DO850

Portable Optical Dissolved Oxygen Meter

Instruction Manual

RoHS compliant CE ISO 9001: 2015 IP57 WATERPROOF

APERA INSTRUMENTS (Europe) GmbH

www.aperainst.de

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1 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 using advanced intelligent instrument. Compared to electrochemical oxygen analyzers, the DO850 is more accurate and stable, easier to use and cost-effective portable dissolved oxygen meter.

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

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 and membranes are present in the meter; no warm-up; 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, along with H_2S and NH_4 and other chemical substances.
- Long service life. Other than 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 calibration/storage sleeve, which makes calibration and maintenance more convenient and reliable.

1.2 Advanced Intelligent Instrument

- Automatic temperature compensation, automatic pressure compensation and manual salinity compensation.
- Clear large-size LCD display with white backlight.
- Reading stable and automatic locking modes.
- Meets IP57 waterproof rating; in addition, a standard instrument suitcase is provided.

Special Notes

- **Sensor cap surface coating can not withstand high temperatures, so the optical dissolved oxygen electrode can not test the water of more than 50 ℃.**
- **Sensor cap must be kept in a humid environment, if the surface coating is dry, treat it by hydration, otherwise the measured value is unstable or the response is slow, as described in section 4.2 (Probe Maintenance)**
- **After meter power on, wait about 30 seconds to read value or operatation.**

2 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℃ , 90% response)
	Calibration Points	Saturation Point & Zero Oxygen
	Temperature Compensation	Automatic, (0 to 50)℃
	Pressure Compensation	Automatic, (60 to 120) kPa
	Salinity Compensation	Manual, (0 to 45) ppt
Temperature	Range	(0 to 50.0) ℃
	Resolution	0.1 ℃
	Accuracy	±0.5 ℃
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

3 Instructions

3.1 LCD Screen

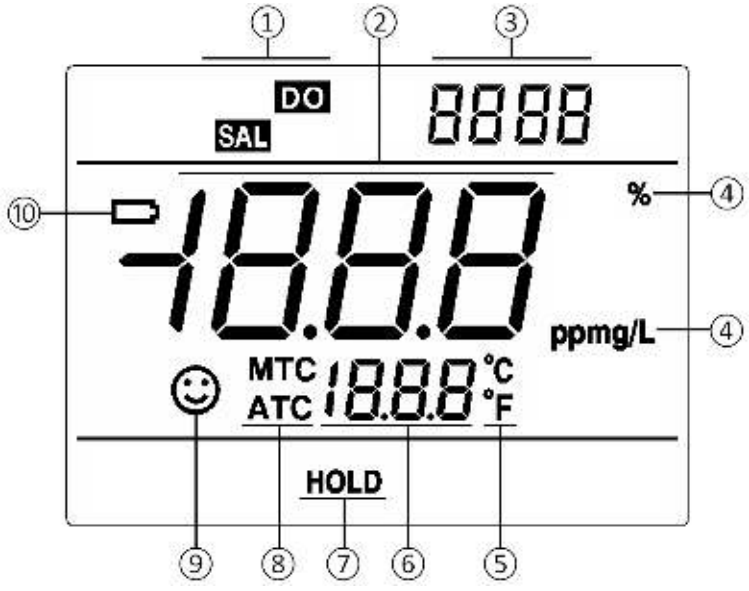


Fig.-1

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	Temprature value / Symbol	⑩	Low Voltage Icon

3.2 Key Operation

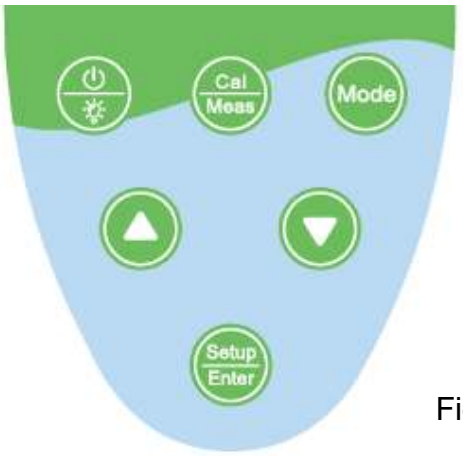


Fig.-2

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

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

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

Table - 1 Key operation and functions

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
Mode	Short Press	● In measurement mode: press the key to switch unit: %→mg/L or %→ppm
Cal Meas	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
Setup Enter	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 batteries, please use the LR6-type alkaline batteries to ensure battery quality. Battery life> 200 hours (no backlight). When the display shows ▭ symbol as Figure-3, replace the battery.

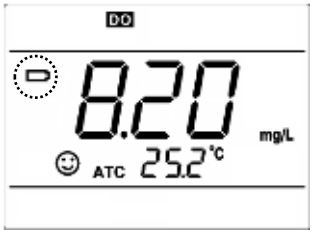


Fig.-3

3.4 Instrument Socket

The instrument uses an 8-pin socket that is protected by a gray rubber cap seal. When inserting the Probe plug, please insert it after the notch position, and tighten the plug nut. The end face of the socket and the plug connection has the sealing ring, which can effectively maintain the waterproof protection 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 measured value is not stable, the measured value should not be read or calibrated.

Fig.-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 5. When auto locked, press Cal Meas to unlock.

Fig.-5

3.7 Backlighting

The Instruments LCD screen has a white backlight suitable for use in dimly lit environments. Turning on the backlight will consume more power. The instrument is equpped with automatic backlight and manual backlight mode. In automatic backlight mode, when thepower key ⏻ is pressed, backlight will be on for a minute then automatically shuts off; In manual backlight mode, when the key ⏻ is pressed, backlight will be on and will be off only ⏻ 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, select **Off** to disable this function.

4 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

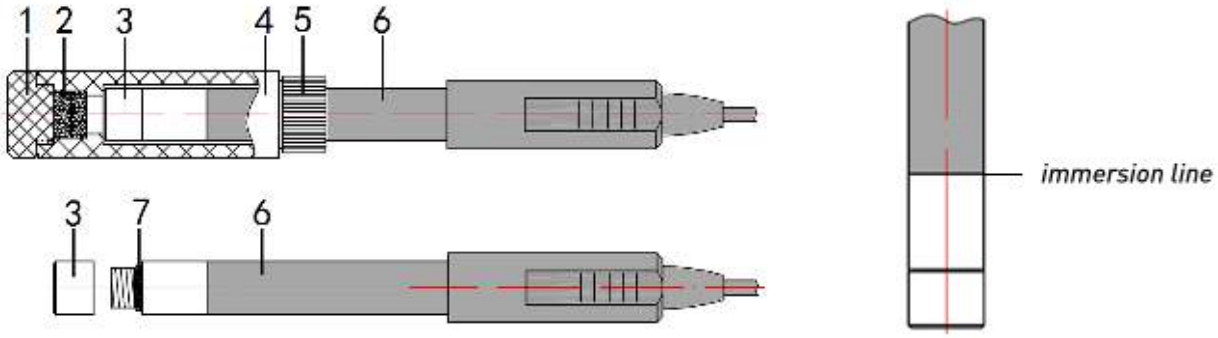


Fig.-6

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.

(A) 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.

(B) 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.

(C) 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℃ for 24 hours. If the water temperature is low, soaking time is 48-72 hours.

(D) The sponge can not be allowed to get stained or moldy, otherwise it will consume or produce oxygen. If stained or moldy, please clean immediately.

4.3 Sensor Cap

(A) 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.

(B) The surface coating of the sensor cap cannot withstand high temperatures, so the optical DO probe can not 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.

(D) 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) 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 can not be contaminated or wet.

5 Preparation for Calibration

5.1 Dissolved Oxygen Units Selection

Dissolved oxygen units displays in two forms: mg / L and %, and ppm and %. Press Mode 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: ℃ or ℉.

5.4 Air Pressure Compensation

The instrument has automatic air pressure compensation function. The instrument has been performed the air pressure calibration before it leaves the factory. So generally users do not have to calibrate the air pressure. If necessary, calibrate it according to the value of the standard barometer. Refer to parameter setting P3.4 for the procedure of barometric 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 solution to be tested and input it 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.

6 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 that the sponge in the calibration sleeve is wet. Attach the calibration sleeve to the probe. Tighten the locking cap. Be careful not to have water droplets on the head of the cap. Wait for 5 to 10 minutes after turning on the instrument. Saturate the air in the calibration sleeve with water vapor. In addition, wait for the temperature to completely stablize.

(C) Long press the Cal Meas key to enter the calibration mode, and the CAL is flashing in the upper right corner of the LCD. Wait for the stable ☺ icon to appear and stay, press the key Setup Enter to calibrate, once the instrument displays a stable 100%, it is ready to use.

6.2 Zero -Oxygen Calibration

Zero-Oxygen calibration is only performed when a probe or sensor cap is replaced or the probe has not been used for a long period. It is usually not necessary to conduct zero oxygen calibration. The instrument is factory calibrated for zero oxygen, so it is not necessary to perform a zero-oxygen calibration for the first time. Zero-oxygen calibration should follow these steps:

(A) Preparation of 100ml of oxygen-free water: in the 100ml beaker weigh 2g anhydrous sodium sulfite (Na_2SO_3) and add 100ml of pure water or tap water to dissolve. Oxygen-free water is 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 measured value to completely stabilize. The measured value should be very low, 0.1mg / L or so.

(C) Long press Cal Meas to enter the calibration mode. The upper right corner of the LCD will flash **CAL**. Wait for a stable ☺ icon. Press Setup Enter 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 better 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.

7 Measurement

7.1 When measuring, place the probe in sample solution, swirl quickly in the solution for a few seconds and rest it to remove bubbles from the measuring surface of the sensor cap. The solution must be above the immersion line of the probe. Note that brief shaking the probe in solution is only to eliminate bubbles. Not like conventional electrochemical 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 measured values when the icon ☺ appears and stays. Note that the measurement time is related to temperature. When the solution temperature and the probe temperature is close, the measurement time is about one minute. 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 influenced by temperature, and the probe senses temperature much more slowly than dissolved oxygen.

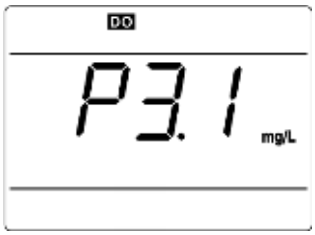
8 Parameter Settings

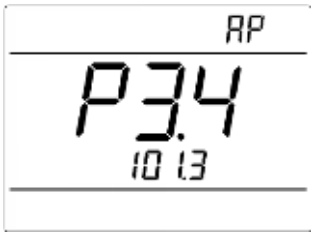
8.1 Press the Setup/Enter key in the measurement mode to enter the parameter setting mode P3.0, press the ▲ key to switch the menu P3.0 →P4.0; In P3.0 mode, press Setup/Enter to enter P3.1, press ▲ to switch submenu P3.1→P3.5; In P4.0 mode, press Setup/Enter to enter P4.1, press ▲ to switch submenu P4.1→P4.4.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

Table-2 Parameter Setting List

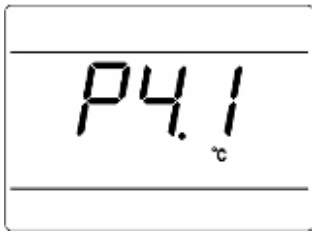
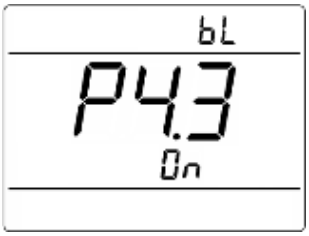
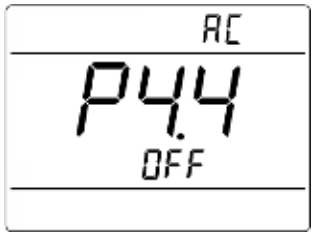
Menu	Submenu	Parameter	Code	Content
P3.0 DO parameter	P3.1	DO Units Selection	/	mg/L—ppm
	P3.2	Resolution Selection	/	0.01/0.1 mg/L(ppm)
	P3.3	Salinity Compensation	/	(0 to 45) ppt
	P3.4	Air Pressure Calibration	AP	(60 to 120) kPa
	P3.5	Back to Factory Default	FS	No—Yes
P4.0 Basic parameter	P4.1	Temp. Unit Selection	/	℃—℉
	P4.2	Auto Lock	/	Off—On
	P4.3	Auto Backlight	bL	On—Off
	P4.4	Auto Power Off	AC	On—Off

8.2 DO Parameter setting (press ▲ or ▼ to switch)

	**P3.1—Dissolved Oxygen Unit** (mg/L—ppm) 1. In P3.0 mode, press the Setup/Enter key to enter P3.1 mode. 2. Press the Setup/Enter key, **mg / L** flashes, press the ▲ key to select mg/L → ppm, press Setup/Enter to confirm. 3. Press ▲ to enter P3.2 mode, or press Cal/Meas to return to measurement mode.
	**P3.2—Resolution** (0.01-0.1mg/L) 1.Press the Setup/Enter key, **0.01** flashes, press the ▲ key to select resolution (0.01-0.1mg/L),press Setup/Enter to confirm. 2. Press ▲ to enter P3.3 mode, or press Cal/Meas to return to measurement mode.
	**P3.3—Salinity Compensation** (0~45 ppt) 1. Press the Setup/Enter key, **0** flashes**,** Press ▲ or ▼ key to adjust salinity value (0 to 45 ppt), Press Setup/Enter Key to confirm. 2. Press ▲ to enter P3.4 mode,or press Cal/Meas to return to measurement mode.

	**P3.4—Air Pressure Calibration** (60 to 120 kPa) 1. Press the Setup Enter key, **101.3** flashes, according to standard pressure value. Press ▲ or ▼ key to adjust, Press Setup Enter key to confirm. 2. Press ▲ to enter P3.5 mode, or press Cal Meas to return to measurement mode.
	**P3.5—Back to Factory Default** (No—Yes) Press Setup Enter key, **No** flashes, Press ▲ key to select **No** →**Yes**, Press Setup Enter key to confirm. Meter returns to measurement mode. No—cancel restore. Yes—restore

8.3 Basic Parameter setting (press ▲ or ▼ to switch)

	**P4.1— temperature unit** (℃—℉) 1. In P4.0 mode, Press Setup Enter key to enter P4.1 mode. 2. Press Setup Enter key, °C flashes, Press ▲ key to select °C→°F, Press Setup Enter key to confirm. 2.Press ▲ key to enter P4.2 mode, or Cal Meas key to return to measurement mode.
	**P4.2—Auto Lock** (Off—On) 1. Press Setup Enter key, **Off** flashes, Press ▲ key to select Off→On, Press Setup Enter key to confirm. Off—unlock; On—lock (If reading stays stable for more than 10seconds, it auto locks). 2. Press ▲ key to enter P4.3 mode, or Cal Meas key to return to measurement mode.
	**P4.3—Auto Backlight** (On—Off) 1. Press Setup Enter key, **On** flashes, Press ▲ key to select On→Off, Press Setup Enter key to confirm. On - Auto backlight on, Off - Auto backlight off. 2. Press ▲ key to enter P4.4 mode, or press Cal Meas key to return to measurement mode.
	**P4.4—Auto Power Off** (On—Off) 1. Press Setup Enter key, **On** flashes， Press ▲ key to select On→Off,press Setup Enter key to confirm. On—auto power off on， Off—auto power off off 2. Press Cal Meas key to return to measurement mode

9 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

10 Warranty

10.1 We warrant this instrument to be free from defects in material and workmanship and agree to repair or replace free of charge, at option of APERA INSTRUMENTS (Europe) GmbH, any malfunctioned or damaged product attributable to responsibility of APERA INSTRUMENTS (Europe) GmbH for a period of 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.

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

(A) 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;

(B) The sensor cap is damaged by external force and can not work; or the electrode cable is damaged or twisted due to external force;
(C) Fails to maintain the product in accordance with the requirements of this manual and the industry standard process;
(D) Any unauthorized repairs, and the use of defective or incorrect components to repair the product;
(E) 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.

11 Trouble Shooting

Error	Solutions
The instrument does not turn on	1. The battery is not installed correctly. Check the polarity. 2. Battery low voltage, replace the battery. 3. Instrument freezes. Unplug the battery and then install.
The instrument can not calibrate	1. Check calibration procedure: correct atmospheric pressure, salinity input and temperature. 2. The measured value is not stable, prolong the stabilization time, until the demonstration ☺ then presses the Setup Enter key. 3. Check the sensor cap. If it is contaminated, it can be cleaned; if dry, it can be hydrated; if damaged it can be replaced.
DO readings are not accurate	1.Check whether the temperature is stable, the salinity input and barometric pressure are accurate. 2. If the probe calibration is not good, recalibrate. 3. Check the sensor cap. If it is contaminated, it can be cleaned; if dry, it can be hydrated; if damaged it can be replaced. 4. 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	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 dry, it can be hydrated; if damaged, it can be replaced.

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	10.31	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	8.50	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	8.02	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. value	Pressure				Cal. value	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%	24.83	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

APERA INSTRUMENTS (Europe) GmbH
Wilhelm-Muthmann-Straße 18
42329 Wuppertal, Germany
Email: info@aperainst.de
Website: www.aperainst.de
Tel.: +49 202 51988998