



DO1000 Portable Optical DO Meter

35643-20, 35643-30 Kit

Instruction Manual



Environmental Express

www.environmentalexpress.com

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1 Brief Introduction

Thank you for purchasing Environmental Express Portable Optical Dissolved Oxygen Meter.

This meter adopts luminescence technology through an optical sensor and displays data with intelligent instrumentation. Compared to conventional polarographic dissolved oxygen meter, the meter is more accurate, stable and easier to use. To improve instrument performance constantly, we reserve the right to change the manual and accessories without giving notice in advance.

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 H_2S and NH_4 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

- Auto. Temperature Compensation, Auto. Air Pressure Compensation, Manual Salinity Compensation.
- Clear large-size LCD with white backlight.
- Stable reading and automatic lock-up modes available.
- Meets IP57 waterproof rating; In addition, a rugged carrying case is provided with the instrument.

Special Notes

- Sensor cap surface coating cannot withstand high temperature, so the optical dissolved oxygen electrode cannot test water with temperature over 122°F(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 24~72 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.

2 Technical Specifications

	Technical specifications	
DO	Range	(0 ~ 20.00) mg/L(ppm),(0 ~ 200.0)%
	Resolution	0.01/0.1 mg/L(ppm), 0.1/1 %
	Accuracy	±2% reading or ±2% saturation, whichever is greater
	Response time	≤30s(77°F/25°C, 90% response)
	Calibration points	Saturation point & zero oxygen
	Temperature compensation range	32~122°F (0 ~ 50°C) (Automatic)
	Barometric pressure compensation	60~ 120 kPa (Automatic)
	Salinity compensation range	0 ~ 45 ppt (Manual)
Temperature	Range	32~212°F(0~100°C)
	Resolution	0.1°F (0.1°C)
	Accuracy	±0.9°F (0.5°C) ±1 digit
Other	Power	AA batteries x3 (1.5V×3)
	IP rating	IP57 dustproof and waterproof
	Dimension & weight	Meter: 91×190×33mm /352 g
		Carrying case: 330×270×82mm/1.6 kg
		Paper box: 255×200×45mm/ 950g

3 Instrument Description

3.1 LCD display

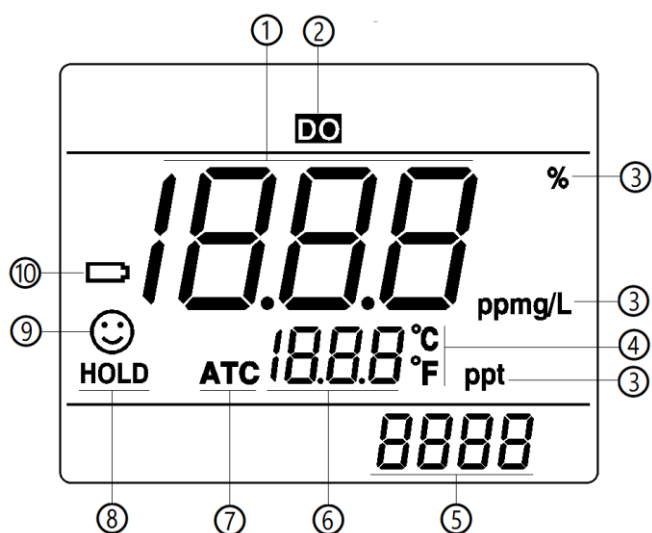


Diagram-1

①	Measurement reading
②	Parameter mode icon
③	Units of measurement
④	Temperature units
⑤	Indicator icons
⑥	Temperature value and indicator icons
⑦	ATC—automatic temperature compensation;
⑧	Automatic reading hold icon
⑨	Stability icon of readings
⑩	Low battery icon

3.2 Keypad functions

Short press ----- <2 seconds;

Long press ----- >2 seconds.



Diagram-2

Table -1 Keypad operations and descriptions

Keypad	Operations	Descriptions
	Short press	<ul style="list-style-type: none"> Press this key to turn on/off the meter.
	Short press Long press	<ul style="list-style-type: none"> Short press to select measuring unit: mg/L(ppm)→ %. Long press to enter the main parameter setup menu.
	Long press Short press	<ul style="list-style-type: none"> In the measurement mode, long press to enter calibration mode; Short press to cancel operation, return to measurement mode or the previous operation; When the measure value is locked-up, short press release lock-up.
	Short press	<ul style="list-style-type: none"> In measurement mode: press to turn on/off the backlight; In calibration mode: press to calibrate; In the parameter setup mode: press to enter and open the sub-menu, confirm parameter.
	Short press	<ul style="list-style-type: none"> In parameter setup mode: press to select parameter.

3.3 Display mode

3.3.1 Display mode of measurement

Refer to Diagram - 3 and Diagram - 4 for the display mode in the units of mg/L and ppm; Diagram - 5 shows the display mode in measuring unit of % referring to air saturation; Diagram - 6 shows the display mode. When salinity value is ≥ 3 ppt, salinity displays at the bottom right of LCD. *H- 15* means that the manual compensated salinity is 15 ppt, *H* --Auto.

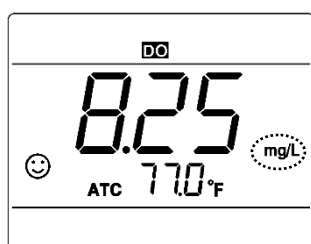


Diagram -3

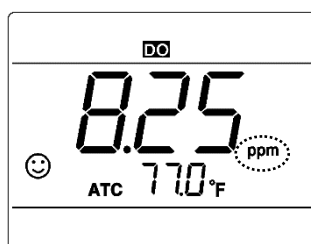


Diagram - 4

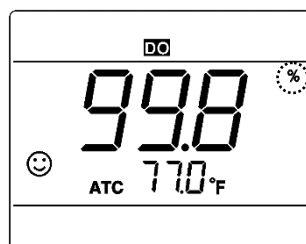


Diagram - 5

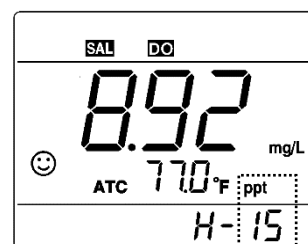



Diagram - 6

3.3.2 Display mode of stable reading

When the reading is stable, the stable icon ☺ displays on LCD. Please do not get the reading or calibrate before the smiley icon ☺ stays on LCD.

3.3.3 Automatic lock-up

Select from parameter setting P6.2 to set up automatic lock-up mode (Off-On), select **On** to turn on lock-up. When the reading is stable over 10 seconds, the meter will automatically lock up the measuring value, and LCD displays HOLD icon, see Diagram - 7. When the measure value is locked-up, press  to release lock-up.

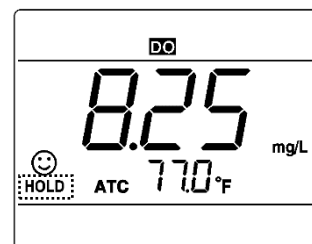


Diagram - 7

3.4 Other functions


3.4.1 Automatic Power-off

Select from parameter P4.5 to select automatic power-off (On-Off), select **On** to turn on automatic power-off, the meter will turn off automatically after 20 minutes of nonuse. Select **Off** to turn off automatic power-off.

3.4.2 Back-light

The meter is with white backlight, suitable for application even in dark environments. However, when backlight is on, the consumption of the power will increase. Select from P6.3 to select lasting time for backlight: **1-2-3-Off**, i.e. select backlight lasting time to be 1 minute, 2 minutes or 3 minutes. When Off is selected, the backlight will be turned on all the time.

3.4.3 Battery

The meter adopts 3xAA batteries. Please use LR6 alkaline battery to ensure the battery quality. Battery life >500 hours (without backlight). When LCD displays  icon, please replace with new batteries, see Diagram - 8.

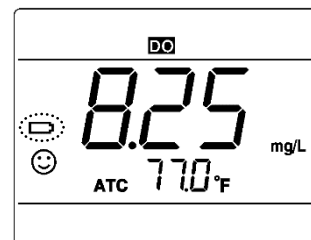
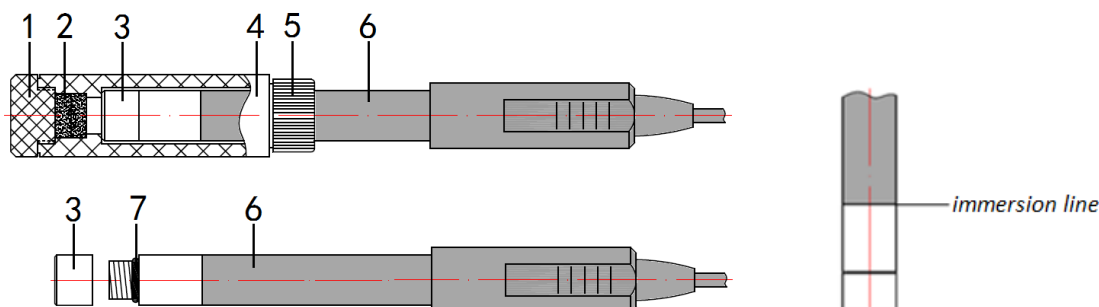


Diagram- 8

4 Optical DO (Dissolved Oxygen) Electrode

4.1 Probe structure

The meter connects to DO803 optical DO electrode with 3m cable length and built-in temperature sensor for automatic temperature compensation. See Diagram - 9 of the electrode structure.



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 reading will be unstable, or the response rate will be slow.

- Before the first use, unscrew the bottom cover of the calibration sleeve to check if the sponge is damp. If the sponge is dry or if the electrode is exposed in dry air for more than 8 hours, the surface coating of the sensor cap may be completely dried and needs to be hydrated. Soak the electrode in tap water at room temperature 77°F(25°C) for 24 hours. If the water temperature is low, soaking time should be 48-72 hours.
- Short-term storage (less than 30 days): Keep the probe head in the calibration sleeve. Always keep the sponge inside the calibration sleeve moist. Several drops of clean water should be added to a dry sponge (let the sponge be damp, but not dipping), and tighten the lock cap, so that the sensor cap is kept in the moist-saturated air.
- Long-term storage (greater than 30 days): Keep the probe head in the calibration sleeve. Check whether the storage sponge is moist every 30 days or user can store the electrode in a beaker containing clean water.
- The sponge cannot be allowed to get stained or moldy, otherwise it will consume or produce oxygen. If stained or moldy, please clean it or replace with new sponges immediately.

4.3 Optical sensor cap

4.3.1 The sensor cap is a key part of the optical DO probe. The surface coating of the cap cannot be scratched or mechanically worn. Otherwise, the service life of the sensor cap will be reduced or the probe will be damaged. Please pay special attention to it when using the probe.

4.3.2 The surface coating of the sensor cap cannot withstand high temperature, so the optical DO probe cannot be tested in water above 122°F (50°C).

4.3.3 If the surface of the sensor cap is contaminated, please do not use alcohol or organic solvents to clean, otherwise it may damage the probe. It can be gently wiped with a soft clean cloth. To disinfect the probe, immerse it in 3% hydrogen peroxide for 15 to 30 minutes and then rinse off with clean water.

4.3.4 The sensor cap has a service life of more than 8000 hours. When the probe is not being used, the service life will not be reduced, 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.

4.3.5 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.

4.3.6 The probe that comes with the meter can be used directly. User 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.


5 Calibration and Measurement of Dissolved Oxygen

5.1 Connect the DO electrode

The meter uses 8-pin socket. When the electrode is connected to the meter, please rotate it slowly to find the position of the bayonet and connect it, and then tighten the cap nut. Be careful not to pull the cable forcefully to prevent poor contact and keep the plug clean and dry.

5.2 Preparation for calibration

5.2.1 DO units selection:

Dissolved oxygen units display in three forms: mg/L, ppm and %. Press  to switch from mg/L→% or ppm→%. User can choose mg/L or ppm in Parameter Setting P4.4, but only a percentage (DO%) is displayed in calibration.

5.2.2 Resolution selection

User can choose 0.01 or 0.1 mg/L (ppm) in parameter setting P4.1. After setting, the meter will display resolution of 0.1 or 1 according to %.

5.2.3 Temperature unit selection

The temperature unit can be selected in parameter setting P6.1: °C or °F

5.2.4 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 P4.3 for the procedure of aneroid barometer calibration.

5.2.5 Salinity compensation

The instrument has manual salinity compensation. It is set in the parameter P4.2 (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.




5.3 DO Calibration

5.3.1 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 stabilize.
- c) Long press  to enter the calibration mode, and **CAL** is flashing in the upper right corner. Wait for the stable icon  to appear and stay on LCD, press  to calibrate. Once **100%** becomes stable, the saturated oxygen calibration is completed.

5.3.2 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. Generally, it is not necessary to perform zero oxygen calibration. The instrument has been calibrated for zero oxygen before it leaves the factory, so it is not necessary to perform zero-oxygen calibration for the first use. The zero-oxygen calibration is carried out in the following 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 0.1mg/L.
- c) Long  press to enter the calibration mode. **CAL** will be flashing at the bottom right corner. Wait for a stable . Press  to calibrate and the zero-oxygen calibration is completed.

5.4 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 meter 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 5.3.1 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.

5.5 Measurement of water samples

5.5.1 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.

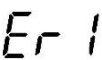


Note: the brief stirring of the probe in solution is only to eliminate bubbles. Unlike conventional galvanic/polarographic electrodes, the measuring via optical dissolved oxygen probes does not require constant stirring of the solution or flowing fluid.

5.5.2 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 stabilized. 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

5.6 Self-diagnosis information




During the process of calibration and measurement, the meter has self-diagnosis functions, indicating the relative information as below, please refer to Table -2.

Table – 2

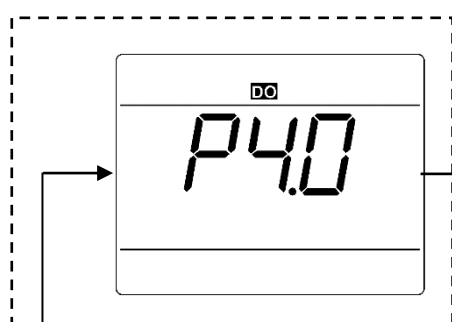
Display Icon	Contents	Checking
	Press  when reading value is not stable during calibration.	Press  after 😊 icon displays and stays on screen.

6 Parameter Setting

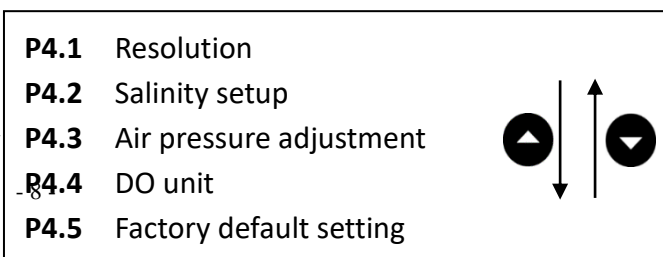
6.1 Main menu of parameter setting

Long press  in measurement mode, the meter enters P4.0 mode, and then press  or  to change menu P4.0→P6.0. For details, please see Diagram – 10. P4.0: sub-menu of DO parameter setup; P6.0: basic parameter setup menu.

Main menu of parameter setting



Submenu of DO parameter setting



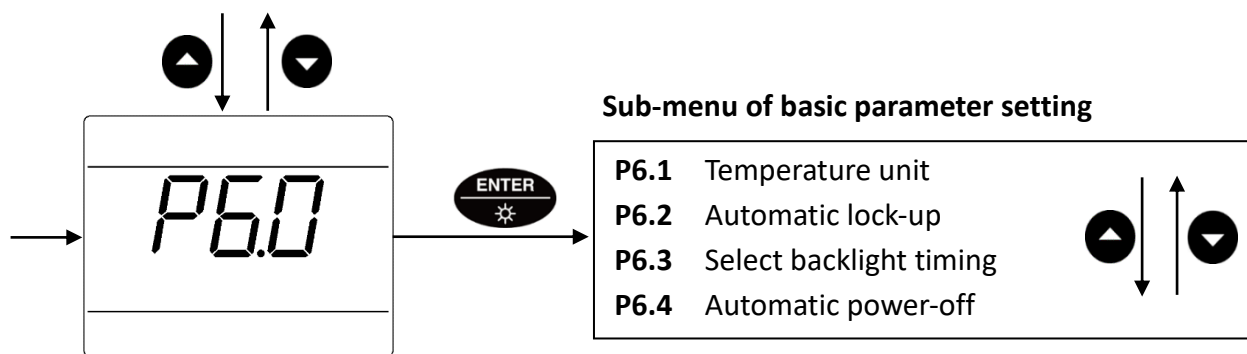
























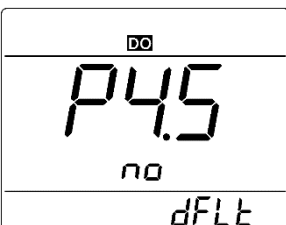





Diagram - 10




6.2 Main menu of parameter setting

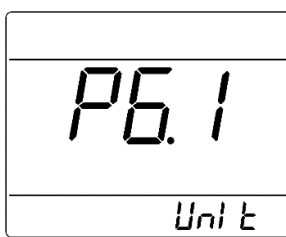





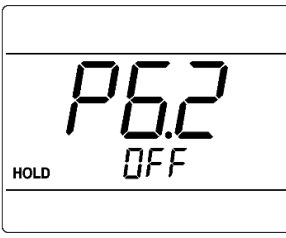





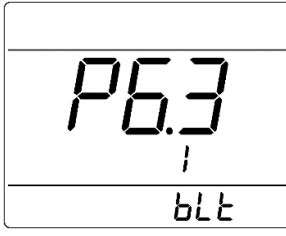





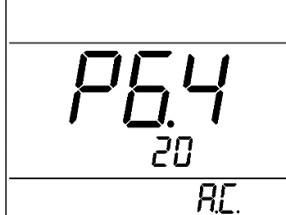




Press  in P4.0 mode, the meter enters submenu of DO parameter setting P4.1, press  or  to switch among P4.1→P4.2→...→P4.5.

	<p>P4.1—Resolution(0.01-0.1)</p> <ol style="list-style-type: none"> Press , 0.01 flashes, press  to select resolution, press  confirm. Press  to enter P4.2, or press  to return.
	<p>P4.2—Salinity setup</p> <ol style="list-style-type: none"> Press , 0 flashes, press  to set up salinity value, press  to confirm. Press  to enter P4.3, or press  to return.
	<p>P4.3—Air pressure adjustment (60-120 kPa)</p> <ol style="list-style-type: none"> Press , 101.3 flashes, press  or  to adjust air pressure value according to laboratory barometer, press  to confirm. Press  to enter P4.4, or press  to return.
	<p>P4.4— DO unit(mg/L-ppm)</p> <ol style="list-style-type: none"> Press , mg/L flashes, press  to select mg/L-ppm, press  confirm. Press  to enter P4.5, or press  to return.

	<p>P4.5—Factory default setting(No-Yes)</p> <p>Press , No flashes, press  to select No→Yes, press  to confirm, the meter returns o measurement mode.</p> <p>No— Don't restore to factory default; Yes—Restore to factory default.</p>
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6.3 Main menu of parameter setting

Press  in P6.0 mode, the meter enters submenu of basic parameter setting P6.1, press  or  to switch among P6.1→P6.2→P6.3→P6.4.


	<p>P6.1 — Temperature unit (°C-°F)</p> <ol style="list-style-type: none"> 1. Press , °C flashes, press  to select °C-°F, press  to confirm. 2. Press  enter P6.2, or press  to return.
	<p>P6.2 — Automatic lock-up (Off-On)</p> <ol style="list-style-type: none"> 1. Press , OFF flashes, press  to select OFF-On, press  to confirm. Off—Unlock-up; On—lock-up (Stable reading > 10 seconds and the reading will be automatically locked up). 2. Press  to enter P6.3, or press  to return.
	<p>P6.3— Select backlight timing (1-2-3-Off)</p> <ol style="list-style-type: none"> 1. Press , 1 flashes, press  to select 1-2-3-OFF, press  to confirm. Select Off to turn on the backlight, the time unit is minute. Factory default setting is 1 minute. 2. Press  to enter P6.4 mode, or press  to return.
	<p>P6.4—Automatic power-off setup(10-20-30-Off)</p> <ol style="list-style-type: none"> 1. Press , 20 flashes, press  to select 10-20-30-Off, press  to confirm. Select off to turn off automatic power-off, the time unit is minute. 2. Press  to return.

7 What's in the Kit?

	Content	Quantity	DO1000	
			35643-30	35643-20
1	DO1000 portable optical DO meter	1	√	√

2	DO802optical DO electrode	1	√	√
3	Instruction manual	1	√	√
4	Carrying case	1	√	
5	Paper box	1		√

8 Trouble Shooting

Error	Solutions
The meter does not turn on	<ol style="list-style-type: none"> 1. The battery is not installed correctly. Check the direction. 2. Battery low voltage, replace the battery. 3. Instrument freezes. Take out the battery and re-install.
The meter cannot calibrate	<ol style="list-style-type: none"> 1. Check calibration procedure: correct atmospheric pressure, salinity input and temperature. 2. The measured value is not stable yet, prolong the stabilization time, until 😊 is fully stabilized, then press  to finish. 3. Check the sensor cap. If it is contaminated, clean it; If it is dried out, hydrate it; If it is damaged, replace it.
DO readings are not accurate	<ol style="list-style-type: none"> 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, clean it; If it is dried out, hydrate it; If it is damaged, replace it. 4. Unscrew the sensor cap, check whether there is moist inside. If yes, wipe off, dry and tighten it.
The display value is 200% or 20.0mg/L. No change.	<ol style="list-style-type: none"> 1. Check whether the concentration of the sample is higher than 200% or 20.0mg/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, clean it; If it is dried out, hydrate it; If it is damaged, replace it.
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9 Warranty

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 Environmental Express, any malfunctioned or damaged product attributable to responsibility of Environmental Express, for a period of THREE YEARS for the instrument, TWO YEARS for the optical probe (excluding the sensor cap) and ONE YEAR for the sensor cap.

This limited warranty does not cover any damages due to:

- (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 cannot 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.

The product warranty period is the time for users to get free service after purchasing the product, not the service life of the meter or electrode.

Appendix - 1 Table of Parameter Setting

Mode	Prompts	Parameter setting items	Abbreviation	Description	Factory Default
P4.0 DO	P4.1	Resolution	<i>rES</i>	0.01-0.1 (mg/L, ppm) 0.1-1 (%)	0.01 mg/L
	P4.2	Salinity calibration	<i>HRnd</i>	0-45 ppt	0.01
	P4.3	Barometric pressure adjustment	<i>AP.</i>	60-200 kPa	101.3
	P4.4	DO unit	<i>Unit</i>	mg/L-ppm	mg/L
	P4.5	Restore to factory default setting	<i>dFLt</i>	No-Yes	No
P6.0 Basic Parameter	P6.1	Temperature unit	<i>Unit</i>	°C -°F	/
	P6.2	Automatic lock-up timing	/	Off-On	/
	P6.3	Backlight timing	<i>bLt</i>	1-2-3-Off	/
	P6.4	Automatic power-off timing	<i>AC.</i>	10-20-30-Off	/

Appendix – 2Icons and Abbreviation

Mode	Prompts	Abbreviation	Stand for	Explanation
P4.0 DO	P4.1	<i>rES</i>	Resolution	Resolution
	P4.2	<i>HRnd/ Auto</i>	Manual/Automatic	Manual or automatic salinity compensation
	P4.3	<i>AP.</i>	Air pressure	Air pressure adjustment
	P4.4	<i>Unit</i>	Unit	DO unit
	P4.5	<i>dFLt</i>	Factory default setting	Factory default setting
P6.0 Basic Parameter	P6.1	<i>Unit</i>	Unit	Temperature unit
	P6.2	<i>/</i>	<i>/</i>	<i>/</i>
	P6.3	<i>bLt</i>	Backlight setting	Backlight setting
	P6.4	<i>AC.</i>	Automatic power-off	Automatic power-off timing setting

Appendix – 3Oxygen Solubility Table (760mm Hg)

Temp. °F / °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
32.0/0	14.62	13.73	12.89	12.10	11.36	10.66
33.8/1.0	14.22	13.36	12.55	11.78	11.07	10.39
35.6/2.0	13.83	13.00	12.22	11.48	10.79	10.14
37.4/3.0	13.46	12.66	11.91	11.20	10.53	9.90
39.2/4.0	13.11	12.34	11.61	10.92	10.27	9.66
41.0/5.0	12.77	12.02	11.32	10.66	10.03	9.44
42.8/6.0	12.45	11.73	11.05	10.40	9.80	9.23
44.6/7.0	12.14	11.44	10.78	10.16	9.58	9.02
46.4/8.0	11.84	11.17	10.53	9.93	9.36	8.83
48.2/9.0	11.56	10.91	10.29	9.71	9.16	8.64
50.0/10.0	11.29	10.66	10.06	9.49	8.96	8.45
51.8/11.0	11.03	10.42	9.84	9.29	8.77	8.28
53.6/12.0	10.78	10.18	9.62	9.09	8.59	8.11
55.4/13.0	10.54	9.96	9.42	8.90	8.41	7.95
57.2/14.0	10.31	9.75	9.22	8.72	8.24	7.79
59.0/15.0	10.08	9.54	9.03	8.54	8.08	7.64
60.8/16.0	9.87	9.34	8.84	8.37	7.92	7.50
62.6/17.0	9.67	9.15	8.67	8.21	7.77	7.36
64.4/18.0	9.47	8.97	8.50	8.05	7.62	7.22
66.2/19.0	9.28	8.79	8.33	7.90	7.48	7.09
68.0/20.0	9.09	8.62	8.17	7.75	7.35	6.96
69.7/21.0	8.92	8.46	8.02	7.61	7.21	6.84

71.6/22.0	8.74	8.30	7.87	7.47	7.09	6.72
73.4/23.0	8.58	8.14	7.73	7.34	6.96	6.61
75.2/24.0	8.42	7.99	7.59	7.21	6.84	6.50
77.0/25.0	8.26	7.85	7.46	7.08	6.72	6.39
78.8/26.0	8.11	7.71	7.33	6.96	6.62	6.28
80.6/27.0	7.97	7.58	7.20	6.85	6.51	6.18
82.4/28.0	7.83	7.44	7.08	6.73	6.40	6.09
84.2/29.0	7.69	7.32	6.93	6.62	6.30	5.99
86.0/30.0	7.56	7.19	6.85	6.51	6.20	5.90
87.8/31.0	7.43	7.07	6.73	6.41	6.10	5.81
89.6/32.0	7.31	6.96	6.62	6.31	6.01	5.72
91.4/33.0	7.18	6.84	6.52	6.21	5.91	5.63
93.2/34.0	7.07	6.73	6.42	6.11	5.82	5.55
95.0/35.0	6.95	6.62	6.31	6.02	5.73	5.46
96.8/36.0	6.84	6.52	6.22	5.93	5.65	5.38
98.6/37.0	6.73	6.42	6.12	5.84	5.56	5.31
100.4/38.0	6.62	6.32	6.03	5.75	5.48	5.23
102.2/39.0	6.52	6.22	5.98	5.66	5.40	5.15
104.0/40.0	6.41	6.12	5.84	5.58	5.32	5.08
105.8/41.0	6.31	6.03	5.75	5.49	5.24	5.01
107.6/42.0	6.21	5.93	5.67	5.41	5.17	4.93
109.4/43.0	6.12	5.84	5.58	5.33	5.09	4.86
111.2/44.0	6.02	5.75	5.50	5.25	5.02	4.79
113.0/45.0	5.93	5.67	5.41	5.17	4.94	4.72

Salinity = Dissolved salts in water

Chlority = Measure of chlorine content, by mass, of water

S (‰) = 1.80655 x Chlorinity (‰)

Appendix – 4DO % Calibration Values

Cal. Value	Air Pressure				Cal. Value	Air 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

Environmental Express

2345A Charleston Regional Parkway
Charleston, South Carolina 29492

Toll Free: 800-343-5319

Technical Support: 800-745-8218

Email: tech@environmentalexpress.com

Website: www.environmentalexpress.com