



SD Series Online Color Meter

OPERATING INSTRUCTIONS

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1. Introduction

Dear users:

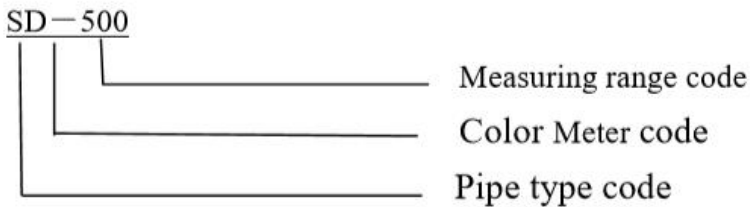
Thank you for choosing the SD Series Online Color Meter developed by our company , To ensure correct and efficient use of the instrument, please read this manual thoroughly and fully understand how to operate the instrument before operating it.

SD Series Pipeline Online Color Meter, Pipeline type totally enclosed detection to Avoid external light interference, Reliable and accurate measurement, Can be widely used in Chromaticity monitoring of sewage enterprises ; Municipal pipe network monitoring ; Industrial process chroma monitoring , Effluent monitoring of printing and dyeing plant, Chemical effluent, etc.

1. Product name and model description

Product name: Online Color Meter

Model: SD Series



2. Technical parameters

- **Range:** SD-500 0.1-500.0PCU
- **Resolving power:** 0.1 与 1PCU
- **Response time:** Quick response

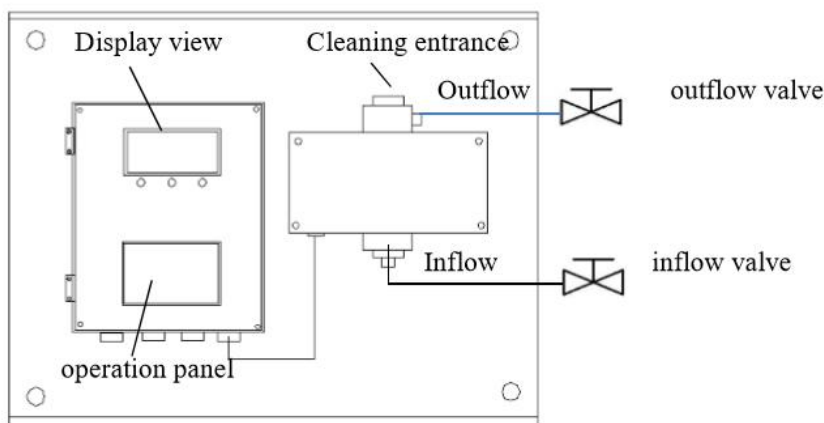
- **Storage time:** >3 years
- **Recording interval:** 0-30 Minutes can be setup, Default 10 minutes
- **Display mode:** LCD and Key
- **Cleaning method:** Manual cleaning (Cleaning method and Matters needing attention, Please refer to the following chapter)
- **Sample flow rate:** 0mL~3000mL/min, Ensure that the flow rate is no bubbles
- **Working temperature:** 0~55°C
- **Analog output:** 4~20mA output (Four wire system, No need to provide 24V)
- **Relay output:** Four SPDT, 230VAC, 5A;
- **Fault alarm:** two Acousto-optic alarm, Display prompt, Alarm value and time can be set
- **Power Supply:** AC, 100~230V, 50/60Hz or 24VDC; power 50W
- **Inflow pipeline:** 1/4" NPT, (Provide external interface)
- **Outflow pipeline:** 1/4" NPT, (Provide external interface)
- **Digital communication:** MODBUS/RS485, Communication speed and station address can be setup
- **Standard method:** National standard
- **Size:** 40×33×10cm
- **Weight:** 3Kg

3. Measuring principle

This module monitors by Constant incident light Irradiated on liquid surface, The receiving chip will dynamically measure the chroma of water. If the water is turbid, it may affect the measurement accuracy, It is recommended to filter and clean before entering water.

4. Structural features

Outline structure and installation instructions of Online Color Meter, As shown in the figure below.



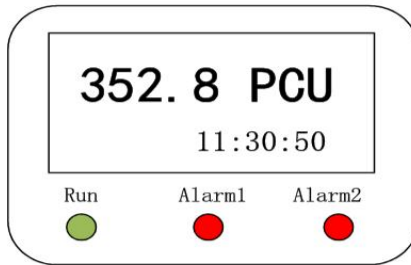
Careful:

- 1. Outflow valve flow control to minimum, It must be less than the inflow flow, Let the measuring tube have a certain air pressure, Otherwise, there will be bubbles, Influence measurement value**
- 2. Panels should be installed vertically**

- **DO4, com4:** unuse
- **DI1-DI4:** unuse
- **485A, 485B:** MODBUS communication interface

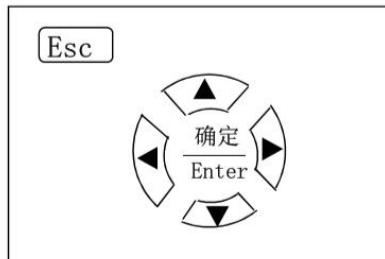
6. Panel operating instructions

6.1. Instrument panel and operating instructions



LED Panel description

1. Real time display of current ammonia value;
2. Alarm light display;
3. Real time clock display;
4. **Run** LED is normal operation;
5. **Alarm1** Led is low alarm;
6. **Alarm2** led is high alarm;

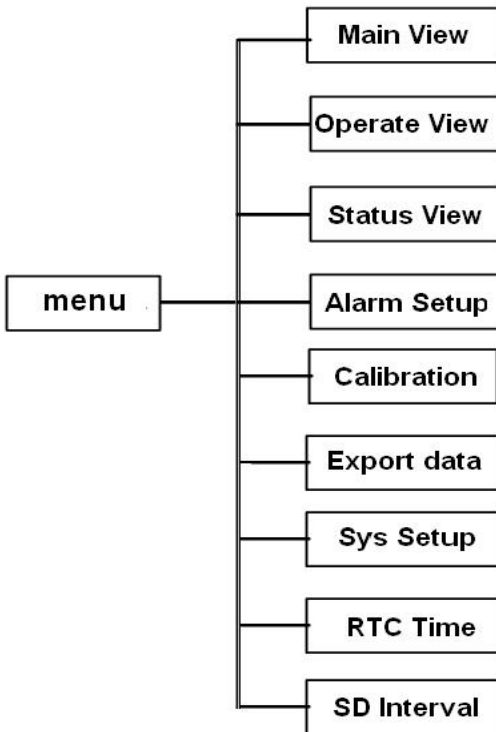


Operation panel description

1. ▲ Indicates move up or value increase key (Up key)

2. ▼ Indicates move down or value decrease key (Down key)
3. ◀ Indicates move Left (Left key)
4. ▶ Indicates move Right (Right key)
5. ENTER: Acknowledgement key
6. ESC: Return or exit key (Go back to the previous menu)

6.2. Menu



7.3. Main interface and main menu



Chroma value is mainly displayed in the main interface, If chroma value greater than set value, The alarm led red light up.

When the view is displayed as the main view, Press the ESC key, Can get into Function menu page。 As shown in the figure below:

=== Main Menu ===		
1.	Main View	
2.	Operate View	
3.	Status View	

Function menu

Press up key or down key to move options, Press ENTER key to enter the corresponding option。

7.4. Alarm settings

=== Alarm Setup ===		
Item	Val	Time
Alarm1	15	120
Alarm1	18	120

Alarm s Alarm setup et the alarm value and alarm time of chroma alarm 1 and alarm 2。

careful: If you do not press enter after setting, Set value not saved.

7.5. System setup

=== System Setup ===	
Addr	1
Baud	9600
Language	En

System parameter setting view

In this view, you can select the address of Modbus communication station(1-32), communication rate and language. The system defaults station is no 1, Communication baud rate is 9600Bps, Language is Chinese.

Communication data format: One start bit, eight data bits, one check bit and one stop bit.

Verification method: CRC check.

Broadcast information is not supported.

Upload data mode, Implement with 03 command, It can transmit the switching value (in word form) and analog value in the Numerical controller, The specific process is as follows. For example: Read the analog down transfer register with the starting address of 0000H, with the length of 09 words

03 Command request message:

address	function	Data start	Data	Data	Data	CRC	CRC
---------	----------	------------	------	------	------	-----	-----

		register high	start register low	length high	length low	check code low	check code high
02	03	00	00	00	09		

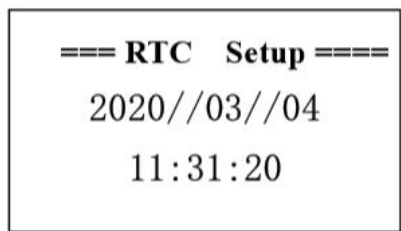
03 Command response message:

address	function	Bytes	High bit of data output register0014	Low bit of data output register0014	High bit of data output register.....	Data output register low	High bit of data output register0027	Data output register low 0027	CRC check code low	CRC check code high
02	03	28	01	2B	00	00	00	64		

Communication data address definition

address		Data name	Data definition	type	Explanation	Remarks
000.0		Data name				
000.1						
003.3		Alarm 1	1 Alarm	bool		
003.4		Alarm 2	2 Alarm	bool		
0006		Chroma value	0-1000 对应 0-100.0	int		
0007						

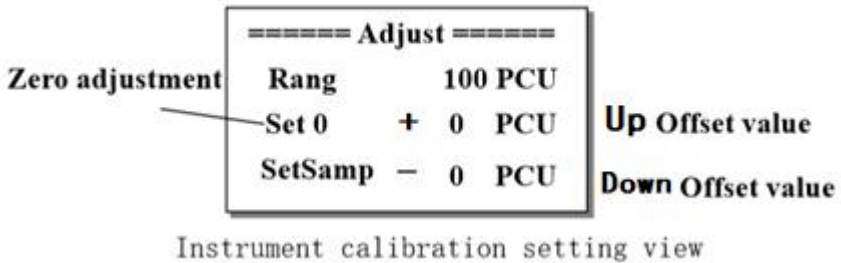
7.6.Clock setting



System clock setting view


Adjust and set the system time displayed on the current main view, Year, month, day, hour, minute and second can be set.

7.7. Instrument calibration



When the deviation of the detected value is large, the instrument can be corrected

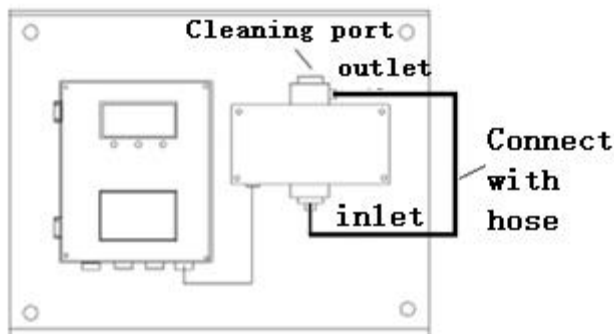
Zero adjustment

1. In circulation, Connect clean water for zero adjustment
2. Enter the instrument calibration screen , Press on the operation panel  , When the cursor flashes at "zero adjustment", Press the "OK" key in the middle of the operation panel to adjust zero , If the operation is unsuccessful, repeat the operation.

Sample adjustment

Close the water inlet valve before sample adjustment and correction, Pull out the water inlet quick connect hose, Short the

water inlet and outlet with quick connect hose。 As shown in the figure below:



1. Open the cleaning port , Pour in the full-scale standard sample solution provided by the manufacturer when leaving the factory, Close the cleaning cover。

2. Enter the instrument calibration screen , Press on the operation panel ► , When the cursor flashes at "sample adjustment", Press the "OK" key in the middle of the operation panel to sample adjust , If the operation is unsuccessful, repeat the operation。

During zero adjustment or sample adjustment , It is recommended to pour clean water or sample solution for many times , Reduce the influence of residual liquid on correction results。

After the above operations are completed, connect the inlet and outlet pipes according to the normal installation and

Range: Maximum range setting。

Set 0: Zero adjustment, After pouring in water, Tighten the

cleaning port, After stabilizing for 8-10 minutes, conduct zero adjustment and calibration。

+/- 0 PCU: Up/Down Offset value

SetSamp : Adjusting sample , After pouring standard sample solution , Tighten the cleaning port , After stabilizing for 8-10 minutes, conduct sample adjustment and calibration。

7. Routine maintenance

Generally, the instrument has been calibrated before leaving the factory, and the user can put it into use directly。

Maintain: The following operations must be carried out in case of power failure。

1 、 Check whether the wiring is correct when using the instrument for the first time。

2、 If you found that the measurement error is too large or the measurement value keeps rising and will not return to the original value when it is used for a long time , Please turn off the water inflow , Unscrewing the cleaning port, Please Manual cleaning。

3、 Do not remove the instrument, In order to avoid affecting or damaging the performance of the instrument, keep the instrument dry and tidy。

Manual cleaning method:

Step 1: Turn off Power off, close the water inflow valve.

Step 2: Open the upper cleaning seal cover, Carefully clean the inner wall of the measuring glass tube with a brush (Pay attention not to overflow the water from the cleaning port, which will cause the water to seep into the circuit board of the measuring tank).

Step 3: Repeat the second step repeatedly until the colored substance adhering to the inner wall of the glass tube is removed.

Step 4: Cover the measuring box, clean the sealing cover, and power on.

8. Matters needing attention

- The first start-up of the system takes 10 minutes to warm up .
- Incoming line voltage must be within the allowable range, Wiring of incoming terminal must be firm and reliable
- It is strictly prohibited to use in places with explosion, flammability, corrosion of metal, damage of insulation and steam.
- Maintain the original assembly mode of water inflow and water outflow. The internal measurement is precision glass tube. Do not use too much force when changing the installation, which will cause the glass tube to break.
- This test method is a national standard platinum cobalt colorimetry, which can not necessarily meet the needs of on-site chroma. It is suggested that the darkest color solution on site can be used as the standard solution for sample mixing according to

the actual situation.

- **There are bubbles on the inner wall of the measuring tank, which will cause the measurement value to be wrong or rise continuously. It is suggested to increase the water inflow and reduce the water outflow so as to generate pressure in the measuring pipe and make the bubble burst.**
- **Due to different manufacturers and different components of sewage, colored substances adhere to the inner wall of the measuring pipe, and the cleaning interval and frequency depend on the specific situation of the site.**
- **Keep the ventilation and dry environment, condensation will occur in the humid environment, and the adhesion to the outer wall of the measuring tank will cause the measurement value to increase.**
- **Do not disassemble the right measuring tank without the technical support of the manufacturer.**