L'eau D'or
Swimming Pool Products
www.lodore.ca

PS- 4

Pool System Power Saver

INSTALLATION AND USING INSTRUCTION

⚠ WARNING

THIS EQUIPMENT MUST BE INSTALLED AND SERVICED BY A QUALIFIED TECHNICIAN. IMPROPER INSTALLATION MAY RESULT IN PROPERTY DAMAGE, SERIOUS INJURY OR DEATH. IMPROPER INSTALLATION AND/OR OPERATION WILL VOID THE WARRANTY.

THIS MANUAL CONTAINS IMPORTANT INFORMATION ABOUT THE INSTALLATION, OPERATION AND SAFE USE OF THIS PRODUCT. ONCE THE PRODUCT HAS BEEN INSTALLED THIS MANUAL MUST BE GIVEN TO THE OWNER / OPERATOR OF THIS EQUIPMENT.

⚠ **WARNING**: **When installing and using this electrical equipment, always follow basic safety precautions.**

⚠ **WARNING**: **Keep equipment out of reach of children.**

⚠ **WARNING**: **Professional installation recommended**

⚠ **WARNING**: **Before performing installation or service, disconnect all power.**

ⓘ **ATTENTION**: **Install this product at the place with good ventilation in order to prevent the internal temperature of the instrument from rising.**

ⓘ **ATTENTION**: **Don't lean to left or right when the instrument is installed, horizontal installation shall be realized as possible (retroversion<30°).**

GENERAL

LODORE Pool System Power Saver is to effectively save energy used by pool systems through setting minimum running schedule according to water chemistry change.

The controller features proportional feed to ensure precise water chemistry maintenance, and operates using the Oxidation-Reduction Potential (ORP) method of water analysis to ensure rapid deactivation of such waterborne pathogens as E.Coli in swimming pool water.

SPECIFICATIONS

Model:	PS-4	**Volts:**	110/230V or 240/415V
Description:	Power saver control unit Probe Unit Pipe fitting	**Freq:**	55HZ
		Amps:	0-40A
		Phase:	single & double

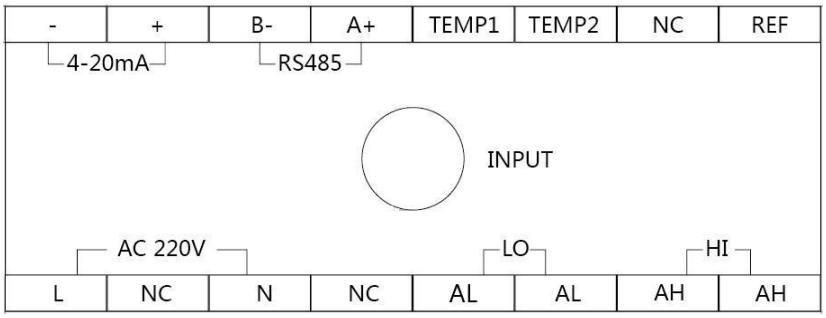
INSTALLATION

1. Install the Probe Unit to the filter return side of the pool. To install the Probe Unit, do the following:
    a. Cut off the PVC pipe with a proper length;
    b. Clean the cut end with PVC cleaner to make it ready for adhesion;

c. Adhere the Probe Unit to the pipe with PVC cement.

For the pipe width of 1 ½ inches, use reducer to connect the Probe Unit with the pipe.

2. Connect the Probe with Control Unit.



3. Install the Control Unit on the wall near the Probe Unite by screwing through the screw holes on the back of the Control Unit.
4. Connect the transformer and pool pump with the Control Unit.

ⓘ Attention:

The following places shall be avoided during the installation. Improper installation may impact efficiency of this product, or void the warranty of this product.

- The place that's exposed to direct sunlight and the vicinity of the hot tools.
- The place where the environment temperature exceeds 60℃during the work.
- The place where the environment humidity exceeds 85% during the work.
- The vicinity of the electromagnetic occurring sources.
- The sites with strong mechanical vibration.
- The site where the temperature is changed a lot and the moisture.
- condensation is easily formed.
- Places with lots of lampblack, steam, moisture, dust and corrosive gas.

OPERATION

A. Modes:

Use the following user mode buttons to turn on and off this Power Saver:

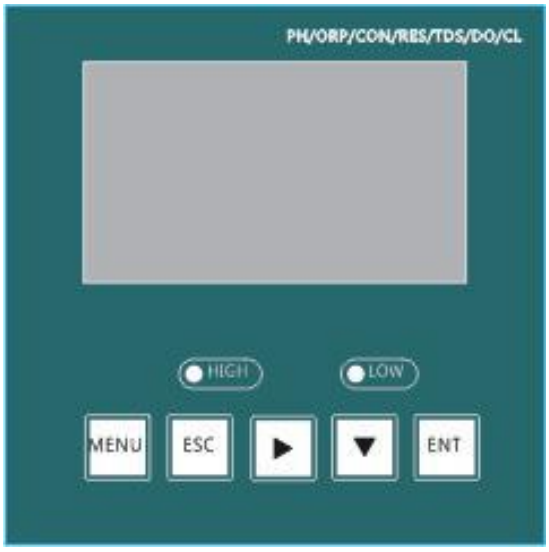
ON: Slide the switch to the ▬ icon. The pump will keep running independently

OFF: Slide the switch of timer to the ○ icon to turn off the Power Saver. In this position there is no power at pump.

Controller: Slide the switch of timer to the 〓 icon Power Saver is working . pump is under control by Power Saver

B. Controller setup

Follow ORP controller instruction



Definitions of Keys

Identification	Key Tag	Function Description
	**Menu**	**Enter the menu under "monitoring interface"** **Exit the menu under "monitoring interface"**
	**ESC**	**Check relevant alarm status under the "monitoring interface"** **The relevant up and bottom layer of interface under the "menu interface" returns to the up layer** **"Calibration interface" presents the calibration item is skipped**

	**Right displacement**	**The digit of recurrent selection parameter**
	**Down displacement**	**Relevant menu is selected under the "menu interface" Relevant numerical value is modified under the setup status**
	**ENT**	**Enter the submenu or confirm modification under the "menu interface"**

C. Monitoring picture

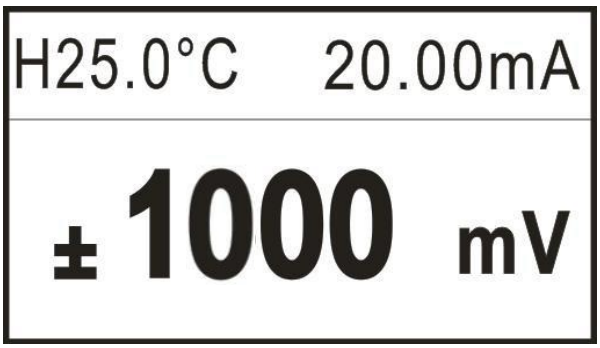
The instrument is equipped with monochrome lattice LCD, the resolution ratio is 128*64.

Use Menu to enter the picture of password authentication, input password to enter the picture of the main menu.

Use ESC to enter the alarm inquiry picture so as to inquire the current alarm set information.

PH monitoring picture

ORP monitoring picture



D. Password verification

Use the ENT to enter the picture of the main menu after input the password. The initial password is 0000, which can be changed by using the function of password change. Please keep your password in safe place.

E. Main menu

- System Setting: the setup of buzzer and backlight, password change and factory reset.
- Signal Setting: switchover of electrode type and manual/automatic switchover of temperature compensation.
- Online Calibration: calibration or correction of PH and ORP signal.
- Remote setting: parameter setup of RS485 and current transmitting output.
- Alarm setting: parameter of high alarm and low alarm. Information inquiry: current version number.

F. System Setting

- Buzzer: set the switch of the buzzer during the alarm.
- Change Password: change the password and use the new password to log in.
- Factory setting: return to the set before leaving the factory.

G. Signal Setting

- Electrode type: set the type of the electrode, two types of PH electrode and ORP electrode.
- Temperature compensation: set automatic or artificial temperature compensation, the temperature scope is 0-99.9℃.

H. Online calibration

- PH calibration: after entering the PH calibration picture, firstly put PH electrode into 4.00/ or 4.01 standard solution, standing for a moment, after the reading is stable, press the ENT, then put the PH electrode into the 6.86/ 7.00 PH standard solution, standing for a moment, after the reading is stable, press the ENT, finally put the PH electrode into 9.18/10.01 PH standard solution, standing for a moment, after the reading is stable, press the ENT, after the reading is successfully calibrated, the calibration process of PH is completed.
- PH modification: the measured PH is modified between two PH value.
- ORP calibration: after entering the calibrated picture, firstly put the ORP electrode into the 86mV standard solution, standing for a moment, after the reading is stable, press the ENT, then put the ORP electrode into the 256mV standard solution, standing for a moment, after the reading is stable, press the ENT, after the reading is successfully calibrated, the calibration process of ORP is over.
- ORP modification: the measured ORP is modified between 300mV.

I. Remote setting

- RS 485: set the address and baud rate of 485 communication.
- Current transmission: set the 4mA and 20mA corresponding value of the 4-20mA output.

J. Alarm Setting

- PH high alarm: when the measured value is bigger than the high alarm pull-on value, the high alarm relay will actuate; when the measured value is smaller than high alarm cut-off value, the high alarm relay will disconnect.
- PH low alarm: when the measured value is smaller than the low alarm pull-on value, the low alarm relay will actuate; when the measured value is bigger than low alarm cut-off value, the low alarm relay will disconnect.
- ORP high alarm: when the measured value is bigger than the high alarm pull-on value, the high alarm relay will actuate; when the measured value is smaller than high alarm cut-off value, the high alarm relay will disconnect.
- ORP low alarm: when the measured value is smaller than the low alarm pull-on value, the low alarm relay will actuate; when the measured value is bigger than low alarm cut-off value, the low alarm relay will disconnect.

MAINTENANCE

1. The storage of pH glass electrode, short-term: it's stored at the buffered solution of pH=4; long-term: it's stored at the buffered solution of pH=7.

2. The washing glass electrode spherical bulbs of the pH glass electrode possibly lengthen the response time of the electrode due to contamination. CCl4 or soap solution can be used to wipe the dirt, then it can be continued to use after being soaked in the distilled water for a whole night. It can be soaked for 10~20 minutes by 5% HF solution when the contamination is serious, then immediately use water to wash clean, finally It's used after being soaked in the 0.1N HCl solution for a whole night.

3. Treatment of glass electrode aging: the aging of glass electrode is related to the progressive change of the substratum structure. The response of the old electrode is slow, the membrane resistance is high, and the slope is low. The external substratum is etched by hydrofluoric acid, which can usually improve the electrode performance. If the internal and external substratum can be regularly cleaned by this method, the service life of the electrode is almost unlimited.

4. The best storage solution for the storage silver-silver chloride electrode of the reference electrode is saturation potassium chloride solution, the high concentration potassium chloride solution can prevent the silver chloride from being deposited at the solution border and keep the solution border at the working condition. This method can also be used for the storage of combined electrode.

5. The problems of regenerated reference electrode are mostly caused by the blocking of solution border, which can be solved by the following methods:

(1) Solution border is soaked: the mixed liquor of 10% saturation potassium chloride solution and 90% distilled water is heated to 60-70℃, the electrode is soaked for about 5cm, it's soaked for 20 minutes to 1 hour. This method can eliminate the crystal at the electrode terminal.

(2) Soaked by ammonia: the stronger ammonia water can be used to eliminate when the solution border is blocked by silver chloride. The specific method is to wash clean the electrode,

then it's soaked for 10~20 minutes in ammonia water after the solution is evacuated, but the ammonia water can't enter the internal part of the electrode. The electrode is picked out and washed clean y distilled water, which can be continued to use by adding internal solution.

(3) Vacuum method: use soft tube to cover the solution border of the reference electrode, use current getter pump to suck the internal solution until penetrate the solution border, and then the mechanical blocking materials are removed.

(4) Solution border is boiled: the solution border of silver- silver chloride reference electrode is soaked in boiled water for 10~20 seconds. Notice that the electrode shall be cooled to room temperature before the next boiling.

(5) The mechanical method of abrasive paper can be adopted to eliminate the blocking when the above mentioned methods are invalid, this method possibly blocks the grinded sand grains into the solution border and cause permanent blocking.

FAULT ANALYSIS AND EXCLUSION

1. No display at the controller?

Answer: check if the power line is correctly connected, if the power is on.

2. Up and down bounce of the displayed number?

Answer: check if there are frequency converters and other interference equipment at the surrounding environment, notice to keep away from these interference equipment or adopt shield measures.

3. The PH instrument can't be calibrated?

Answer: the standard solution preparation is not correct, or the electrode is damaged.

4. The test of standard solution PH4.00, PH6.86 and PH9.18 calibration is not correct?

Answer: if the standard solution is contaminated, exchange the standard solution for calibration again.

5. The response of the figure is slow?

Answer: the electrode spherical bulb is covered by dirt, the response will become slow, please clean according to the corresponding methods based on the types of the pollutants, it's normal phenomenon if it's slow in winter.

WARRANTY

LODORE POOL PRODUCTS as manufacturer, warrants each LODORE product unit delivered to the original consumer/purchaser to be free from defects in material and workmanship under the intended normal use as described in LODORE pool product installation and operating instructions enclosed with each unit, for a period of THREE years from the date of purchase.

During the warranty period LODORE POOL PRODUCTS agrees to repair or, at its own option, replace the unit or any part of it without charge for labor or parts. This warranty shall not apply if the unit is subjected to misuse, neglect or accident.

Please refer to the detailed LODORE products warranty booklet available at LODORE website www.lodore.ca.

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