

# Online Dissolved Oxygen Meter Model:DOG-2092



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## User's Notice

- Please observe the operating instructions and precautions when using this meter.
- In case of any abnormality or damage of the instrument in use, please contact the distributor or the Shanghai Boqu Instrument Co., Ltd instead of repairing it by yourself.
- To ensure a more accurate measurement, the instrument should be calibrated to fit the electrode from time to time; if your electrode is bought about one year ago, you'd better replace it.
- Electrify to preheat the instrument for 30 minutes before calibration.
- When the instrument has been used for one year, send it to the metrological institutions or Shanghai Boqu Instrument Co., Ltd.

## Chapter 1 Overview

DOG-2092 is a precision instrument used for testing and control of dissolved oxygen. Adopts the backlit LCD display with error indication ,automatic temperature compensation; isolated 4-20mA current output; the dual-relay control; high and low points. Dual relay control, high and low alarm indication; down memory, no battery backup, data store more than 10 years.

Can be equipped with DOG-209F (ppb level) polarographic electrode, automatically ppm full scale measurement, for the detection of environmental protection, sewage and other sectors of liquid oxygen content measurement instruments. DOG-209F (ppm level) in response to a fast, stable, reliable, and low cost, suitable for environmental protection, sewage and other industries widely used. Coupled with the versatility and direct link to the "practical, convenient, fully functional" and other similar products in the unique advantages, widely used.

## Chapter 2 Technical Indexes

- 1.Measuring range: 0 ~ 19.99 mg / L
- 2.Control range: 0 ~ 19.99mg / l
- 3.Resolution: 0.01mg / l, 0.1 °C
- 4.Accuracy:  $\pm 1.5\%$  F.S
- 5.Automatic temperature compensation range: 0 ~ 50 °C, 25 °C basis
- 6.Communication interface: RS485 (optional)
- 7.Signal output: 4 ~ 20mA isolated output protection
- 8.Control output mode: ON / OFF relay output contacts
- 9.Relay under load: Maximum AC 240V 5A
10. Relay hysteresis: freely adjustable
11. Current output load: maximum allowable load is 750
12. Signal Input impedance:  $\geq 1 \times 10^{12} \Omega$
13. Whole basic error:  $\pm 0.3\text{mg} / \text{l}$ ;
14. Temperature error:  $\pm 0.5$  °C
15. Output current error:  $\pm 0.04\text{mA}$
16. Power supply: 220V  $\pm 22\text{V}$ , 50Hz  $\pm 0.5\text{Hz}$
17. Instrument Dimensions: 96 (length)  $\times$  96 (W)  $\times$  115 (D) mm
18. Instrument hole size: 91  $\times$  91mm
19. Instrument Weight: 0.6Kg
20. Instrument Operating Conditions:

- ① Ambient temperature: 5 ~ 35 °C
- ② Relative humidity:  $\leq 80\%$
- ③ In addition to Earth's magnetic field around the outside no strong magnetic field interference....

### Chapter 3 Panel Cutout

The instrument can be mounted away from the scene of the control room can also be installed together with the measuring cell at the scene. The required connection terminal leads back from the secondary table.

Cabinets or mounted on the instrument panel cut out a rectangle (see Figure 1).

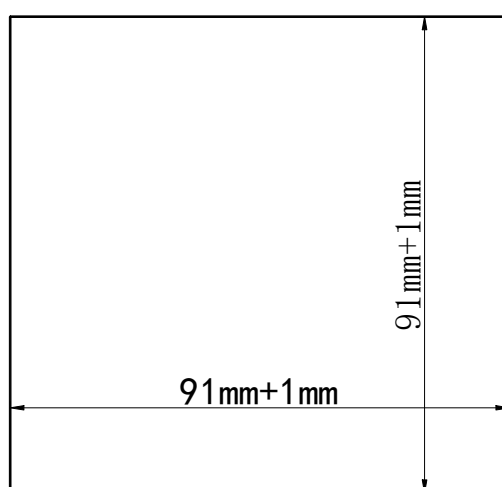


Figure 1

Installation should pay attention:

1. Instrumentation and measuring cell closer the better. Generally not more than 20 meters, the best second table fixed in the best eye level, the surface should be clean, dry, avoid direct water droplets splashing.
2. Electrode and meter connection cable must not be laid close parallel with the power cord to avoid an adverse effect on the signal.

### Chapter 4 Fixed Bracket Mounting

The rear of the instrument inserted from the front opening, the two put on and tighten the locking bar (see Figure 2).

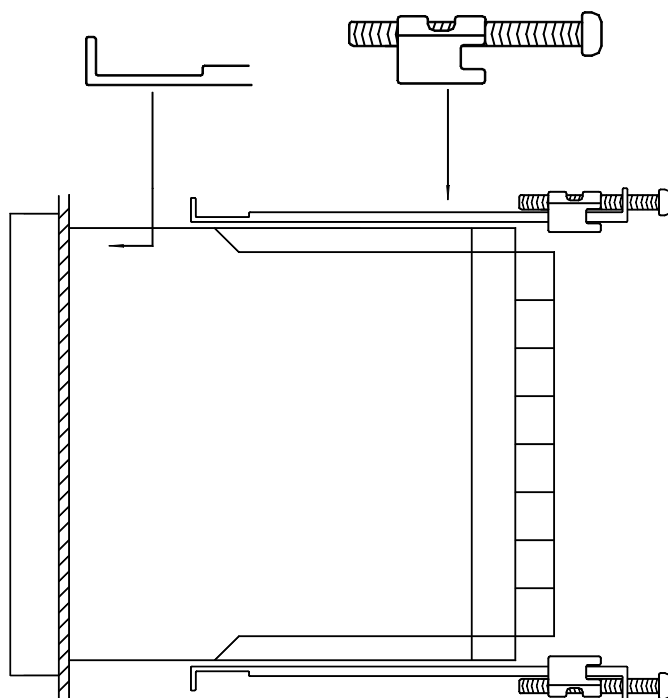


Figure 2

## Chapter 5 Front Panel Instruction

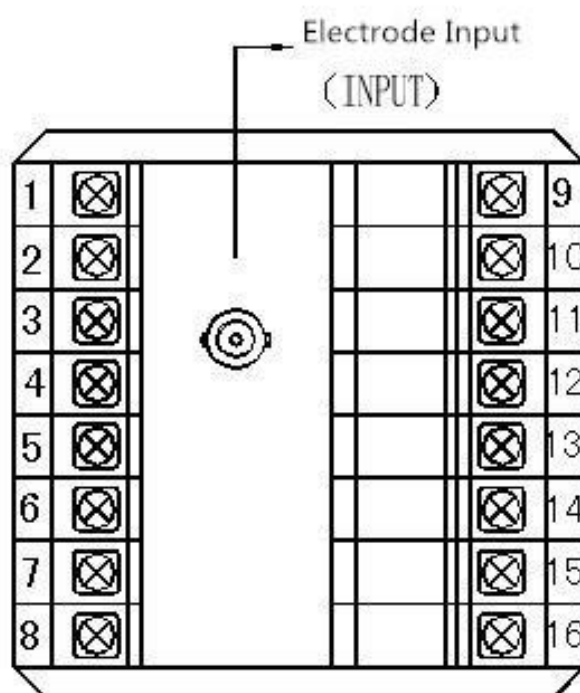


Figure 3

1. Hi: high alarm indicator
2. Lo: low alarm indicator

3. %: Percentage indication
4. Mg / L: mg / l indicates
5. ↑ key: increase the value
6. ↓ key: decrease the value
7. MENU keys: menu selection
8. ENTER key: determine the operating
9. FUN keys: Shift key (the current test value into the electrode voltage value)

## Chapter 6 Instruction Cable Connect



1. NO: high point relay normally switch
2. COM: high point relay common
3. NC: high point relay normally closed terminal
4. NO: normally open relay lows
5. COM: low relay common
6. NC: low relay normally closed terminal
7. 220v
8. 0v
9. DO-oxygen electrode negative

10. TEMP: Temperature compensation

11. TEMP: Temperature Compensation

12 empty 13. Empty 14. Air

15.4 ~ 20 mA + 16.4 ~ 20 mA -

Intermediate terminals DO + (electrode input terminal)

## Chapter 7 Instrument Calibration

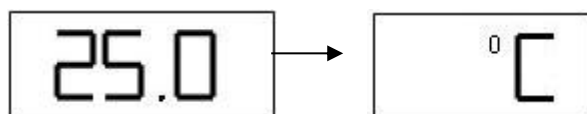
Note: Be sure the electrode, power and other terminals correctly wired only after the calibration procedure.

During the calibration process to provide users with anaerobic water Preparation method:

250ml 5% of the preparation of sodium sulfite (NaSO) solution of cobalt chloride may be added as catalyst amount.

1. After power on, the screen displays Err wait one minute display properly dissolved oxygen values.

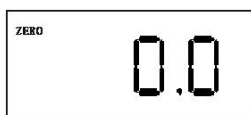
2. Press the MENU key to display 25.0 °C alternately with flashing temperature display for the instrument. Temperature compensation is required, between 10 and 11 on the 10K temperature probe wiring termination.



3. Press the MENU button, upper left corner of the screen shows ZERO, clean the electrode with distilled water and dry with filter paper, put anhydrous sodium sulfite solution, stirring gently a few, such as the instrument display numerical stability.



4. Wait thirty minutes and then press the ENTER key, the screen displays ZERO and 0.0, indicating that the instrument zero calibration has been completed.



5. Press the MENU key, the screen displays the lower left corner appears SLOPE.

6. Remove the electrode from anhydrous sodium sulfite solution is removed, cleaned with distilled water and dry with filter paper, and then the electrodes are placed aside and wait for the instrument display numerical stability.

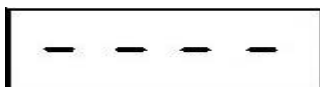




7. Wait thirty minutes and then press the ENTER key, the screen displays SLOPE and 100.0, indicating the percentage of instrument calibration is complete.



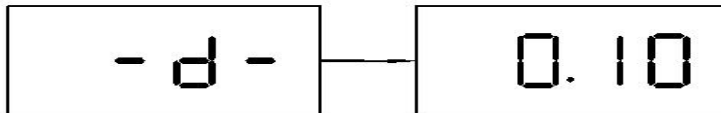
8. Press MENU to make the screen display mode as shown below, the correction is completed.



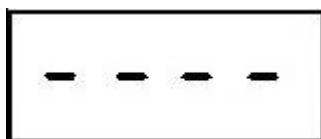
Relay hysteresis adjustment

To prevent or control relay stop beating oxygen value width, the ad hoc instrument this function,as follows:

Press MENU to make the screen appear-d-and a 0.10-numerical alternately blinking, the machine waits relay hysteresis adjustment.



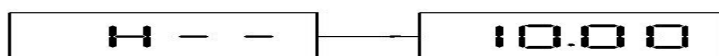
Then press ↑ or ↓ keys to adjust the relay hysteresis (adjustment range is 0 to 14, the customer may need to adjust this range, the initial value of the instrument is shipped 0.10), regulate then press the ENTER key, as shown below mode.



Instrument memorize the value, adjustment is completed.

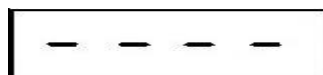
### Chapter 8 Set The Control Program

1. Press MENU to make the screen appears "H--" and "1000" flash alternately, when high alarm indicator will blink, the machine has entered the high alarm set state.



2. Press ↑ or ↓ to determine the high point of the control value.

3. After you press ENTER the screen as shown below, complete the high setting and access control mode.



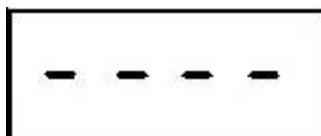
### Chapter 9 Low Alarm Settings

1. Press MENU to make the LCD display "L--" and "400" alternate blinking, low alarm indicator will blink, the machine enters low alarm set state.



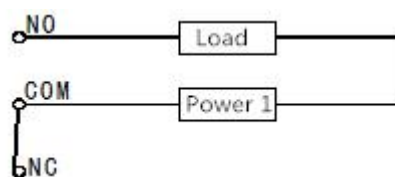
2. Press ↑ or ↓ to determine the low control values.

3. After you press ENTER the screen as shown below, complete the low setting and access control mode.

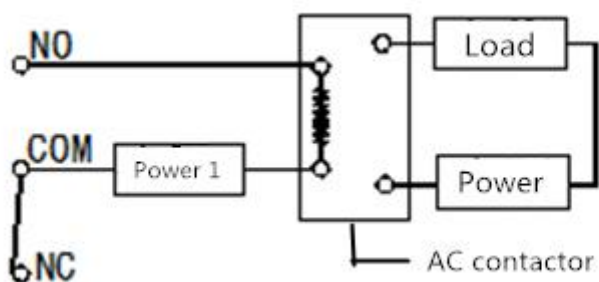


### Chapter 10 Relay Control Description

1. Such as controlling the load current is less than the rated current of the relay is exposed, you can connect the diagram. (Power supply 1 not exceed 220V)



2. Such as controlling the load current is greater than the rated current of the relay is exposed, the need to increase access AC contactor, press diagram to connect.



## Chapter 11 Signal Output

- 4 ~ 20mA current output:
- Output load is less than  $750\Omega$
- I Error:  $\pm 0.04\text{mA}$
- Output current  $I = D \times (16/14) + 4.00$

**Note:** I is the output current value,  $4\text{ mA} \leq I \leq 20\text{ mA}$

D is the instrument displays the DO value,  $0.00\text{mg} \leq D \leq 20.00\text{mg}$