Inverter Salt Chlorinator

Operating Instructions

InverClear

INDEX

1 Warnings

⚠ WARNING: General Information

1. Carefully read the instructions that appear in this manual and on the device. Failure to comply with the instructions can cause injuries. This document must be given to every pool user, who should keep it in a safe place.
2. Chemicals can cause internal and external burns. To avoid death, serious injury and/or damage to equipment, wear personal protective equipment (gloves, goggles, mask, etc.) when servicing or maintaining this device. This device must be installed in an adequately ventilated place.
3. The appliance is not to be used by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.
4. Children must not play with the device. User maintenance and cleaning must not be carried out by unsupervised children.
5. Use only original Aquark parts.
6. Instructions are also available on https://www.aquark.com/inverclear-salt-chlorinator/

⚠ WARNING: Electrical Hazard.

1. The equipment is intended to be used only in swimming pools.
2. Disconnect the equipment from the mains supply before any intervention.
3. All electrical connections must be carried out by a qualified approved electrician in accordance with the standards currently in force in the country of installation.
4. Check that the device is plugged into a power outlet that is protected against short-circuits. The device must also be powered via an isolating transformer or a residual current device (RCD)with a nominal operating residual current not exceeding 30 mA.
5. Check that the supply voltage required by the product corresponds to the voltage of the distribution network and that the power supply cables are suitable for the product power supply.
6. To reduce the risk of electric shock, do not use an extension cable to connect the device to the mains. Use a wall socket.
7. The device must not be used if the power cord is damaged. An electric shock could occur. A damaged power cord must be replaced by the after-sales service or similarly qualified persons to avoid danger.

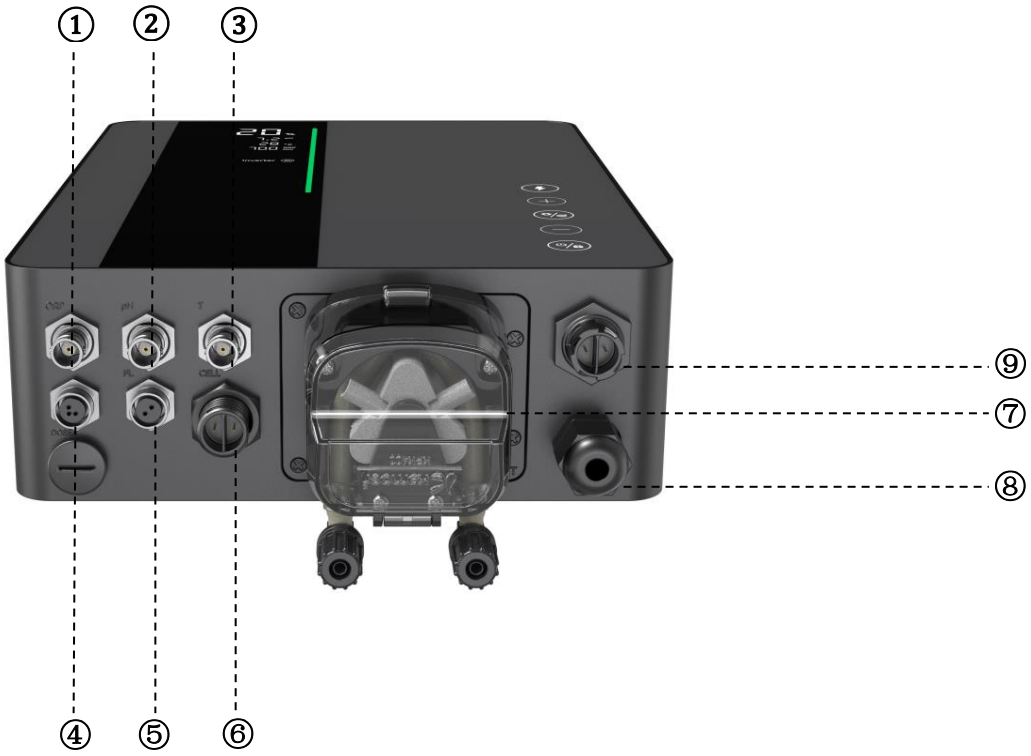
2 Product Introduction

2.1 Product Specification

Model	ICS10	ICS16	ICS22	ICS28
Chlorine production (g/h) (Salinity: 3000 PPM)	10	16	22	28
Pool Volume (m^3)	20-45	35-75	40-100	50-120
Recommended Salinity	2 – 5 (recommended 3g/L)			
Power Supply	AC 100~240V 50/60Hz			
Max. Output Voltage	DC 12V			
Max Input Power	60 W	85 W	110 W	130 W
Advised water flux (m^3/h)	5 m^3/h~18 m^3/h			
Operating Water Temperature	10℃~40℃			
Ambient Temperature	-5℃~42℃			
Pressure for Electrolytic Cell	3.0 Bar for Probe Cell, 4.5 Bar for Electrolysis Cell			
IP Rating	IPX4			
Cell Lifetime	Up to 10000H			

2.2 Electronic Connections

2.2.1 Control Unit with In-Built pH Regulator



No.	Port Name	Photo	Description	
1	ORP		BNC Connector for ORP probe	
2	pH		BNC Connector for pH probe	
3	Temp		BNC Connector for temperature sensor (Integrated with the pH sensor)	
4	485 COM		1	485 - GND
			3	485 - B
			4	485 - A
5	Flow Switch		Connector for flow switch	
6	Power Output		Terminal for cell power	
7	In-built pH Regulator		Left	Acid inlet
			Right	Acid outlet
8	Power Input		AC power connector (110/220V, 50/60Hz)	
9	AUX		Reserved power connector	

2.2.2 Control Unit with External pH Regulator

3 Pool Water Preparation

To prepare the pool water to enable the chlorinator, its chemical composition must be balanced and salt added. Certain adjustments to the chemical balance of the pool can take several hours.

The procedure **MUST** therefore be started well **BEFORE** the chlorinator is turned on.

3.1 Adding Salt

Add the salt several hours or, if possible, a day before turning on the chlorinator. Ensure that the recommended amount of salt is used.

Measure the salt content 6 to 8 hours after adding the salt to the swimming pool.

NOTE:

- If the water in the pool is not fresh and/or if it is liable to contain dissolved metals, use a metal remover, according to the manufacturer's instructions.
- If your water has previously been treated with a product other than chlorine (bromine, hydrogen peroxide, PHMB, etc.), neutralize this product or replace all the water in the pool.

3.2 Chemical Water Balance

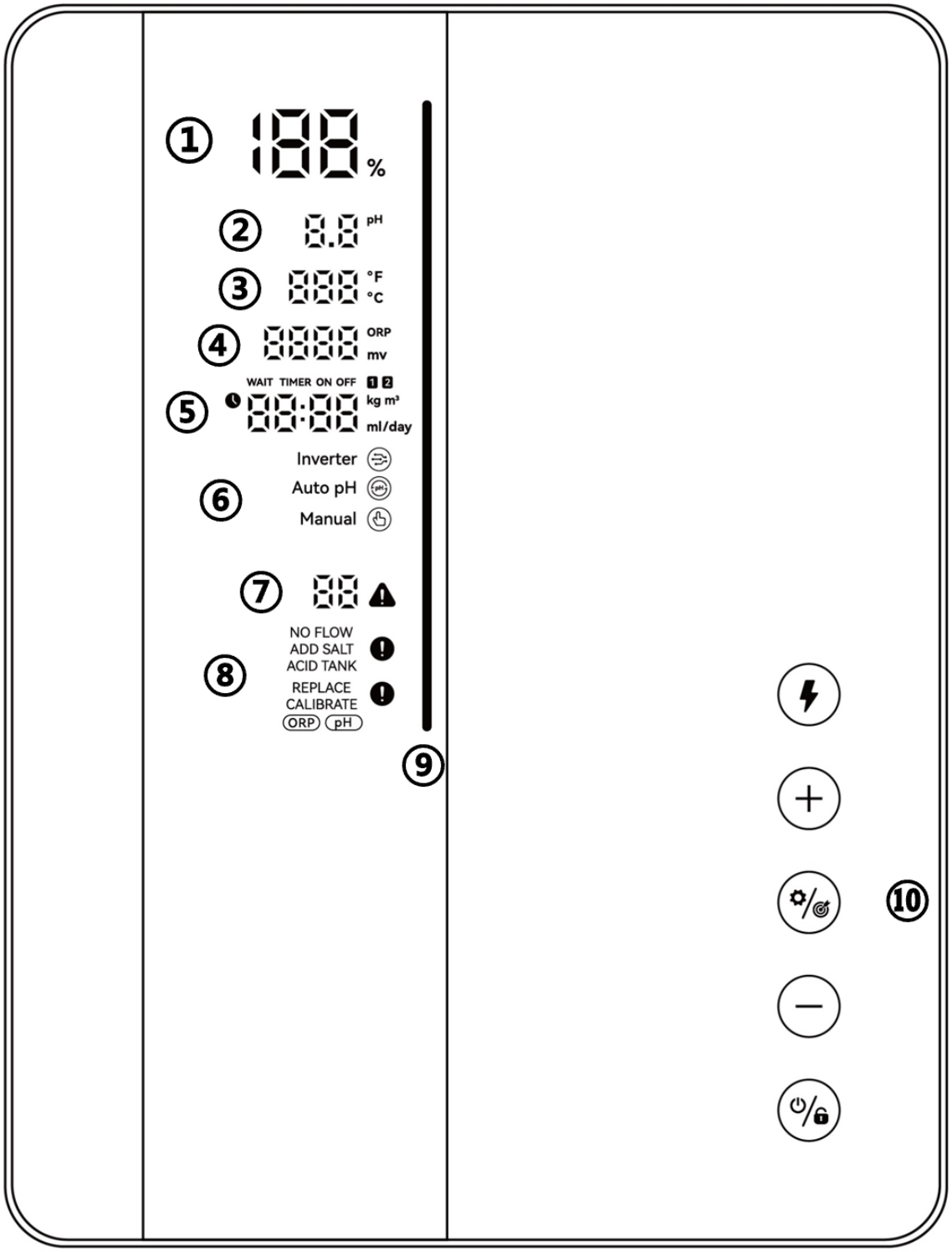
The water must be balanced manually **BEFORE** the device is started up.

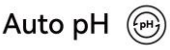
The following table summarizes the concentrations recommended. Your water should be checked regularly to maintain these concentrations and minimize surface corrosion or deterioration.

CHEMISTRY	Recommended CONCENTRATIONS
Salt	Salt 3.0 g/l
Salt (Low salt)	Salt (Low salt) 2.0g/l
Free chlorine	Free chlorine 1.0 to 3.0 ppm
pH	pH 7.2 to 7.6
Cyanuric acid (stabilizer)	20 to 30 ppm max, 0 ppm in indoor pool (Add stabilizer only if necessary)
Total alkalinity	80 to 120 ppm
Water hardness	200 to 300 ppm
Metals	0 ppm
Algaecide	Use of algaecide is an option, but must be copper free

4 Control Unit Operation

4.1 General Screen View



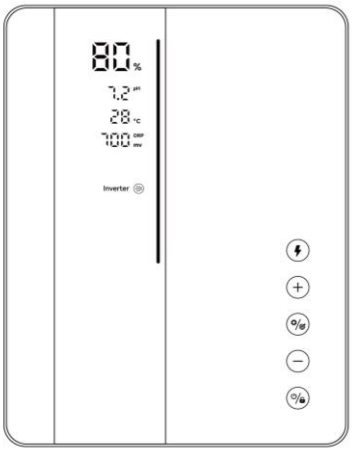
Marked Area	Description	Icon
①	Real-time chlorine production/ OTA updating progress.	
②	Real-time pH	
③	Real-time water temperature (℃/℉)	
④	Real-time ORP value (display "---" when the value exceeds 999mV)	
⑤	Pool volume, Boost mode countdown, salt adding amount, time, acid adding amount.	
⑥	Chlorine Production Mode: Inverter Mode	
	Chlorine Production Mode: Auto pH Mode	
	Chlorine Production Mode: Manual Mode	
⑦	Error codes	
⑧	Warnings	
⑨	LED Indicator Green: Suitable for swimming Red: Need to be chlorinated * Only available with ORP probe & Ph/Temp probe	
⑩	Boost Mode Switch	
	Tuning up	
	Settings/Calibration	
	Tuning down	
	Power/Lock	

4.2 Chlorine Production Mode Introduction

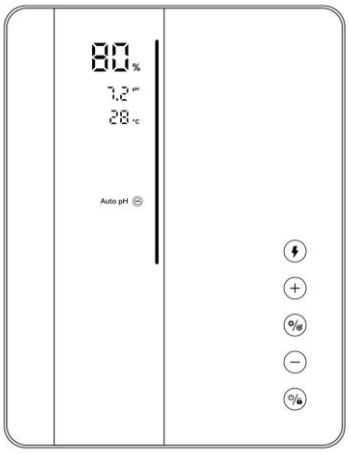
The chlorinator can be configured to 3 different types according to different chlorine production modes.

Configuration		Premium Model	Medium Model	Basic Model
Hardware Options		ORP+pH+Doser	pH+Doser	/
Selectable Chlorine Production Mode	Inverter Mode	√	-	-
	Auto pH Mode	-	√	-
	Manual Mode	√	√	√

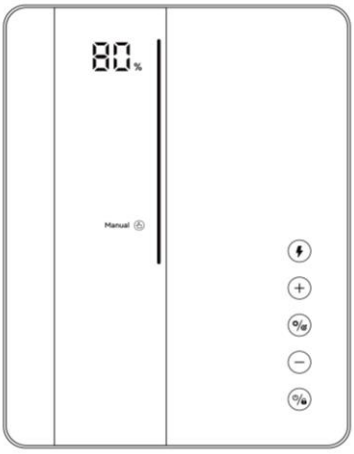
The HOME screen of each chlorine mode is shown as follows:



Inverter Mode



Auto pH Mode



Manual Mode

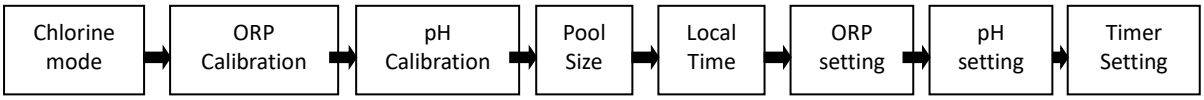
4.3 Basic Commands and Functions

Command Keys	Function
	1. **Power ON :** Hold for 3 seconds initially 2. **Power OFF :** Tap on home screen 3. **Lock/Unlock :** Hold for 3 seconds. **Note:** The auto lock function will be activated after 2 minutes without any operation.
	1. **Activate BOOST mode :** Tap 2. **Exit BOOST mode :** Hold for 3 seconds
	1. **Start setting process/ Start calibration process/ Go to next step :** Tap 2. **Back to home screen :** Hold for 3 seconds

4.3.1 Start Up/ First-time Initialization

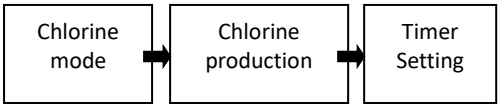
When switching on the control unit for the first time or right after restoring factory settings, the pad screen operation follows the initialization process.

Premium Configuration:



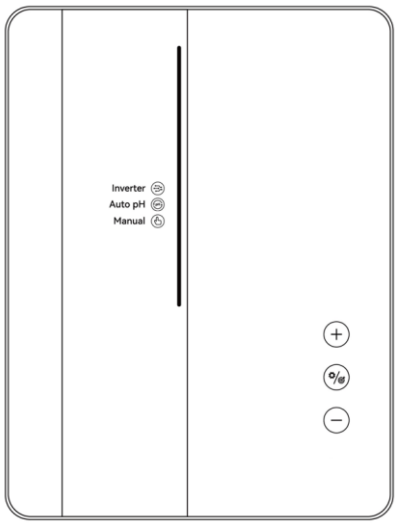
Medium configuration:

Basic Configuration:



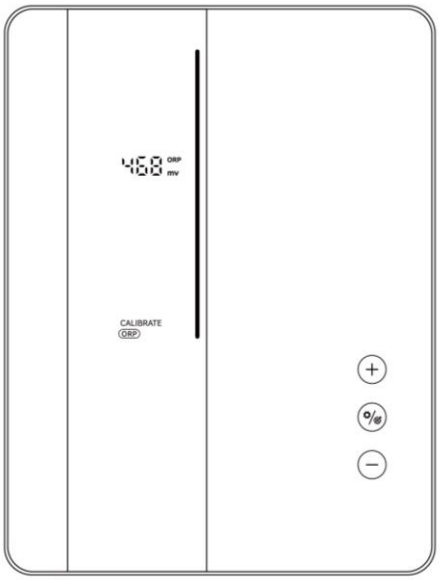
① Chlorine Production Mode Selection

- The default mode Inverter / Auto pH / Manual start to blink;
- Tap  or  to select chlorine production modes;
- Tap  to confirm your selection, and go to next step.



② ORP Calibration (Only Premium)

- On the processing screen, the default digit display “ORP 468 mV” and Red LED indicator are blinking.
- Place ORP probe into 468mV buffer solution, make sure the head of the probe is totally soaked.
- Calibration completes when the beeper sounds, and LED indicator turned green.
- Tap  to next step.

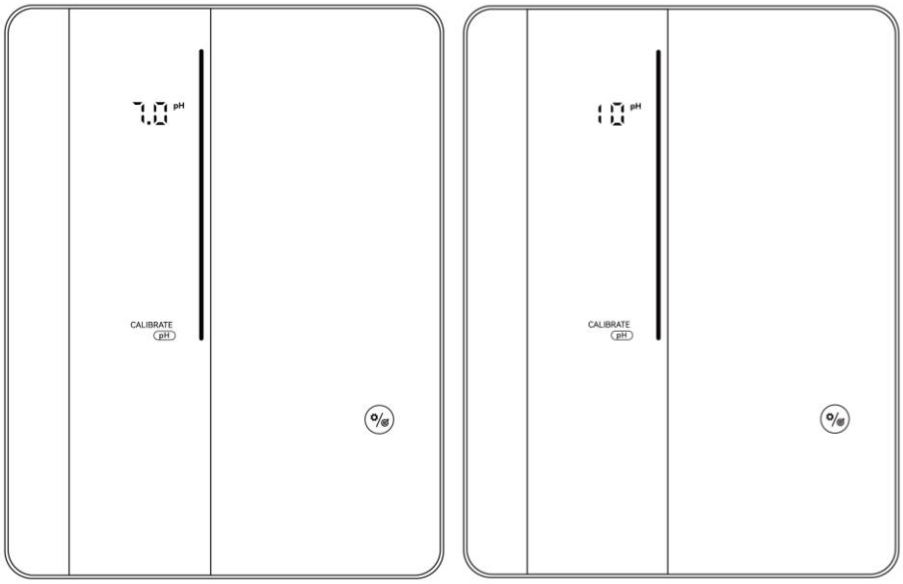


NOTE:

- This step can also be skipped by tapping  .
- If the ORP probe stayed unsoaked by the buffer solution within 30 seconds or soaked in wrong solution, the LED indicator would keep blinking red until the probe is handled properly.

③ pH 7.0 & pH 10.0 Calibration (Premium/Medium)

- When the digit display “pH 7.0” and red LED indicator are blinking on the pad screen, place pH probe into the PH 7.0 buffer solution, make sure the head of the probe is totally soaked.
- Calibration completes when the beeper sounds, and LED indicator turned green.
- Tap  to next step, pH 10.0 calibration. (Remember to clean the pH probe before pH 10.0 calibration).
- The entire process of pH 10.0 calibration is the same with pH 7.0 calibration.
- Tap  to next step.



NOTE:

- This step can also be skipped by tapping the setting button  .
- If the pH probe stayed unsoaked by the buffer solution within 30 seconds or soaked in wrong solution, the LED indicator would keep blinking red until the probe is handled properly.
- Before calibrating or replacing the probe, the valve of the electrolytic cell needs to be turned off to avoid leakage.

④ Pool Volume Setting

- The default digit display on the pad screen is "SIZE 30 m^3" as follows.
- When the number "30" is blinking, it can be tuned from 5 to 150 m^3, in increments of 5, by tapping ⊕ or ⊖. Holding the button can accelerate the tuning speed.
- Tap ⚙/◎ to next step.

⑤ Local Time Setting

- When the local time is blinking, set hours of the local time by tapping ⊕ and ⊖, save the parameter by tapping ⚙/◎, then set and save minutes in the same way.
- Tap ⚙/◎ to next step.

⑥ ORP Setpoint Setting (Only Premium)

- The default digit display on the pad screen is "700mV" .
- When the number "700" is blinking, it can be tuned from 650 to 800 mV, in increments of 1, by tapping + or − . Hold the button can accelerate the tuning speed.
- Confirm the ORP setpoint setting by tapping ⚙/◎, and enter the next step: pH Setpoint setting.

⑦ pH Setpoint Setting (Premium/Medium)

- The default digit display on the pad screen is "7.2" .
- When the number "7.2" is blinking, it can be tuned from 7.2 to 7.6, in increments of 0.1, by tapping + or − . Hold the button can accelerate the tuning speed.
- Tap ⚙/◎ to confirm and enter next step.

⑧ Chlorine Production (Auto pH Mode/Manual Mode)

- The default digit display on the pad screen is "100%" .
- When the number "100" is blinking, it can be tuned from 100 to 0, in increments of 5, by tapping + or − . Hold the button can accelerate the tuning speed.
- Tap ⚙/◎ to confirm and enter next step.

⑨ pH Dosing Volume Setting (Only Manual Mode)

- The default digit display on the pad screen is “50 mL/day” .
- When the number “50” is blinking, it can be tuned from 0 to 999, in increments of 10, by tapping + or − . Hold the button can accelerate the tuning speed.
- Tap  to confirm and enter next step

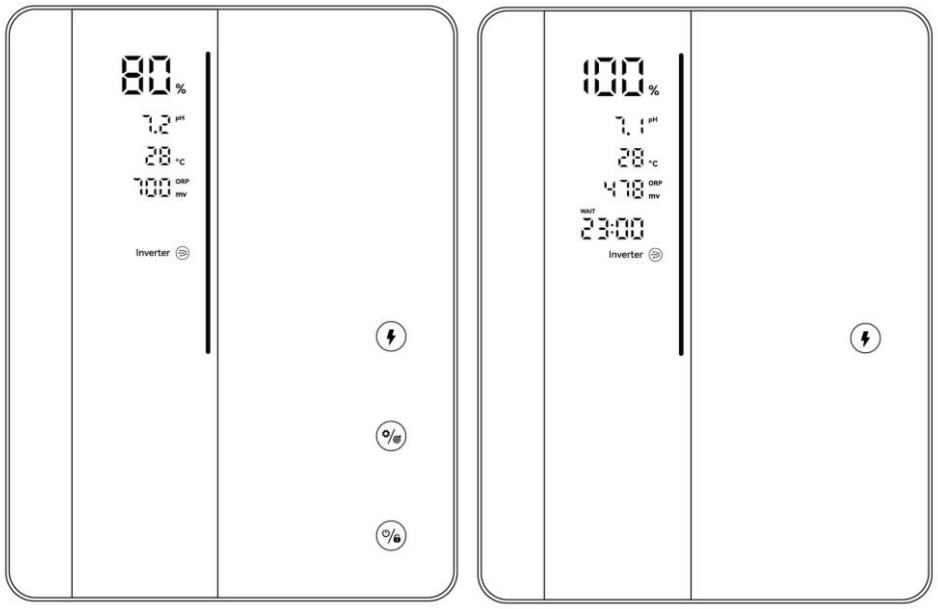
⑩ Timer Setting

- When TIMER ON and 1 lights up, set hours of the first timer by tapping ⊕ and ⊖, save the parameter by tapping  , then set and save minutes in the same way.
- When TIMER ON setting finished, TIMER OFF light up, set the end time of the first timer in the same way.
- When 1 vanishes and 2 lights up, set the start and end time of the second timer the same as mentioned above.
- Tapping  to Confirm Timers setting and return to home screen.

4.3.2 BOOST Performance

① **Switch ON:** Tap to enter Boost mode, the device will run at 100% power for 24 hours. The real-time production and Boost countdown will be displayed as follows

② **Switch OFF:** Hold for 3 seconds.



Production Speed Display **Countdown Display**

NOTE：

- BOOST mode is suggested to be activated when chlorine is urgently needed.
- BOOST mode cannot be activated When or lights up.
- While BOOST mode is on, the is deactivated.
- If the chlorinator is powered off with BOOST mode turned on, the BOOST countdown refreshes when the chlorinator is turned on again.
- When the BOOST mode terminates or stops, production continues according to the previous settings.
- If ORP value is lower than 500mV, the Boost switch will start flashing for 30 seconds. Then it stays lit when no remedial action is detected.

4.3.3 Settings

Tap Setting  to enter settings in accordance with following order:

1) ORP Target Value setting: range 650-800mV (Inverter Mode)

   Sug'td ORP Winter setting: ORP 650mV;

   Sug'td ORP summer setting:QRP700mV；

   Summer (max load) setting:750mV-800mV；

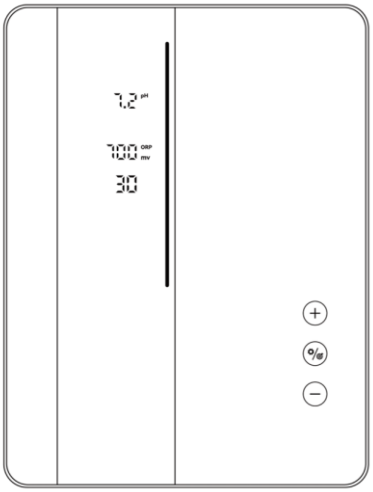
2) pH Target Setting: range 7.2-7.6 (Inverter Mode / Auto pH Mode);

3) Chlorine Production: range 0-100% (Auto pH Mode / Manual Mode);

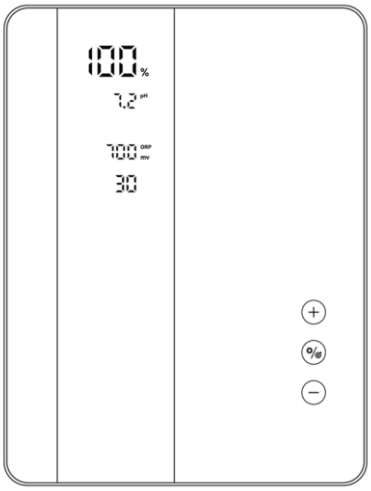
4) pH Dosing Volume Setting: range 0-990 mL/day (Only Manual Mode)

   Hydrochloric Acid: ≤12.5% concentration;

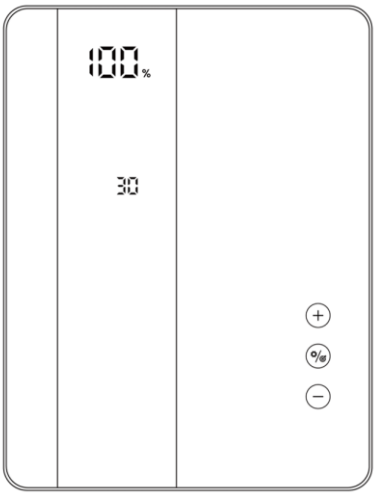
5) Timers setting: range 0:00-24:00 (24hr clock);



Settings (Inverter Mode)



Settings (Auto pH Mode)



Settings (Manual Mode)

4.3.4 Calibration

Tap  and hold for 3 seconds to enter calibration in accordance with following order:

1) ORP 468mV Calibration (Inverter Mode)

2) PH 7.0 and 10.0 Calibration (Inverter Mode / Auto pH Mode)

3) Pool Volume Setting: range 5-150m^3

4) Previous local time setting: range 00:00-24:00;

5) Tap  to return home screen;

NOTE:

During the settings and calibration process, all values are set by tapping and ;

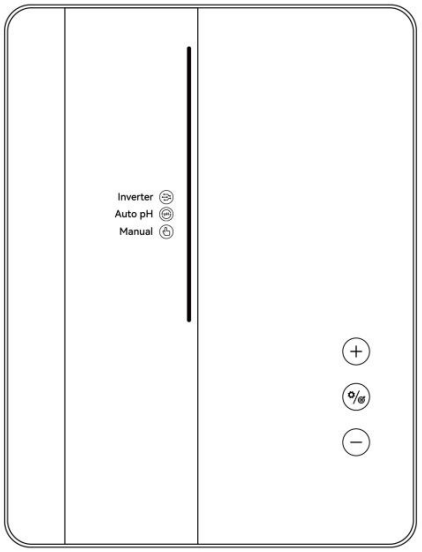
Users can return to home screen at any point by holding for 3 seconds, or skip any step by tapping .

4.4 Combination Commands and Operation

Combinations	Function
Hold and for 3 second	Enter chlorine mode selection screen
Tap , then hold and for 3 second	Restore factory settings
Tap , then hold and for 3 second	Enter network configuration screen

4.4.1 Chlorine Mode Selection

Hold and for 3 second on home screen, the chlorine mode selection screen shows as follows.

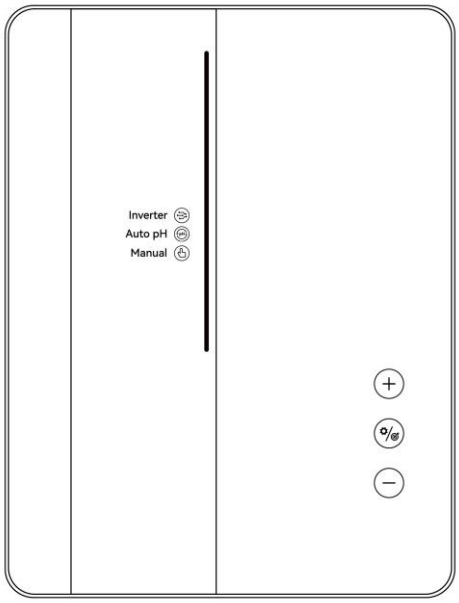


Tap or to choose chlorine production mode. According to different configuration options, the selectable modes4.2.

The icon starts to blink when being selected. Tap to confirm your selection, then the screen will return to home automatically.

4.4.2 Restore Factory Settings

Tap on home screen, hold and for 3 second, hearing the beeper and the chlorinator is restored factory settings, and automatically start initialization process as follows:



4.4.3 Network Configuration

① Enter settings screen by tapping on home screen, hold and for 3 second, then constant buzz can be heard.

② During network configuration process, the chlorinator is still operating with the previous configuration.

③ The beeper stops when network configuration is completed.

5 Salt Replenishment

The chlorinator must remain OFF during this operation and until the additive is completely dissolved. Operating the chlorinator with non-dissolved salt could irreversibly damage the cell and the power supply, and lead to a void of the warranty.

Calculate the volume of the swimming pool and add 3 to 5 Kg of salt per cubic meter. The suggested salinity is 3-5 g/L. Make sure the chlorinator is disconnected during the whole process, and turn on the filtration system to work for at least 24 hours after the operation.

For any new pool builds please wait for four weeks before adding salt into any recently cement coated pool or discuss this with your pool builder.

The salt dissolving process can be accelerated using the pool cleaner. Check the salt concentration is between 3 and 5 kg/m^3 using a kit from a specialized pool shop.

The salt concentration may be reduced over time due to the rain or other periodic freshwater contributions (topping up, backwashing, etc.). Whenever the salt concentration needs to be corrected, pour salt as close as possible to the return lines. Never pour salt in the skimmers or in the drain inlet.

6 Maintenance

6.1 Cleaning the Electrodes

The smart polarity inversion system mentioned in chapter 4, is to prevent the electrode plates from corrosion and scaling (Default setting = 4 hours). However cleaning may be required when the water hardness is too high.
The cleaning process is listed as follows:

① Turn off the chlorinator and the filtering, close the isolation valves, and disconnect the cell power cable.

② Place the cell backwards and fill it with a cleaning solution so that the electrode plates are immersed.

Do not allow the cell cap assembly to be immersed.

③ Leave the cleaning solution to dissolve the scale deposit for about 15 minutes. Dispose of the cleaning solution at an approved waste recycling site, never pour into the rainwater drainage system or into the sewers.

④ Rinse the electrode using clean water and put it back on the cell fixture collar (there is an alignment mark).

⑤ Open the isolation valves and restart the filtering and chlorinator.

⑥ If you do not use a commercially available cleaning solution, you can manufacture it yourself by carefully mixing 1 volume of hydrochloric acid with 9 volumes of water (Warning: always pour the acid into the water and not the opposite and wear suitable protective equipment!).

⑦ Make sure that the setting of the polarity inversion cycles is adapted to the pool water hardness.

6.2 Maintenance of the ORP Probe (Only Premium)

6.2.1 Cleaning the Probe

Under any circumstance, every 6 months cleaning is always advisable. Generally, impurities and grease caught on electrodes may also result in measurement errors.
The cleaning steps are as follows:

① Turn of the chlorinator, unscrew the ORP probe from the holder.

② Thoroughly clean the probe in pure, preferably distilled water. Shake the probe to remove the water. Use a cotton or a paper napkin if necessary.

③ Turn on the control unit, Insert the probe into standard calibration solution (default 468mV) and complete the calibration process.

6.2.2 Storage

In case of pools being shut down during the winter season, take the probe out of the cell and store it at temperature from +5 to +30 °C in the probe storage bin filled with a storage solution.
Other storage methods are not recommended.

NOTE: Never leave the probe outside. If the probe has been dry for a time, it can be regenerated with the standard calibration solution.

6.3 Maintenance of the pH Probe (Premium/Medium)

6.3.1 Maintenance

It is recommended to clean and check the probe every 6 months. Generally impurities and grease caught on electrodes may also result in measurement errors.
The cleaning steps are as follows:

① Stir the probe in a glass of water in which a spoonful of detergent has been dissolved.

② Wash it under the tap and leave it for a few hours in a glass of water in which 1 cm3 of hydrochloric acid has been added.

③ Thoroughly clean the probe in pure, shake the probe to remove the water. Use a cotton or a paper napkin if necessary.

④ Recalibrate the probe again.

6.3.2 Storage

In case of pools being shut down during the winter season, take the probe out of the cell and store it at temperature from +5 to +30 °C in the probe storage bin filled with a storage solution.
Other storage methods are not recommended.

NOTE:

- If well maintained, a probe can last for two or three years. When the probe is exposed in air, the original cap should be placed, or it should be submerged in a glass of water.
- If a probe has been left to dry, it can be regenerated by leaving it for 12 hours in a glass of water, preferably adding a few drops of hydrochloric acid.

7 Winterizing

The chlorinator has a protective system to limit chlorine production under poor operating conditions such as cold water (winter) or a lack of salt.
Active winterizing = filtering operational in winter:

- Above 10°C: Chlorinator running in preset mode.
- Below 10°C: Chlorinator running, capped at 30%.
- Below 5°C: Electrolytic cell off.

Passive winterizing = lower water level and drained piping: leave the electrode dry in its cell with its isolation valves- open.

8 Wi-Fi Instruction

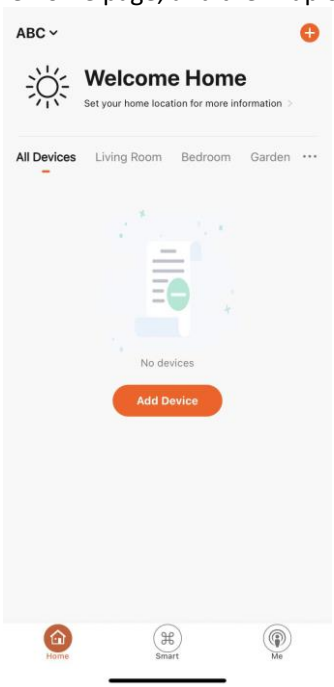
8.1 Start-Up

8.1.1 Download App on Smartphone

“InverGo” app is available on App Store and Google Play.

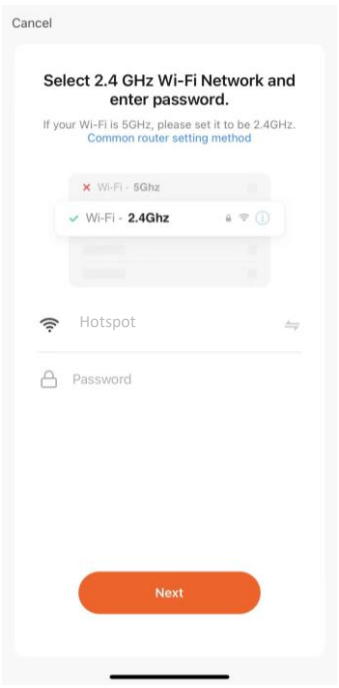
8.1.2 Networking Configuration

Turn on your location services, Wi-Fi and Bluetooth, enter the “InverGo” app, tap the "+" icon in the top right corner of the home page, and then Tap on "Add Device" to start searching for nearby devices.

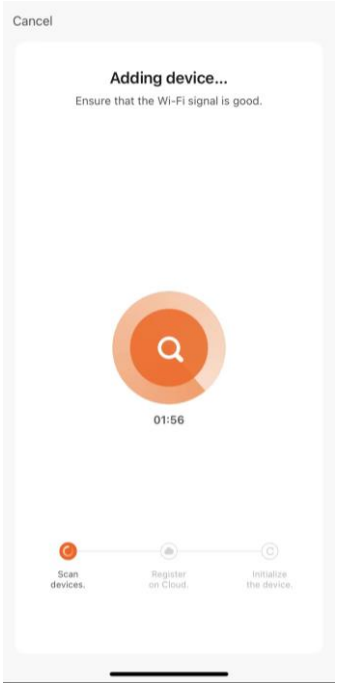


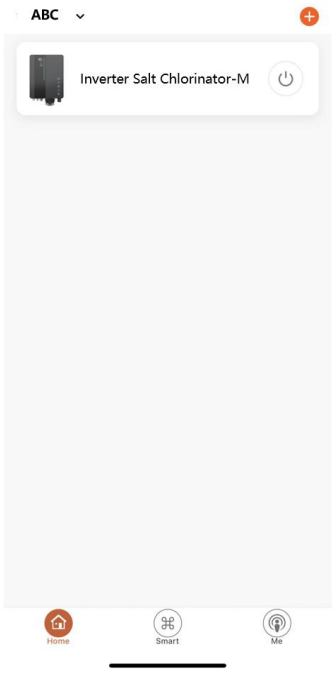
When Control Panel is on regular working, tap  to enter settings, hold  and  for 3 seconds, when an intermittent beep occurs, entering network connection mode. Under network connection mode, Control Unit sounds twice every 2 seconds. The beeper stops when the network is successfully configured.

Enter”InverGo”app, and when your phone finds the Control Unit, it will be displayed on your phone. Tap "Add" and then "+" to add the main device, then enter the name and password of the Wi-Fi that your phone is connecting to, Tap Next”.



“being added” and progress will be shown on the app. The beeper will stop when progress is finished.



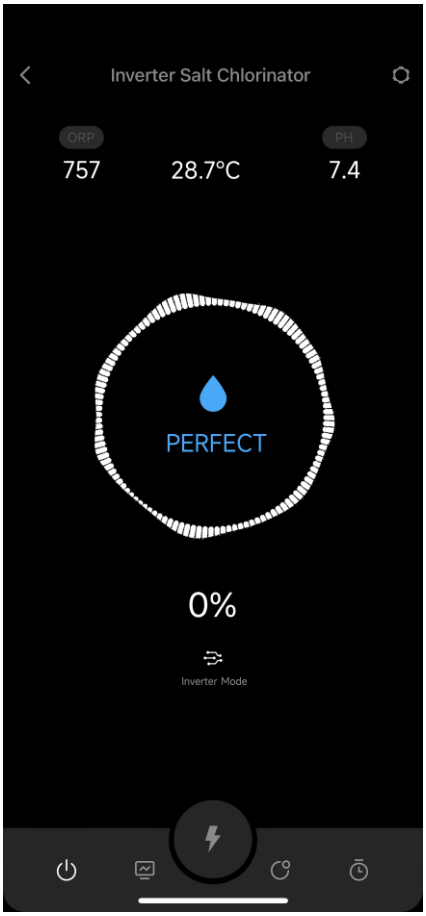


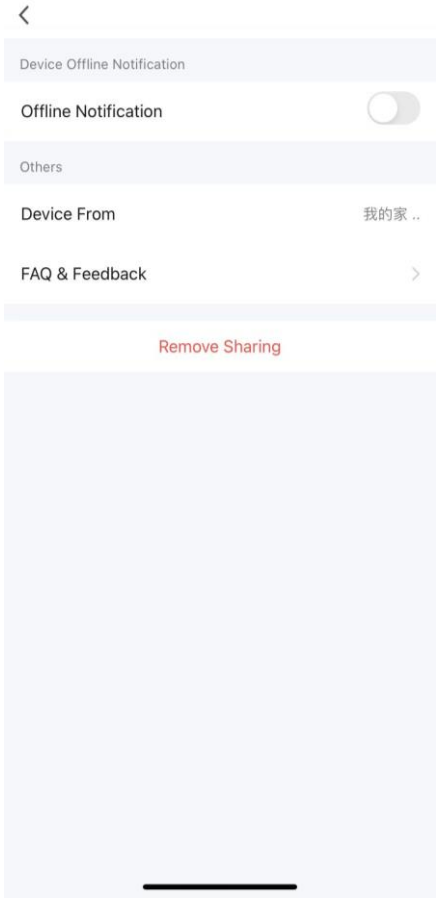
8.2 OTA Upgrade

When upgrade is available, upgrade information will pop up and Tap “Update Now”; Or Tap on the brush icon in the top left corner of the screen to enter the settings screen, and Tap "Device Upgrade" at the bottom to upgrade.

8.3 Device Sharing

Enter the app Settings, tap “Share Device”, and add the mobile number of the corresponding person being shared. By downloading the “InverGo” app, the user being shared can view the device's information simultaneously.





9 Error Code and Solution

Error Code	Reason	Recommended Solution
NO FLOW	1. Filtration pump failure, no flow 2. Water valve closed 3.Flow detection faults	1. Check filtration pump 2. Check the water valve. 3. Try the following in order： - Stop the pump, turn off the chlorinator; - Unplug power cable of the cell, remove the flow switch from the holder; - Turn on the control unit, try to activate the flow switch; If the “NO FLOW” warning remains, replace the flow switch.
ADD SALT	1. Pool salinity below 2000ppm 2. Water temperature too low 3. Electrodes malfunction.	1. Following warning from control panel, Add salt to more than 3500ppm. 2. Check the water temperature 3. Try the following in order： Check for excessive scaling on cells and clean Check if the cell has fallen off the coating or is broken, if so, replace it
ACID TANK	1. Run out of acid. 2. pH Probe not connected/dirty/not calibrated/not working.	1. Replace with new acid 2. Try the following in order： - Check pH probe connections - Clean the probe - Calibrate the probe and test pH value again - Replace probe
CALIBRATE	1. No calibration of the corresponding probe for 3 months	1. Calibrate the Probe alerted on the control panel； If no calibration performed, hold  until return to the home screen, the warning will disappear automatically
REPLACE	1. Probe dirtied 2. Probe aged	1. Clean and calibrate Probe. 2. Replace Probe.
E1	1. Electrodes disconnected or wrongly connected. 2. Electrodes malfunction. 3. Internal electrical components malfunction.	1. Check electrodes connection. 2. Check electrodes by following in order： Check for excessive scaling on electrolytic plates and clean. Check if the cell has fallen off the coating or is broken, if so, replace it 3. Please contact the After-Sales Center
E2	1. Have been adding acid for 5 hours but fail to reach targeted pH value. 2. Too much alkalinity, adding acid does not balance the pH 3. pH Probe not connected, dirty, not calibrated or not working	1. Test pH with other pH testing equipment 2. Reduces alkalinity 3. Try the following in order： Check pH probe connections Clean the probe Calibrate the probe and test PH again Replace probe

E3	1. Unable to reach targeted ORP value after running for 36 hours. 2. Too much cyanuric acid 3. High pH value 4. High chlorine. Chloramine affects ORP Probe testing. 5. Increased resistance between electrodes. 6. ORP Probe not connected, dirty, not calibrated or not working	1. Test the chlorine level with other chlorine testing device 2. rain some water and fill with fresh water to dilute cyanuric acid. 3. Add Acid to balance pH 4. Choose BOOST mode or add chlorine to reduce chloramine. 5. Check electrolytics if with excessive scaling and clean them. Check if the electrolytic has lost its coating or is broken, if so, replace the electrolytic sheet 6. Try the following in order： Check ORP probe connection Clean the probe Calibrate the probe and test ORP value - Replace the probe
E4	1. The Control Unit is over 70℃, Salt Chlorinator automatically reduces operating speed. 2. Stop operating when the internal of control panel is over 80℃,	1. Automatically resume normal operation, when the Control Unit is below 70℃ Be careful not to install the Salt Chlorinator in a position exposed to direct sunlight, install shade or move the Salt Chlorinator to a sheltered position
E5	1. Water temperature is below 10℃,Salt Chlorinator automatically reduces operating speed 2. Stop operating when water temperature is below 5℃	1. Automatically resume normal operation, when water temperature is raised to over
E6	1. Weak Wi-Fi signal 2. Internal electrical components malfunction	1. Check the router Wi-Fi signal 2. Restart the control unit 3. Factory reset 4. Please contact the After-Sales Center
E7	1. External signal interference 2. Internal electrical components malfunction	1. Restart the control unit 2. Disconnect the power for 10 seconds and replug the control unit. 3. Factory reset 4. Please contact the After-Sales Center
E8	1. External signal interference 2. Internal electrical components malfunction	1. Restart the control unit 2. Disconnect the power for 10 seconds and replug the control unit. 3. Factory reset 4. Please contact the After-Sales Center
E9	1. External signal interference 2. Internal electrical components malfunction	1. Restart the control unit 2. Disconnect the power for 10 seconds and replug the control unit. 3. Factory reset 4. Please contact the After-Sales Center

AQCxx-MO-V1.5