



Labco SCIENTIFIC DO850 Portable Optical Dissolved Oxygen Meter User Manual

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DO850 PORTABLE OPTICAL DISSOLVED OXYGEN METER USER MANUAL



ISO9001:2015



APERA INSTRUMENTS, LLC

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OVERVIEW

Thank you for purchasing Apera Instruments DO850 Portable Optical Dissolved Oxygen Meter. The DO850 measures dissolved oxygen in water using luminescence technology through an optical sensor and displays data with intelligent instrumentation. Compared to conventional electrochemical dissolved oxygen meter, the DO850 is more accurate, stable and easier to use.

Before you use the instrument, please carefully read the instruction manual to help you properly perform tests and maintenance.

1.1 Luminescent Optical Sensor.

- **Stability and Accuracy:** Oxygen is not consumed during measurements. It is not affected by sample flow rate and thus provides a stable measurement.
- **Easy to Use:** No electrolytes or membranes are required; frequent calibration is not necessary.
- **Interference-Free:** Sensor cap is coated with a light-shielding layer and minimizes the impact from external light sources. The use of non-chemical sensors helps reduce a variety of heavy metal ions interference in the aqueous environment with H₂S and NH₄ and other chemical substances.
- **Long service life:** except for mechanical deterioration (such as scratches to the light shielding layer), the sensor cap has up to 8000 hours of service life.
- **Easy to calibrate and maintain.** Probe is equipped with a calibration/storage sleeve, which makes calibration and maintenance more convenient and reliable.

1.2 Intelligent Instrumentation

- Built-in microprocessor chip, featured with automatic temperature compensation, automatic air pressure compensation, manual salinity compensation and parameter setting, auto. power off, and low power reminder.

- Stable reading and automatic locking modes available.
- Clear large LCD display with white backlight.
- Meets IP57 waterproof rating; In addition, a rugged instrument suitcase is provided.

Special Notes

- Sensor cap surface coating can not withstand high temperature, so the optical dissolved oxygen electrode can not test water with temperature over 50 °C.
- When the electrode is not in use, it should be kept in the storage sleeve and the sponge in the cap should be kept moist, so that the fluorescent cap will not dry out. If the sponge is dried out or the probe is exposed in dry air for more than 8 hours, soak the electrode in tap water for 24~48 hours (see section 4.2), otherwise it may cause unstable measurements or slow response.
- Before getting readings or performing other operations, wait about 30 seconds after meter is powered on.

TECHNICAL SPECIFICATIONS

DISSOLVED OXYGEN	DYNAMIC RANGE	(0-20.00) mg/L (ppm), (0-200.0)%
	RESOLUTION	0.01/0.1mg/L (ppm), 0.1/1%
	ACCURACY	±2% reading or ±2% saturation, whichever is greater ±2% reading or ±0.2 mg/L, whichever is greater
	RESPONSE TIME	≤30 s (25°C, 90% response)
	CALIBRATION POINTS	Saturation Point & Zero Oxygen
	TEMPERATURE COMPENSATION	Automatic, (0 to 50°C
	PRESSURE COMPENSATION	Automatic, (60 to 120) kPa
	SALINITY COMPENSATION	Manual, (0 to 45) ppt
TEMPERATURE	RANGE	(0 to 50.0)°C
	RESOLUTION	0.1°C
	ACCURACY	±0.5°C
OTHER	BATTERIES	AA x 3 (1.5V×3)
	IP RATING	IP57
	DIMENSIONS AND WEIGHT	Meter: 88×170×33 mm/313g With case: 360×270×76 mm/1.3kg
	PRODUCT CERTIFICATE	RoHS, CE & ISO9001:2015

INSTRUCTIONS

3.1 LCD Screen

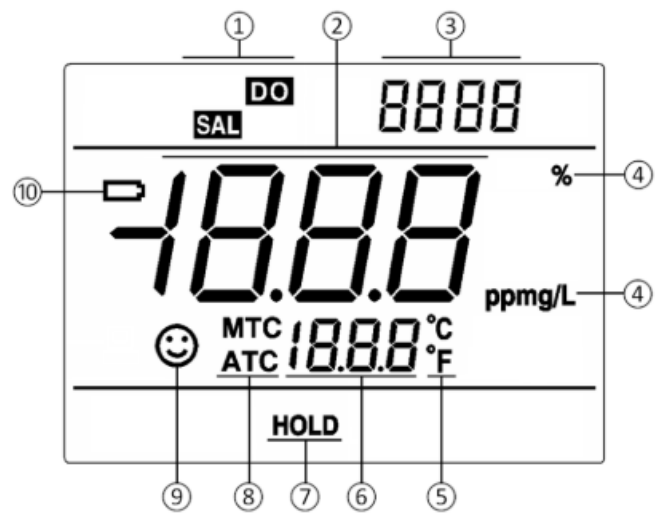


Figure - 1

1	Measurement Mode Icon	7	Auto Lock Icon
2	Reading/Measured Value	8	Temperature Compensation ATC – Auto Temperature Compensation MTC – Manual Temperature Compensation
3	Symbol		
4	Units of Measurement		
5	Temperature Unit	9	Reading Stability Icon
6	Temperature Value / Symbol	10	Low Voltage Icon

3.2 Key Operation

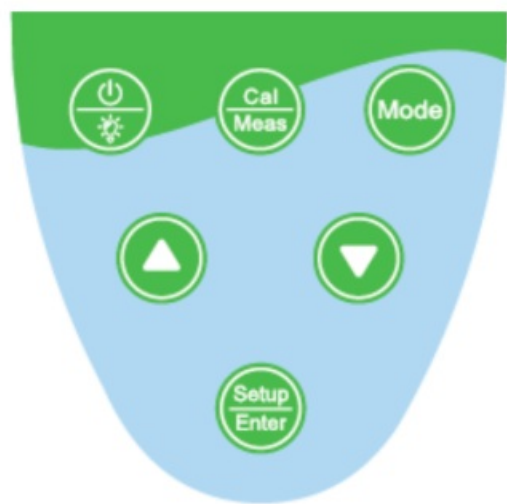










Figure - 2

Short press: key press time < 2 seconds; Long press: key press time> 2 seconds.


Power on: Press  to turn on. Power off: long press  2 seconds off.

Special notes: After meter power on, wait about 30 seconds to read value or operation.

KEY	OPERATION	FUNCTIONS
	Short Press	In the shutdown mode: press the key to boot In measurement mode: press to turn backlight on or off
	Long Press	Press and hold for 2 seconds to turn off
	Short Press	In measurement mode: press the key to switch unit: %→mg/L or %→ppm
	Long Press	In the measurement mode: press the key for 2 seconds to enter the calibration mode
	Short Press	To cancel any operation, press to return to measurement mode
	Short Press	In the menu mode: press the key to change the serial number or select the parameter
	Short Press	In the menu mode: press the key to change the serial number or select the parameter
	Short Press	In measurement mode: press to enter menu mode; In calibration mode: press key to calibrate; In the menu mode: press key to confirm the parameter.

3.3 Batteries

The instrument uses three AA alkaline batteries. Battery life > 200 hours (without backlight).

When the display shows  symbol as shown in Figure-3, replace the battery.

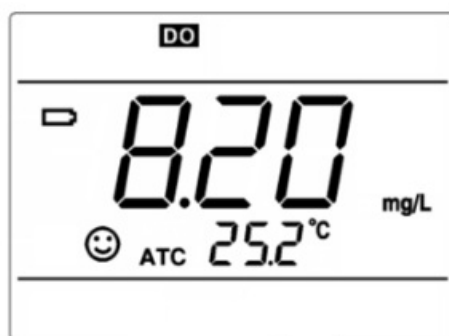


Figure 3

3.4 Instrument Socket

The instrument uses an 8-pin socket that is protected by a grey rubber cap seal. Eight-pin socket (right) – connect DO electrode. When inserting the probe connector, align the notch on the connector to the socket, and twist the nut to tighten.

There is a sealing ring between the end face of the socket and the connector, which can effectively maintain the waterproof rating of the socket.

3.5 Reading Stability Mode



When the measured value is stable, the LCD screen displays the icon  as shown in Figure- 4. If there is no  icon or icon flashing, indicating that the reading is not stable yet, the measurement should not be read or calibrated.



Figure 4

3.6 Auto Lock Mode

In parameter setting P4.2 you can select the auto-lock mode (Off-On), Select On to turn on automatic locking. When the reading is stable for more than 10 seconds, the meter automatically locks the measured value and displays the HOLD icon, as shown in Figure – 8.





When auto. locked, press  to unlock. Select Off to turn off automatic lock.



Figure 5

3.7 Backlighting

The Instruments LCD screen has a white backlight suitable for use in dark environments. Turning on the backlight will consume more power. The instrument has automatic backlight and manual backlight mode. In automatic backlight mode, when  is pressed, backlight will be on for a minute then automatically shuts off; In manual backlight mode, when  is pressed, backlight will be on and won't turn off unless  is pressed again. In the parameter setting P4.3, you can select the auto backlight mode (On-Off), select On to turn on auto. backlight; select Off to turn off auto. backlight.

3.8 Automatic Power-Off

In the parameter setting P4.4, you can select the auto power off function (On-Off), select On to turn on auto. power off, the instrument will shut down automatically after 20 minutes' non- operation; select Off to disable this function.

OPTICAL DISSOLVED OXYGEN PROBE

4.1 Probe Structure

The instruments DO803 optical dissolved oxygen probe has a cable length of 3m and built-in temperature sensor for automatic temperature compensation. The electrode structure is shown in Fig.-6

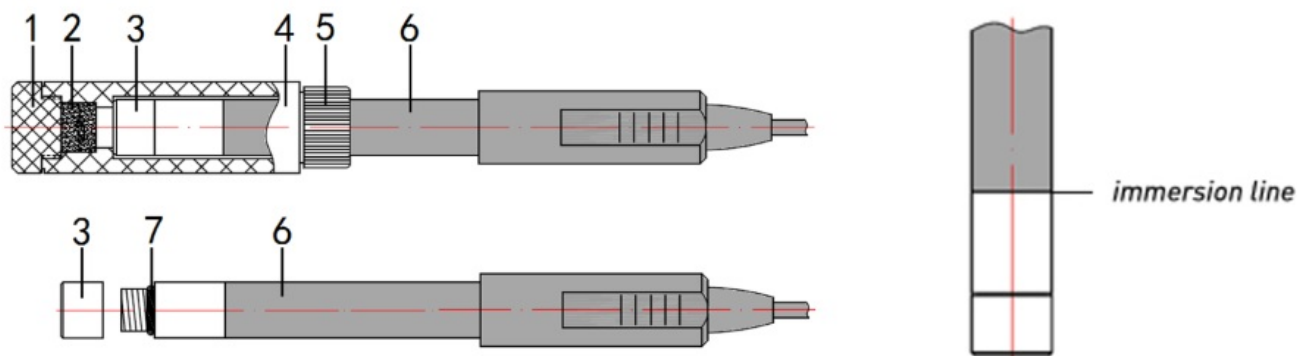


Figure - 6

1. Bottom Cover of the Calibration Sleeve	5. Locking Cap
2. Sponge for Water Storage	6. Optical DO Electrode
3. Sensor Cap	7. O Ring
4. Calibration Sleeve	Immersion Line: The tested solution should be above this line

4.2. Probe Maintenance

The sensor cap of the optical DO electrode must be kept in a moist environment. If the surface coating of the sensor cap dries out, the measured value will be unstable or the response will be slow. The electrode calibration sleeve is used to store the probe.

- Short-term storage (less than 30 days): The probe head is kept in the calibration sleeve. Always keep the sponge inside the calibration sleeve wet. Several drops of clean water should be added to a dry sponge (let the sponge be saturated, but not dripping), and tighten the lock cap, so that the sensor cap is kept in the moist saturated air.
- Long-term storage (greater than 30 days): The probe head is kept in the calibration sleeve. Check whether the water storage sponge is moist every 30 days or user can store the electrode in a beaker containing water.
- Before the first use, unscrew the calibration sleeve to check if the sponge is wet. If the sponge is dry or if the electrode is exposed to dry air for more than 8 hours, the surface coating of the sensor cap may be completely dry. So the electrode should be immersed in tap water at room temperature 25°C for 24 hours. If the water temperature is low, soaking time is 48-72 hours.
- The sponge cannot be allowed to get stained or mouldy, otherwise it will consume or produce oxygen. If stained or mouldy, please clean immediately.

4.3 Sensor Cap


- The sensor cap is an important part of the optical DO probe. The surface coating of the cap cannot be scratched or mechanically worn. Otherwise, the life of the sensor cap will be reduced or the probe will be damaged. Please pay special attention to it when using the probe.
- The surface coating of the sensor cap cannot withstand high temperatures, so the optical DO probe cannot be tested in water above 50°C.
- If the surface of the sensor cap is contaminated, please do not use alcohol and organic solvents to clean, otherwise it may damage the probe. It can be gently wiped with a soft cloth or paper towels. To disinfect the probe, immerse it in 3% hydrogen peroxide for 15 to 30 minutes and then rinse off with water.
- The sensor cap has a service life of more than 8000 hours. When the probe is not being used, it does not "bleach" luminescence layer; in addition, the storage time will not reduce the life of the probe, so the actual use time of the sensor cap is far more than a year. The major factor affecting the service life of the sensor cap is the surface coating being damaged under external force. So the key is to protect the sensor cap from external damage.

e) If the sensor cap is damaged or deteriorated, users need to purchase a new one. Every new cap has a set of calibration codes which need to be input into the instrument. The specific input method will be described in the instruction manual of sensor cap.

f) (F) The probe that comes with the instrument can be used directly without the input of the calibration codes. So users should not take off the sensor cap when it is not in use. Nor should one swap the caps from different instruments. When being installed, the sensor cap must be tightened and the interior cannot be contaminated or wet.

PREPARATION FOR CALIBRATION

5.1 Dissolved Oxygen Units Selection

Dissolved oxygen units displays in two forms: mg / L and %, and ppm and %. Press  to switch between mg / L → %, or ppm → %. Users can choose mg / L or ppm in parameter setting P3.1, but only a percentage (DO %) is displayed in calibration.

5.2 Resolution Selection

The resolution unit can be selected in parameter setting P3.2: 0.01 or 0.1mg/L (ppm). After setting, the meter will display resolution of 0.1 or 1 in according to %.

5.3 Temperature Unit Selection

The temperature unit can be selected in parameter setting P4.1: °C or °F

5.4 Air Pressure Compensation

The instrument has automatic air pressure compensation function. The air pressure has been calibrated before the product left the factory. So in general users do not have to calibrate air pressure any more. If necessary, calibrate it according to standard value measured by aneroid barometer. Refer to parameter setting P3.4 for the procedure of aneroid barometer calibration.

5.5 Salinity Compensation

The instrument has manual salinity compensation. It is set in the parameter P3.3 (0 to 45 ppt). To obtain accurate readings in mg/L and ppm, it is necessary to know the salinity of the test sample and input salinity value into the instrument. As the salinity of the solution increases, the level of DO decreases. Generally, salinity of freshwater is 0 to 0.5ppt, salinity of seawater is 35ppt.

CALIBRATION

6.1 Saturated Oxygen Calibration

a) This procedure requires the use of a calibration sleeve to allow the probe to be calibrated in a humidity-saturated atmosphere.


b) Check if the sponge in the calibration sleeve is damp. Attach the calibration sleeve to the probe. Tighten the locking cap. Be careful not to have water droplets on the head of the sensor cap. Wait for 5 to 10 minutes after turning on the instrument in order to saturate the air in the calibration sleeve with water vapor. In addition, wait for the temperature to completely stabilise.



c) Long press

to enter the calibration mode, and CAL is flashing in the upper right corner. Wait for the stable to appear and stay on, press to finish calibration, once 100% starts flashing, the saturated oxygen calibration is completed.

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c) Long press  to enter the calibration mode, and CAL is flashing in the upper right corner. Wait for the stable

 to appear and stay on, press to  finish calibration, once 100% starts flashing, the saturated oxygen calibration is completed.

6.2 Zero-Oxygen Calibration

Zero-Oxygen calibration is only performed when a probe or sensor cap is replaced, the probe has not been used for a long time, or users have a requirement for high accuracy in low DO range (0 to 2.0 ppm). Zero-Oxygen calibration is done at the factory before shipment, so it is not necessary to perform it during initial use. Zero-oxygen calibration should follow these steps:

- a) Preparation of 100ml of oxygen-free water: in the 100ml beaker, weigh 2g of anhydrous sodium sulfite (Na_2SO_3) and add 100ml of distilled or deionized water to dissolve. Oxygen-free water is only effective within 1 hour.
- b) Put the electrode into the oxygen-free water, wait for 3 to 5 minutes after the instrument is turned on, and wait for the temperature and DO reading to completely stabilize. The DO reading should be very close to 0, 0.1mg/L (ppm) or so.
- c) Long press  to enter the calibration mode. CAL will be flashing at the upper right corner. Wait for a stable 
, Press  and the zero-oxygen calibration is completed.


6.3 Special Notes for Calibration

- a) Optical dissolved oxygen probes have better stability and smaller calibration drift compared to conventional electrochemical dissolved oxygen electrodes, which means that the instrument can maintain its calibration data for a few months. However, for optimal accuracy, it is recommended that the oxygen saturation calibration be performed according to section 6.1 before use every day.
- b) Drying of the surface coating of the sensor cap can adversely affect the stability of the measurement. Please pay special attention to this situation. See Section 4.2 (Probe Maintenance) for details.
- c) The instrument has factory default setting function, select YES in parameter setting P3.5, the meter will be calibrated to the theory value.







MEASUREMENT

7.1 When measuring, place the probe in your sample solution, stir quickly for a few seconds in the solution to remove bubbles from the measuring surface of the sensor cap. Then hold the probe still and wait for a stable measurement. The solution must be above the immersion line of the probe.

Note: the brief stirring of the probe in solution is only to eliminate bubbles. Unlike conventional galvanic/polarographic electrodes, the measuring via optical dissolved oxygen probes does not require constant stirring of the solution or flowing fluid.

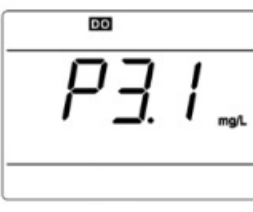



















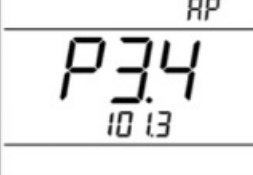






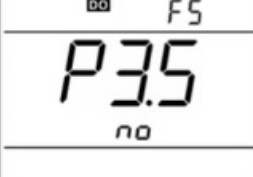



7.2 Users can read the measurements when  appears and stays on. Note that the measurement time is related to temperature. When the solution temperature and the probe temperature is close, it takes about one minute to get the readings stabilised. When the solution temperature and the electrode temperature differ a lot, it takes about 3 minutes to reach a stable reading. This is because the reading of dissolved oxygen is heavily- 11 – influenced by temperature, and the probe senses temperature slower than dissolved oxygen.

PARAMETER SETTINGS

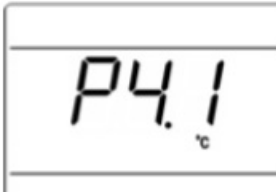












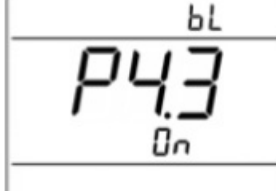










8.1 Press the  key in the measurement mode to enter the parameter setting mode P3.0, press the  key to switch the menu P3.0 → P4.0; In P3.0 mode, press  to enter P3.1, press  to switch submenu P3.1 → P3.5; In P4.0 mode, press  to enter P4.1, press  to switch submenu P4.1 → P4.4. See Table 2 for details.

MENU	SUBMENU	PARAMETER	CODE	CONTENT
P3.0 DO PARAMETER	P3.1	DO Units Selection	/	mg
			/L—ppm	
	P3.2	Resolution Selection	/	0.01/0.1
			mg/L(ppm)	
	P3.3	Salinity Compensation	/	(0 to 4
			5) ppt	
P3.0 DO PARAMETER	P3.4	Air Pressure Calibration	AP	(60 t
			o 120) kPa	
	P3.5	Back to Factory Default	FS	
			No—Yes	
P4.0 BASIC PARAMETER	P4.1	Temp. Unit Selection	/	
			°C – °F	
	P4.2	Auto Lock	/	
			Off—On	
P4.0 BASIC PARAMETER	P4.3	Auto Backlight	BL	
			On—Off	
	P4.4	Auto Power Off	AC	
			On—Off	

8.2 DO Parameter Setting (press  or  to switch)

	<p>P3.1—Dissolved Oxygen Unit (mg/L—ppm)</p> <ol style="list-style-type: none"> 1. In P3.0 mode, press  to enter P3.1 mode. 2. Press , mg / L flashes, press  to select mg/L → ppm, press  to confirm. 3. Press  to enter P3.2 mode, or press  to return to measurement mode.
	<p>P3.2—Resolution (0.01-0.1mg/L)</p> <ol style="list-style-type: none"> 1. Press , 0.01 flashes, press  to select resolution (0.01-0.1mg/L), press  to confirm. 2. Press  to enter P3.3 mode, or press  to return to measurement mode.
	<p>P3.3—Salinity Compensation (0~45 ppt)</p> <ol style="list-style-type: none"> 1. Press , 0 flashes, Press  or  to adjust salinity value (0 to 45 ppt), Press  to confirm. 2. Press  to enter P3.4 mode, or press  to return to measurement mode.
	<p>P3.4—Air Pressure Calibration (60 to 120 kPa)</p> <ol style="list-style-type: none"> 1. Press , 101.3 flashes, according to standard pressure value. Press  or  to adjust, Press  to confirm. 2. Press  to enter P3.5 mode, or press  to return to measurement mode.
	<p>P3.5—Back to Factory Default (No—Yes)</p> <p>Press , No flashes, Press  to select No → Yes, Press  to confirm. Meter returns to measurement mode.</p> <p>No—cancel restore. Yes—restore</p>

8.3 Basic Parameter Setting (press or to switch)

	<p>P4.1— temperature unit (°C—°F)</p> <ol style="list-style-type: none"> 1. In P4.0 mode, Press  to enter P4.1 mode. 2. Press , °C flashes, Press  to select °C→°F, Press  to confirm. 2. Press  to enter P4.2 mode, or  to return to measurement mode.
	<p>P4.2—Auto Lock (Off—On)</p> <ol style="list-style-type: none"> 1. Press , Off flashes, Press  to select Off→On, Press  to confirm. Off—unlock; On—lock (If reading stays stable for more than 10seconds, it auto locks). 2. Press  to enter P4.3 mode, or  to return to measurement mode.
	<p>P4.3—Auto Backlight (On—Off)</p> <ol style="list-style-type: none"> 1. Press , On flashes, Press  to select On→Off, Press  to confirm. On - Auto backlight on, Off - Auto backlight off. 2. Press  to enter P4.4 mode, or press  to return to measurement mode.
	<p>P4.4—Auto Power Off (On—Off)</p> <ol style="list-style-type: none"> 1. Press , On flashe, press  to select On→Off, press  to confirm. On—auto power off on, Off—auto power off off 2. Press  to return to measurement mode.

COMPLETE KIT

9.1 What's In The Box

	CONTENT	QUANTITY
1	DO850 Portable Optical Dissolved Oxygen Meter	1
2	DO803 Optical Dissolved Oxygen Probe	1
3	Probe Calibration Sleeve	1
4	Small Screwdriver	1
5	Carrying Case	1
6	Sponge for Water Storage (spare)	4
7	Instruction Manual	1

9.2 Accessories for Separate Purchase

MODEL	NAME
DO803	Optical DO probe (3m cable. with sensor cap and calibration sleeve)
DO810	Optical DO probe (10m cable, with sensor cap and calibration sleeve)
DO8032	Sensor cap
DO8031	Calibration sleeve

WARRANTY


10.1 The warranty period of the DO850 instrument (only the instrument) is 3 years from the date of purchase. That of DO803 optical DO probe (excluding sensor cap) is 2 years from the date of purchase. That of DO8032 sensor cap is 1 year from the date of purchase. If the above products or parts within the warranty period is not functional due to raw material defects or poor manufacturing, they are free for repair or replace.

10.2 Damage and malfunction of the product caused by the following reasons are not covered by the warranty:

- Fails to install, operate, or use the product in accordance with the instruction manual, or if the product is damaged by abuse or incorrect use;
- The sensor cap is damaged by external force and can not work; or the electrode cable is damaged or twisted due to external force;
- Fails to maintain the product in accordance with the requirements of this manual and the industry standard process;
- Any unauthorized repairs, and the use of defective or incorrect components to repair the product;
- Any modification of the product unauthorized by the Company.

10.3 Product Warranty Period is the free of charge service time for the user who purchase the product, not the service life of the instrument or the probe.

TROUBLESHOOTING

ERROR	SOLUTIONS
THE INSTRUMENT DOES NOT TURN ON	<ol style="list-style-type: none"> The battery is not installed correctly. Check the direction. Battery low voltage, replace the battery. Instrument freezes. Take out the batteries and re-install.
THE INSTRUMENT CAN NOT CALIBRATE	<ol style="list-style-type: none"> Check calibration procedure: correct atmospheric pressure, salinity input and temperature. The measured value is not stable, prolong the stabilization time, until 😊 is fully stabilized, then press  to finish. Check the sensor cap. If it is contaminated, it can be cleaned; if dried out, it can be hydrated; if damaged, it can be replaced.
DO READINGS ARE NOT ACCURATE	<ol style="list-style-type: none"> Check whether the temperature is stable, the salinity input and barometric pressure are accurate. If the probe calibration is not good, recalibrate. Check the sensor cap. If it is contaminated, it can be cleaned; if dried out, it can be hydrated; if damaged it can be replaced. Unscrew the sensor cap, check whether there is moisture inside, if so, wipe off, dry, and tighten it.

THE DISPLAY VALUE STAYS 200% OR 20.0 MG/L. NO CHANGE	<ol style="list-style-type: none"> 1. Check whether the concentration of the sample is higher than 200 % or 20.0 mg / L (ppm). 2. Check if the temperature reading is accurate. 3. If the probe calibration is not good, recalibrate. 4. Check the sensor cap. If it is contaminated, it can be cleaned; if dried out, it can be hydrated; if damaged, it can be replaced.
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Appendix A: Oxygen Solubility Table (760mm Hg)

TEMP ° C	CHLORITY: 0 SALINITY: 0	5.0 PPT 9.0 PPT	10.0 PPT 18.1 PPT	15.0 PPT 27.1 PPT	20.0 PPT 36.1 PPT	25.0 PPT 45.2 PPT
0.0	14.62	13.73	12.89	12.10	11.36	10.66
1.0	14.22	13.36	12.55	11.78	11.07	10.39
2.0	13.83	13.00	12.22	11.48	10.79	10.14
3.0	13.46	12.66	11.91	11.20	10.53	9.90
4.0	13.11	12.34	11.61	10.92	10.27	9.66
5.0	12.77	12.02	11.32	10.66	10.03	9.44
6.0	12.45	11.73	11.05	10.40	9.80	9.23
7.0	12.14	11.44	10.78	10.16	9.58	9.02
8.0	11.84	11.17	10.53	9.93	9.36	8.83
9.0	11.56	10.91	10.29	9.71	9.16	8.64
10.0	11.29	10.66	10.06	9.49	8.96	8.45
11.0	11.03	10.42	9.84	9.29	8.77	8.28
12.0	10.78	10.18	9.62	9.09	8.59	8.11
13.0	10.54	9.96	9.42	8.90	8.41	7.95
14.0	10.031	9.75	9.22	8.72	8.24	7.79
15.0	10.08	9.54	9.03	8.54	8.08	7.64
16.0	9.87	9.34	8.84	8.37	7.92	7.50

17.0	9.67	9.15	8.67	8.21	7.77	7.36
18.0	9.47	8.97	8.5	8.05	7.62	7.22
19.0	9.28	8.79	8.33	7.90	7.48	7.09
20.0	9.09	8.62	8.17	7.75	7.35	6.96
21.0	8.92	8.46	8.01	7.61	7.21	6.84
22.0	8.74	8.30	7.87	7.47	7.09	6.72
23.0	8.58	8.14	7.73	7.34	6.96	6.61
24.0	8.42	7.99	7.59	7.21	6.84	6.50
25.0	8.26	7.85	7.46	7.08	6.72	6.39
26.0	8.11	7.71	7.33	6.96	6.62	6.28
27.0	7.97	7.58	7.20	6.85	6.51	6.18
28.0	7.83	7.44	7.08	6.73	6.40	6.09

29.0	7.69	7.32	6.93	6.62	6.30	5.99
30.0	7.56	7.19	6.85	6.51	6.20	5.90
31.0	7.43	7.07	6.73	6.41	6.10	5.81
32.0	7.31	6.96	6.62	6.31	6.01	5.72
33.0	7.18	6.84	6.52	6.21	5.91	5.63
34.0	7.07	6.73	6.42	6.11	5.82	5.55
35.0	6.95	6.62	6.31	6.02	5.73	5.46
36.0	6.84	6.52	6.22	5.93	5.65	5.38
37.0	6.73	6.42	6.12	5.84	5.56	5.31
38.0	6.62	6.32	6.03	5.75	5.48	5.23
39.0	6.52	6.22	5.98	5.66	5.40	5.15
40.0	6.41	6.12	5.84	5.58	5.32	5.08
41.0	6.31	6.03	5.75	5.49	5.24	5.01
42.0	6.21	5.93	5.67	5.41	5.17	4.93
43.0	6.12	5.84	5.58	5.33	5.09	4.86
44.0	6.02	5.75	5.50	5.25	5.02	4.79
45.0	5.93	5.67	5.41	5.17	4.94	4.72

Salinity = Dissolved salts in water

Chlorinity = Measure of chloride content, by mass, of water

S (‰) = 1.80655 x Chlorinity (‰)

Appendix B: DO % Calibration Values

CAL. VA LUE	PRESSURE				CAL. VA LUE	PRESSURE			
D.O. %	In Hg	mmHg	kPa	mbar	D.O %	In Hg	mmHg	kPa	mbar
101%	30.22	767.6	102.34	1023.38	86%	25.73	653.6	87.14	871.40
100%	29.92	760.0	101.33	1013.25	85%	25.43	646.0	86.13	861.26
99%	29.62	752.4	100.31	1003.12	84%	25.13	638.4	85.11	851.13
98%	29.32	744.8	99.30	992.99	83%	14.83	630.8	84.10	841.00
97%	29.02	737.2	98.29	982.85	82%	24.54	623.2	83.09	830.87
96%	28.72	729.6	97.27	972.72	81%	24.24	615.6	82.07	820.73
95%	28.43	722.0	96.26	962.59	80%	23.94	608.0	81.06	810.60
94%	28.13	714.4	95.25	952.46	79%	23.64	600.4	80.05	800.47
93%	27.83	706.8	94.23	942.32	78%	23.34	592.8	79.03	790.34
92%	27.53	699.2	93.22	932.19	77%	23.04	585.2	78.02	780.20
91%	27.23	691.6	92.21	922.06	76%	22.74	577.6	77.01	770.07
90%	26.93	684.0	91.19	911.93	75%	22.44	570.0	75.99	759.94
89%	26.63	676.4	90.18	901.79	74%	22.14	562.4	74.98	749.81
88%	26.33	668.8	89.17	891.66	73%	21.84	554.8	73.97	739.67
87%	26.03	661.2	88.15	881.53	72%	21.54	547.2	72.95	729.54

sales@labcoscientific.com.au

1800 052 226

ABN 57 622 896 593

labcoscientific.com.au

PO Box 5816, Brendale, QLD 4500

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1800 052 226

soles@labcoscientific.com.au

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	<p>Labco SCIENTIFIC DO850 Portable Optical Dissolved Oxygen Meter [pdf] User Manual DO850 Portable Optical Dissolved Oxygen Meter, DO850, Portable Optical Dissolved Oxygen Meter, Dissolved Oxygen Meter, Oxygen Meter</p>
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