ScichemTech-USA

SCT-108.005.16,19 & 20

SCT-TDS/EC-MAXI HR
ScichemTech TDS Maxi Controller
User/Operational Manual


Conductivity/Resistivity
0.2 PPM
24.7 °C
ScichemTech®
ENTER

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I. MODEL AND INSTRUMENT TYPE

Thank you for purchasing and selecting Our SCT- Product Number: SCT-108.005.20
Model: SCT-TDS/EC-MAXI HR– The online TDS/EC Controller.
Once again we thank you for choosing our Model: SCT-TDS/EC-MAXI HR– The online TDS Controller for your TDS 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:

The term "total solids" refers to matter suspended or dissolved in water or wastewater, and is related to both specific conductance and turbidity. Total solids (also referred to as total residue) is the term used for material left in a container after evaporation and drying of a water sample. Total Solids includes both total suspended solids, the portion of total solids retained by a filter (usually with a pore size of 0.45 microcontrollers), and total dissolved solids, the portion that passes through a filter (American Public Health Association, 1998). Total Dissolved Solids (TDS) are solids in water that can pass through a filter. TDS is a measure of the amount of material dissolved in water. This material can include carbonate, bicarbonate, chloride, sulfate, phosphate, nitrate, calcium, magnesium, sodium, organic ions, and other ions. A certain level of these ions in water is necessary for aquatic life. Changes in TDS concentrations can be harmful because the density of the water determines the flow of water into and out of an organism's

cells . However, if TDS concentrations are too high or too low, the growth of many aquatic life can be limited, and death may occur.

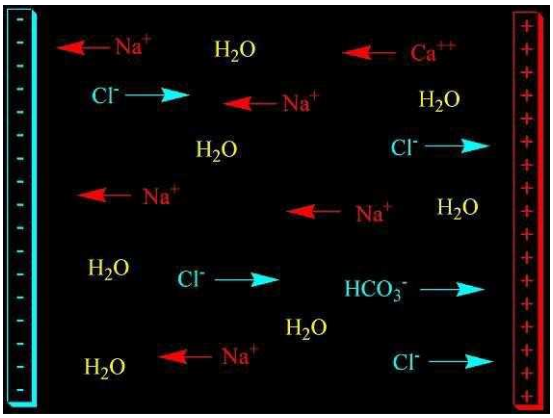


TDS is used to estimate the quality of drinking water, because it represents the amount of ions in the water. Water with high TDS often has a bad taste and/or high water hardness, and could result in a laxative effect.
Total dissolved solids are differentiated from total suspended solids (TSS), in that the latter cannot pass through a sieve of two microcontrollers and yet are indefinitely suspended in solution. The term "settleable solids" refers to material of any size that will not remain suspended or dissolved in a holding tank not subject to motion, and excludes both TDS and TSS Settleable solids may include larger particulate matter or insoluble molecules.

TDS controllers are, in reality, conductivity controllers. They work by applying a voltage between two or more electrodes. Positively charged ions (e.g., sodium, Na+; calcium, Ca++; magnesium, Mg++; hydrogen ion, H+; etc.) will move toward the negatively charged electrode, and negatively charged ions (e.g., chloride, Cl-; sulfate, SO4--; bicarbonate, HCO3-; etc.) will move toward the

IONIC PRINCIPLE

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Schematic diagram of a conductivity electrode, showing negatively-charged anions (blue) moving toward the positively charged electrode, positively-charged cations (red) moving toward the

Positively charged electrode in the above **Schematic diagram.** Because these ions are charged and moving, they constitute an electrical current. The controller then monitors how much current is passing between the electrodes as a gauge of how many ions are in solution. Since TDS controllers are often used to test water "purity," it is important to understand what they do not detect. As conductivity controllers in disguise, TDS controllers will only detect mobile charged ions. They will not detect any neutral (uncharged) compounds. Such compounds include sugar, alcohol, many organics (including many pesticides and their residues), and unionized forms of silica, ammonia, and carbon dioxide. These controllers also do not detect macroscopic particulates, as those are too large to move in the electric fields applied. So if you see "rusty" looking water from iron oxide particulates, that won't be measured. Neither will anything else that makes the water look cloudy. Bacteria and viruses also won't be detected.

Consequently, the term "total dissolved solids" is really quite a misnomer. "Total charged ions" is likely a much better term for what it measures.

III: About the Product & Applications:

Our SCT- Product Number: ***108.005.20***

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

Applications of SCT-TDS MAXI Controller.

SCT-MAXI TDS HR Controllers are designed for the measurement and control of industrial on-line TDS, 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-108.005.16 can be used in many other fields & applications too.

III. TECHNICAL SPECIFICATIONS

Of Our SCT- Product Number: SCT-108.005.20
Model: SCT-TDS/EC-MAXI HR– The online TDS Controller

The housing box for packing	(1) Protection grade: **IP65**, front **(2)** Material of the shell: **ABS** (3) Screen: synthetic polyester (4) Keys: **4** encapsulated silicone keys **(5)** Weight: about **225g**
Display:	■ LCD display with backlight, **LCD 2x16** bit ■ Contrast: defined by users, **5** levels ■ Refresh rate: **3s**
Electrical performance	■ Power: **18-36V DC**
Input range of the sensor	■ Conductivity: **0-350,000uS** ■ TDS: **0-175,000 ppm** ■ Resistivity: **0-18.25MΩ** ■ Temperature: **PT1000, -25-125**℃

Current Output Signal	**-4-20mA**, isolated, transportable Maximum impedance of the loop: **600Ω MAX@24V** -Refresh rate: **3S** -Accuracy: **±0.03mA@25℃, 24V**
Control output signals	■ Operating mode: **Hi/Lo/off** (normally open contact) ■ Capacity of the relay contact: **2A/250V AC** (resistive load); **2A/28V DC** (resistive load)
Pulse Output Signal	■ Output signal of the open collector, optical isolation ■ The maximum pull-down current is **50mA** and the maximum pull-up voltage is **30VDC.** ■ Pulse modes (maximum pulse rate: **400p/m**) 485 communication output signal
Overall dimension**:**	96x96x46mm (H×W×D)
Environmental conditions	Working temperature: **-10~70**℃ Storage temperature: **-15~80**℃ Relative humidity: **0~95%**, no dew point
Insulation grade:	**II**

IV: UN-PACKING & PRE-INSTALLATION REQUIREMENTS:

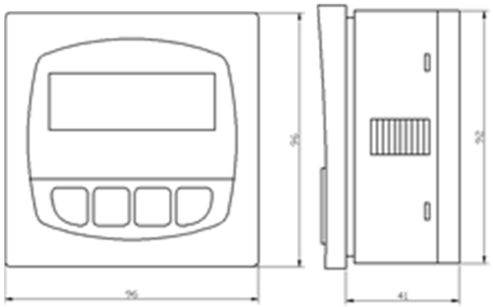
Follow these steps after receiving the instrument:

- 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.

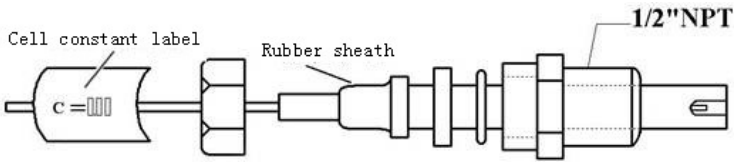
- The meter should be installed in a clean, dry, well ventilated, vibration-free location around should be no corrosive gases.

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.



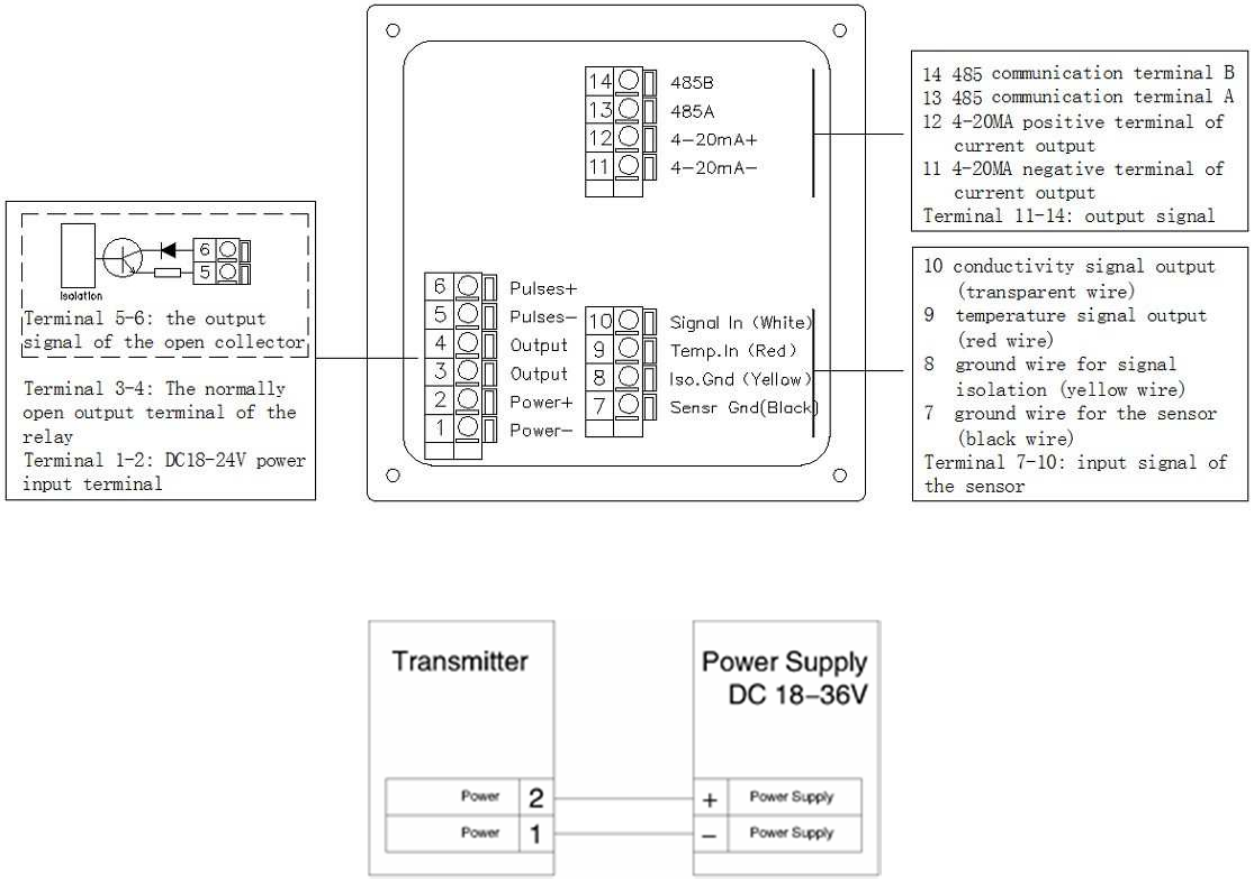
- **5.2. Electrode installation**
- TDS electrode loaded in to the flow cell is shown in Fig. Such as the use of sinking into the (insertion) type installation, an electrode without the flow measuring chamber, directly, respectively, TDS electrode is connected to the connecting rod (water) to prevent 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 TDS / EC CONTROLLER

5.1 Back cover plate



The back cover plate

5.4. CONTROLLER OPERATION

Wiring instructions:

- The cables for the sensor and the AC cables cannot be laid in the same cable conduit as electronic noise can disturb the signals of the sensor.
- To lay the cables in the grounded metallic cable conduit is conductive to prevent electronic noise and mechanical damage.
- Seal the entrances of the cables in order to protect the cables from being damaged by humidity.
- Insert one conductor into each terminal socket. If two conductors need to be inserted in the same terminal socket, it is necessary to connect the two conductors and the terminal outside the terminal socket.

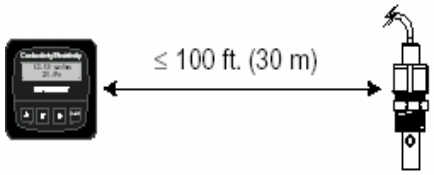
Choose the sensor with a proper measuring range according to the maximum and minimum values in the process flow

0.01-0.05 cell：0~18MΩ； 0.01-0.05 cell sensor is applicable for all kinds of resistivity test.

0.1 cell：1~3,500uS/1,750ppm

1.0 cell：10~35,000uS/17,500ppm

10.0 cell：100~350,000uS/175,000ppm



The VIEW Menu



- During normal operation, the instrument displays VIEW menu.
- When using CALIBRATE menu or OPTIONS menu, if no key is pressed for over ten minutes, the instrument will automatically return to VIEW menu.
- Press the Up and Down arrow keys to have different contents displayed. The display options are continuous and can be repeatedly displayed.
- Changing the display options will not interrupt the normal operation of the system.
- No password is needed to change the display options.

Output settings cannot be edited in the VIEW menu.

Displayed content	Description
100.0uS/cm +25.0 ℃	Display the conductivity and temperature values input by the sensor. This is a permanent display format.

The following items are displayed temporarily and the system will return to the permanent display items 10 minutes later.

Loop Output 12.00 mA	Display a current output value of 4-20mA.

VI. CALIBRATION OF THE TDS CONTROLLER

Calibration is to ensure accurate measurements from your TDS Controller .The controller will need to be calibrated both before its first use and on an ongoing basis. This is usually done by dipping the probe into a buffer solution of a known TDS and following the calibration steps based on our specific TDS Controller.

One-point calibration should be adopted. During the calibration process the controller will be

calibrated to the known buffer.
Before calibration, prepare the buffer solution with tds values of 1382 ppm respectively according to the requirements. Before calibration, the electrode should be dipped into clean water or the test solution for 5 minutes.

The calibration method is as follows: (under the measuring status)

Step 1: -keep pressing the ENTER key:
-Keep pressing the ENTER key for 2 seconds, and the system will enter into CALIBRATE menu.
-Keep pressing the ENTER key for 5 seconds, and the system will enter into OPTIONS menu.
Step 2: -Press the Up-Up-Up-Down arrow keys according to the sequence of the password.



-After the password is typed in, the first item of the selected menu option will be displayed.
Step 3: -Drag the menu by pressing the Up or Down key.
-Press the Up or Down arrow key to exit the menu and return to measurement status.
Step 4: -Choose the menu option to be edited by pressing the Right arrow key.
-The first bit of the displayed content starts to flicker.
Step 5: -Press the Up or Down arrow key to edit at the flicker bit.
-Press the Right arrow key to move the flicker bit forward.
-Press the Up or Down arrow key to return to the previous menu.
Step 6: -Press the ENTER key to save the new settings and then return to Step 3.

Displayed content (the content are the factory settings)	Description
Cell: Custom 1.0000 >	For a sensor, it is necessary to check the quality certificate or the labels attached to the sensor; Type in the correct cell constant.
Cond Units: uS >	Choose correct units for the measured values: uS, mS, ppm, kΩ, MΩ.
Set: Temperature >	Adjust the measured temperature values of the system according to the accurate external reference values.
Set: Conductivity >	For a sensor, completion of this single-point wet calibration will lead to the most accurate measurement result. **When all the input values are "zero", the "TEMP" value and the "COND" value will be restored to factory settings.**
Loop Source: Cond >	Choose the source signal that is corresponding to the current output signal: conductivity value and temperature value.
Loop Range: uS	Set the minimum and the maximum physical values (4mA and 20mA

0.0000→100.000 >	respectively) that are corresponding to the current output signal. When changing the unit of the conductivity, it is necessary to make sure that settings in this item are modified accordingly.
Output Source: Cond >	Choose the source signal that is corresponding to the relay output signal: conductivity value or temperature value.
Output Mode: Off >	Choose either a “High” or “Low” working model for the relay. If the above “High” and “Low” functions are not needed, the working model can be turned to “Off”.
Output Setpnt: 10.0000 uS >	Under “Low” or "High” model, if the process variable reaches the set value, the output signal of the relay will be excited. When changing the unit for the conductivity value, it is necessary to make sure that settings in this item are modified accordingly.
Output Hys: 0.5000 uS >	When the measured value reaches the set value ± the return difference value, the output signal of the relay will be reset. Choosing“+” or “-” depends on whether the relay is under “High” or "Low” working models. (See page 3 for more details.)
Pules Source: Cond >	Choose the source signal that is corresponding to the proportional pulse output signal: conductivity value or temperature value.
Pules Range: uS 0.0000→100.000 >	Under the “Pulse” working model, it is necessary to set the starting point, end point and the maximum pulse rate that are corresponding to the pulse signals. When the unit of the conductivity value is changed, it is necessary to make sure that settings in this item are modified accordingly.
Output PlsRate: 120 Pulses/Min >	Under the “Pulse” working model, it is necessary to set the maximum pulse rate of the proportional pulse signal. EC8850 can accept the values within the range of 0~400.
RS485 Source: Cond >	Choose the source signal that is corresponding to the RS485 communication output signals: conductivity value or temperature value.
RS485 Baud Rate: 4800 >	Choose RS485 communication baud rate: 1200, 2400, or 4800.

The OPTIONS Menu:

Displayed content (the content are the factory settings)	Description
Contrast: 3 >	Adjust the display contrast of the LCD in order to get the best visual effects. Level 1 is the relatively lower contrast while Level 5 is the relatively higher contrast. In relatively hot environment, it is better to choose the relatively lower contrast level.

Cond Decimal: * * * *. * >	Set the optimal output resolution according to the specific application. The display value will be displayed automatically according to the above setting. The resolution should be *****; ****.*; ***.**; **.*** or *.****.
Temperature Comp %: 2.00 >	Each 1°Cof temperature change will lead to conductivity change. The percentage of the conductivity change should be within the range of 0.00~10.00%.
PPM Factor: 2.00 >	If the unit of the measured values is PPM, it is necessary to set the proportion between the total amount of dissolved solid and "uS". (See page 7 for more details.) TDS parameters can only adopt PPM as the unit.
Comeback Factory Set: >	⚠ Use this function with caution. If you choose "yes", the instrument will resume its initial data, so that you need to re-calibrate the instrument. Therefore, we do not recommend the users to use this function.
Averaging: Off >	"OFF" is most responsive to the changes of the process variables. If there are frequent or large fluctuations, you may choose the deferred response time of 3s, 6s, 9s,…, 30s. The longest deferred response time is 30s.

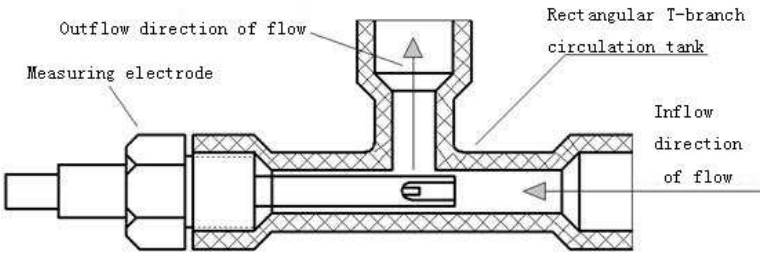
VII: PRECAUTIONS & MAINTANANCE:

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.
2) The electrode should be cleaned on a regular basis.

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 sulTDSide 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 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 tds signal is a kind of feeble potential signal. The cables for collecting tds 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. TDS ELECTRODE / PROBE MAINTENANCE

A system's TDS 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 TDS 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 TDS electrode's lifetime is also finite. Even in the "friendliest" environments, TDS 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 TDS 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.

Displayed content	The possible causes	The recommended solutions
Value must be less than 3	PPM Coefficient must be within the range of 0.00~3.00.	Set a PPM coefficient below 3.
Value must be 400 or less	The pulse rate should not exceed 400.	Set a pulse rate below 400.
Too much Error CHECK SENSOR	■ The sensor is damaged or dirty. ■ Wiring error. ■ The temperature elements are damaged.	■ Clean or replace the damaged sensor. ■ Check whether wiring is correct. ■ Replace the sensor.

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

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