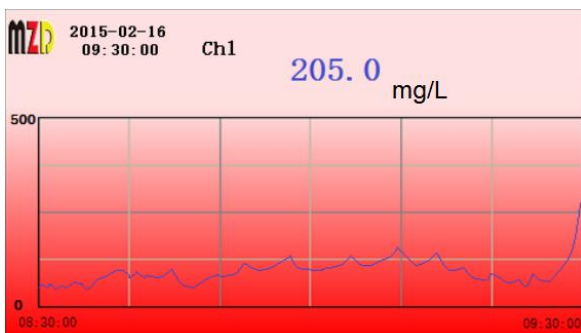
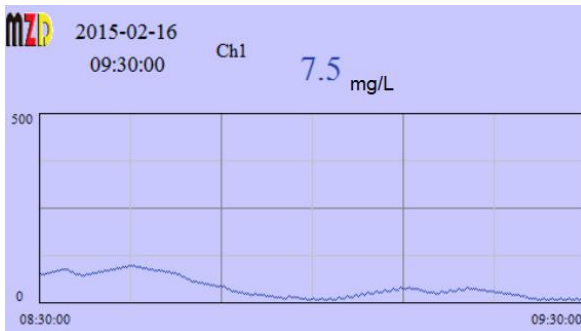


### Typical application

- ▲ Sewage treatment
- ▲ Environmental Engineering
- ▲ Municipal water supply
- ▲ Water source monitoring
- ▲ Chemical engineering
- ▲ Electricity
- ▲ Biopharmaceutical



## COD\_TOC\_BOD Analyzer



### Features

#### ❖ Quick and convenient

The navigation menu contains 6 languages, which can be operated easily.

#### ❖ Process safety

4.3" or 7" large size color LCD touch screen, convenient and safe touch operation and debugging

Large size screen with red flashing alarm, clearly visible from long distances and in dark areas

Alarm immediately, safe the process

#### ❖ Alarm event record

Real-time data curve display

Record function for up to 6,000 alarms

#### ❖ Expert calibration function

Multi-point calibration function up to 9 point

#### ❖ Powerful self-diagnosis function

Built-in heartbeat monitoring function and watchdog

Monitor the status of analyzer and sensors, and promptly remind customers to take necessary maintenance

High-standard hardware and software security and password protection

#### ❖ Powerful control function

High(low) limit control function

Optional: Timer control(automatic cleaning) function

Optional: analog PID control function

Optional: PWM control function

#### ❖ Flexible fieldbus communication functions for IOT4.0

Optional fieldbus MODBUS, HART, Foundation Fieldbus FF, PROFIBUS PA, PROFIBUS DP, etc.

## COD\_TOC\_BOD Analyzer

### Parameters

<b>Sensor Type</b>	COD/BOD/TOC(UV 254nm)			
<b>Parameters</b>	COD	BOD	TOC	
<b>Range</b>	0~50/1300mg/L	0~15/350mg/L	0~20/500mg/L	
<b>Accuracy</b>	3%	3%	3%	
<b>Resolution</b>	0.01 or 0.1	0.01	0.01	
<b>Response Time T90</b>	<2 s			
<b>Temperature compensation</b>	Automatic			
<b>Working temperature</b>	0~40°C			
<b>Temperature Sensor</b>	CTN Thermistor			
<b>Pressure</b>	Max. 5Bar			
<b>Ambient Temperature</b>	-10~50°C			
<b>Ambient humidity</b>	0~90%			
<b>Sensor Size</b>	Φ48x371mm or Φ48x419mm			
<b>Sensor Weight</b>	1800g			
<b>Sensor Material</b>	SS			
<b>Sensor Ingress Protection</b>	IP68			
<b>Sensor cable length</b>	7m			
<b>Display</b>	4.3" or 7" industrial color touch screen			
<b>Language</b>	Multi-Language (English, German, Chinese, French,Italian, Russian or Customized)			
<b>Diagnosis function</b>	Sensor and controller self-diagnosis,Heartbeat monitoring			
<b>Event Logger</b>	Internal Flash,up to 6,000 alarm records			
<b>Analog Output(Galvanic)</b>	4~20mA, maximum load 500Ω			
<b>Relay Output(Galvanic)</b>	Relay(2A, 230V AC freely set alarm), System alarm			
<b>Control function</b>	Optional Timer controller,PID analog controller,PWM controller			
<b>Calibration</b>	Can store 6 calibration curves of different materials, Multi-point calibration function up to 9 point			
<b>Communication</b>	RS485 MODBUS RTU, HART, Foundation Fieldbus FF, PROFIBUS PA, PROFIBUS DP, MODBUS TCP/IP, etc			
<b>Power</b>	80~264V AC,1A or 19~28V DC,3A			
<b>Electrical protection</b>	EMI / RFI CEI-EN55011 – 05/99			
<b>Ambient Temperature</b>	-15 ~ 60°C			
<b>Storage and transport temperature</b>	-25 ~ 70°C			
<b>Ambient humidity</b>	0~90%RH			
<b>Wall-mounted(1~2Channels)</b>	4.3" color touchscreen	ABS,Gray RAL7045	213*185*84mm	IP65,Ex d IICT4 optional
	7" color touchscreen		323x237x172mm	



## Turbidity/Suspended Solids Concentration Analyzer

### Overview

SMART series intelligent multi-parameter universal controller has high accuracy, its unique professional design can be applied in water, chemical, pharmaceutical, food and hygiene in the production process of the most extreme physical and chemical environments. SMART series intelligent multi-parameter universal controller has modular bus structure, highly scalable functionality, high reliability and comfortable operation.



### Principle

Total dissolved solids (TDS) is the total amount of all solutes in water, including both inorganic and organic content. Since organic matter and molecular inorganic matter contained in natural water are generally not considered, the salt content is generally referred to as total dissolved solids.

Salinity refers to the amount of dissolved salts per kilogram of water, and can be understood as the concentration of salt in the water.

In general, the higher the conductivity, the higher the salt content, and the higher the TDS, which means that the water contains more impurities. Generally  $1\text{TDS}=0.5\mu\text{S}/\text{cm}$ .

In liquid conductors, current is generated by the movement of free ions. According to Ohm's law:  $I=U/R=U\cdot G$ , solution conductivity:  $C=G\cdot d/A=G\cdot k$  ( $d$  is the distance between the plates,  $A$  is the area of the plates, and the electrode constant  $k=d/A$  [cm<sup>-1</sup>]).

Electrode type: The conductivity is measured by using 4 electrodes equivalent to the two plates of the capacitor.

Inductive type: The transmitting coil generates an alternating magnetic field, which generates an induced voltage in the medium to move the positively or negatively charged ions in the liquid, and form an alternating current in the liquid. The current generates an alternating magnetic field in the receiving coil, and the circuit has a certain proportional relationship between the induced current generated by the coil and the conductivity, thereby measuring the conductivity. Since ion clusters are formed on the positive plate of the small face, the free movement of positive and negative ions is hindered, and it is impossible to measure solutions with high ion concentration, so an inductive sensor is required.



## Fouling Monitoring Analyzer



### Typical application

- ▲ Source water monitoring
- ▲ Filter backwash detection
- ▲ Filter monitoring
- ▲ Drinking-water quality monitoring
- ▲ Separation process monitoring
- ▲ Cooling water monitoring
- ▲ Circulating water detection
- ▲ Sludge treatment monitoring
- ▲ Aeration tank monitoring

### Feature

- ★ Smart digital MEMS sensor
- ★ Sensor self-diagnosis, proactively reminding maintenance and management
- ★ The sensor automatically completes all compensation and measurement algorithms
- ★ Quick response sensor
- ★ IP68 Sensor
- ★ Automatic temperature compensation
- ★ Good robustness
- ★ 4-electrode/inductive sensor

### Application Case

- ▲ Power plant: the quality of boiler feed water
- ▲ Pharmaceutical: ultrapure water



# Turbidity/Suspended Solids Concentration Analyzer

## Features

### ❖ Quick and convenient

The navigation menu contains 6 languages, which can be operated easily.

### ❖ Process safety

4.3" or 7" large size color LCD touch screen, convenient and safe touch operation and debugging

Large size screen with red flashing alarm, clearly visible from long distances and in dark areas

Alarm immediately, safe the process

### ❖ Alarm event record

Real-time data curve display

Record function for up to 6,000 alarms

### ❖ Expert calibration function

Multi-point calibration function up to 9 point

### ❖ Powerful self-diagnosis function

Built-in heartbeat monitoring function and watchdog

Monitor the status of analyzer and sensors, and promptly remind customers to take necessary maintenance

High-standard hardware and software security and password protection

### ❖ Powerful control function

High(low) limit control function

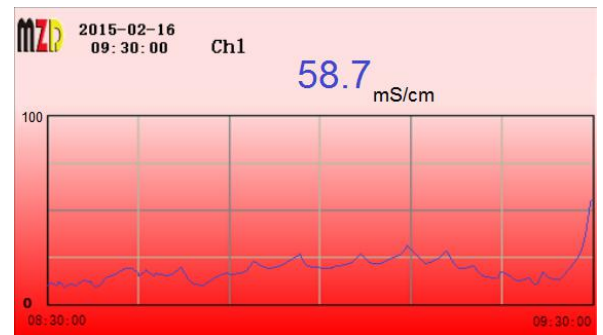
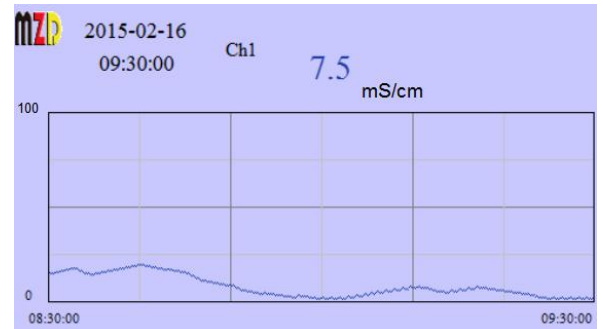
Optional: Timer control(automatic cleaning) function

Optional: analog PID control function

Optional: PWM control function

### ❖ Flexible fieldbus communication functions for IOT4.0

Optional fieldbus MODBUS, HART, Foundation Fieldbus FF, PROFIBUS PA, PROFIBUS DP, etc.






## Fouling Monitoring Analyzer

### Parameters

<b>Sensor Type</b>	Conductivity/Salinity /TDS_ Total dissolved solids(4Electrode type/Inductive type)			
<b>Range</b>	4Electrode type:0~200mS/cm, 0~60g/Kg, 0~133000ppm Inductive type: 0~700mS/cm, 0~78g/Kg			
<b>Accuracy</b>	1% FS			
<b>Resolution</b>	0.01μS/cm, 0.1°C			
<b>Response Time T90</b>	<1 s			
<b>Temperature compensation</b>	Automatic			
<b>Working temperature</b>	0~50°C			
<b>Temperature Sensor</b>	CTN Thermistor			
<b>Pressure</b>	Max. 5Bar			
<b>Ambient Temperature</b>	-10~50°C			
<b>Ambient humidity</b>	0~90%			
<b>Sensor Size</b>	Φ27mm*150mm			
<b>Sensor Weight</b>	350g			
<b>Sensor Material</b>	PVC			
<b>Sensor Ingress Protection</b>	IP68			
<b>Sensor cable length</b>	7m			
<b>Display</b>	4.3" or 7" industrial color touch screen			
<b>Language</b>	Multi-Language (English, German, Chinese, French,Italian, Russian or Customized)			
<b>Diagnosis function</b>	Sensor and controller self-diagnosis,Heartbeat monitoring			
<b>Event Logger</b>	Internal Flash,up to 6,000 alarm records			
<b>Analog Output(Galvanic)</b>	4~20mA, maximum load 500Ω			
<b>Relay Output(Galvanic)</b>	Relay(2A, 230V AC freely set alarm), System alarm			
<b>Control function</b>	Optional Timer controller,PID analog controller,PWM controller			
<b>Calibration</b>	Can store 6 calibration curves of different materials, Multi-point calibration function up to 9 point			
<b>Communication</b>	RS485 MODBUS RTU, HART, Foundation Fieldbus FF, PROFIBUS PA, PROFIBUS DP, MODBUS TCP/IP, etc			
<b>Power</b>	80~264V AC,1A or 19~28V DC,3A			
<b>Electrical protection</b>	EMI / RFI CEI-EN55011 – 05/99			
<b>Ambient Temperature</b>	-15 ~ 60°C			
<b>Storage and transport temperature</b>	-25 ~ 70°C			
<b>Ambient humidity</b>	0~90%RH			
<b>Wall-mounted(1~2Channels)</b>	4.3" color touchscreen	ABS,Gray	213*185*84mm	IP65,Ex d IICT4
	7" color touchscreen	RAL7045	323x237x172mm	optional

## pH/ORP Analyzer

### Overview

SMART series intelligent multi-parameter universal controller has high accuracy, its unique professional design can be applied in water, chemical, pharmaceutical, food and hygiene in the production process of the most extreme physical and chemical environments. SMART series intelligent multi-parameter universal controller has modular bus structure, highly scalable functionality, high reliability and comfortable operation.

### Principle

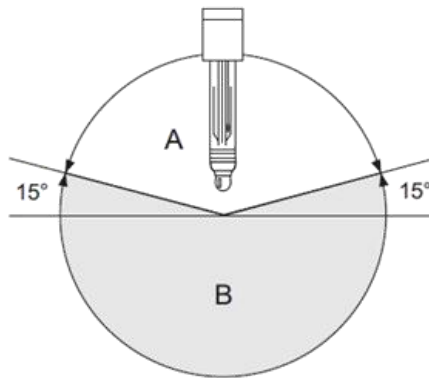
The electrochemical PH glass composite electrode is based on the principle of potential difference, so the voltage between the measuring electrode and the reference electrode follows the Nernst equation.

ORP is a measure of the oxidation or reducibility of the process medium. For different aqueous solutes, the measurement range is between -1500mv and 1500mv. The measuring electrode usually uses precious metals (platinum or gold).

### Typical application

- ▲ Source water monitoring
- ▲ Filter monitoring
- ▲ Drinking water quality monitoring
- ▲ Separation process monitoring
- ▲ Cooling water monitoring
- ▲ Circulating water detection
- ▲ Sludge treatment monitoring
- ▲ Aeration tank monitoring





### Feature

- ★ Smart digital MEMS sensor
- ★ Sensor self-diagnosis, proactively reminding maintenance and management
- ★ Quick response sensor
- ★ Sensor IP68 protection level
- ★ Automatic temperature compensation
- ★ Electrochemical sensor
- ★ KCl plastic gel electrolyte
- ★ PTFE porous permeable material is durable
- ★ Good robustness
- ★ Good stain resistance
- ★ Fully automatic cleaning
- ★ The MEMS sensor eliminates the following problems: corrosion, contact problems, salt bridges, moisture, leakage, high resistance connections, and grounding.

### Installation

Please note that the installation is more than 15 degrees above the horizontal plane, the first installation and use will take about 20 minutes of polarization time. When not in use for a long time, the PH or ORP electrode can be kept moist (the best storage solution is potassium chloride solution with pH 7 or 3mol, and it must be noted that it cannot be stored in deionized water and acid-base solutions). White potassium chloride crystals appear, but it will not affect the measurement after cleaning the surface. If the sensor becomes dry during storage, you can soak the sensor in a pH 7 or 3 mol potassium chloride solution for a period of time, and the sensor will restore the water-containing glass membrane and the reference diaphragm.

### Calibration

During pH calibration, wait for 5 to 10 minutes until it is stable before operation can be confirmed.

### Application Case

- ★ Drinking water
- ★ Sewage: water inlet, activated sludge and water outlet pipe.



## pH/ORP Analyzer

### Features

#### ❖ Quick and convenient

The navigation menu contains 6 languages, which can be operated easily.

#### ❖ Process safety

4.3" or 7" large size color LCD touch screen, convenient and safe touch operation and debugging

Large size screen with red flashing alarm, clearly visible from long distances and in dark areas

Alarm immediately, safe the process

#### ❖ Alarm event record

Real-time data curve display

Record function for up to 6,000 alarms

#### ❖ Expert calibration function

Multi-point calibration function up to 9 point

#### ❖ Powerful self-diagnosis function

Built-in heartbeat monitoring function and watchdog

Monitor the status of analyzer and sensors, and promptly remind customers to take necessary maintenance

High-standard hardware and software security and password protection

#### ❖ Powerful control function

High(low) limit control function

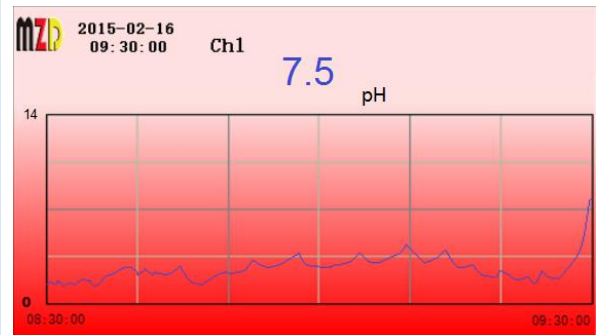
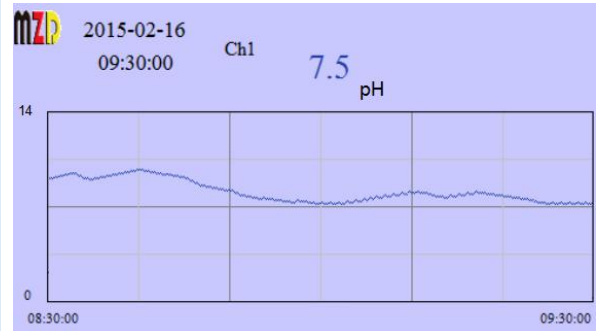
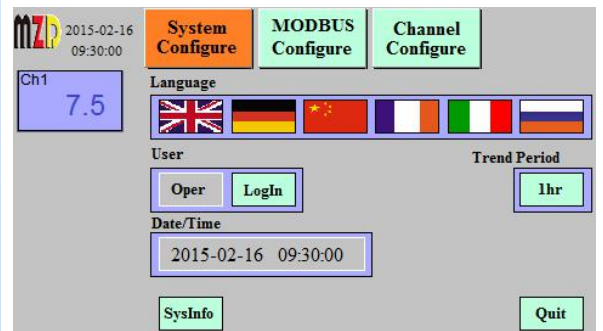
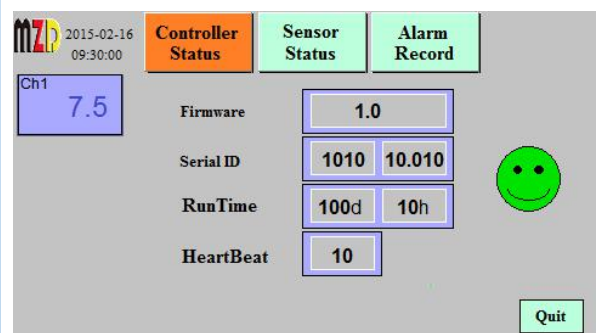
Optional: Timer control(automatic cleaning) function

Optional: analog PID control function

Optional: PWM control function

#### ❖ Flexible fieldbus communication functions for IOT4.0

Optional fieldbus MODBUS, HART, Foundation Fieldbus FF, PROFIBUS PA, PROFIBUS DP, etc.


## Parameters

<b>Sensor Type</b>	pH/ORP redox (electrochemical KCl gel)			
<b>Range</b>	0~14pH, -1000~1000mv			
<b>Accuracy</b>	0.1pH, 2mv/10mv			
<b>Resolution</b>	0.01pH, 0.1mv			
<b>Response Time T90</b>	<5 s			
<b>Temperature compensation</b>	Automatic			
<b>Working temperature</b>	0~50°C			
<b>Temperature Sensor</b>	CTN Thermistor			
<b>Pressure</b>	Max. 5Bar			
<b>Ambient Temperature</b>	-10~50°C			
<b>Ambient humidity</b>	0~90%			
<b>Sensor Size</b>	Φ25mm*150mm			
<b>Sensor Weight</b>	350g			
<b>Sensor Material</b>	PVC			
<b>Sensor Ingress Protection</b>	IP68			
<b>Sensor cable length</b>	7m			
<b>Display</b>	4.3" or 7" industrial color touch screen			
<b>Language</b>	Multi-Language (English, German, Chinese, French,Italian, Russian or Customized)			
<b>Diagnosis function</b>	Sensor and controller self-diagnosis,Heartbeat monitoring			
<b>Event Logger</b>	Internal Flash,up to 6,000 alarm records			
<b>Analog Output(Galvanic)</b>	4~20mA, maximum load 500Ω			
<b>Relay Output(Galvanic)</b>	Relay(2A, 230V AC freely set alarm), System alarm			
<b>Control function</b>	Optional Timer controller,PID analog controller,PWM controller			
<b>Calibration</b>	Can store 6 calibration curves of different materials, Multi-point calibration function up to 9 point			
<b>Communication</b>	RS485 MODBUS RTU, HART, Foundation Fieldbus FF, PROFIBUS PA, PROFIBUS DP, MODBUS TCP/IP, etc			
<b>Power</b>	80~264V AC,1A or 19~28V DC,3A			
<b>Electrical protection</b>	EMI / RFI CEI-EN55011 – 05/99			
<b>Ambient Temperature</b>	-15 ~ 60°C			
<b>Storage and transport temperature</b>	-25 ~ 70°C			
<b>Ambient humidity</b>	0~90%RH			
<b>Wall-mounted(1~2Channels)</b>	4.3" color touchscreen	ABS,Gray	213*185*84mm	IP65,Ex d IICT4 optional
	7" color touchscreen	RAL7045	323x237x172mm	

## Chlorine/Dioxide Chlorine Analyzer

### Overview

SMART series intelligent multi-parameter universal controller has high accuracy, its unique professional design can be applied in water, chemical, pharmaceutical, food and hygiene in the production process of the most extreme physical and chemical environments. SMART series intelligent multi-parameter universal controller has modular bus structure, highly scalable functionality, high reliability and comfortable operation.

### Principle

The amperometric sensor has a metal cathode, which is isolated from the medium by a thin membrane. The free chlorine and compound chlorine in the medium diffuse through the membrane and are reduced on the gold cathode. The silver anode and the electrolyte together form a complete circuit loop. The reduction of electrons at the cathode is proportional to the concentration of chlorine in the medium.

How does chlorine exist:

1. Active free chlorine (free active chlorine) hypochlorous acid molecule,  $\text{HClO}$ , is the most important part of the disinfection process.
2. Total free chlorine (free chlorine, free residual chlorine) is commonly referred to as chlorine disinfectants, which are composed of chlorine in these ways: elemental chlorine molecules  $\text{Cl}_2$ , hypochlorous acid molecules  $\text{HClO}$ , hypochlorite ion  $\text{ClO}^-$  (hypochlorine Acid salt)
3. Compound chlorine (chloramine) is a compound composed of chlorine and nitrides ( $\text{NH}_2$ ,  $\text{NH}_3$ ,  $\text{NH}_4^+$ ), and the compounded chloride has no disinfecting activity.
4. Total combined chlorine refers to the general term of free chlorine and compound chlorine.

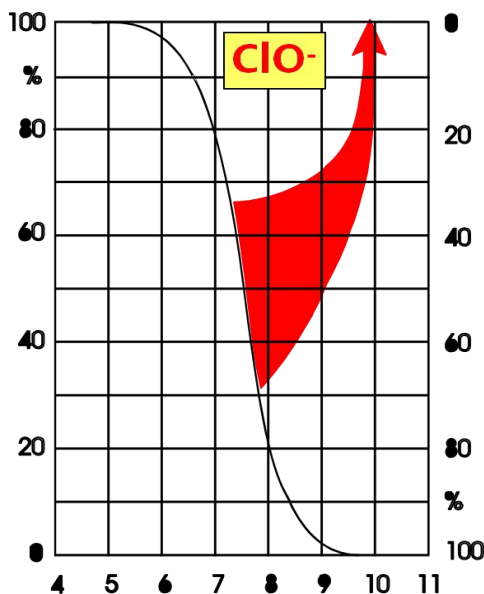
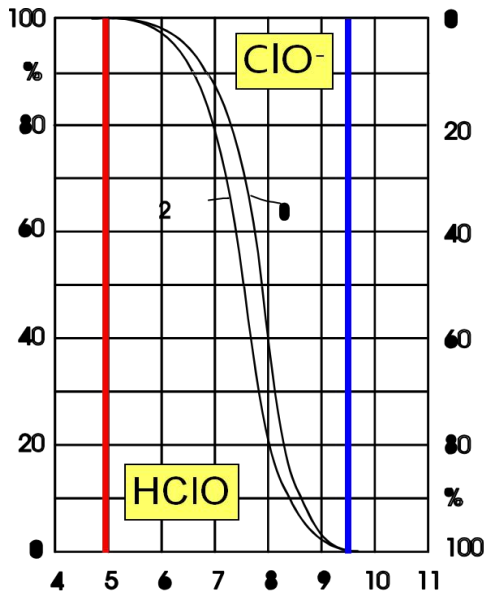
### Typical application

- ▲ Sewage treatment
- ▲ Environmental Engineering
- ▲ Municipal water supply
- ▲ Water source monitoring
- ▲ Chemical Engineering
- ▲ Electricity
- ▲ Biopharmaceuticals





## Chlorine/Dioxide Chlorine Analyzer



### Feature

- ★ Quick response sensor
- ★ IP68 Sensor
- ★ Automatic temperature compensation
- ★ Electrochemical sensor
- ★ Good robustness
- ★ Short polarization time (60 minutes)
- ★ Drift <1.5%/month
- ★ Long calibration period
- ★ Low maintenance

Under the condition of pH value <5, chlorine only exists in the form of HClO, and under the condition of pH value > 9.5, chlorine exists in the form of ClO<sup>-</sup> which has no disinfecting activity. When the pH value is between 5 and 9.5, the measured pH value can be used to realize automatic compensation.

### Installation

- ▲ polarization time, 60 minutes
- ▲ Flow rate from 45 to 135 l/h
- ▲ The maximum pressure is 1 bar
- ▲ Temperature 0~45°C

### Application Case

- ★ Drinking water: chlorination control and activity monitoring of residual chlorine in the pipe network.
- ★ Swimming pool: chlorination and disinfection measurement.
- ★ Industrial circulating water: In order to prevent the growth of biological algae, it is controlled by adding chlorine.

Disinfectants are generally used to kill germs in the water. The stronger the disinfectant's bactericidal power against germs, it may have a similar effect on other organic substances. Therefore, the amount of disinfectant added must be strictly controlled. Excessive input of disinfectant will endanger the safety of humans and animals.

# Chlorine/Dioxide Chlorine Analyzer

## Features

### ❖ Quick and convenient

The navigation menu contains 6 languages, which can be operated easily.

### ❖ Process safety

4.3" or 7" large size color LCD touch screen, convenient and safe touch operation and debugging

Large size screen with red flashing alarm, clearly visible from long distances and in dark areas

Alarm immediately, safe the process

### ❖ Alarm event record

Real-time data curve display

Record function for up to 6,000 alarms

### ❖ Expert calibration function

Multi-point calibration function up to 9 point

### ❖ Powerful self-diagnosis function

Built-in heartbeat monitoring function and watchdog

Monitor the status of analyzer and sensors, and promptly remind customers to take necessary maintenance

High-standard hardware and software security and password protection

### ❖ Powerful control function

High(low) limit control function

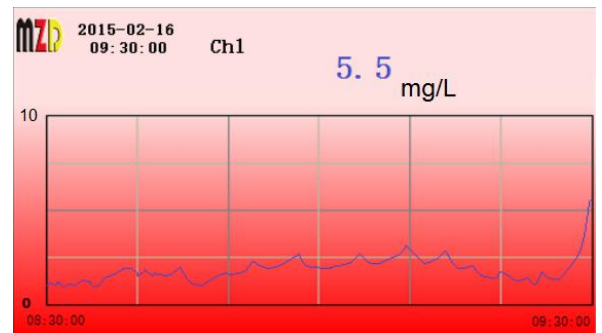
Optional: Timer control(automatic cleaning) function

Optional: analog PID control function

Optional: PWM control function

### ❖ Flexible fieldbus communication functions for IOT4.0

Optional fieldbus MODBUS, HART, Foundation Fieldbus FF, PROFIBUS PA, PROFIBUS DP, etc.




## Chlorine/Dioxide Chlorine Analyzer

### Parameters

<b>Sensor Type</b>	Chlorine/Dioxide Chlorine Analyzer(Electrochemical)			
<b>Range</b>	0~2/5/10ppm			
<b>Accuracy</b>	1%FS			
<b>Resolution</b>	0.01ppm			
<b>Response Time T90</b>	<5 s			
<b>Temperature compensation</b>	Automatic			
<b>Working temperature</b>	0~55°C			
<b>Temperature Sensor</b>	CTN Thermistor			
<b>Pressure</b>	Max. 5Bar			
<b>Ambient Temperature</b>	-10~50°C			
<b>Ambient humidity</b>	0~90%			
<b>Sensor Size</b>	Φ30mm*150mm			
<b>Sensor Weight</b>	300g			
<b>Sensor Material</b>	PVC			
<b>Sensor Ingress Protection</b>	IP68			
<b>Sensor cable length</b>	7m			
<b>Spare parts</b>	Membrane and electrolyte			
<b>Display</b>	4.3" or 7" industrial color touch screen			
<b>Language</b>	Multi-Language (English, German, Chinese, French,Italian, Russian or Customized)			
<b>Diagnosis function</b>	Sensor and controller self-diagnosis,Heartbeat monitoring			
<b>Event Logger</b>	Internal Flash,up to 6,000 alarm records			
<b>Analog Output(Galvanic)</b>	4~20mA, maximum load 500Ω			
<b>Relay Output(Galvanic)</b>	Relay(2A, 230V AC freely set alarm), System alarm			
<b>Control function</b>	Optional Timer controller,PID analog controller,PWM controller			
<b>Calibration</b>	Can store 6 calibration curves of different materials, Multi-point calibration function up to 9 point			
<b>Communication</b>	RS485 MODBUS RTU, HART, Foundation Fieldbus FF, PROFIBUS PA, PROFIBUS DP, MODBUS TCP/IP, etc			
<b>Power</b>	80~264V AC,1A or 19~28V DC,3A			
<b>Electrical protection</b>	EMI / RFI CEI-EN55011 – 05/99			
<b>Ambient Temperature</b>	-15 ~ 60°C			
<b>Storage and transport temperature</b>	-25 ~ 70°C			
<b>Ambient humidity</b>	0~90%RH			
<b>Wall-mounted(1~2Channels)</b>	4.3" color touchscreen	ABS,Gray RAL7045	213*185*84mm	IP65,Ex d IICT4 optional
	7" color touchscreen		323x237x172mm	