AQUASOL DIGITAL

Bench Top pH, DO, TDS, Conductivity Meter

ABM405

Product Manual / Warranty Card

Introduction

We thank you for having purchased bench top multi- parameters meter. Before using the instrument, please note that the operation instructions should be read carefully, which will help you to operate and maintain the instrument.

Specification:

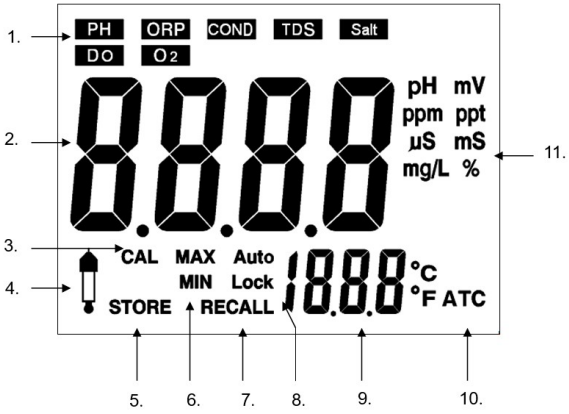
Model	**ABM405 – Bench Top pH, DO, TDS, Cond. Meter**		
pH/ORP			
Parameter	**pH**	**ORP***	**Temp**
Range	(-)2.00 to 16.00	± 1999 mV	0 to 110 Deg C
Accuracy	1%	2%	±0.2
Resolution	0.01 pH	1 mV	0.1 Deg C
Calibration	pH - 5 Point Calibration (USA/NIST)		
TDS / Conductivity			
Parameter	**Conductivity**	**TDS**	**Salt**
Range	0 to 100 mS/cm	0 to 66.0 ppt	0 to 50 ppt
Accuracy	1%	1%	1%
Resolution	1µS	1 PPM	1 PPM
Calibration	Conductivity - 5 - Multi Point Calibration		

Model	ABM405 – Bench Top pH, DO, TDS, Cond. Meter		
DO / O_2			
Parameter	**DO**	**O_2**	
Range	0 to 20.00 mg/L	0 to 200.0 %	
Accuracy	2%	2%	
Resolution	0.01 mg/L	0.01	
Calibration	DO - Air Calibration / Zero Calibration		
Meter			
ATC	Yes		
Output	USB Connectivity with Computer		
Stirrer	Magnetic Stirrer Provided		
Sensor*	pH, DO, Conductivity & Temp. sensors included. To measure ORP, order AMEORLG separately.		

Accessories:

pH Sensor, Conductivity Sensor, DO Sensor, Temp. Sensor, Standard Solution, Power Adapter, Electrode Holder with Magnetic Stirrer, USB Software.

Display Details



1. Function Mode
2. Measuring Value
3. Calibration Mode
4. Calibration error indicator
5. Reading stored indicator
6. MAX & MIN Value
7. Recall Mode
8. Auto lock or manually lock current reading
9. Temperature Indicator
10. Auto Temperature Compensation
11. Unit

Keyboard Details

	Single Press Lock the current reading, Press for 3 sec. to enter or exit MAX/MIN mode.
	Single Press to Store the current reading. Press 3 sec. to enter Recall mode.
	In Recall mode, browse records. Press both together 3 sec. to enter Advance Setting
	Single Press to Choose different Function mode. Press 3 sec. to switch ℃/℉, or switch pH-mV or ORP-mV or switch mg/L or ppm
	Turn on or off power. Press 3 sec. to enter calibration mode

Magnetic Stirrer Operation

1) Connect AC adaptor with power source and Stirrer

2) Assemble the Electrode Holder and Stand with the Stirrer Base.

3) Place the Sample container with stirrer bar in center of stirrer.

4) Power On the Stirrer and Adjust Speed with Regulator

Meter Preparation

1) Connect AC adaptor with power source.
2) Connect the DO, pH/ORP , Conductivity and Temperature Electrode
3) Clean the Electrodes with DM Water and Power On the Meter

DO Electrode Preparation

1. Take DO Electrode and remove the protection cap from the probe.
2. Now remove the membrane cap carefully without damaging the film.
3. Fill the membrane cap with the electrolyte solution up to the bottom of the threads on the inside of the cap. Tap the Cap to remove any air bubbles.
4. Now Fix the membrane cap back in such a way that no air bubble is present in the cap.
5. Press Power button to turn the meter power on.

Meter Calibration

pH Calibration:

When doing a calibration, calibrate with buffer pH 7 first, and then follow with other buffers.

pH 7.00 - Rinse the electrode with clean water and wipe it dry. Take a standard solution e.g. pH 7.00 in a clean beaker. Place cleaned pH and Temp sensor in this solution and stir gently until the reading is stable. Press and hold CAL for 3

seconds & the display will appear CAL and flashing 7.00. Then the display indicates “SA", then "End” i.e. calibration is done.

pH Other - To calibrate in any other pH Standard solution, Rinse the electrode with clean water and wipe it dry. Dip the electrode into the buffer solution as previous steps and calibrate.

Calibration can be performed for following standard solutions.

Note - Once 3 point or 5 point Calibration is done, the display will indicate the percentage of slope (PTS) to show the status of the electrode. If the PTS is below 70% or above 130%, the electrode must be replaced. Calibration error indicator icon will appear, and “Err” instead of “SA”, if calibration fails.

ORP Calibration

Calibration is not necessary for ORP. However, it could be tested with specific ORP standard solution to check whether the electrode is good.

Conductivity Calibration:

Switch the Meter to Conductivity Mode. Now Dip the Conductivity electrode and the temperature probe into the 1413 µS/cm buffer solution and Stir gently until the reading is stable. Press and hold CAL for 3 seconds & the display will appear CAL and flashing 1413. Then the display indicates “SA", then "End” i.e. calibration is done. Meter will return to Measurement Mode.

Note:

1. Calibrate by 12.88 mS/cm standard solution is recommended for measuring high conductivity solution.
2. Calibration error indicator icon will appear, and “Err” instead of “SA”, if calibration fails.
3. If the reading is not 0 µS/cm while the cell is in the air and not dipped into any solution, calibrate it in the air to make reading becomes 0 µS/cm.
4. The other calibration points are 0, 84 µS/cm, 1413 µS/cm, 12.88 mS/cm and 80.0 mS/cm.

DO Calibration:

Air Calibration

1. Power on the meter and remove the protection cap from the probe.
2. Keep the Electrode exposed to Air for some time.
3. Press **MODE** to choose **O2** mode and wait 25 minutes to 30 minutes for the probe to polarize. The reading should be approx. 101.7% (saturation) after the probe has completely polarized.
4. Once the reading is 101.7%, Press and hold **CAL** for 3 sec. to enter calibration mode. The display will appear **CAL** and flashing 101.7%. When the display stops flashing and indicates “**SA**", then "**End**” while calibration ends, and will return to measurement mode.

Zero Calibration

To improve measurement accuracy for very low or very high DO readings. Place the probe into a Zero Oxygen calibration solution (AMEB1DEO) and wait for stabile 0% Reading. Stability in a zero solution may take many minutes, depending on probe. Once 0% is press and hold **CAL** to enter calibration.

Note:

1. Calibration error indicator icon will appear, and "**Err**" instead of "**SA**", if calibration fails.
2. If the reading is not 0% while the probe is not connected, calibrate it in the air without probe to make reading becomes 0%.

Meter Measurements

pH / ORP Measurement:

Press **MODE** to choose pH / ORP mode. After calibration, rinse the pH / ORP electrode with clean water and wipe it dry. Dip the electrode and the temperature probe into the sample solution which is going to be measured. Stir gently and wait until a stable reading can be obtained.

Conductivity / TDS / Salt Measurement:

Press **MODE** to choose respective modes. After calibration, rinse the Conductivity electrode with clean water and wipe it dry. Dip the electrode and

the temperature probe into the sample solution which is going to be measured. Stir gently and wait until a stable reading can be obtained.

Note:

1.The display will appear "----" when it is over measuring range.

2.The unit will auto-range to µS/cm or mS/cm, or ppm or ppt.

3.Don't touch or wipe the surface of the inner black plate of the Sensor

4.After measurement, rinse the electrode with clean water. Replace the soaking bottle. The soaking bottle should be always filled with soaking solution

DO Measurement:

1.Confirm Calibration is Done.

2.Now select DO or O2 by pressing **MODE** on the meter.

3.Remove the protection cap & place the probe in the sample.

4.Stir the probe in the sample to remove any trapped air bubbles from the membrane surface.

5.Allow the meter time to settle and read the results.

Note:

1.The larger the difference in temperature between the probe and the solution the longer it will take for the reading to stabilize.

2.Cover the probe with the probe cap. The sponge contained in the cap should

be moistened (not soaked) with DI (distilled water) or clean tap water.

MAX/MIN mode:

Press and hold **MAX/MIN** button until the display appears flashing MAX and MIN icons to enter MAX/MIN. Press **MAX/MIN** lightly to browse MAX and MIN value during this mode. To exit this mode, press and hold **MAX/MIN** button again until the flashing MAX and MIN icons disappear and return to measuring mode.

Store and Recall mode:

In measuring mode, press **STO** to store the current reading. The Store icon and the ordinal of this record will appear on the display.

Press and hold **RCL** for 3 sec. to enter Recall mode. In this mode, use ▲ or ▼ to browse records. Press and hold **STO** to exit this mode and return to measuring mode.

In Recall mode, press ▲▼ together for 3 sec. to clean all the records in the memory.

Advanced Setting:

In pH /TDS /DO measuring mode, press ▲▼ together for 3 sec. will enter advanced setting.

pH Mode

Press **STO** to set pH calibration type and use ▲▼ to choose “USA” or “NIST”.

Then press **MODE** to confirm and return to measuring mode.

Conductivity Mode

Press **STO** to the ratio between Conductivity and TDS.

Use ▲▼ to adjust ratio (Range 0.5 to 1.0)

Then press **MODE** to confirm and return to measuring mode.

DO Mode

Press ▲▼ together for 3 sec. will enter advanced setting.

Press **STO** to set Salt Compensation and use ▲▼ to set from 0 to 50 ppt.

Then press **MODE** to confirm and return to measuring mode.

Press **LOCK** to set Altitude Compensation and use ▲▼ to set from 0 to 20K ft.

Then press **MODE** to confirm and return to measuring mode.

Note:

Press **LOCK** to turn on or off “Auto Lock” function. Use ▲▼ to choose.

Then press **MODE** to confirm and return to measuring mode.

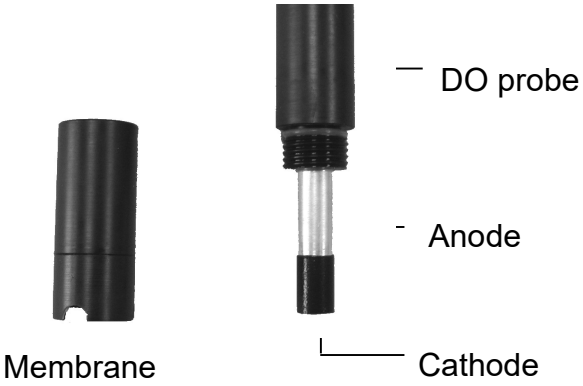
In advanced settings, press **CAL** to reset all settings to factory settings.

DO Membrane Cap Replacement:

1. Do not touch the membrane as skin oils will interfere with the oxygen permeability rate of the membrane. Replace the cap carefully.
2. It is recommended that the probe remain attached to the meter during this replacement process.
3. Unscrew the cap firmly and carefully from the probe.
4. Rinse the old electrolyte solution from the Cathode and Anode.
5. Use the supplied Polishing Strips to clean, polish, shine, and/or remove scratches from the cathode. Be sure to moisten the cloth before polishing the cathode. Do not over-polish the sensitive gold cathode.
6. Set the new replacement membrane cap on a flat surface. Leave the cap in this position during the replacement process.
7. Fill the membrane cap with the electrolyte solution up to the bottom of the threads on the inside of the cap.
8. Tap the membrane cap to release and prevent air bubble in electrolyte solution.
9. Keeping the cap in a fixed position on a flat surface, carefully insert the probe into the new cap by first dipping and removing the probe several times from the cap. With each dip, push the probe progressively deeper into the bonded cap. Finally, screw the probe slowly onto the cap until fully tightened. The dipping and removal technique minimizes the

introduction of air bubbles into the electrolyte solution. Air bubbles in the electrolyte can affect measurements.

10. It is normal that excess electrolyte solution will leak out the cap during this replacement since it minimizes the introduction of air pockets. Clean off the excess electrolyte before use.



DO probe clean:

When the Do reading is unstable or incorrect, please follow the below steps to clean the probe.

1. Unscrew the membrane cap from the probe.
2. Put the sand paper on the table, let the coarse side on the up side, and add some water on it.
3. Rub the cathode part against the sand paper according to figure “8” for around 10 times.
4. Use the sand paper to clean the anode part.
5. After cleaning the probe, please refill new electrolyte into the membrane cap.

Connect to PC:

Download the Software and User Guide from – **www.rakiro.net/alc**

WARRANTY CARD

Customer Details:

Name: _____

Address: _____

_____

Email Id: _____

Contact No: _____

Dealer Details:

Name: _____

Stamp & Signature

Product Details:

Bill No: _____ Bill Date: _____

Product Serial No: _____

Manufactured By

Rakiro Biotech Systems Pvt Ltd

www.rakiro.net