



USER MANUAL

TDS / CONDUCTIVITY METER

TDS 101

1. Introduction

SANSEL TDS 101 Model TDS / Conductivity Meter that offer High Accuracy, Wide Range of TDS / Conductivity & Temperature Measurement in a Single Unit. User Friendly features Such as Simultaneous Temperature display, Auto Ranging, Adjustable TDS factor, Temperature Co - efficient, and Automatic / Manual Temperature Compensation makes TDS and Conductivity Measurements as Quick and Easy.

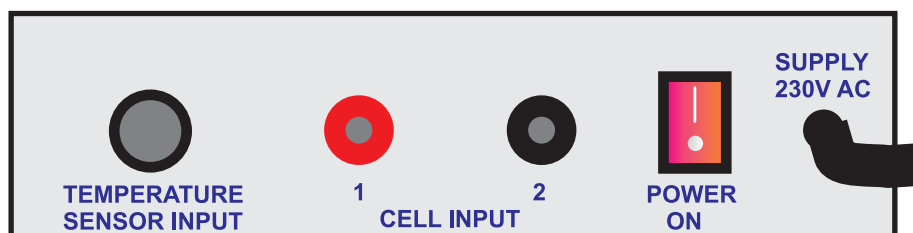
These Technologically Advanced Meter build with Easy 4 Point Calibration Steps and Adjustable Cell Constant.

2. Specification

Model	TDS 101	
Measuring Parameter	TDS / Conductivity (User Selectable) & Temp. (° C)	
Range (Auto Ranging)	00.00 - 19.99 ppm 20.0 - 199.9 ppm 200 - 1999 ppm 2.00 - 99.99 ppt 100.0 - 199.9 ppt	00.00 - 19.99 µS 20.0 - 199.9 µS 200 - 1999 µS 2.00 - 99.99 mS 100.0 - 199.9 mS
Resolution (minimum)	0.01 ppm to 0.01 ppt / 0.01 µS to 0.01 mS (Auto) & 0.1 ° C	
Temp. Compensation	Manual / Automatic (0 - 150°C)	
Cell Constant	0.1 / 1.0 (Selectable)	
TDS Conversion Factor	0.4 to 1.5 (Adjustable)	
Temperature Co - efficient	0 to 15 % (Adjustable)	
Accuracy @ 25 ° C	± 1% of FS for TDS & Cond. / ± 0.5 ° Cfor Temp.	
Display	16 Character x 2 Line LCD Display	
Calibration	4 Point (manual user Adjustable) / Error Adj. for Temp.	
Operating Environment	0 - 50°C / 5 to 95 % RH Non Condensing	
Power Supply	230V AC / 50Hz	
Dimension	185 (W) x 185 (D) x 80 (H) mm	
Standard Accessories	Operation manual, Conductivity Cell (electrode), stand set, electrode clip	
Weight	1.7 Kg (Approx.)	

Note: Due to continuous product improvements, Published specifications may change with out notice

3. Terminal Arrangement



4. Configuration Setup

4.1. Display Parameter Mode

4.1.1 : Press  CONF key continuously for 5 sec, till the display shows



4.1.2 : To select “ TDS ” or “ COND ”press  UP or  DOWN key , then Save by  ENT Key. Then Display Shows

4.2. Temperature Compensation Mode



MTC - Manual Temperature Compensation
ATC - Automatic Temperature Compensation

4.2.1 : To select “ ATC ” or “ MTC ” press  UP or  DOWN key, then Save by  ENT Key. Then Display Shows

4.3. Cell Constant Setup (0.1 , 1.0)



NOTE : BEFORE CHANGING THE CELL CONSTANT VALUE, CHANGE THE CONDUCTIVITY CELL (ELECTRODE) TO THE REQUIRED CELL CONSTANT

4.3.1 : To Change the Cell Constant , Press  UP or  DOWN keys to Select any One (0.100 or 1.000).

4.3.2 : Then Save by  ENT key and Return back to Read Mode.



NOTE : AFTER CHANGING THE CELL CONSTANT VALUE, TO INITIALIZE DISPLAY ZERO SWITCH OFF THE INSTRUMENT, SWITCH ON BY PRESSING  CAL KEY. NOW THE INSTRUMENT AUTOMATICALLY ADJUST TO ZERO.

4.3.3. The optimum conductivity ranges for cells of 2 different constants

Cell Constant	Optimum Ranges
0.100	0.50 µS to 100.0 µS
1.000	1.00 µS to 200.0 mS

5. Temperature Compensation

5.1. Manual Temperature Compensation (0 - 150.0 °C)

NOTE : If Temperature Compensation is MTC display Shows



5.1.1 : To Modify the MTC, Press ▲ TEMP key Continuously for 5 sec till the Display Shows



5.1.2 : Press ▲ UP and ▼ DOWN keys to select the Desire Value (Roll over the Blinking Digit between 0 - 9) and Press ► MODE Key to Next Digit Selection and Repeat the Above for all the four Digit and Select the Desire Value and Save by ■ ENT Key.

5.2. Automatic Temperature Compensation (0 - 150.0 °C)

Note : 1. Connect External Temperature Sensor Before Select this Mode.
2. Dip Temperature Sensor Parallel with Electrode on Test Liquid.

5.2.1 : If Temperature Compensation mode is ATC , then the display shows test Liquid Temperature as



5.3. Temperature Co Efficient (Manual) 0 - 15.00 %

NOTE : Before Calibration, Set the Desire Temperature Co efficient Alpha (α) Value .

5.3.1 : To View and Modify the Temperature Co efficient Alpha (α) Value, Switch OFF the Instrument and Power ON by Pressing ▼ CONF key, the display shows



5.3.2 : Press ▲ UP or ▼ DOWN key to select the Desire Value (Roll over the Blinking Digit between 0 - 9) and Press ► MODE Key to Next Digit Selection and Repeat the Above for all the Four Digit and Select the Desire Value and Save by ■ ENT Key. Then the Display Automatically Return back to Read Mode.

6. TDS Factor (Manual) (0.4 to 1.5)

6.1: Factor - the conductivity to ppm TDS conversion factor. Multiply conductivity by this factor to get ppm TDS for the type of TDS reading needed.

6.2 : 442 - a formulation that most closely represents the conductivity to ppm relationship, on average, for naturally occurring fresh water.

Factor = Actual TDS / Actual Conductivity @ 25 °C.

6.3 : To Change the TDS Factor Switch OFF the Instrument and Power ON by Pressing ► MODE Key the Display Shows



6.4 : Press ▲ UP and ▼ DOWN keys to select the Desire Value (Roll over the Blinking Digit between 0 - 9) and Press ► MODE Key to Next Digit Selection and Repeat the Above for all the four Digit and Select the Desire Value and Save by ■ ENT Key. Then Display Return Back to Read Mode.

7. TDS & Conductivity Measurement

7.1 : Rinse the Conductivity Cell (Electrode) with Distilled Water.

7.2 : Immerse the Electrode into the Test Sample Solution.

7.3 : For ATC, Dip the Temperature Sensor also into the Sample Solution.

7.4 : For MTC, Measure the Solution Temperature Manually Using the Thermometer and Set the Temperature as MTC.

7.5 : Then Set the Desire TDS Factor (Refer. 6)

7.6 : Wait for Stabilization of Reading and Note Down the Actual TDS or Conductivity Value of the Sample Solution.

NOTE :

1. In TDS, 1 ppt = 1000 ppm, Similarly in Conductivity, 1 mS = 1000 μ S
2. To View TDS Value in Conductivity Mode (or) Conductivity Value in TDS Mode, Just Press ► MODE Key the Display Indicates the TDS (or) Conductivity Value for that Solution. After few sec return back to READ MODE.

Various Commercial Standards with its TDS Factor

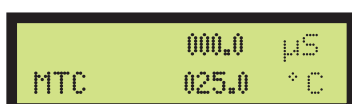
Conductivity (μ S/cm) @ 25 °C	TDS ppm Kcl		TDS ppm NaCl		TDS ppm 442	
	Actual	Factor	Actual	Factor	Actual	Factor
23	11.6	0.5043	10.7	0.4652	14.74	0.6408
84	40.38	0.5048	38.04	0.4755	50.50	0.6563
447	225.6	0.5047	215.5	0.4822	300.0	0.6712
1413	744.7	0.5270	702.1	0.4969	1000	0.7078
1500	757.1	0.5047	737.1	0.4914	1050	0.7000
2070	1045	0.5048	1041	0.5028	1500	0.7246
2764	1382	0.5000	1414.8	0.5118	2062.7	0.7462
8974	5101	0.5685	4487	0.5000	7608	0.8478
12,880	7447	0.5782	7230	0.5613	11,367	0.8825
15,000	8759	0.5839	8532	0.5688	13,455	0.8970
80,000	52,168	0.6521	48,384	0.6048	79,688	0.9961

6. Conductivity Calibration @ 25 °C (Manual)

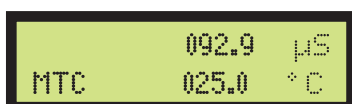
NOTE :

1. Before Conductivity Calibration Ensure the “Parameter ” was selected as “COND”.
2. During Calibration Ensure that the ATC or MTC Value at 25 °C
3. For Best results, calibrate with certified accurate conductivity calibration standards.

1 : Connect the Conductivity Cell (Electrode) on Specified Terminal given on Rear side of Instrument. Then Switch ON the Instrument, the Display Shows like



2. Rinse the Conductivity Cell (Electrode) with Distilled Water. Immerse the Electrode into the Standard Solution, the Display Shows like



3. Wait for Stabilize, then Press  CAL Key for 5 Sec the Display Shows like



4 : The Primary display will Show the Un-calibrated Value.

5 : Press  UP or  DOWN key to manually adjust the Un-calibrated Value (Roll over the Blinking Digit between 0 - 9) and Press  MODE Key to Next Digit Selection and Repeat the Above for all the four Digit and Set the Desire Standard Solution Value to be Calibrate.

6 : Then Press  CAL key to Confirm the Calibration value, then the Display shows



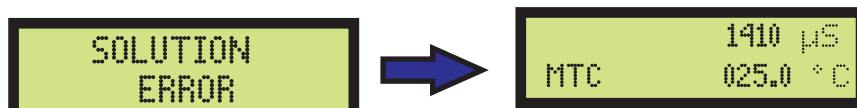
for Few Sec and Automatically Return to Read Mode

7 : Rinse the Conductivity Cell (Electrode) with Distilled Water. Immerse the Electrode into the Next Standard.

8 : Repeat Steps 3 to 7 with Additional Standard Solutions if Desired.

NOTE :

1. AT CALIBRATION MODE, THE SOLUTION IS MORE DEVIATION FROM THE STANDARD VALUE, THE DISPLAY SHOWS “ SOLUTION ERROR ” INDICATION FOR FEW SEC AND AUTOMATICALLY RETURN TO READ MODE.



7. TDS Calibration @ 25 °C (Manual)

NOTE :

1. Before TDS Calibration Ensure the “Parameter ” was selected as “TDS”.
2. During Calibration Ensure that the ATC or MTC Value at 25 °C
3. For Best results, calibrate with certified accurate TDS calibration standards.

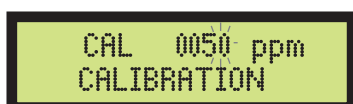
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2. Rinse the Conductivity Cell (Electrode) with Distilled Water. Immerse the Electrode into Standard Solution, the Display Shows like



3. Wait for Stabilize, then Press  CAL Key for 5 Sec the Display Shows like



4 : The Primary display will Show the Un-calibrated Value.

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6 : Then Press  CAL key to Confirm the Calibration value, then the Display shows



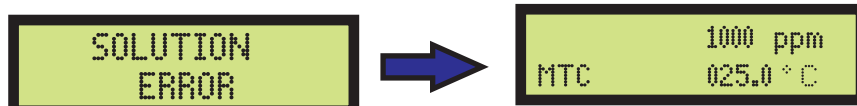
for Few Sec and Automatically Return to Read Mode

7 : Rinse the Conductivity Cell (Electrode) with Distilled Water. Immerse the Electrode into the Next Standard.

8 : Repeat Steps 3 to 7 with Additional Standard Solutions if Desired.

NOTE :

1. AT CALIBRATION MODE, THE SOLUTION IS MORE DEVIATION FROM THE STANDARD VALUE, THE DISPLAY SHOWS “ERROR SOLUTION ” INDICATION FOR FEW SEC AND AUTOMATICALLY RETURN TO READ MODE.



8. Temperature Error Adjustment (Offset) for ATC

The Factory temperature calibration should last for the life of the original sensor since it does n't normally drift Temperature calibration is always recommended upon sensor replacement. It may also be desirable to adjust the temperature to match a certified accurate thermometer or another Instrument. To perform temperature Error Adjustment

1 : Place the Reference Thermometer and TDS 101 Temperature Sensor into the sample solution. Allow enough time for both to stabilize.

2 : Note down the Difference between them, for adjustment.

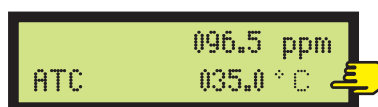
3 : Switch OFF the TDS 101 and ON by Pressing ▲ TEMP Key, the display shows



Default Value was "50.0"

4 : If the Error Value Difference is +5.0 °C, Increase the Default Value "50.0" to "55.0" or If the Error Value Difference is - 5.0 °C, Decrease the Default Value "50.0" to "45.0".

5 : To Adjust the Error value, Press ▲ UP or ▼ DOWN keys (Roll over the Blinking Digit between 0 - 9) and Press ► Mode Key to Next Digit Selection and Repeat the Above for all the Three Digit . Then Save ■ ENT Key and return Back to Read Mode as



ATC Temperature Reading
After Error Adjustment

9. Instructions for Conductivity Cell (Electrode)

Cleaning the Electrode

1. Thoroughly clean it with a nylon-bristle brush or Tissue Paper and a warm detergent solution.
2. Clean the central electrode in a similar manner, taking care not to damage it.
3. For more tenacious deposits a 2% hydrochloric acid solution may be used.
4. Rinse thoroughly with distilled water after cleaning.
5. The electrodes should have a dull, frosted appearance which must not be removed by polishing or abrasive cleaning.

Precaution

Don't use Electrode beyond the TDS / Conductivity and Temperature Range, permanent damage may occur if used beyond the range.

⚠ Caution : Electrode will get permanently damaged if wrong solution is used.

For further clarification kindly contact us.



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