
KDM-150B Wall Mounted Residual Chlorine Meter

User Manual

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Attention

- When using the analyzer, please comply with the operation procedures and attentions of this user manual.
- If the instrument is found to be abnormal or damaged during use, please contact the dealer and do not repair it yourself..
- In order to measure more accurately, the instrument must be regularly calibrated with the electrode; if your electrode has been purchased for about a year or the electrode has quality problems, please replace it.
- Please power on the instrument for 30 minutes before calibration.
- Due to product updates, this manual is subject to change without notice.

1. Product configuration

Please confirm whether the detector and the packaging box you purchased are complete. If the packaging is damaged or there are any shortage of accessories, please contact the dealer as soon as possible.

The configuration is as follows:

The standard configuration:

- ✧ Controller×1
- ✧ Free Chlorine Electrode×1
- ✧ Flow cell×1
- ✧ Operation manual×1
- ✧ Optional accessories

2. Product introduction

This product is a new generation of intelligent water quality detector independently developed by our company, which adopts advanced non-membrane constant voltage sensor, no need to replace the diaphragm and agent, high sensitivity, rapid signal response, accurate measurement, stable performance and simple maintenance. With English menu operation, high stability, superior repeatability, multi-functionality, etc., it can accurately measure the free chlorine value in solution. It is used for continuous monitoring and control of free chlorine content in water solution.

Widely used in: water treatment plants, canning plants, drinking water distribution networks, swimming pools, cooling and circulating water, water treatment projects, etc.

Main Feature

- ✧ Adopting advanced non-membrane type constant voltage sensor, no need to replace the diaphragm and agent, high sensitivity, rapid signal response, accurate measurement, stable performance, stable zero position, simple maintenance, more suitable for low range occasions.
- ✧ Large screen dot-matrix LCD display. Chinese and English menu operation.
- ✧ Manual temperature compensation.
- ✧ Communication function (optional): With RS-485 communication interface (partially compatible with MODBUS protocol)
- ✧ Able to Restore factory settings.
- ✧ Watchdog function: ensure that the meter will not crash.
- ✧ Power-off protection > 10 years.
- ✧ Protection level: IP65(controller), IP68(CL electrode)

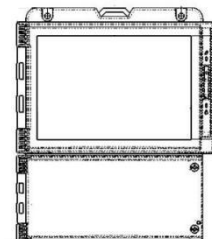
3. Technical indicators

- (1) Measuring Range: free chlorine 0-20.00mg/L
- (2) Resolution: 0.01mg/L
- (3) Accuracy: $\pm 1\%FS$
- (4) Alarm output: high or low alarm outputs correspond to any parameters.
- (5) Signal isolation output: 4~20mA isolated protection output
- (6) Working conditions: temperature of 0-60 °C, relative humidity $\leq 90\%$
- (7) Output load: load $< 500\Omega$ (4-20mA)
- (8) Working voltage: AC 220V $\pm 10\%$.
- (9) Size: 218 × 183 × 126mm
- (10) Installation: wall-mounted
- (11) Weight: 1.5Kg (without electrodes)
- (12) Protection level: IP65(controller), IP68(CL electrode)

4. Instrument installation

4.1. Host installation

The instrument should be installed in a clean, dry, well-ventilated location without vibration, and there should be no corrosive gas around it.



The installation method is wall-mounted installation. First, fix the screws on the wall according to the position of the installation hole of the instrument, and then install it firmly.

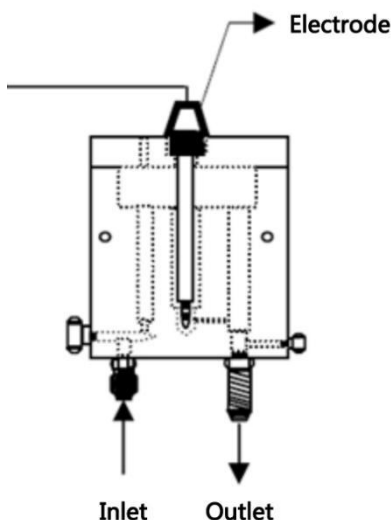
4.2. Electrode installation

The electrode must be installed in the constant current electrode seat hole of the constant current device if the constant flow device continuously passes water, and ensure that the electrode is always immersed in the water. If the constant current device loses water for a long time, please Take out the sensor and cover it with the original rubber sheath. The rubber sheath must ensure the protective liquid. The specific installation is as follows.

A. Taking out the electrode and carefully push the rubber sleeve of the electrode with your fingernail (note: do not twist it by hand to avoid damaging the electrode) until the rubber sleeve is fully pushed out. Note: If you try to install it temporarily, it is best to save the rubber sleeve and the protective liquid in the sleeve, so that after the test installation, the sampling electrode can cover the rubber sleeve and the protective liquid back to the electrode. The

protective solution is slightly corrosive, and if it gets on the skin, it will be rinsed off with water. B. Inserting the electrode into the constant hole of the constant current device (close to the hole of the water outlet). Be careful not to damage the glass head on the top of the sensor. Before installation, please make sure to use the raw material tape (threaded part) for waterproof sealing before installation. The measured media should be kept at a constant flow rate and constant, suggested water flow is 15~30 cm³/s.

Installation method:



5. Instrument panel and wiring instructions:

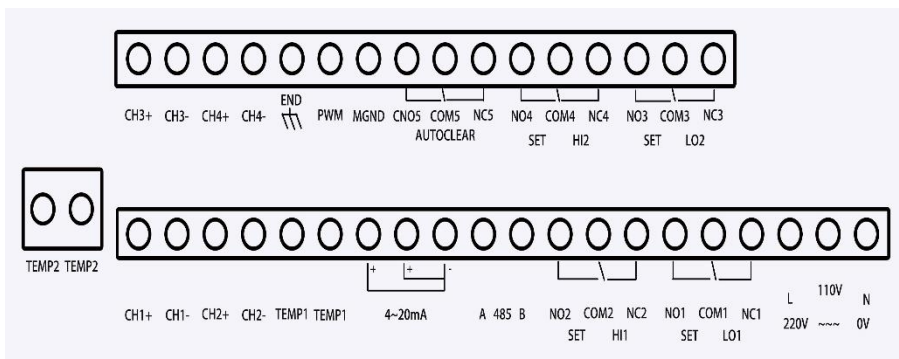
Front panel buttons



1. MENU: menu key or cursor movement key
2. DOWN: cursor move down or numerical decrease key
3. UP: cursor move up or numerical increase key
4. ENTER: confirm key
5. ESC: return or exit key (return to the previous menu)

Key description: Press the MENU key to pop up/move the cursor, press the DOWN key/UP key to modify, and press the ENTER key to store the data. Press the ESC key to return to the previous menu. The same key is accelerated by pressing it several times, then press and hold it to accelerate.

Open the cover under the instrument, the schematic diagram of terminal on the circuit board as follows:

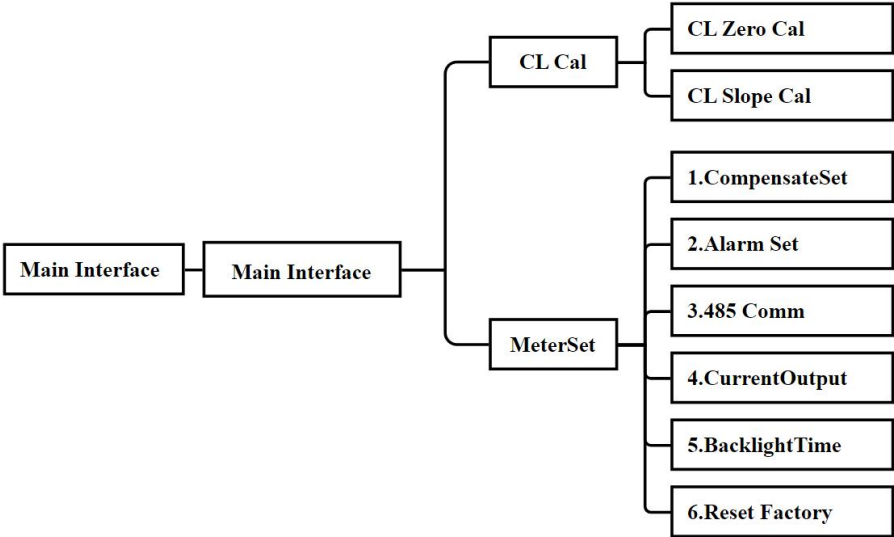


Instrument wiring diagram

1.CH1+: CL electrode EL	13. 4~20mA:Com
2. CH1-: CL electrode REF	14. RS485 A
3. CH2+:	15. RS485 B
4. CH2-:	16. NO2:
5. CH3+:	17. COM2:
6. CH3-:	18. NC2:
7. TEMP2 Left: CL electrode IN	19. NO1:
8. CH4+:	20. COM1:
9. CH4-:	21. NC1:
10. TEMP1:	22.L: 220V for power supply
11. TEMP1:	23. Null
12. TEMP2 Right:	24.N: 0V for power supply

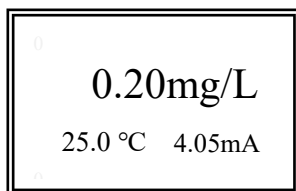
6. Instrument Function Settings

6.1. Menu Structure



6.2. Main Interface and Main Menu

The main interface displays the free chlorine value and temperature value. The menu shows the current measurement value, 25.0°C is the temperature value.



6.3. Calibration of free chlorine

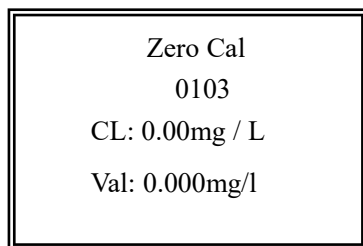
Due to the constant pressure method, the zero potential and the electrode slope of the new residual chlorine electrode are basically the same. no calibration is required during normal use. With the use of the process will gradually change and produce aging phenomenon.

This requires regular calibration to ensure the accuracy of measurement. The menu is as follows: In the main menu, press the up and down keys to select free chlorine calibration, and press ENTER to enter the free chlorine calibration interface.

6.3.1. Zero Calibration

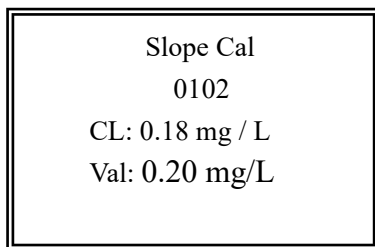
If you need to calibrate the zero point of the residual chlorine electrode, gently blot the electrode before calibration, place the electrode in the air, press the ENTER key to enter the instrument, then press the MENU menu selection key to pop up the cursor, press Up and down key modification.

The default value is 0, usually no need to change, wait for stability and press ENTER to save the data. Press the ESC key to return to the previous menu.



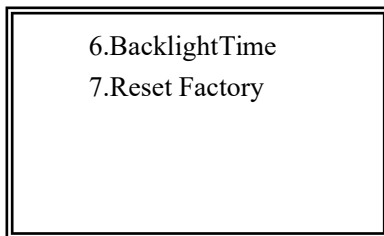
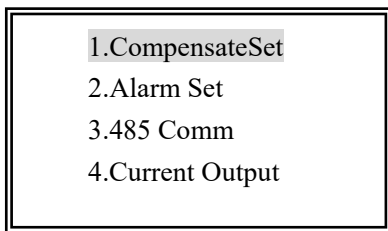
6.3.2. Slope calibration

Enter the free chlorine slope calibration menu. Before calibration, place the residual chlorine electrode in a residual chlorine standard solution with a constant flow rate(15~30cm³ /s) and known concentration. Press ENTER key to enter, and then press MENU key to pop up the cursor. The default value is 0.20mg/L. Press DOWN/UP key to change to a concentration value, such as 0.30mg/L, etc. After the current or residual chlorine value is stable, press the ENTER key to save data. When the residual chlorine value is stable (± 0.01 mg / L), it indicates that it has been calibrated. Press ESC key to return to the calibration setting menu.

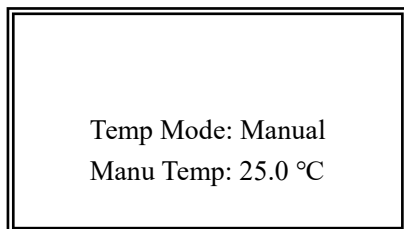


6.4. Compensation Setting

Press the up and down keys in the main menu to select the parameter setting, press ENTER to enter the parameter setting menu, as shown below, the left picture is the first page, and the right picture is the second page. Press the up and down keys to select each setting. The first item is selected in this section.



Press ENTER to into the compensation Settings menu. Click the MENU button to pop up the cursor and move the cursor.Press the up and down button to modify the temperature. When equipped with NTC thermistor, the true value is measured automatically. If there is no NTC thermistor, you can choose manual input.



Press ENTER to save the data, and press ESC to return to the previous menu.

6.5. Alarm Setting

Select Alarm Setting in the Parameter Setting menu and press ENTER to enter the Alarm Setting menu.Press MENU to select the key to pop up the cursor, move the cursor, and you can press the up and down keys to modify.

High H : High alarm setting, Lag H: Lag amount of the high point. Low point L: Low alarm setting. Lag L: Lag amount of the low point. Note: The lags amount is set in the range of 0 to (high point H value - low point L value). In order to avoid the relay jumping constantly or to control the width of the free chlorine value of the solution, this instrument is equipped with this function, the specific operation is as follows: Press up and down to adjust the hysteresis amount. That is, adjust the amount of relay hysteresis. After adjustment, press ENTER to store, press ESC to return to the previous menu.

High point relay: It will act when the actual measured value is higher than the high alarm setting value, and will be released when the actual measured value drops lower than the value of high alarm value-lag value.

Low point relay: It will act when the actual measured value is lower than the low alarm setting value, and will be released when the actual measured value rises higher than the value of low alarm value + lag value. It is beneficial to extend the service life of relays or AC contactors. Therefore, the user must set the high, low and hysteresis value according to the actual application.

Note: The high & low point value and lag value can only be set within the measure range.

High: 20.0 Lag H: 0.5 Low: 0.0 Lag L : 0.5

6.6. RS485 Communication

485 Comm Set ADD: 01

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Selecting 485 Communication in the MeterSet menu. Press the MENU key to pop up/move the cursor, press the DOWN key/UP key to modify, and press the ENTER key to save the data. The communication address (hexadecimal), press ENTER to store the data, press ESC to return to the previous menu. (Note: Please consult the manufacturer or distributor for specific protocol specifications)

6.7. Current Output

4-20mA Set	
4 mA:	0
20 mA:	10

4-20mA Set	
4 mA:	0
20 mA:	10

The residual chlorine value corresponding to the 4-20 mA output is 0-10 mg/L, but the user can arbitrarily set the corresponding value according to his own requirements to meet the industrial control needs. Press the MENU menu selection button to pop up the cursor, move the cursor, press the up and down keys to modify, press the ENTER key to store the data, press the ESC key to return to the previous menu.

Output current (mA): $I = 16 \times (C - A) / (B - A) + 4$

Note: I is the output current value, $4\text{mA} \leq I \leq 10\text{mA}$.

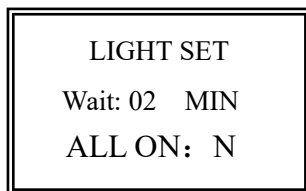
C is the current residual chlorine value measured by the meter, $0.00 \leq C \leq 20\text{mg/L}$.

A is the number corresponding to 4 mA in the setting.

B is the value corresponding to 10 mA in the setting.

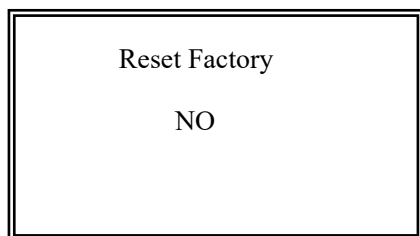
6.8. Backlight Time

Select "BackLightTime" in the MeterSet setting menu and press ENTER key. Press the MENU key to pop up the cursor / move the cursor, you can press the DOWN key / UP key to modify the data and press the ENTER key to save data. Press ESC to return to the previous menu. Backlight control function can save power of the meter, protect the display screen, and extend its lifetime.



6.9. Reset Factory

Select Restore Factory Value in the MeterSet menu and press ENTER to enter the Restore Factory menu. Press MENU selection key to pop up the cursor, you can press up and down key to modify. Press ENTER to store data, press ESC to return to the previous menu.



7. Electrode Use and Maintenance

- (1) The instrument has been calibrated before leaving the factory and can be put into use directly by the user.
- (2) The on-line monitoring of the measured medium should be kept at a constant flow rate and constant, with a minimum flow of 15 cm³/s. General instrument failure rate is low.
- (3) The sensor should be cleaned in distilled water (or deionized water) and blotted dry with filter paper to prevent impurities from being carried into the measured solution when measuring. Ensure that 1/3 of the electrode should be submerged in the measured solution, and the water flow rate is constant when measuring.
- (4) The sensor should be washed when not in use, and then ensure that the

head is immersed in the protective solution for a long time, you can add the protection solution in the electrode protective cap and then put back the electrode, the effect is the same.

- (5) Check whether the terminals are dry, if there is any dirt, please wipe with anhydrous alcohol, and use it after blowing dry..
- (6) If you find that the metal ring of the electrode head has dirt attached or oxidized (normal bright silver), you can first use alcohol with cotton swabs to clean it first, if the dirt/oxidation layer still can't be removed you can use an eraser to gently polish it, remove it and then clean it with distilled water.
- (7) Measuring electrode is precise parts, can not be decomposed, can not change the shape and size of the electrode, and can not be cleaned with strong acid, alkali, so as not to change the performance of the electrode and affect the accuracy of the instrument measurement. Measuring cable is special cable, can not be replaced.
- (8) If the electrode is used for a long time and there is a measurement error, it must be calibrated.

Note: Do not disassemble the sensor to avoid affecting or damaging the performance of the instrument.