ScichemTech-USA

SCT-108.005.07

SCT-ORP-MINI
ScichemTech ORP MINI Controller
User/Operational Manual


ScichemTech®
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HIGH LOW
SET
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SCT-ORP-MINI-V

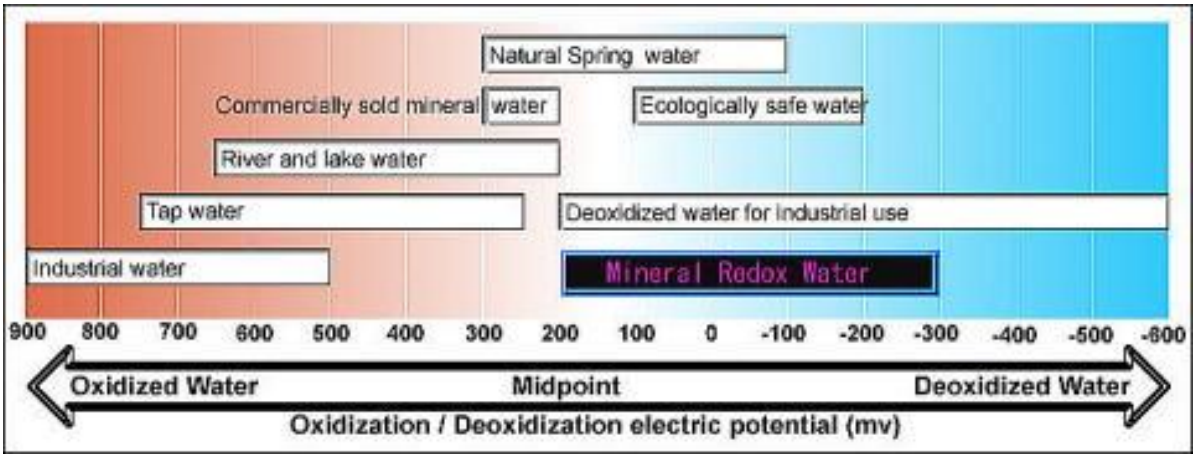
MANUAL INDEX PAGE

I. MODEL AND INSTRUMENT TYPE

Thank you for purchasing and selecting Our SCT- Product Number: SCT-108.005.07
Model: SCT-ORP-MINI – The online ORP Controller.
Once again we thank you for choosing our Model: SCT-ORP-MINI – The online ORP Controller for your ORP 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.

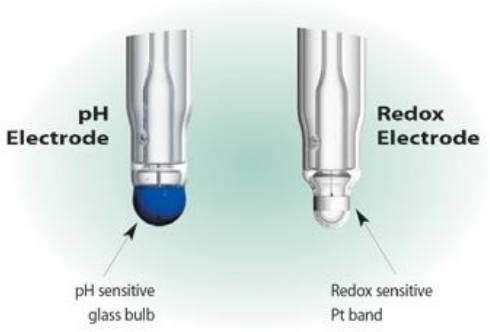
II: PRINCIPLE & OPERATIONS:

Oxidation-Reduction Potential (ORP) Reduction potential (also known as **redox potential**, **oxidation / reduction potential**, **ORP**, **pE**, **ε**, or E_h) is a measure of the tendency of a chemical species to acquire electrons and thereby be reduced. Reduction potential is measured in volts (V), or millivolts (mV). Each species has its own intrinsic reduction potential; the more positive the potential, the greater the species' affinity for electrons and tendency to be reduced. ORP is a common measurement for water quality.



Oxidation-reduction potential (ORP) measures the ability of a lake or river to cleanse itself or break down waste products, such as contaminants and dead plants and animals. When the ORP value is high, there is lots of oxygen present in the water. This means that bacteria that decompose dead tissue and contaminants can work more efficiently. In general, the higher the ORP value, the healthier the lake or river is. However, even in healthy lakes and rivers, there is less oxygen (and therefore lower ORP values) as you get closer to the bottom sediments (mud; see the picture below of a lake bottom). This is because there are many bacteria working hard in the sediments to decompose dead tissue, and they use up a lot of the available oxygen. In fact, oxygen disappears very quickly in the bottom mud (often within a centimeter or two) and ORP falls quickly. ORP is measured in addition to dissolved oxygen because ORP can provide scientists with additional information of the water quality and degree of pollution, if present. Also, there are other elements that can function like oxygen (in terms of chemistry) and contribute to increase in ORP.

ORP depends on the amount of dissolved oxygen that is in the water, as well as the amount of other elements that function similarly to oxygen. Though not technically correct, oxygen and other elements that contribute to high ORP effectively help ‘eat’ things that we don’t want in the water – such as contaminants and dead tissues. When ORP is low, dissolved oxygen is low, toxicity of certain metals and contaminants can increase, and there is lots of dead and decaying material in the water that cannot be cleared or decomposed. This is obviously not a healthy environment for fish or bugs. In healthy waters, ORP should read high between 300 and 500 millivolts. In the North, we might expect low ORP in waters that receive sewage inputs or industrial waste.



ORP is measured directly in the lake or river water that you are investigating using an ORP sensor. ORP is measured in millivolts (mV) and the more oxygen that is present in the water, the higher the ORP reading is. ORP can either be above zero or below zero

III: About the Product & Applications:

Our SCT- Product Number: ***108.005.07***

Model: ***SCT-MINI ORP Controller.***

Is a very reliable, accurate and consistent instrument you can always rely upon the Controller for all you Water PH control related applications within it's measuring range.

SALIENT FEATURES:

- SCT-ORP (Oxidation Reduction Potential) MINI 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 -ORP (Oxidation Reduction Potential) MINI CONTROLLERS are supplied with the suitable electrode with SCT standard 10 meters cable.(new series).
- SCT-ORP (Oxidation Reduction Potential) MINI CONTROLLERS are an industrial instrument used for online analysis and monitoring.
- SCT-ORP (Oxidation Reduction Potential) MINI CONTROLLERS are made in a attractive pleasant colour with a Large and Clear blue white LCD Display
- SCT-ORP (Oxidation Reduction Potential) MINI CONTROLLERS are Microprocessor based controllers, which gives stable and accurate readings.
- SCT-ORP (Oxidation Reduction Potential) MINI CONTROLLERS uses Low power consumption and produces less internal heat.
- SCT-ORP (Oxidation Reduction Potential) MINI CONTROLLERS has an isolated 4-20 mA current output.
- SCT-ORP (Oxidation Reduction Potential) MINI CONTROLLERS proved to work continuously in any harsh environmental conditions for the In line measurement and control of accurate ORP value and it give the the direct measurement and readings.

Applications of SCT-ORP MINI Controller.

SCT-MINI ORP Controllers are designed for the measurement and control of industrial on-line ORP, 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-108.005.07 can be used in many other fields & applications too.

III. TECHNICAL SPECIFICATIONS

Of Our SCT- Product Number: SCT-108.005.07

Model: SCT-ORP-MINI–The online ORP Controller

Measuring range:	-1000mV～+1000mV
Display method:	liquid-crystal display with 3½ bit LCD Segment code
Accuracy:	±2mV
Work pressure:	0～0.6MPa
Media temperature:	0～100℃
Output current:	isolation of 4～20mA active output
Control output:	High limit relay, low limit relay (normally open)
Contact capacity:	8A/240V AC (with resistance load)
Cable length:	10m in normal condition or ___m otherwise provided
Environment condition:	temperature: 0～50℃,humidity: ≤85%RH
Power supply:	AC 220V±10% 50Hz
Overall dimension:	83×53×93mm (height x width x depth)
Face opening:	74×43mm
Installation method:	panel-mounted

IV: UN-PACKING & PRE-INSTALLATION REQUIREMENTS:

Follow these steps after receiving the instrument:

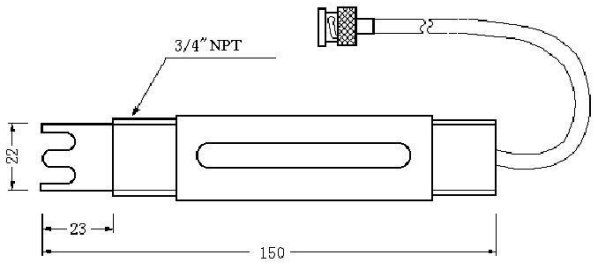
- Please check carefully the packaging box of the Controller before removing it in order to find out transportation damages.
- Should the packaging box be broken or have suffered any other damage, please contact the shipping agency before opening it.
- Once you have taken the instrument out of the box, 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.

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.

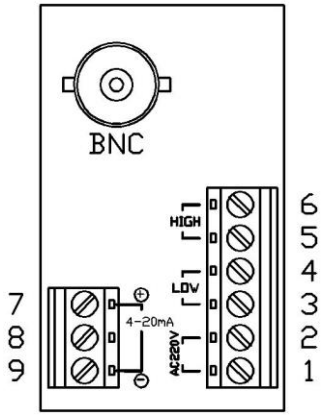
- **5.2. Electrode installation**
- ORP electrode loaded in to the flow cell is shown in Fig. Such as the use of sinking into the (insertion) type installation, an electrode without the flow measuring chamber, directly, respectively, ORP electrode is connected to the connecting rod (water) to prevent 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 minimum flow rate of 15cm^3/S.



The measuring electrode is a kind of compound electrode with plastic housing with 3/4" NPT pipe thread joint.

5.3. INSTALLATION OF THE ORP CONTROLLER

5.1 Back cover plate



The back cover plate

Description:

1. Alternating current 200V(L) 2. Alternating current 200V(N)
3. Normally open terminal of the low limit control relay
4. Normally open terminal of the low limit control relay
5. Normally open terminal of the high limit control relay
6. Normally open terminal of the high limit control relay
7. Positive output of 4-20 mA 9. negative output of 4-20 mA

5.4. CONTROLLER OPERATION

5.4.1 Keyboard

SET Selector key for the function menu

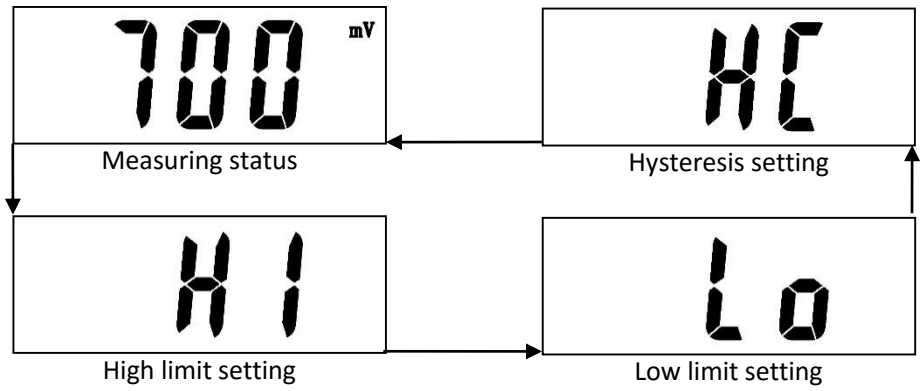
> Left arrow key

^ Multiply key

ENT Enter key

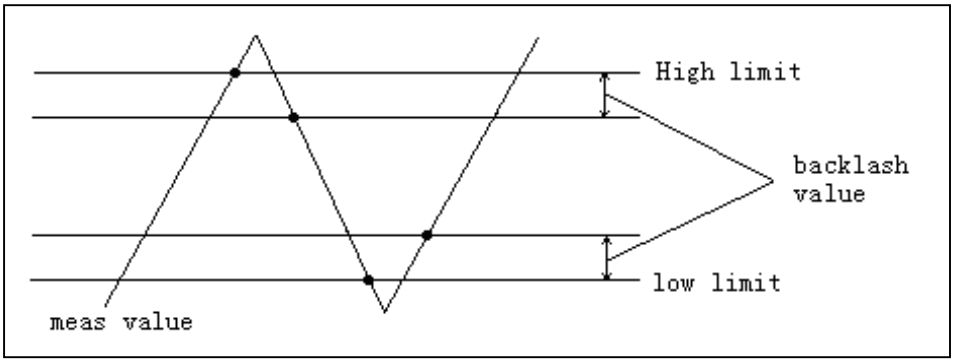
5.4.2 Instrument operation

5.4.2.1 OPR operation menu:



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

Note: 1. After the setting of an option, it is necessary to press the ENT 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

VII: PRECAUTIONS & MAINTANANCE:

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 sulORPide 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 ORP signal is a kind of feeble potential signal. The cables for collecting ORP 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.

7. ORP ELECTRODE / PROBE MAINTENANCE

A system's ORP electrodes require periodic maintenance to clean and calibrate them. The length of time between cleaning and calibration depends on process conditions and the user's accuracy and stability expectations. Overtime, electrical properties of the measuring and reference electrode change. Calibration in known-value ORP solutions called buffers will correct for some of these changes. Cleaning of the measuring sensor and reference junction will also help. However, just as batteries have a limited life, a ORP electrode's lifetime is also finite. Even in the "friendliest" environments, ORP electrodes have to be replaced eventually.

1. As the measuring electrode is a kind of precision component, do not get it out from the measuring chamber frequently unless under necessary conditions. Wash ORP electrode on a regular basis.
2. Only special-purpose cables can be used for the measurement and no other type of cable can be used for this purpose. Using unqualified cables for measuring purpose will result in large error.
3. If the measuring electrode is damaged or disabled, it is necessary to replace it with the same type of combined electrode. Then calibrate the newly replaced measuring electrode according to Chapter 5 of this instruction manual.
4. This instrument is an assembly of precision integrated circuit and electronic organs. Therefore, precautions should be taken to protect the instrument from any possible damage by humidity.

Optional Spares / Accessories can be ordered separately.

SCT-108.005.07A	ORP probe with 10 meter cable
SCT-108.002.DA	222MV ORP Standard Solution -250ML
SCT-108.002.CA	Electrode Storage solution – 500ml
SCT-108.005.07B	Mounting clamps

As a quality control procedure, before releasing the controller for sale. Our Quality control in the factory performed & assures the following conformity as per the standards.

CONFORMITY DECLARATION **Application of Council Directive** **Standards to Which Conformity is Declared:**	
Compliance Testing	• Vibration to EN 60945 - Section 8.7 • Dry Heat to EN 60945 – Section 8.2 • Damp Heat to Lloyds register Test Spec. No. 1 Section 14 • Low Temperature to EN 60945 – Section 8.4.2 • 22 Degree Tilt operation
Emissions & Immunity	Tested and passed: EN61326-1: 2006
Product Safety	Tested and passed: ETL (tested to ANSI/ UL61010-1-2004) Tested and passed ETL (tested to CAN/CSA C22.2 No.61010.1-2nd Edition, dated July 12, 2004)
I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive and Standard Dr.C.R.Nath, in the Capacity of : Managing Director of ScichemTech-USA 2nd Nov 2013	

VIII. SCT-INTERNATIONAL WARRANTY & RETURN POLICIES

This SCT-ORP-MINI 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-ORP-MINI This warranty becomes void in case of incorrect operation, use of non-appropriate spare parts or accessories and non-authorized modification of the SCT-ORP-MINI. The warranty for the probes are generally for 6 months,based on the customer's use. Should you have any questions about SCT-ORP-MINI 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-ORP-MINI 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-ORP-MINI SHOULD BE OPERATED BY THE TECHNICAL STAFF AND MAINTAINED BY PROFESSIONAL ENGINEER.

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