

## 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



## Turbidity/Suspended Solids Concentration 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" 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

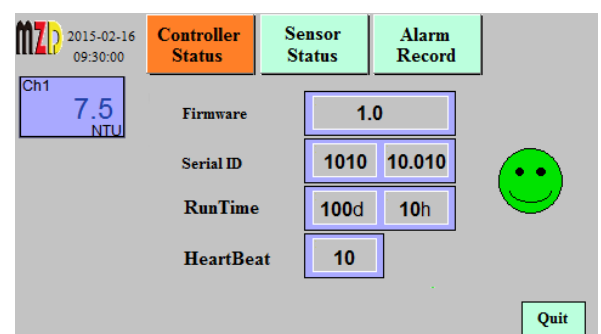
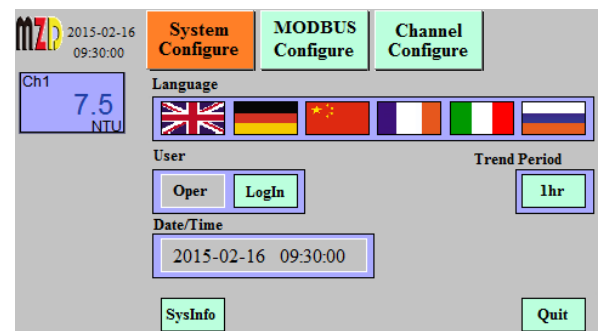
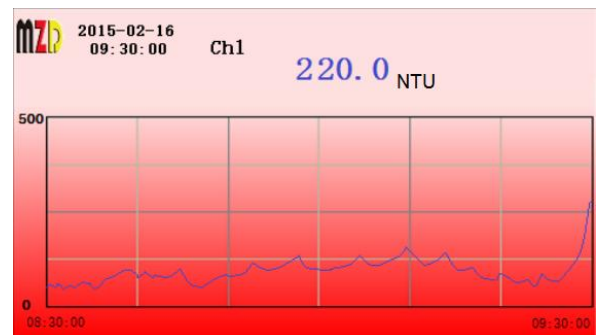
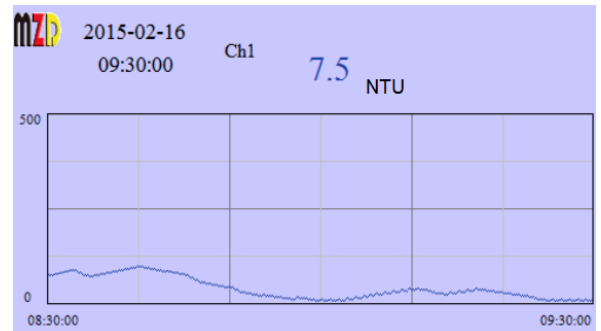
Optional: Timer control(automatic cleaning) function

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.



## Turbidity/Suspended Solids Concentration Analyzer

### Parameters

Sensor Type	Turbidity_Suspended Solids Concentration(IR90°Optical)			
Range	0~4000NTU/FNU or 0~50g/L			
Accuracy	1% FS			
Resolution	0.1NTU/FNU or 0.01g/L			
Response Time T90	<1 s			
Temperature compensation	Automatic			
Working temperature	0~55℃			
Temperature Sensor	CTN Thermistor			
Pressure	Max. 5Bar			
Ambient Temperature	-10~50℃			
Ambient humidity	0~90%			
Sensor Size	Φ27mm*150mm			
Sensor Weight	350g			
Sensor Material	PVC			
Sensor Ingress Protection	IP68			
Sensor cable length	7m			
Display	4.3" industrial color touch screen			
Language	Multi-Language (English, German, Chinese, French,Italian, Russian or Customized)			
Diagnosis function	Sensor and controller self-diagnosis,Heartbeat monitoring			
Event Logger	Internal Flash,up to 6,000 alarm records			
Analog Output(Galvanic)	4~20mA, maximum load 500Ω			
Relay Output(Galvanic)	Relay(2A, 230V AC freely set alarm), System alarm			
Control function	Optional Timer controller,PID analog controller,PWM controller			
Calibration	Can store 6 calibration curves of different materials, Multi-point calibration function up to 9 point			
Communication	RS485 MODBUS RTU, HART, Foundation Fieldbus FF, PROFIBUS PA, PROFIBUS DP, MODBUS TCP/IP, etc			
Power	80~264V AC,1A or 19~28V DC,3A			
Electrical protection	EMI / RFI CEI-EN55011 – 05/99			
Ambient Temperature	-15 ~ 60℃			
Storage and transport temperature	-25 ~ 70℃			
Ambient humidity	0~90%RH			
Wall-mounted(1~2Channels)	4.3" color touchscreen	ABS,Gray RAL7045	213x185x84mm	IP65
	1.8" color LCD	Aluminum,Gray	180x160x135mm	IP65, Exd IICT4

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<b>Sensor Type</b>	Turbidity_Suspended Solids Concentration(IR90°Optical)
<b>Display</b>	1.8" color LCD, 160*128Pixel
<b>Language</b>	English Menu
<b>LED Light</b>	Status LED Light(NAMUR NE107)
<b>Keypad</b>	Magnetic button
<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>Diagnosis function</b>	Sensor and controller self-diagnosis,Heartbeat monitoring
<b>Analog Output</b>	4~20mA, Maximum load 500 ohms
<b>Relay Output</b>	2 Relays (2A, 230V AC/DC freely set alarm), 1 Relay (System alarm)
<b>Communication</b>	RS485 MODBUS RTU Slave
<b>Power</b>	19 ~ 28V DC,0.5A
<b>Electrical protection</b>	EMI / RFI CEI-EN55011 – 05/99
<b>Ambient Temperature</b>	-10~50°C
<b>Ambient humidity</b>	0~90%
<b>Protection</b>	IP67
<b>Housing Material</b>	Aluminum alloy
<b>Size</b>	Φ126*110 mm
<b>Weight</b>	1.5Kg
<b>Explosion-proof</b>	Ex d IICT4 optional

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