ScichemTech-USA

SCT- DO MAXI

D.O CONTROLLER

SCT-108.005.31

User/Operational Manual


SCT-DO-MAXI
MEAS
5.20
ATC
27.1
ScichemTech®

MANUAL INDEX PAGE:

I: Model & Instrument Type:

Thank you for purchasing and selecting Our SCT- Product Number: 108.005.31

Model: ***SCT-D.O MAXI CONTROLLER***

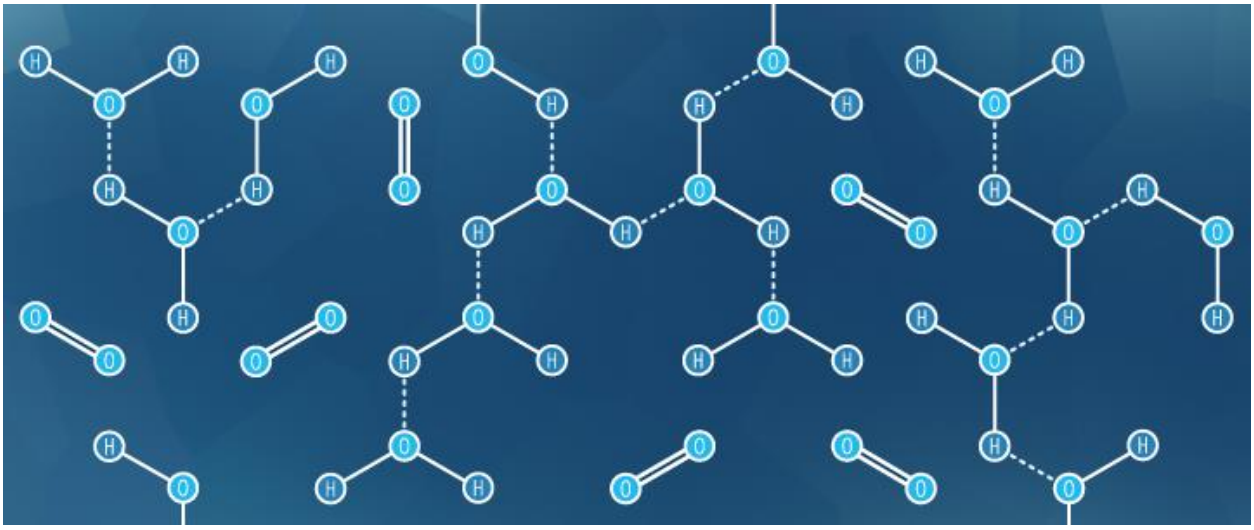
Once again we thank you for choosing our Model: SCT-D.O-MAXI – The online DO Controller for your DO related field applications. We are pretty sure that you will be happy with our Instruments…Please feel free to contact our dealers /service team for any further assistance.

II: Principle & Operations

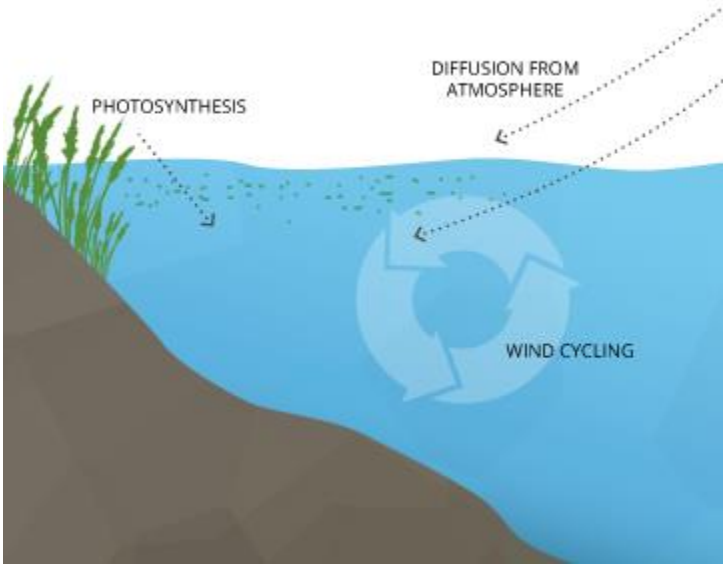
What is Dissolved Oxygen?

Dissolved oxygen refers to the level of free, non-compound oxygen present in water or other liquids. It is an important parameter in assessing water quality because of its influence on the organisms living within a body of water. In limnology (the study of lakes), dissolved oxygen is an essential factor second only to water itself [1]. A dissolved oxygen level that is too high or too low can harm aquatic life and affect water quality.

Non-compound oxygen, or free oxygen (O2), is oxygen that is not bonded to any other element. Dissolved oxygen is the presence of these free O2 molecules within water. The bonded oxygen molecule in water (H2O) is in a compound and does not count toward dissolved oxygen levels. One can imagine that free oxygen molecules dissolve in water much the way salt or sugar does when it is stirred.



Where Does DO Come From?



Dissolved oxygen enters water through the air or as a plant byproduct. From the air, oxygen can slowly diffuse across the water's surface from the surrounding atmosphere, or be mixed in quickly through aeration, whether natural or man-made 7. The aeration of water can be caused by wind (creating waves), rapids, waterfalls, ground water discharge or other forms of running water. Man-made causes of aeration vary from an aquarium air pump to a hand-turned waterwheel to a large dam.

Dissolved oxygen is also produced as a waste product of photosynthesis from phytoplankton, algae, seaweed and other aquatic plants 8.

III: About the Product & Applications:

Our SCT- Product Number: ***108.005.31***
Model: ***SCT-MAXI D.O Controller.***
Is a very reliable, accurate and consistent instrument you can always rely upon the Controller for all you Water D.O control related applications within its measuring range.

3.1 Salient Features:

● SCT-DO-(dissolved Oxygen) MAXI CONTROLLERS are designed with creativeness to get the elegance and produced with proper quality, and meets the specifications for the Water related applications with high level performance
● SCT-DO-(dissolved Oxygen) MAXI CONTROLLERS are an industrial instrument used for online analysis and monitoring.
● SCT-DO-(dissolved Oxygen) MAXI CONTROLLERS are made in a attractive pleasant color with a Large and Clear blue white LCD Display

● SCT-DO-(dissolved Oxygen) MAXI CONTROLLERS are Microprocessor based controllers, which gives stable and accurate readings.
● SCT-DO-(dissolved Oxygen) MAXI CONTROLLERS uses Low power consumption and produces less internal heat.
● SCT-DO-(dissolved Oxygen) MAXI CONTROLLERS are has the polagraphic type DO electrode. This oxygen electrode is a diaphragm polarographic (clark) electrode. The conductibility electrolyte makes the polarization between cathode and anode. Between the cathode and the anode, the proper polarization voltage can deoxidize the O2 at the Cathode electrode.
Cathode reaction: O2+ 2H2O +4e -- 4OH Anode reaction: 4AG +4Cl- -- 4AgCl + 4e
These chemical reactions produce the current which is proportional to the O2 in the test solution.
● SCT-DO-(dissolved Oxygen) MAXI CONTROLLERS has an ISO lated 4-20 mA current output
● SCT-DO-(dissolved Oxygen) MAXI CONTROLLERS are panel mount type of controllers.
● SCT-DO-(dissolved Oxygen) MAXI CONTROLLERS proved to work continuously in any harsh environmental conditions for the in line measurement and control of accurate CHLORINE value.
● SCT-DO-(dissolved Oxygen) MAXI CONTROLLERS has a major advantage that, no reagents are used.it has the direct measurement and readings.

Applications of SCT-MAXI D.O Controller.

SCT-MAXI D.O Controllers are designed for the measurement and control of industrial on-line D.O, widely used in the RO (Reverse Osmosis) Panels for the measurement and control of the water. In the Water purification plants, Production plants of pure water in Pharmaceutical industries, chemical industry, electronic industry, foodstuffs, beverage and etc.
However, SCT-108.005.31 can be used in many other fields & applications too.

III: Technical Specifications:

Our SCT- Product Number: SCT-108.005.31
Model: SCT-D.O-MAXI – The online D.O Controller has the following Specifications

Measurement range:	0.00 ~ 200 ug/L & 0.00 -20.00 mg/l
Accuracy:	0.01mg /L & 0.1ug/l
Display mode:	3½ bit LCD with backlit
CL calibration method:	Zero calibration & Slope calibration
CL temperature compensation:	0 ~ 45 C (automatic)
Output current:	Isolate the active output of 4~20mA.

Output control:	Dual-contact output with both higher and lower limits (normally-open and normally-close respectively)
Contact capacity:	7A/250V AC (resistive load)
Screw size:	3/4" pipe thread
Power supply:	AC 220V±10%; 50Hz
Environnemental conditions:	Température: 0~50℃ Humidity: ≤85%RH
Overall dimension:	96x96x120mm (Height x Width x Depth)
Dimension of the hole:	92x92mm
Installation method:	panel-mounted

V: Pre-Installation Requirements:

Follow these steps after receiving the instrument:

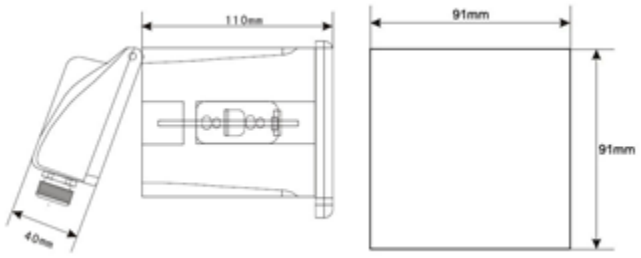
- Please check carefully the packaging box of the Controller before removing it in order to find out transportation damages.
- Should the packaging box be broken or have suffered any other damage, please contact the shipping agency before opening it.
- Once you have taken the instrument out of the box, check if damages can be observed. Should this be the case, please inform the dealer that has delivered you the equipment.
- Remove all packing straps, protectors and accessories used during transport. Recyclable materials are to be disposed in the containers provided therefore.
- Make sure to pre-warm or run the controller for 30-35 minutes prior to using and performing the calibration work
- Also, please make sure all the Electrical connections and the probes are connected properly.
- The meter should be installed in a clean, dry, well ventilated, vibration-free location around should be no corrosive gases.

Temperature changes in the measured liquid affect both the response of the measurement electrode to a given CL level, and the actual CL of the liquid. Temperature measurement devices can be inserted into the liquid, and the signals from those devices used to compensate for the effect of temperature on CL measurement, but this will only compensate for the measurement electrode's CL response, not the actual CL change of the process liquid!

Please follow the above instructions, Prior to Installation

V: Installation & Method of Operations:

- **5.1. Main installation**
- As we mentioned earlier, the meter should be installed in a clean, dry, well ventilated, vibration-free location around should be no corrosive gases. Make a rectangular cut out in the instrument cabinet or panel installation. Using the locking tools fix the Controller firmly into the Panel or Cabinet.



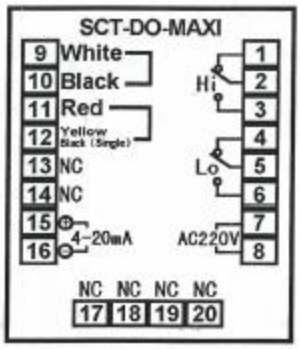
- **5.2. Electrode installation**
- D.O electrode loaded flow cell is shown in Fig. Such as the use of sinking into the (insertion) type installation, an electrode without the flow measuring chamber, directly, respectively, the residual chlorine electrode and pH electrode is connected to the connecting rod (water) to prevent the electrode cable can be fixed after inserted into the water, with the fixing bracket. Before installation, be sure to use the raw material with the (threaded Department) good waterproof closed. The measured media should be kept online monitoring and constant flow rate, the minimum flow rate of 15cm3/S.

Front cover plate

Front panel buttons

1. MENU key or a selection key
2. DOWN menu down or values to reduce key (the key)
3. Move or numerical increase in the UP menu key (on key)
4. Enter or return or exit key (to return to the previous menu)

5.3 The rear panel wiring instructions:



1.NO： High point relay working	9. D.O Sensor- White Line
2.COM：High point relay common	10. D.O Sensor- Black Line
3.NC： High point normally closed	11. TEMP： Red Line
4.NO： Low point relay working	12. TEMP： Yello line Shielded Cable (Single black line)
5.COM：Low point relay common	13. No internal connection
6.NC： Low point normally closed	14. No internal connection
7.L ： 220V Firewire	15. 4~20mA+
8.N ： 0V Zero line	16. 4~20mA-

5.4. CONTROLLER OPERATION

5.4.1 Keyboard

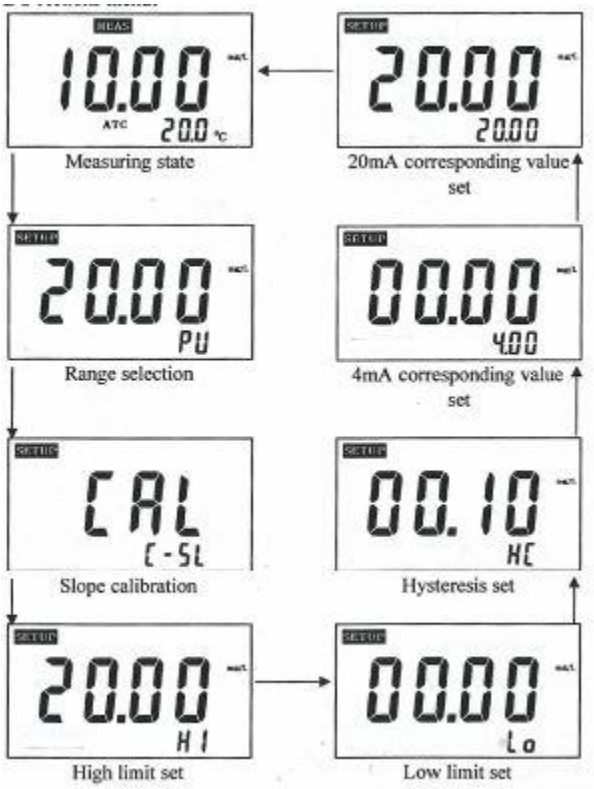
Selector key for the function menu

Left arrow key

Multiply key

Enter key

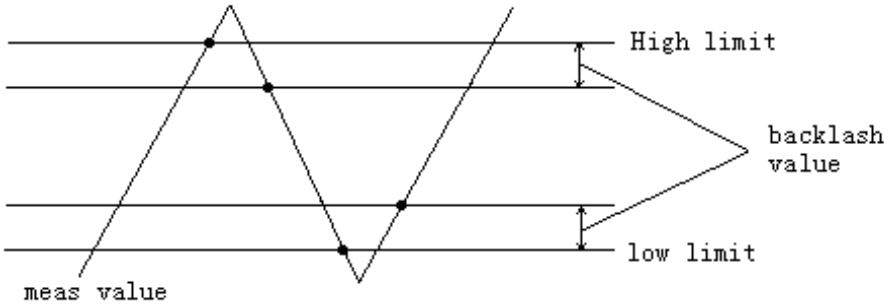
D.O Action Menu



Instructions: Keep pressing the ✎ key, and the "Set" options of the instrument will shift among the above statuses. Press the ↻ key, and the instrument will enter into the set menu. Press the > and ^ keys to modify the value to be set. Finally, press the ↻ key to save the set data.

Note: 1. After the setting of an option, it is necessary to press the ↻ key to save the required data. Then the set values will stop flickering!

2. The high or low limit can be set within the whole range. However, the high limit must be greater than the low limit.



The hysteresis range of the upper and lower limits

VI. CALIBRATION OF THE pH CONTROLLER

Zero calibration:

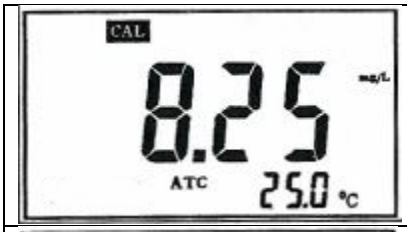
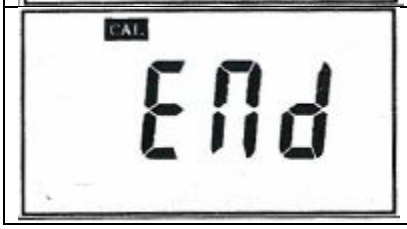
Anaerobic water preparation: 5% anhydrous sodium sulfite (Na2S03) was added to 250ml of distilled water and formulated into a saturated solution, this may be regarded as an oxygen-free water, and the oxygen content of the water in the default-case is Omg / L.

	Measurement of the state, press ESC key for 2 seconds which goes into the zero calibration menu
	Rinse the dissolved oxygen sensor with distilled water, Dip the D.O probe into the anaerobic water solution. Wait for the voltage acquisition value to be stable in the display, press the enter key to confirm the storage. The controller automatically switches to the end state.
	Zero Calibration is now finished. The controller will restart itself and enter into the state of measurement.

SLOPE CALIBRATION:

The dissolved oxygen sensor is rinsed with distilled water, and the measuring probe is kept static in the air.

	press Menu key to enter the slope of the calibration menu.

	The controller displays the current Oxygen standard value and temperature. After 5 seconds the controller automatically switches to the D.O voltage acquisition and D.O temperature values
	When the D.O value is stable and the temperature value is stable press the “Enter” key to confirm the storage.
	The controller now displays the current acquisition oxygen standard solubility and after 5 sec it switches automatically to end state.
	slope Calibration is now finished. The controller will restart itself and enter into the state of measurement.

VII: Precautions & Maintenance:

Maintenance:

1) The electrode cannot be stored in dry environment. When it is not in use, it is necessary to wash it with clean water and insert it in the liquid jacket filled with 1mo1KCL, or insert it in a container filled with 1mo1KCL.
2) The electrode should be cleaned on a regular basis. If the glass bulb of the electrode contacts and is contaminated by the polyfluortetraethylene liquid it should be cleaned with the following reagents.

1. Surfactant can be used to clean oil, grease or oil-containing substance.
2. 10% diluted hydrochloric acid can be used to remove calcium deposit or metal hydroxides.
3.10% diluted hydrochloric acid can be used to remove sulphide precipitation. Protein attachment can be removed by a mixture of 10% diluted hydrochloric acid and pepsin.

In order to ensure that the results of the electrode measurement can reflect the actual situation, the electrode chamber should have no air bubble or stagnant water that may cause measurement errors. Install the measuring electrode according to the following diagram:

Note:

1. The measuring electrode should be installed at a location in the pipeline where the flow rate

is stable and air bubbles will not gather easily.
2. The measuring electrode should go deep into the flowing water. The D.O signal is a kind of feeble potential signal. The cables for collecting D.O signals should be installed independently instead of being laid in the same protection tube with the power cable and the control cable, so as to prevent any possible disturbance.

Standard Atmospheric pressure: 1013.25 mbar Oxygen Solubility.

Temp. (℃)	Dissolved oxygen (mg/L)	Temp. (℃)	Dissolved oxygen (mg/L)	Temp. (℃)	Dissolved oxygen (mg/L)
0	14.604	20	9.089	40	6.399
1	14.220	21	8.909	41	6.326
2	13.801	22	8.738	42	6.232
3	13.441	23	8.565	43	6.131
4	13.076	24	8.407	44	6.057
5	12.756	25	8.254	45	5.969
6	12.439	26	8.113	46	5.879
7	12.113	27	7.956	47	5.787
8	11.831	28	7.826	48	5.703
9	11.559	29	7.681	49	5.642
10	11.288	30	7.564	50	5.550
11	11.036	31	7.432	51	5.446
12	10.764	32	7.303	52	5.385
13	10.537	33	7.173	53	5.311
14	10.305	34	7.060	54	5.237
15	10.064	35	6.943	55	5.151
16	9.858	36	6.835	56	5.080
17	9.637	37	6.719	57	5.003
18	9.465	38	6.596	58	4.902
19	9.273	39	6.524	59	4.829

VIII: Sct-International Warranty & Return Policies

This SCT-D.O Maxi Controller has been subject to thorough testing and quality control. In the unlikely event of any manufacturing faults occurring, our one year warranty (from the date of delivery) covers SCT-D.O Maxi Controller. This warranty becomes void in case of incorrect operation, use of non-appropriate spare parts or accessories and non-authorized modification of the SCT-D.O Maxi Controller. Should you have any questions about SCT-D.O Maxi Controller, or require service, please contact the ScichemTech-USA through E-mail: service@scichemtech.com or ScichemTech's local service Dealer in your Country. Please have the unit's serial number (located on the back panel of the instrument) available when making the complaint. Do not send the unit for service without getting the repair authorization number. Should the SCT-D.O Maxi Controller need service be sure to decontaminate it. The unit should be properly packed to avoid damage. Any damage resulting from improper packing shall be the responsibility of the user or the buyer.

Caution! SCT-D.O Maxi Controller Should Be Operated By The Technical Staff And Maintained By Professional Engineer.

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