iGarden
AQUAGEM®

Mr.MASTER

CONTENTS

1. ⚠ IMPORTANT SAFETY INSTRUCTIONS

This manual contains instructions for installing and operating the Mr.Master pump. If you have any further

For questions regarding this device, please contact your supplier.

1.1 When installing and using this equipment, basic safety precautions should always be followed.

measures, including the following:

- RISK OF ELECTRIC SHOCK. Connect only to a circuit breaker protected electrical outlet.

ground fault circuit interrupter (GFCI). If you cannot verify that the circuit is GFCI protected, contact your

a professionally trained and qualified electrician.

- To prevent the risk of electric shock, connect the motor ground wire (green/yellow)

to the grounding system.

- This pump is intended for use in permanently installed above-ground or underground

swimming pools and can also be used in hot tubs and spas with water temperatures below 50℃.

- Due to the fixed installation method, this pump is not recommended for use in above-ground

pools that can be easily dismantled for storage.

- The pump is not submersible.

- Never open the inside of the drive motor housing.

1.2 All installations must be equipped with a ground fault protection device or

against a residual current device whose rated residual operating current does not exceed 30 mA.

⚠ **WARNING:**

- Fill the pump with water before starting. Do not run the pump dry. In case of running

If the pump runs dry, the mechanical seal will be damaged and the pump will start to leak.

- Before performing any maintenance on the pump, turn off the power to the pump by disconnecting the main circuit of the pump and

Release all pressure from the pump and piping system.

- Never tighten or loosen screws while the pump is running.

- Make sure that the pump inlet and outlet are not clogged with foreign matter.

2. TECHNICAL SPECIFICATIONS

Model	P1	Voltage	Qmax	Hmax	Circulation (m^3/h)	
	KW	(V/Hz)	(m^3/h)	(m)	At 10 meters	At 8m
IM25	1.10	220-240/ 50/60	28.0	20.0	21.5	25.0

3. OVERALL DIMENSIONS (mm)

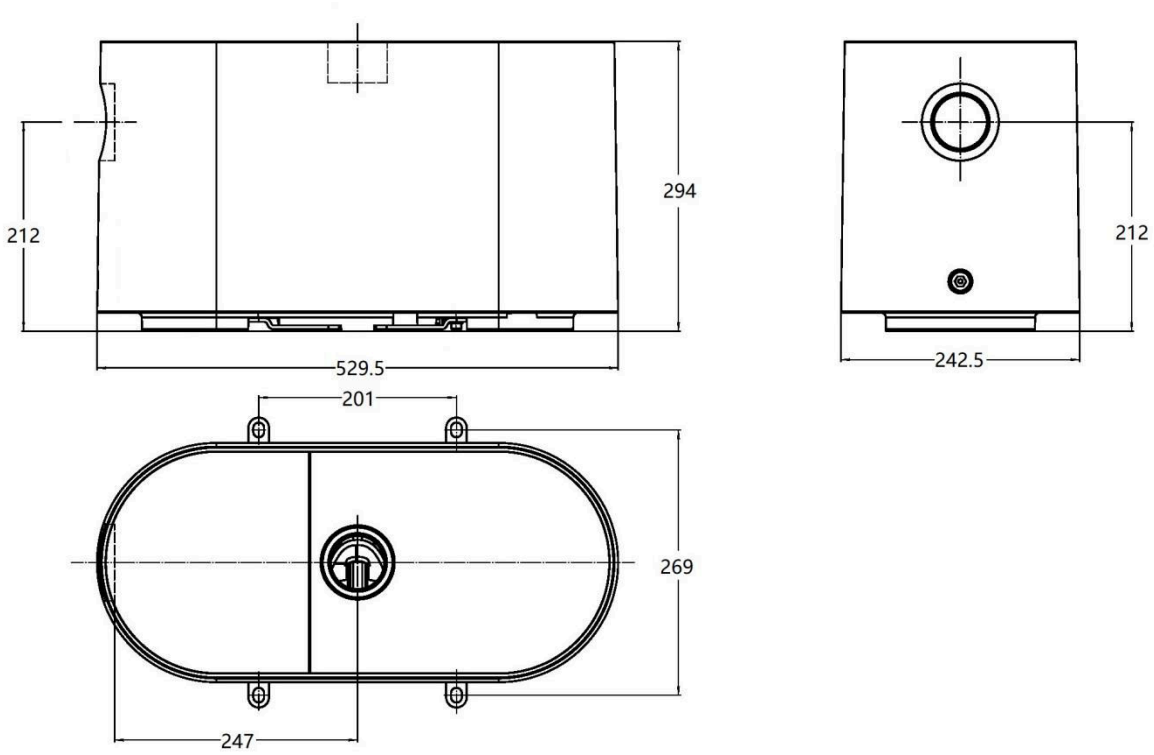


Figure 1

4. INSTALLATION

4.1. Pump location

1) Install the pump as close to the pool as possible to reduce friction losses and increase efficiency, use short, straight suction and return pipes.

2) To avoid direct sunlight, heat or rain, we recommend placing the Pump indoors or in the shade.

3) DO NOT place the pump in a damp or unventilated place. Place the pump at a distance at least 150 mm from obstacles.

4) The pump should be installed horizontally and fixed with screws to prevent unnecessary noise and vibrations.

4.2. Pipes

1) To optimize the pool water piping, it is recommended to use 63 mm pipes. When installing inlet and outlet fittings (joints), use a special sealant for the material PVC.

2) The suction pipe size should be equal to or larger than the suction pipe diameter to avoid prevent air from being sucked into the pump, which would affect the pump's efficiency.

3) The water pipe on the suction side of the pump should be as short as possible.

4) For most installations, we recommend installing a valve on both the suction and return lines of the pump, which is more convenient for routine maintenance. However, we also recommend that the valve, elbow or triangle installed on the suction pipe was no closer to the front of the pump than seven times the diameter suction pipe.

5) The pump outlet piping system should be equipped with a check valve to prevent the influence of medium recirculation and pump stopping due to water hammer.

4.3. Valves and fittings

1) Elbows should not be closer than 350 mm from the inlet. Do not install 90° elbows directly into the pump inlet/outlet. The connections must be tight.

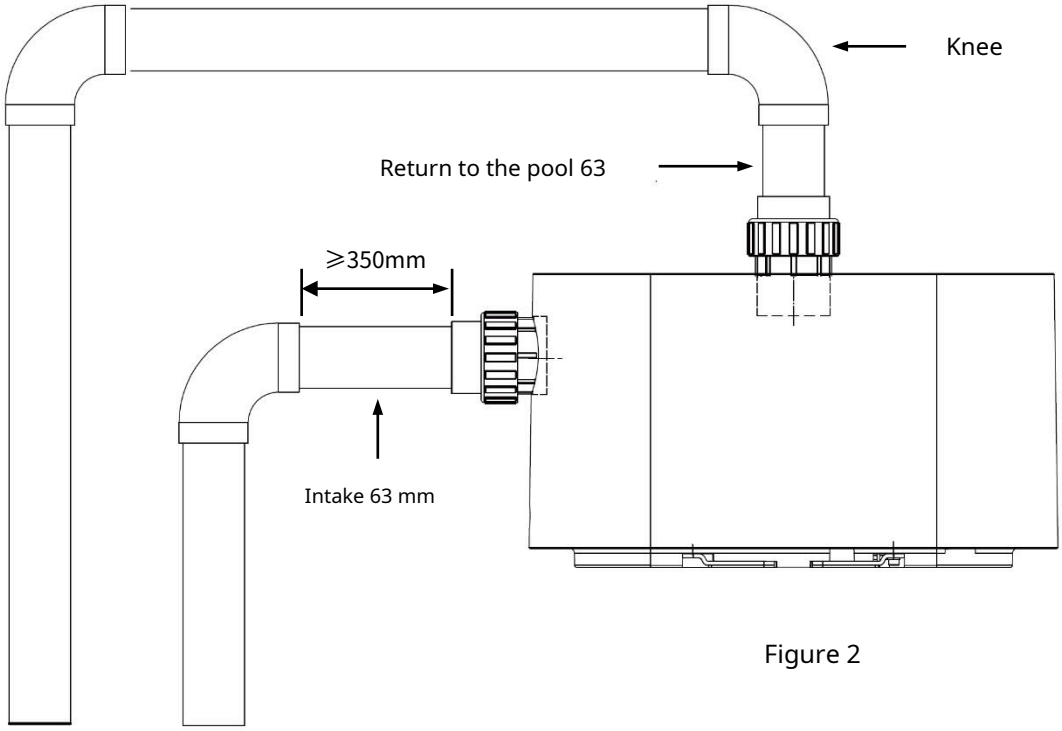


Figure 2

* Pump inlet/outlet port size: optional 48.5/50/60.3/63mm.

2) Flooded suction systems should have relief valves installed on the suction and return lines.

possession; however, the suction valve should not be closer than seven times the diameter of the suction pipe, as described in this section.

3) If there is a significant height between the return pipe and the pump outlet, use a pipeline check valve.

4) When connecting in parallel with other pumps, be sure to install check valves. This will prevent the impeller and motor from rotating backwards.

4.4 Check before first start-up

1) Check that the pump shaft rotates freely;

2) Check that the supply voltage and frequency correspond to the nameplate;

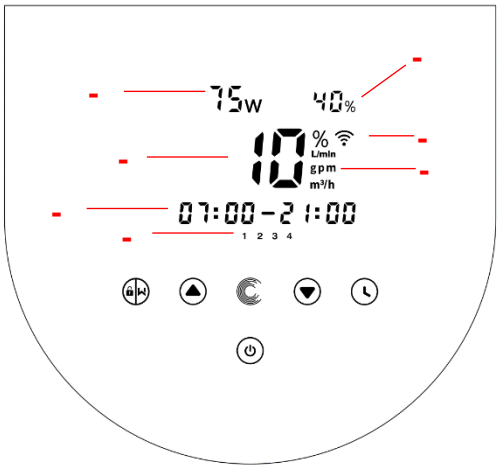
3) It is forbidden to operate the pump without water.

4.5 Conditions of use

Ambient temperature	Indoor installation, temperature range: -10 - 42℃
Water temperature	5℃-50℃
Water salinity	Salt concentration up to 0.5%, i.e. 5 g/l
Humidity	⩽90%RH, (20℃±2℃)
Installation	The pump can be installed at a maximum of 2 m above the water level. water;
Protection	Class F, IP55

5. SETTINGS AND OPERATION

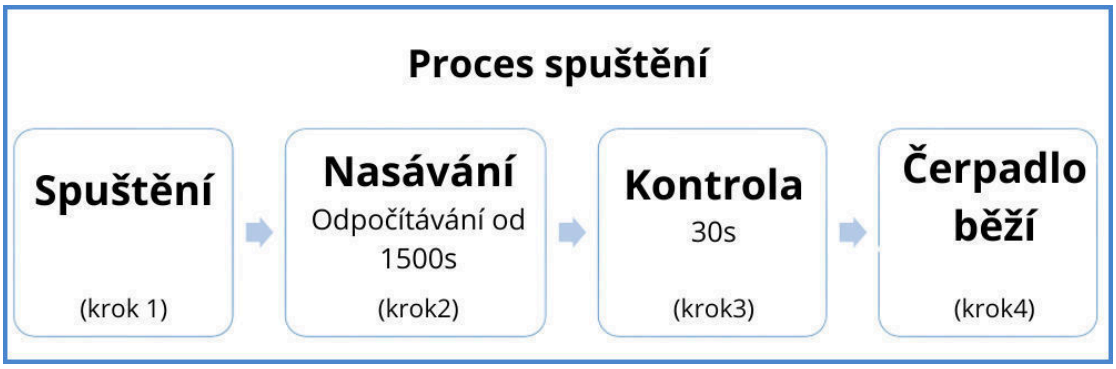
5.1 Display on the control panel:



① Power consumption
② Flow rate
③ Operating capacity
④ WIFI indicator
⑤ Flow unit
⑥ Timer time
⑦ Timer 1/2/3/4
Backflush/unblock
Up/down: change value (capacity/throughput) flow/time)
Switching between manual and automatic mode. **Manual mode**: The operating power is set manually within the range of 30-120%. **Automatic mode**: The operating capacity is automatically adjusted within the range of 30-120% according to the set flow rate. The default setting is for manual mode.
Timer settings

	On/Off

5.2 Startup process overview:



① **Step 1: Start operation**

- Press and hold the button for more than 3 seconds to unlock the screen.
- By pressing the button you start the pump.

② **Step 2: Water suction**

- The pump will start counting down from 1500s; when the system detects that the pump is full of water, it will stop the countdown and automatically end the filling.
- Users can manually stop self-priming by pressing a button for a period longer than 3 seconds. However, we recommend that users make sure the pump is full of water before stopping self-priming;
- Users can enter a parameter setting that disables the default self-priming function (see 5.11).

③ **Step 3: Self-check**

- The pump will perform a 30-second check again to ensure that self-priming (Step 2) has been completed.

④ **Step 4: Pump running**

- When first started after self-priming, the pump will operate at 80% of its operating capacity.

5.3 Start-up:

After powering on, the screen will be fully lit for 3 seconds, the device code will be displayed, and then it will enter the normal working state. When the screen is locked, only the button will be lit.

 ; by pressing and holding the button  for more than 3 seconds to unlock the screen.

The screen will automatically lock if no operation is performed for a long period of time.

than 1 minute, and the screen brightness will be reduced to 1/3 of the normal display. Short press 

wake up the screen and you can monitor the relevant operating parameters.

5.4 Water intake

Self-priming is initiated each time the pump is started.

When the pump performs self-priming, it will start counting from 1500s and automatically stop counting when the system detects that the pump is full of water, then the system will check again for 30s to make sure that the self-priming is completed.

Users can manually stop self-priming by pressing a button  for a period longer than 3 seconds. When first started, the pump will go into the default manual drive mode.

Note:

1) The pump is shipped with self-priming enabled. Self-priming will be performed automatically each time the pump is restarted. Users can enter parameter settings to disable the default self-priming function (see 5.11).

2) If the default self-priming function is off and the pump has not been used for a long time, the water level in the strainer basket may drop. Users can manually activate the self-priming function by pressing both buttons  for 3 seconds, adjustable time is from 600 s to 1500 s (default value is 600 s).

3) After manual self-priming is completed, the pump returns to the previous state before manual self-priming was activated.

4) Users can press the button  for more than 3 seconds to end manual self-priming.

5.5 Backflushing

Users can initiate backwash or rapid recirculation at any operating status by pressing the button. 

	Default	Setting range
Time	180s	By pressing the button  or  set in the range 0 to 1500s with 30 seconds for each step.
Operating capacity	100%	60-100%, enter the parameter settings (see 5.11).

Output reverse current:

When backwash mode is on, users can hold  for 3 seconds, to end it, the pump will return to its previous state before backwashing.

5.6 Manual mode

1		By holding the button  for more than 3 seconds to unlock screen.
2		Press the button  and start. When starting for the first time after self-priming the pump will operate at 80% of its operating capacity.
3		By pressing the button  or  set the operating capacity within the range 30-120%, each step of 5%.
4		By pressing again  switch to automatic mode.

Note:

1) If the pipeline pressure is too high, users can set the operating capacity to 105-120% to maintain adequate flow. The pump will run at a higher speed but will not exceed the rated capacity of each model.
2) If the pump has reached 105% rated capacity and users continue to increase the operating capacity, the display will return to 105% after the motor speed stabilizes.

5.7 Automatic mode

In automatic mode, the pump can automatically detect system pressure and adjust speed

motor to reach the set flow rate

1		Unlock the screen and press the button  switch from mode manual converter manual to automatic mode.
2		The flow rate can be adjusted by pressing a button  or  with a speed of 1 m^3/h for each step.
3		The flow unit can be changed to LPM or GPM by pressing both buttons  for 3 seconds.
4		By pressing the button  you switch to manual converter mode.

The default adjustable flow range for the InverMaster is as follows:

Model	Default adjustable flow range
IM25	8-28 m^3/h

5.8 Timer mode

The pump on/off and power could be controlled by a timer, which could be

programmed daily as needed.

1	To enter the timer settings, press the button. 
2	To set the local time, press the button.  or  .
3	By pressing the button  confirm and go to time setting 1.
4	By pressing the m button  or  select the desired operating times, operating capacity or flow rate (when the % icon is flashing, users can change the flow rate setting by pressing a button ) .
5	 Repeat the above steps to set the other 3 timers.
6	 Hold for 3 seconds to save the settings and activate timer mode.
7	 or  Check the 4 timers and make sure they are not set invalidly.

Note:

1) If the timer mode is activated and the set time period includes the current time, the pump will starts according to the set operating power or flow rate. If the set time period does not contain the current time, the timer number is displayed on the control unit 1 2 3 4 (1 or 2 or 3 or 4) to start running, and will flash, 88:88-88:88 will display corresponding time period, which means the timer has been set successfully.

2) If you want to return to the previous setting while setting the timer, hold down both  for 3 seconds. If you do not need to set all 4 timers, you can hold  for 3 seconds, the system will automatically save the current set value and activates timer mode.

3) Users can exit the timer mode by pressing the button. 

5.9 Skimmer mode

Skimmer mode allows the pump to clean the water surface, preventing dirt buildup and providing users with a cleaner pool.

By holding  a  enter the preset skimmer mode interface. When The first time you switch to this mode, preset 1 is activated.

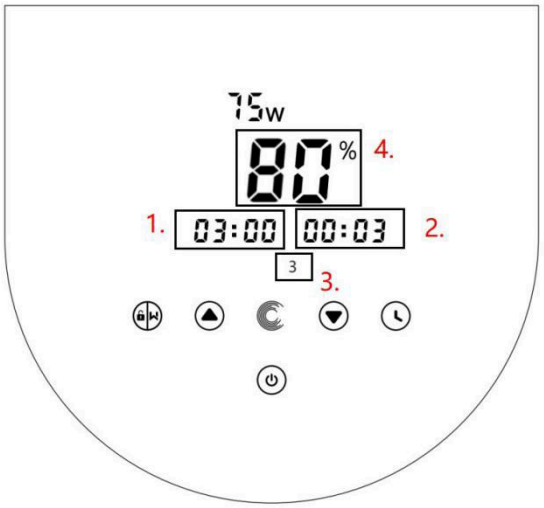
Users can press  or  to display 4 presets, details about each preset is listed below, the selected preset will be activated after 5s of no operation.

Preface melting	Cycle skimmer	Time duration skimmer	Speed/flow	Time period	Note
1	1h	3 minutes	Speed：100% Flow: 25 m^3/h (IM20) 28 m^3/h (IM25) 30m^3/h (IM30)	7:00 - 21:00	Editable in parameter settings By pressing the button  you switch between speed and flow rate.
2	1h	10 minutes	100%	7:00 - 21:00	Cannot be edited

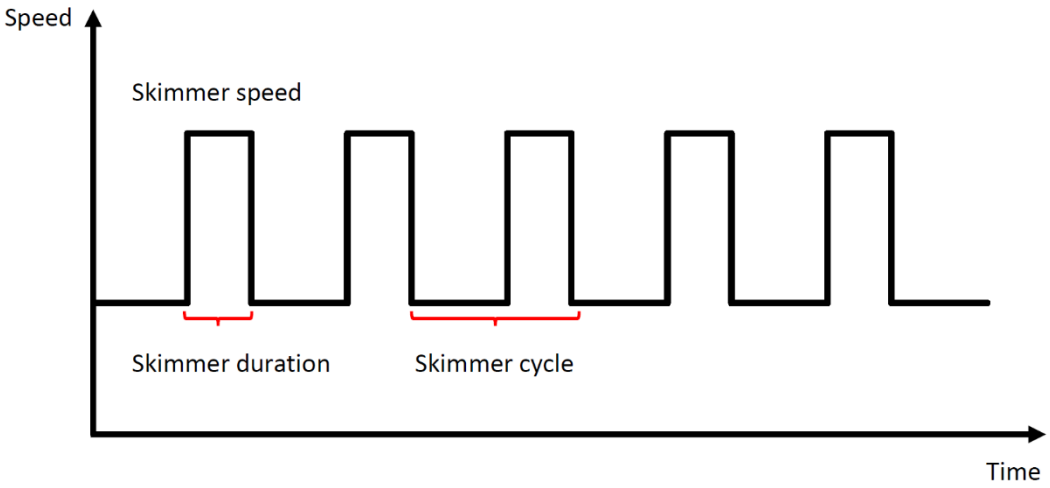
3	3h	3 minutes	80%	7:00 - 21:00	Cannot be edited
4	Turning off skimmer mode				Cannot be edited

After the skimmer duration has expired, the preset parameter will be displayed on the controller, users can hold down the button  end the skimmer duration each time. After the end

After the skimmer duration, the pump will return to normal status so that users can control it.



1. Skimmer cycle (hour)
2. Duration (in minutes)
3. Mode preset number
4. Speed/flow



5.10 Speed limit

Users can set the operating speed limit to meet the flow requirements of other devices, such as sand filters.

In the parameter settings, the running speed limitation can be set in the range of 60% - 100%. (see 5.11). 100% means that there is no speed limitation and the operating capacity can be set in the range of 30% - 120% during normal operation.

To ensure performance, the following mode or process will not be limited by the speed limit: 1.
Self-priming at each start
2. Manual self-priming
3. Automatic mode
4. Setting the flow rate in timer mode

5.11 Parameter settings

Factory reset settings	In off mode, hold down both  for 3 seconds.
Check version software	In off mode, hold down both  for 3 seconds.
Enter settings parameters, as is listed below	In off mode, hold down both  for 3 seconds; If no need to set the current address, hold both  or press  to another address.

Parameter Address	Description	Default settings	Setting range
1	PIN3	Speed：100% Flow rate: 28 m³/h	Speed: 30-120%, in 5% steps Flow rate 8-28m³/h (in 1m³/h steps) Note: Press  you switch to flow setting.
2	PIN2	Speed：80% Flow rate: 22 m³/h	
3	PIN1	Speed：40% Flow rate：11m³/h	
4	Returnable flushing	Speed：100% Flow rate: 28 m³/h	Speed: 60-100%, in 5% steps Flow: 8-28m³/h (in 1m³/h steps) Note: Press  you switch to flow setting.
5	Driving mode analog input	0	0: Current control 1: Voltage control
6	Enable or disable self-priming when every start.	25	25: 0: turns off
7	Reserved	0	Cannot be edited

8	System time	00:00	00:00 - 23:59
9	Preset 1 mode skimmer (cycle, duration, speed/flow)	01:00 00:03 100%	Skimmer cycle: 1-24 h, 1 h for each step Skimmer duration: 1-30min, 1min for every step Skimmer speed: 30-100%, in steps 5% each. Skimmer flow: 8-28 m^3/h (1 m^3/h increments) Note: Press  you switch to flow setting.
10	Time period presets 1 mode skimmer	7:00-21:00	Start time: 00:00-24:00 End time: 00:00-24:00
11	Speed limit	Speed：100% Flow rate：28m^3/h	Speed：60%-100%, in 5% steps（100% means not limited）speed) Flow rate: 17-28 m^3/h (1 m^3/h increments) Note: Press  you switch to flow setting.
12	RS485 address	170(0xAA)	160-190 (0xA0-0xBF), each step by 1.
13	Reserved	0	Cannot be edited

For example: How to turn on/off the self-priming function?

1) Enter the parameter settings: In power off mode, hold down both  for a period of time 3 seconds；.

2) Select the parameter address: Press  to address 6；.

3) Enable or disable self-priming at each startup:  , 0=Disable Yes.

6. WIFI OPERATION

1 Download InverFlow APP

Android

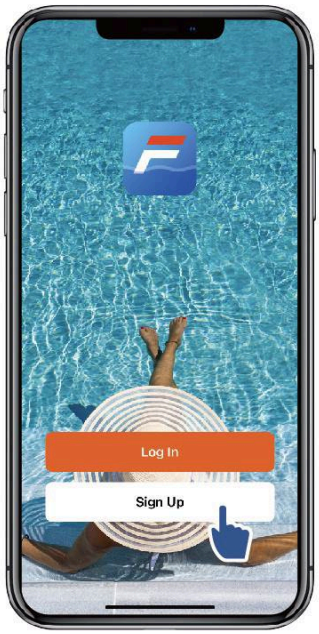
ANDROID APP ON Google play

iOS

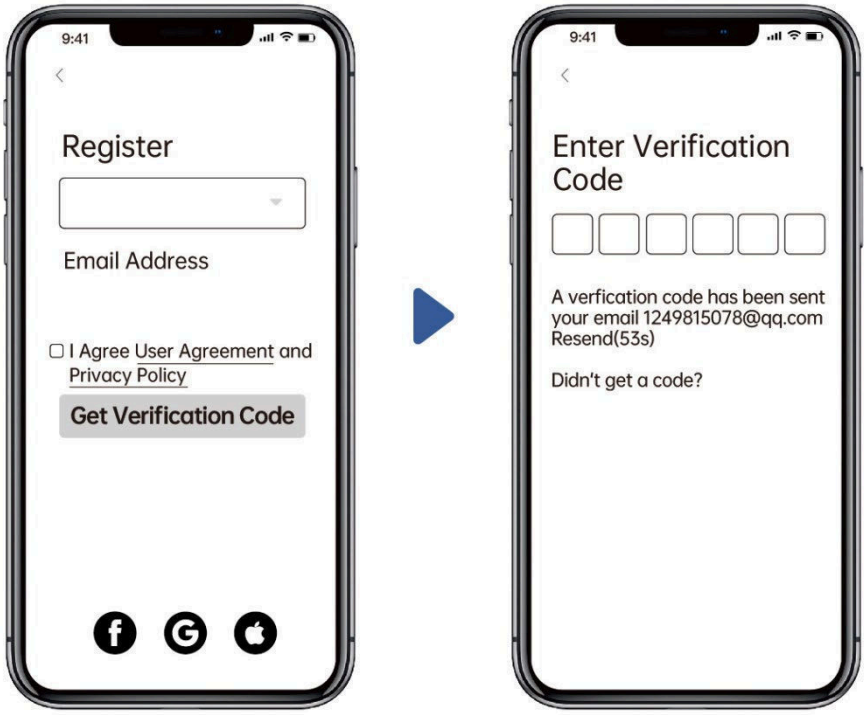
Available on the App Store

2 Account registration

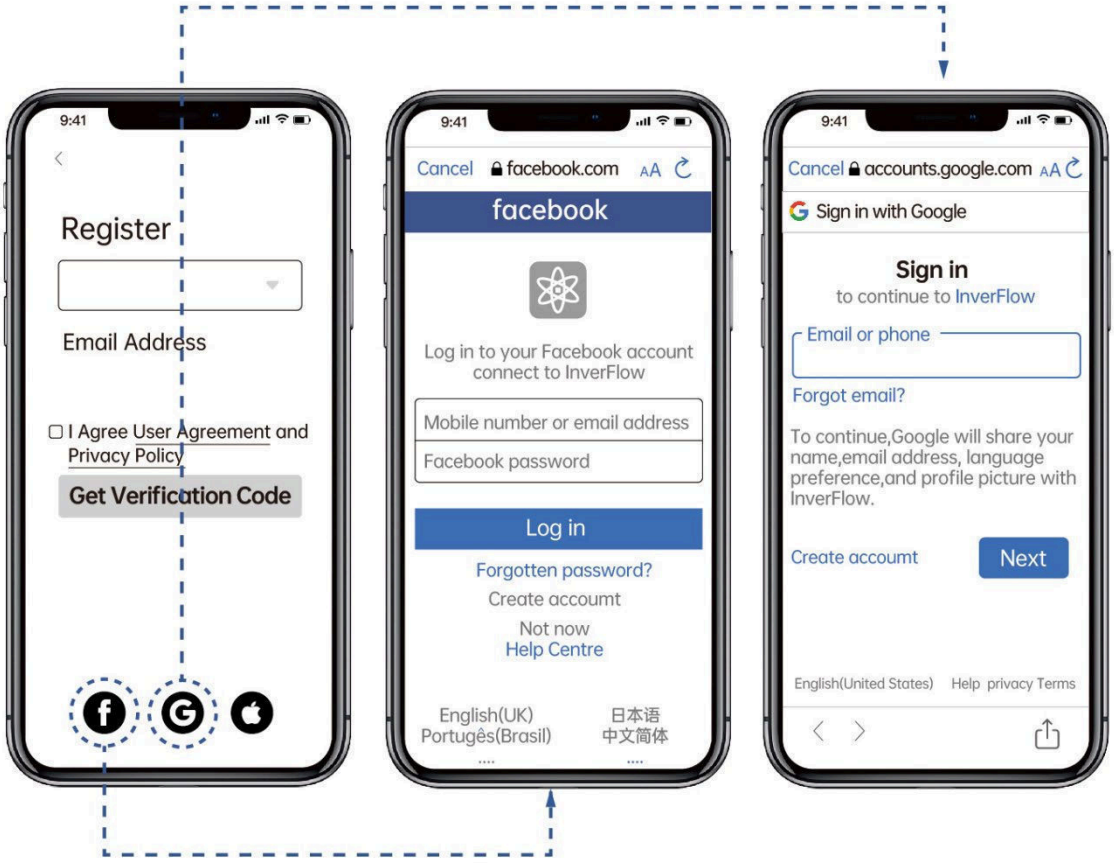
Register by e-mail or third-party application.



a. Registration by email

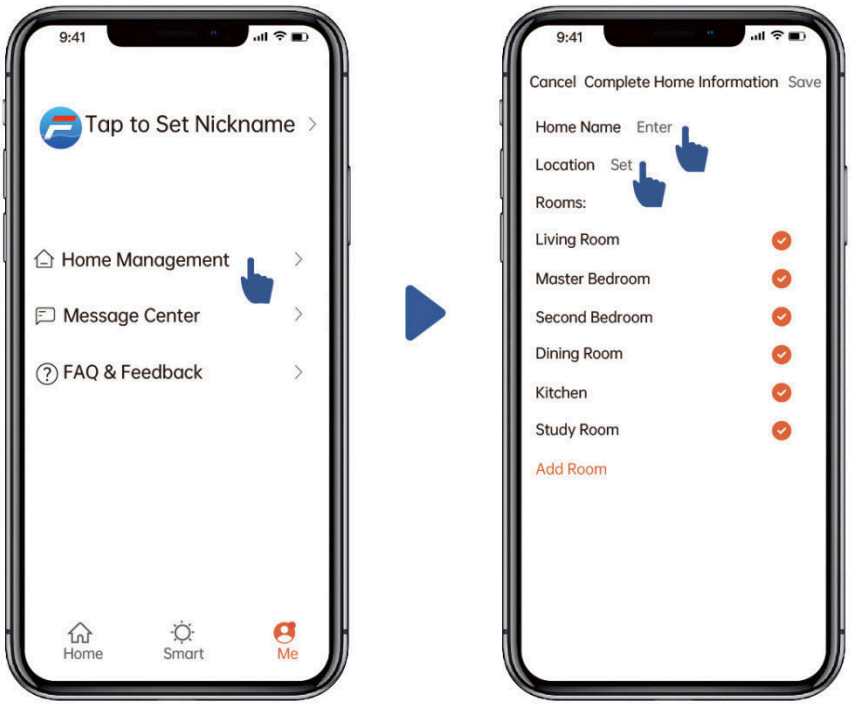


b.**Third-party application registration**



3 Create a homepage

Set the home name and select the device location. (We recommend setting the location so that the app displays the weather for your convenience.)



4 App pairing

Make sure the pump is turned on before starting. **Option 1**

(recommended): With Wifi and Bluetooth

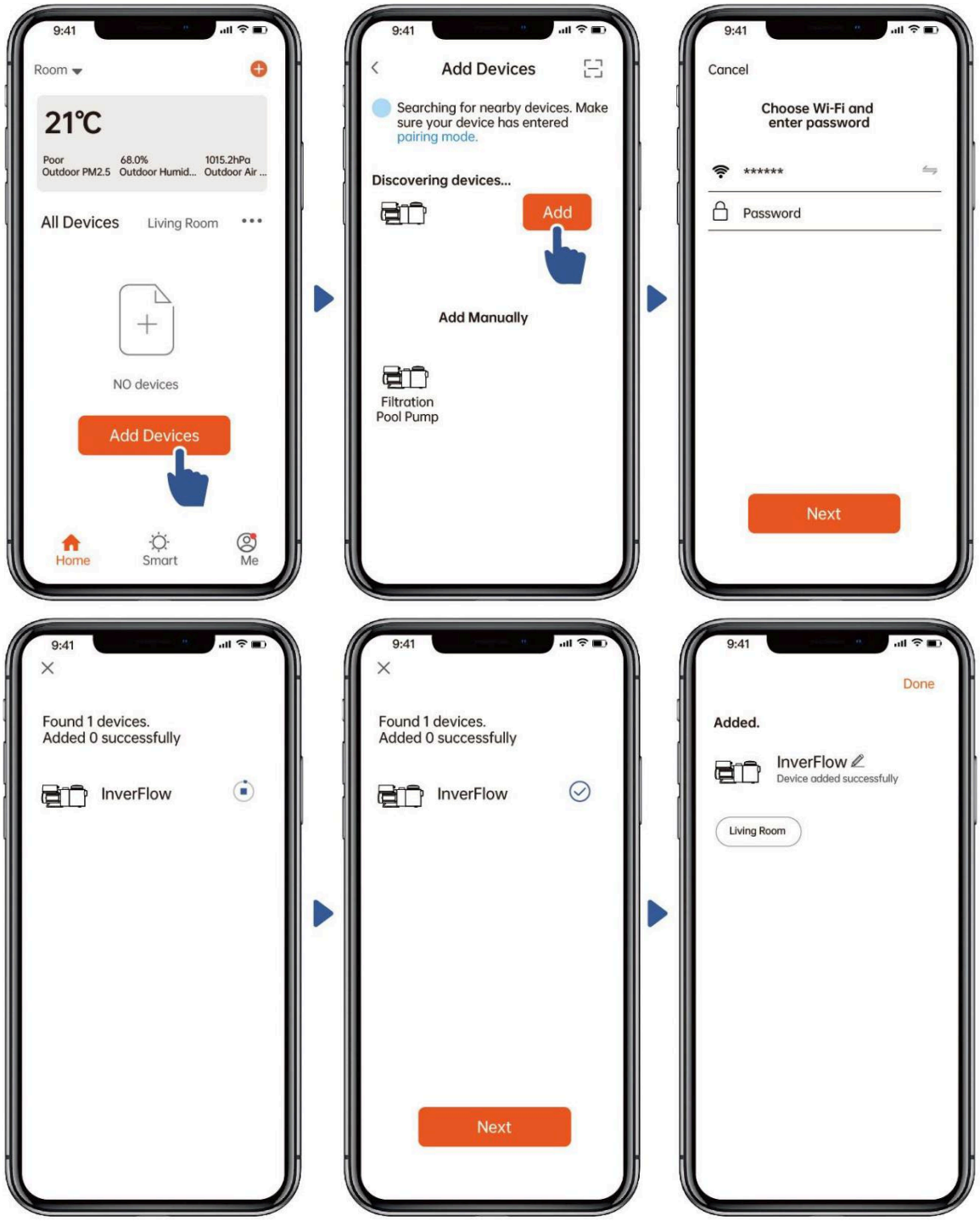
(Network requirement: 2.4GHz; 2.4Ghz and 5GHz in one SSID; but no separate 5GHz network) 1) Check if your phone is connected to Wifi and Bluetooth is turned on.

2) Press the button  for 3 seconds until you hear a "Beep" to unlock the screen.

Press the button  for 5

seconds until you hear a "Beep", and then  release. flashes.

3) Click the "Add Device" button and then follow the instructions to pair the device.



Option 2: With Wifi (network requirement: 2.4GHz only)

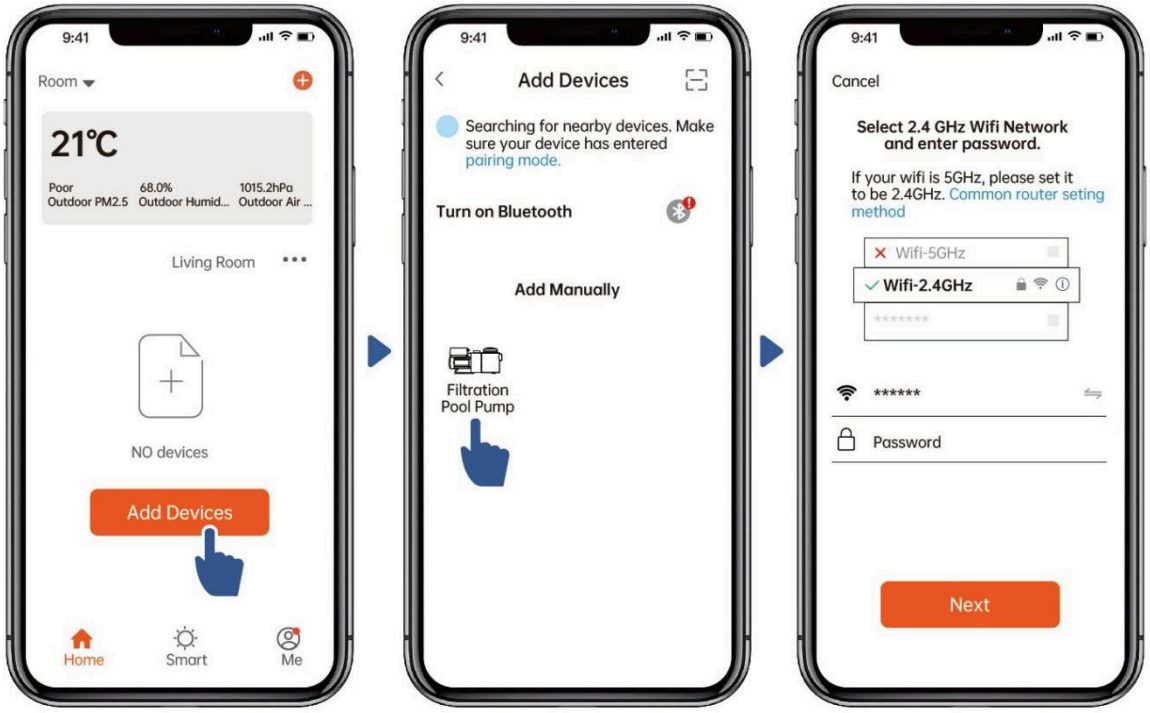
1) Check if your phone is connected to a Wifi network.

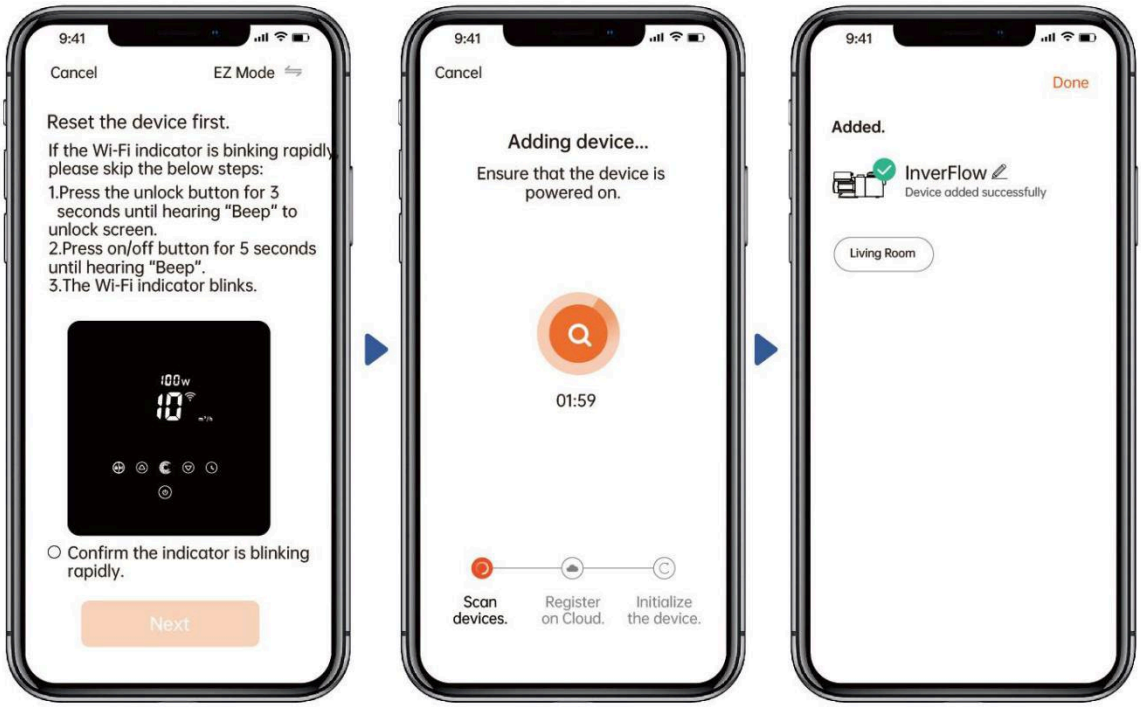
2) Press the button  for 3 seconds until you hear a "Beep" to unlock the screen.

Press the button  for 5

seconds until you hear a "Beep", and then  release. flashes.

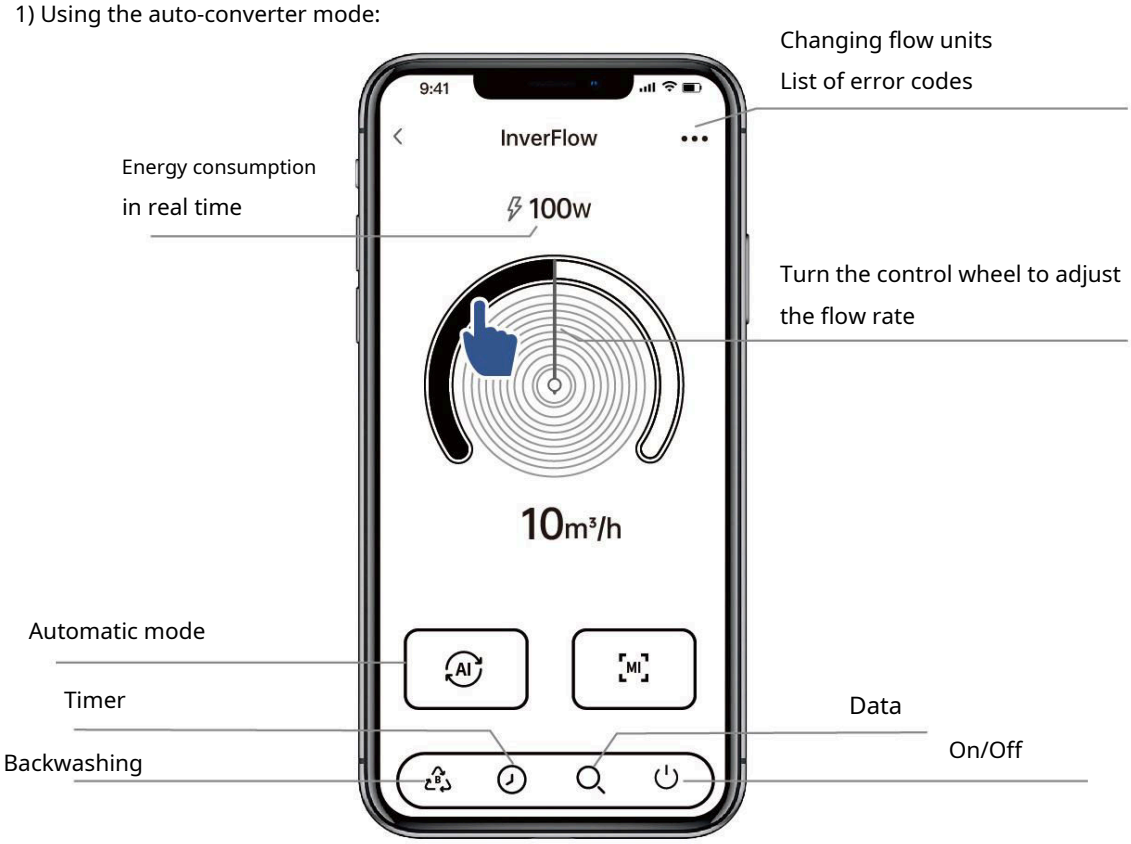
3) Click the "Add Device" button and then follow the instructions to pair the device.



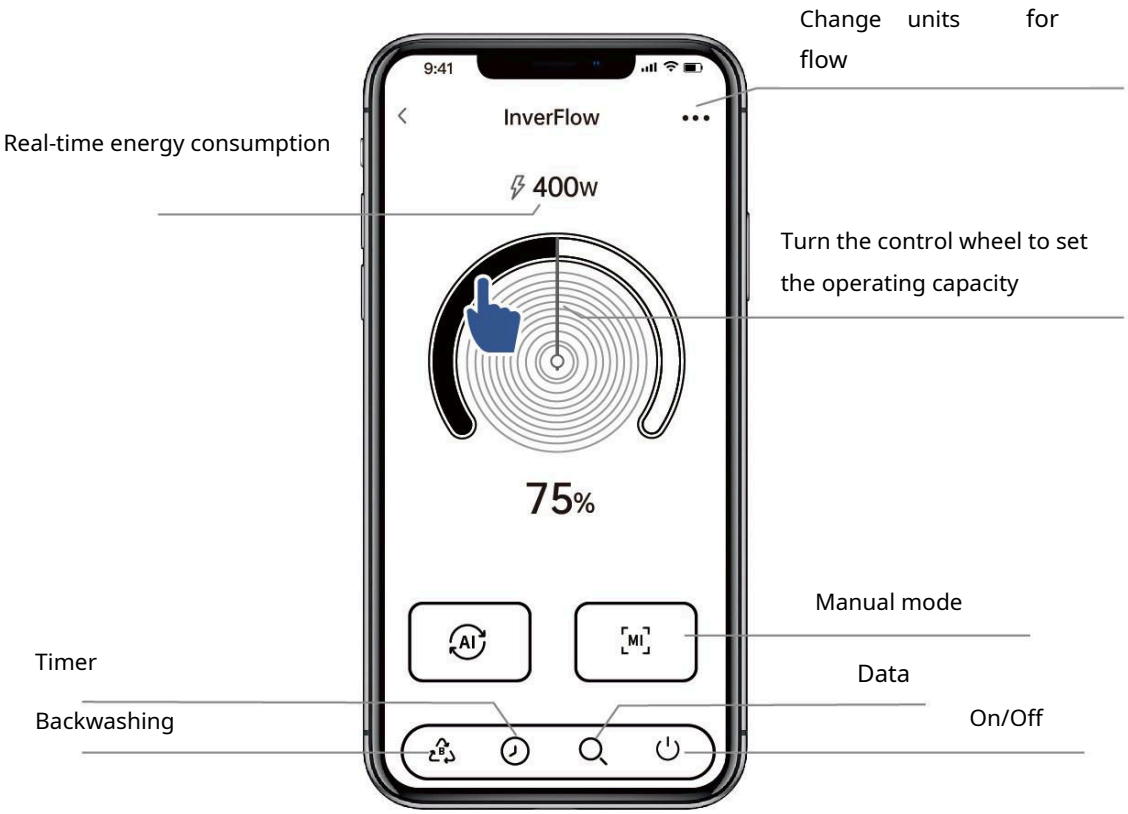


5 Operation

1) Using the auto-converter mode:



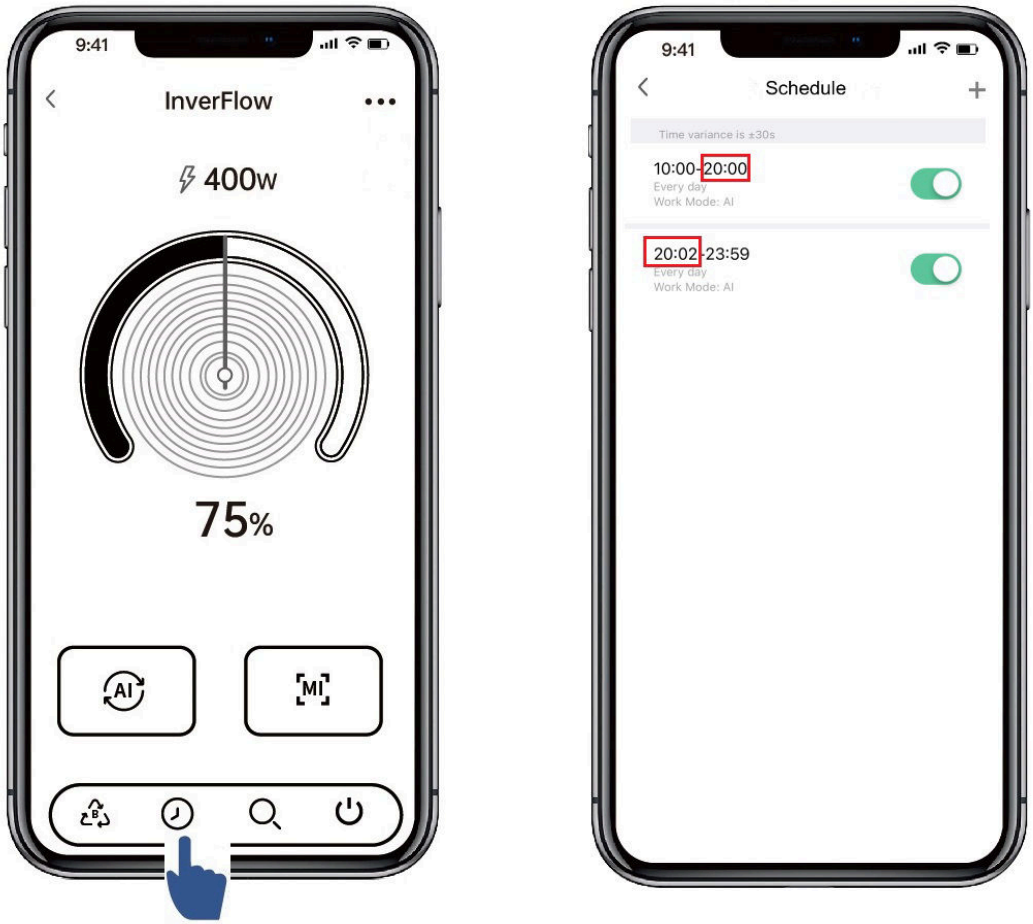
2) Using manual mode:



Reminder for setting timer via APP:

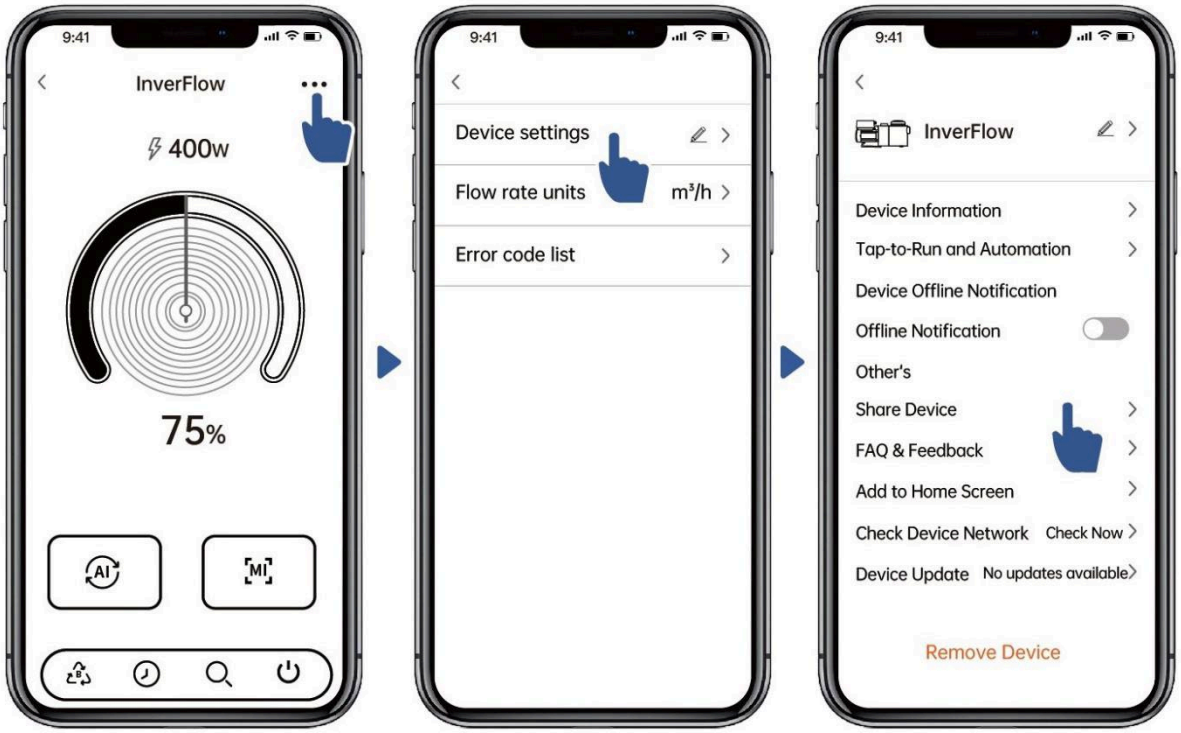
1) The time deviation is ± 30s;

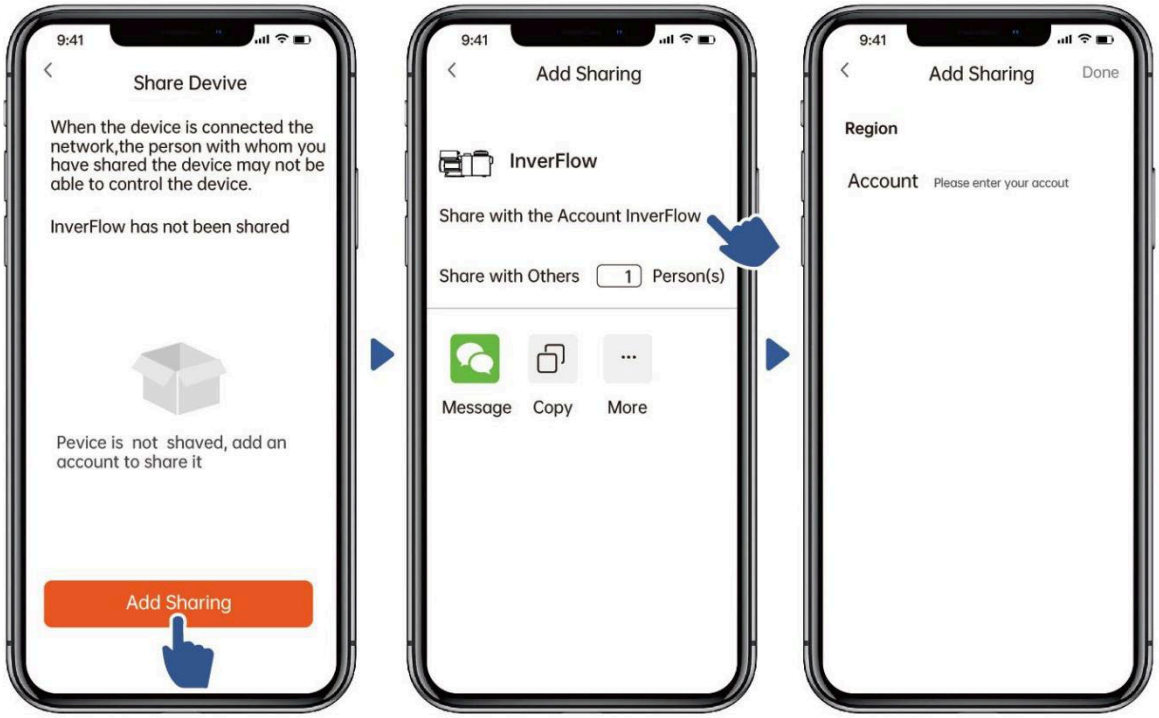
2) To avoid conflicts and invalidation of overlapping time points due to network delays, it is recommended that the end time and start time of the next time period do not overlap and that a sufficient time interval is reserved, such as at least 2 minutes;



6 Sharing devices with family members

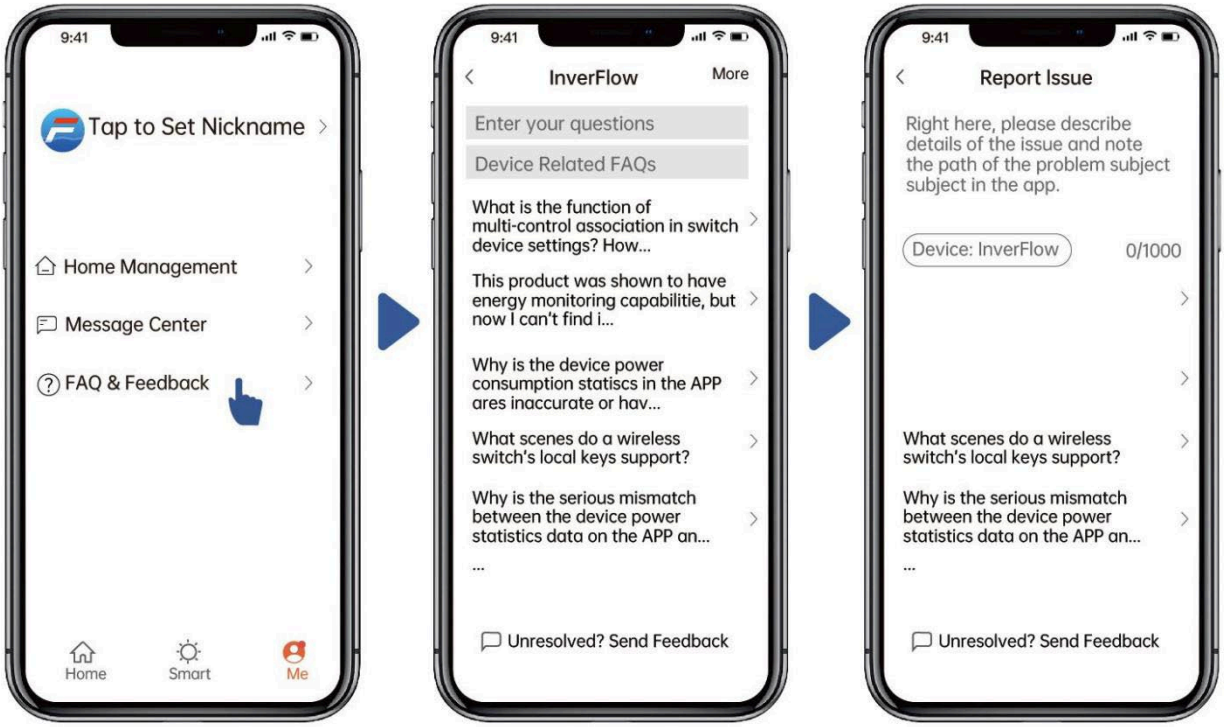
If your family members want to control the device after pairing, please let them register the "InverFlow" device first, and then the administrator can control them according to the procedure below:





7 Feedback

If you have any problem while using it, you can send feedback.



Notice:

1) The weather forecast is for guidance only;
2) Energy consumption data is for guidance only as it may be affected by network problems and calculation inaccuracies.
3) The application may be updated without prior notice.

7. EXTERNAL CONTROL

External control can be enabled using the following contacts. If more than one is enabled one external control, priority is listed below: Digital input > RS485 > Control panel

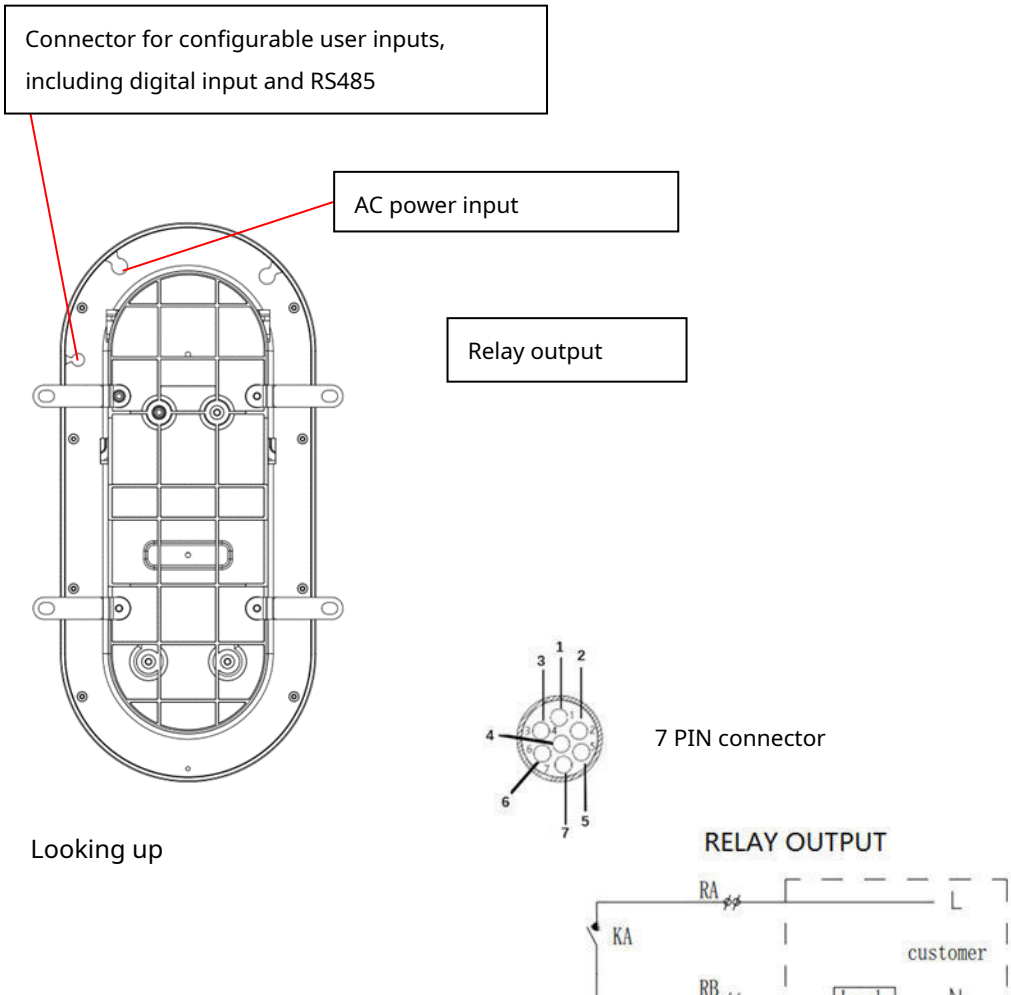


Figure 3

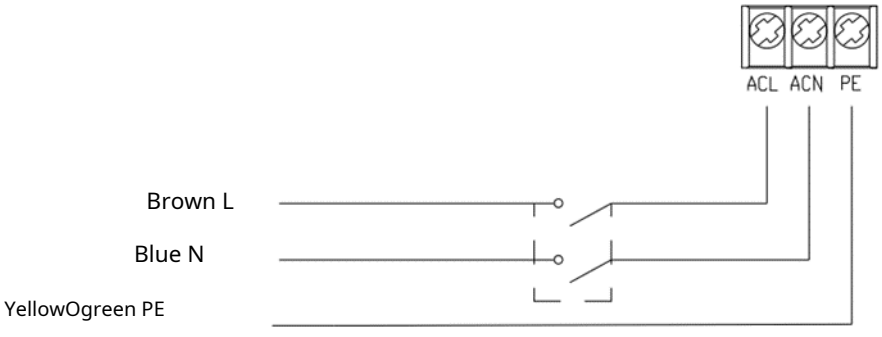


Figure 4

Name	Color	Description
PIN 1	Red	Digital input 4
PIN 2	Black	Digital input 3
PIN 3	White	Digital input 2
PIN 4	Gray	Digital input 1
PIN 5	Yellow	Digital Earth
PIN 6	Green	RS485 A
PIN 7	Brown	RS485 B

a. Digital

The operating capacity is determined by the state of the digital input,

1) When PIN4 connects to PIN5, the pump is forced to stop; if disconnected, the digital control will not be valid;
2) When PIN3 connects to PIN5, the pump will be forced to run at 100%; if disconnected, the control priority will be on the panel again;
3) If PIN2 connects to PIN5, the pump will be forced to run at 80%; if disconnected, the control priority will be on the panel again;
4) When PIN1 connects to PIN5, the pump will be forced to run at 40%; if disconnected, the control priority will be on the panel again;
5) The input capacity (PIN1/PIN2/PIN3) can be adjusted according to the parameter settings.

b. RS485:

For connection using PIN6 and PIN7, the pump can be controlled using the Modbus 485 communication protocol.

C. Relay output:

Connect terminals L and N with RA and RB wire to enable relay output. If the bearing power is higher than 500W (2.5A), additional relay must be used.

8. PROTECTION AND FAILURE

8.1 High temperature warning and speed reduction

IN mode "automatic/manual" and "regime" timers" (besides return flushing/self-priming), when the module temperature reaches the high temperature warning threshold (81℃), it will enter the high temperature warning state; when the temperature drops to the high temperature warning release threshold (78℃), the high temperature warning state will be released. The display area alternates between AL01 and the operating speed or flow rate.

a）If AL01 is displayed for the first time, the operating capacity will be automatically reduced according to the following procedure:

1) If the current operating capacity is higher than 100%, the operating capacity will automatically

will reduce to 85%;

2) If the current operating capacity is higher than 85%, the operating capacity will automatically be reduced by 15%;

3) If the current operating capacity is higher than 70%, the operating capacity will automatically be reduced by 10%;

4) If the current operating capacity is lower than 70%, the operating capacity will automatically be reduced by 5%.

b）If AL01 is activated for the first time, the operating capacity will be automatically reduced as shown below:

1) When the module temperature is lower than 85℃, the controller detects the module temperature every 2 minutes, and for every 1℃ increase in temperature, the operating capacity will automatically decrease by 5%;

2) If the module temperature is higher than 85℃, the controller will detect the module temperature every 2 minutes:.

2.1) if it detects that the module temperature has increased, for every 1℃ increase in temperature, the operating capacity will automatically decrease by 5%;

2.2) if it detects that the module temperature has not changed, it will automatically reduce the operating capacity by 5%;

8.2 Undervoltage protection

When the device detects that the input voltage is lower than 198V, it will limit the current running speed. The display area alternately displays AL02 and the running speed or flow rate.

1) If the input voltage is less than or equal to 180V, the operating capacity is limited to 70%;

2) If the input voltage range is between 180V - 190V, the operating capacity is limited to 75%;

3) If the input voltage range is between 190V - 198V, the operating capacity is limited to 85%.

8.3 Troubleshooting

Problem	**Possible causes and solutions**
The pump is will not start	- Power failure, disconnected or faulty wiring. - Blown fuses or thermal overload. - Check that the motor shaft rotates freely and that there is no obstacle in the way. - Due to long periods of inactivity. Disconnect the power supply and manually rotate the rear motor shaft several times with a screwdriver.
The pump is does not fill	- Empty pump housing/strainer. Make sure the pump housing/strainer is filled with water and the cover O-ring is clean. - Loose connections on the suction side. - The strainer basket or skimmer basket is clogged with dirt. - The suction side is clogged.

	- If the distance between the pump inlet and the liquid level is more than 2 m, the installation height of the pump must be reduced.
Low flow water	- The pump does not prime. - Air entering the intake manifold. - A trash can full of dirt. - Insufficient water level in the pool.
Noise level pumps	- Air leakage in the suction line, cavitation caused by a restricted or undersized suction line or a leak in any joint, low water level in the pool and unrestricted return line. - Vibration caused by improper installation, etc. - Damaged motor bearing or impeller (need to contact supplier for repair).

8.4 Error code

When the device detects a fault (except for capacity reduction strategy and 485 communication fault), it will stop automatically and display the error code. After stopping for 15 seconds, check if it is fault has been removed. If it is cleared, the pump will operate again.

Item	Error code	Description
1	**E001**	Abnormal input voltage
2	**E002**	Output overcurrent
3	**E101**	Radiator overheating
4	**E102**	Radiator sensor error
5	**E103**	Error on the main controller board
6	**E104**	Phase failure protection
7	**E105**	AC power circuit failure
8	**E106**	DC abnormal voltage
9	**E107**	PFC protection
10	**E108**	Motor overload
11	**E201**	Circuit board error
12	**E203**	RTC time reading error
13	**E204**	EEPROM reading error on display board
14	**E205**	Communication error
15	**E207**	No water protection
16	**E208**	Pressure sensor failure
17	**E209**	Loss of primary price

Note:

1) When E002/E101/E103 appears on the display, the device will automatically resume operation.

2) When E002/E101/E103 appears for the fourth time, the device will stop working, to restore operation, disconnect the device from the mains and reconnect it to start it up.

9. MAINTENANCE

Empty the strainer basket frequently. The basket should be checked through the transparent lid and emptied, when there is a visible accumulation of dirt inside. The following instructions should be followed:

1). Disconnect the power.

2). Press the cover plate to spring and open the cover plate. (See Figure 5)

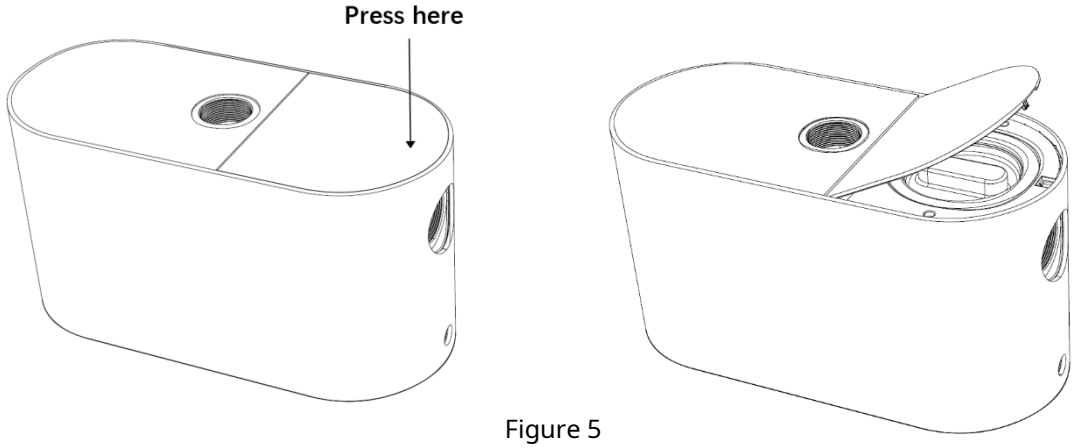


Figure 5

3). Unscrew the filter basket lid counterclockwise and remove it.

4). Lift the strainer basket.

5). Empty the trapped waste from the bin and rinse it if necessary.

Warning: Do not hit the plastic basket against a hard surface, as this could damage it.

6). Check the basket for signs of damage and replace it.

7). Check that the lid O-ring is not stretched, torn, cracked or otherwise damaged.

8). Put the lid back on, just tighten it by hand.

Note: Regular inspection and cleaning of the filter basket helps extend its life.

10. WARRANTY AND EXCLUSIONS

If a defect occurs during the warranty period, the manufacturer will repair or replace such item or part at its option. Customers must follow the warranty claim procedure to obtain the benefit of this warranty.

The warranty is void in the event of incorrect installation, incorrect operation, inappropriate use, unauthorized intervention or the use of non-original spare parts.

The seller will also not accept complaints about mechanically damaged goods, goods that have been used or stored incorrectly, goods that have been significantly worn out or goods that have been used for purposes other than those intended by the manufacturer or seller. The seller will also not accept complaints about goods that have been installed unprofessionally or contrary to the instructions, modified or exposed to non-standard influences, such as increased humidity and dustiness of the surrounding environment. For a proper settlement of a complaint, it is also necessary that the goods are delivered complete and clean.

Device decommissioning

1. Turn off the power.
2. Turn off the power around the pool.
3. Disconnect the power cord.
4.Disconnect the motor cable under the controller.

11. DISPOSITION

When disposing of the product, please separate the waste as waste electrical and electronic equipment.

products or hand it in to your local waste collection system.

Separate collection and recycling of waste equipment at the time of disposal will help ensure that it is recycled in a manner that protects human health and the environment

For information on where you can drop off your water pump for recycling, contact your local office.

MANUFACTURER:

AQUAGEM MANUFACTURING LTD,

Suite 101,Building 15,Suite 401,501,Building 16,No.193,Jinlong Road,Dalong street, Panyu,

Guangzhou, China

www.aquagem.com

Importer:

POOLTECHNIKA sro

Nebovidy 220,Nebovidy , 664 48, Czech Republic

pooltechnika@pooltechnika.cz

iGarden AQUAGEM®

INVERTERSPOOL PUMP

INSTALLATION AND OPERATING INSTRUCTIONS

Mr.MASTER

CONTENTS

1. ⚠ IMPORTANT SAFETY INSTRUCTIONS

This manual contains instructions for installing and operating the Mr.Master pump. If you have any further

For questions regarding this device, please contact your supplier.

1.1 When installing and using this equipment, basic safety precautions should always be followed.

measures, including the following:

- RISK OF ELECTRIC SHOCK. Connect only to a circuit breaker protected electrical outlet.

ground fault circuit interrupter (GFCI). If you cannot verify that the circuit is GFCI protected, contact your

a professionally trained and qualified electrician.

- To prevent the risk of electric shock, connect the motor ground wire (green/yellow)

to the grounding system.

- This pump is intended for use in permanently installed above-ground or underground

swimming pools and can also be used in hot tubs and spas with water temperatures below 50℃.

- Due to the fixed installation method, this pump is not recommended for use in above-ground

pools that can be easily dismantled for storage.

- The pump is not submersible.

- Never open the inside of the drive motor housing.

1.2 All installations must be equipped with a ground fault protection device or

against a residual current device whose rated residual operating current does not exceed 30 mA.

⚠ **WARNING:**

- Fill the pump with water before starting. Do not run the pump dry. In case of running

If the pump runs dry, the mechanical seal will be damaged and the pump will start to leak.

- Before performing any maintenance on the pump, turn off the power to the pump by disconnecting the main circuit of the pump and

Release all pressure from the pump and piping system.

- Never tighten or loosen screws while the pump is running.

- Make sure that the pump inlet and outlet are not clogged with foreign matter.

2. TECHNICAL SPECIFICATIONS

Model	P1	Voltage	Qmax	Hmax	Circulation (m^3/h)	
	KW	(V/Hz)	(m^3/h)	(m)	At 10 meters	At 8m
IM25	1.10	220-240/ 50/60	28.0	20.0	21.5	25.0

3. OVERALL DIMENSIONS (mm)

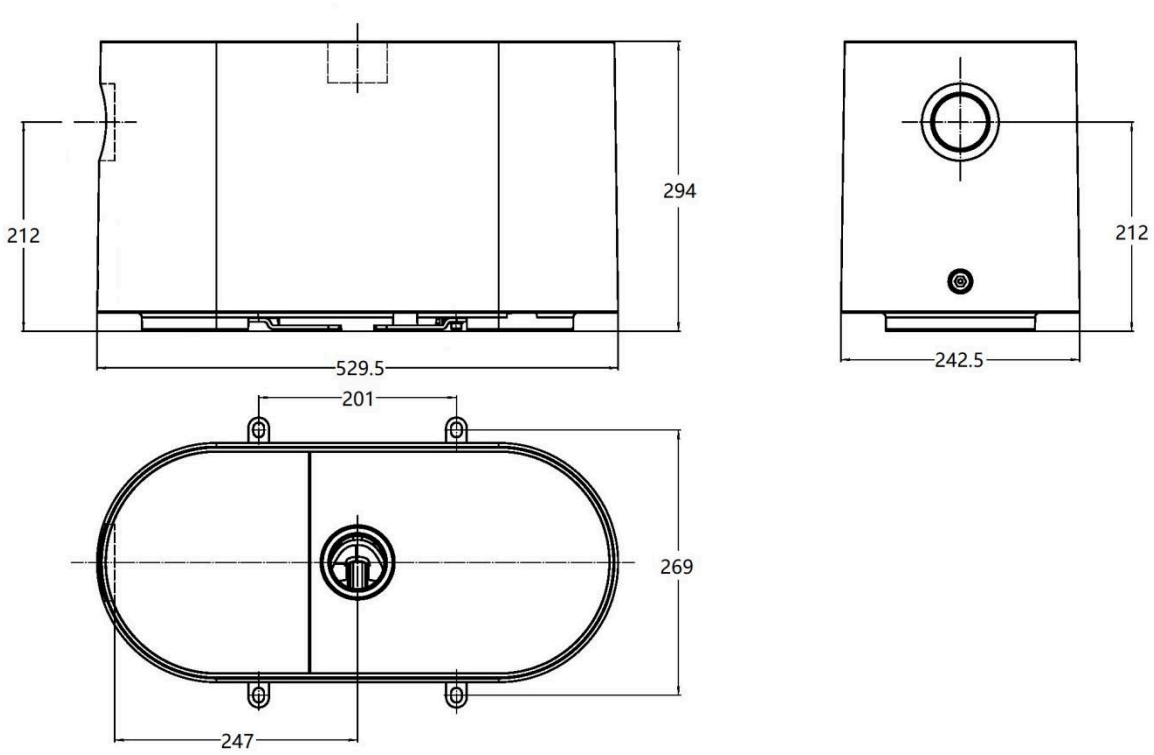


Figure 1

4. INSTALLATION

4.1. Pump location

1) Install the pump as close to the pool as possible to reduce friction losses and increase efficiency, use short, straight suction and return pipes.

2) To avoid direct sunlight, heat or rain, we recommend placing the Pump indoors or in the shade.

3) DO NOT place the pump in a damp or unventilated place. Place the pump at a distance at least 150 mm from obstacles.

4) The pump should be installed horizontally and fixed with screws to prevent unnecessary noise and vibrations.

4.2. Pipes

1) To optimize the pool water piping, it is recommended to use 63 mm pipes. When installing inlet and outlet fittings (joints), use a special sealant for the material PVC.

2) The suction pipe size should be equal to or larger than the suction pipe diameter to avoid prevent air from being sucked into the pump, which would affect the pump's efficiency.

3) The water pipe on the suction side of the pump should be as short as possible.

4) For most installations, we recommend installing a valve on both the suction and return lines of the pump, which is more convenient for routine maintenance. However, we also recommend that the valve, elbow or triangle installed on the suction pipe was no closer to the front of the pump than seven times the diameter suction pipe.

5) The pump outlet piping system should be equipped with a check valve to prevent the influence of medium recirculation and pump stopping due to water hammer.

4.3. Valves and fittings

1) Elbows should not be closer than 350 mm from the inlet. Do not install 90° elbows directly into the pump inlet/outlet. The connections must be tight.

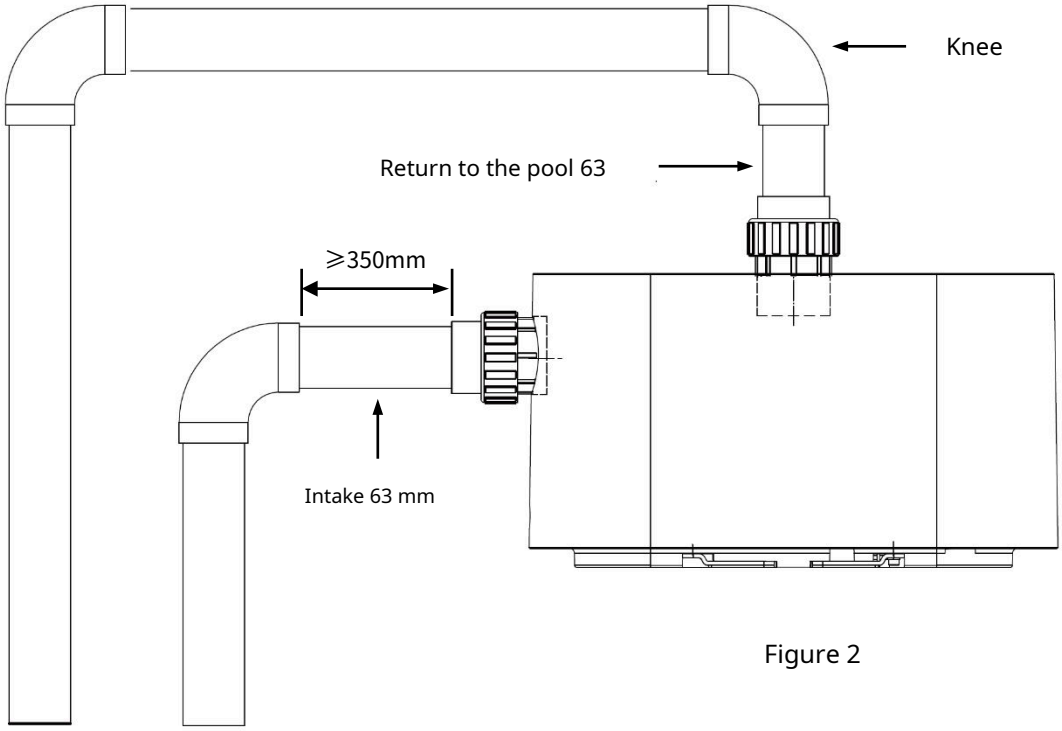


Figure 2

* Pump inlet/outlet port size: optional 48.5/50/60.3/63mm.

2) Flooded suction systems should have relief valves installed on the suction and return lines.

possession; however, the suction valve should not be closer than seven times the diameter of the suction pipe, as described in this section.

3) If there is a significant height between the return pipe and the pump outlet, use a pipeline check valve.

4) When connecting in parallel with other pumps, be sure to install check valves. This will prevent the impeller and motor from rotating backwards.

4.4 Check before first start-up

1) Check that the pump shaft rotates freely;

2) Check that the supply voltage and frequency correspond to the nameplate;

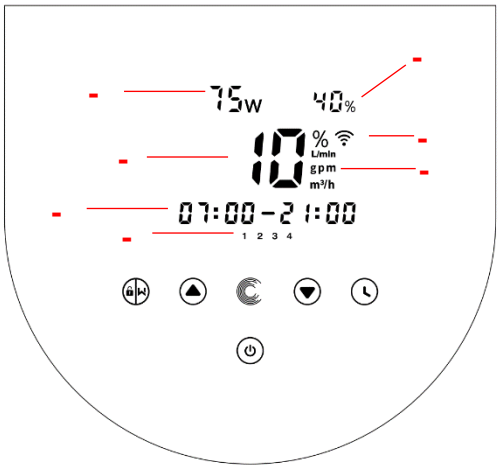
3) It is forbidden to operate the pump without water.

4.5 Conditions of use

Ambient temperature	Indoor installation, temperature range: -10 - 42℃
Water temperature	5℃-50℃
Water salinity	Salt concentration up to 0.5%, i.e. 5 g/l
Humidity	⩽90%RH, (20℃±2℃)
Installation	The pump can be installed at a maximum of 2 m above the water level. water;
Protection	Class F, IP55

5. SETTINGS AND OPERATION

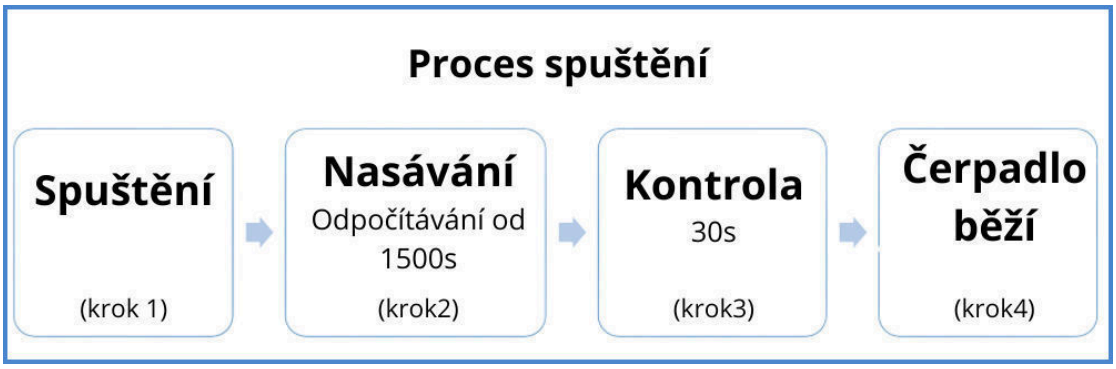
5.1 Display on the control panel:



① Power consumption
② Flow rate
③ Operating capacity
④ WIFI indicator
⑤ Flow unit
⑥ Timer time
⑦ Timer 1/2/3/4
Backflush/unblock
Up/down: change value (capacity/throughput) flow/time)
Switching between manual and automatic mode. **Manual mode**: The operating power is set manually within the range of 30-120%. **Automatic mode**: The operating capacity is automatically adjusted within the range of 30-120% according to the set flow rate. The default setting is for manual mode.
Timer settings

	On/Off

5.2 Startup process overview:



① **Step 1: Start operation**

- Press and hold the button for more than 3 seconds to unlock the screen.
- By pressing the button you start the pump.

② **Step 2: Water suction**

- The pump will start counting down from 1500s; when the system detects that the pump is full of water, it will stop the countdown and automatically end the filling.
- Users can manually stop self-priming by pressing a button for a period longer than 3 seconds. However, we recommend that users make sure the pump is full of water before stopping self-priming;
- Users can enter a parameter setting that disables the default self-priming function (see 5.11).

③ **Step 3: Self-check**

- The pump will perform a 30-second check again to ensure that self-priming (Step 2) has been completed.

④ **Step 4: Pump running**

- When first started after self-priming, the pump will operate at 80% of its operating capacity.

5.3 Start-up:

After powering on, the screen will be fully lit for 3 seconds, the device code will be displayed, and then it will enter the normal working state. When the screen is locked, only the button will be lit.

 ; by pressing and holding the button  for more than 3 seconds to unlock the screen.

The screen will automatically lock if no operation is performed for a long period of time.

than 1 minute, and the screen brightness will be reduced to 1/3 of the normal display. Short press 

wake up the screen and you can monitor the relevant operating parameters.

5.4 Water intake

Self-priming is initiated each time the pump is started.

When the pump performs self-priming, it will start counting from 1500s and automatically stop counting when the system detects that the pump is full of water, then the system will check again for 30s to make sure that the self-priming is completed.

Users can manually stop self-priming by pressing a button  for a period longer than 3 seconds. When first started, the pump will go into the default manual drive mode.

Note:

1) The pump is shipped with self-priming enabled. Self-priming will be performed automatically each time the pump is restarted. Users can enter parameter settings to disable the default self-priming function (see 5.11).

2) If the default self-priming function is off and the pump has not been used for a long time, the water level in the strainer basket may drop. Users can manually activate the self-priming function by pressing both buttons  for 3 seconds, adjustable time is from 600 s to 1500 s (default value is 600 s).

3) After manual self-priming is completed, the pump returns to the previous state before manual self-priming was activated.

4) Users can press the button  for more than 3 seconds to end manual self-priming.

5.5 Backflushing

Users can initiate backwash or rapid recirculation at any operating status by pressing the button. 

	Default	Setting range
Time	180s	By pressing the button  or  set in the range 0 to 1500s with 30 seconds for each step.
Operating capacity	100%	60-100%, enter the parameter settings (see 5.11).

Output reverse current:

When backwash mode is on, users can hold  for 3 seconds, to end it, the pump will return to its previous state before backwashing.

5.6 Manual mode

1		By holding the button  for more than 3 seconds to unlock screen.
2		Press the button  and start. When starting for the first time after self-priming the pump will operate at 80% of its operating capacity.
3		By pressing the button  or  set the operating capacity within the range 30-120%, each step of 5%.
4		By pressing again  switch to automatic mode.

Note:

1) If the pipeline pressure is too high, users can set the operating capacity to 105-120% to maintain adequate flow. The pump will run at a higher speed but will not exceed the rated capacity of each model.
2) If the pump has reached 105% rated capacity and users continue to increase the operating capacity, the display will return to 105% after the motor speed stabilizes.

5.7 Automatic mode

In automatic mode, the pump can automatically detect system pressure and adjust speed

motor to reach the set flow rate

1		Unlock the screen and press the button  switch from mode manual converter manual to automatic mode.
2		The flow rate can be adjusted by pressing a button  or  with a speed of 1 m^3/h for each step.
3		The flow unit can be changed to LPM or GPM by pressing both buttons  for 3 seconds.
4		By pressing the button  you switch to manual converter mode.

The default adjustable flow range for the InverMaster is as follows:

Model	Default adjustable flow range
IM25	8-28 m^3/h

5.8 Timer mode

The pump on/off and power could be controlled by a timer, which could be

programmed daily as needed.

1	To enter the timer settings, press the button. 
2	To set the local time, press the button.  or  .
3	By pressing the button  confirm and go to time setting 1.
4	By pressing the m button  or  select the desired operating times, operating capacity or flow rate (when the % icon is flashing, users can change the flow rate setting by pressing a button ) .
5	 Repeat the above steps to set the other 3 timers.
6	 Hold for 3 seconds to save the settings and activate timer mode.
7	 or  Check the 4 timers and make sure they are not set invalidly.

Note:

1) If the timer mode is activated and the set time period includes the current time, the pump will starts according to the set operating power or flow rate. If the set time period does not contain the current time, the timer number is displayed on the control unit 1 2 3 4 (1 or 2 or 3 or 4) to start running, and will flash, 88:88-88:88 will display corresponding time period, which means the timer has been set successfully.

2) If you want to return to the previous setting while setting the timer, hold down both  for 3 seconds. If you do not need to set all 4 timers, you can hold  for 3 seconds, the system will automatically save the current set value and activates timer mode.

3) Users can exit the timer mode by pressing the button. 

5.9 Skimmer mode

Skimmer mode allows the pump to clean the water surface, preventing dirt buildup and providing users with a cleaner pool.

By holding  a  enter the preset skimmer mode interface. When The first time you switch to this mode, preset 1 is activated.

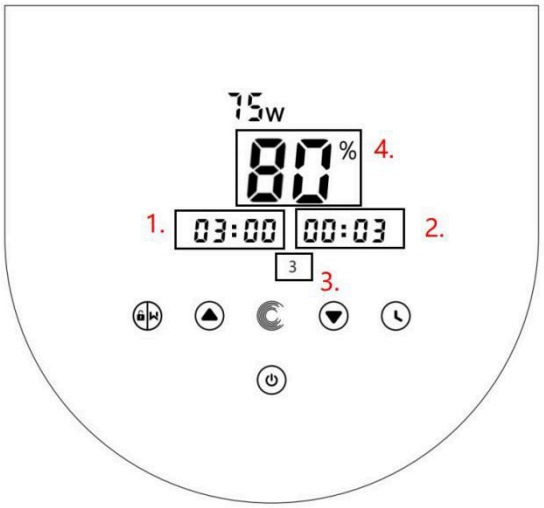
Users can press  or  to display 4 presets, details about each preset is listed below, the selected preset will be activated after 5s of no operation.

Preface melting	Cycle skimmer	Time duration skimmer	Speed/flow	Time period	Note
1	1h	3 minutes	Speed：100% Flow: 25 m^3/h (IM20) 28 m^3/h (IM25) 30m^3/h (IM30)	7:00 - 21:00	Editable in parameter settings By pressing the button  you switch between speed and flow rate.
2	1h	10 minutes	100%	7:00 - 21:00	Cannot be edited

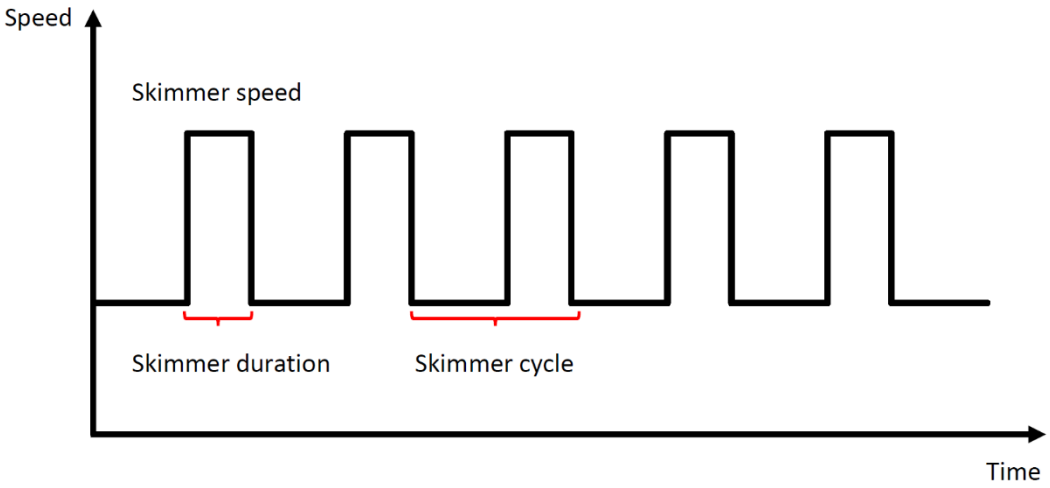
3	3h	3 minutes	80%	7:00 - 21:00	Cannot be edited
4	Turning off skimmer mode				Cannot be edited

After the skimmer duration has expired, the preset parameter will be displayed on the controller, users can hold down the button  end the skimmer duration each time. After the end

After the skimmer duration, the pump will return to normal status so that users can control it.



1. Skimmer cycle (hour)
2. Duration (in minutes)
3. Mode preset number
4. Speed/flow



5.10 Speed limit

Users can set the operating speed limit to meet the flow requirements of other devices, such as sand filters.

In the parameter settings, the running speed limitation can be set in the range of 60% - 100%. (see 5.11). 100% means that there is no speed limitation and the operating capacity can be set in the range of 30% - 120% during normal operation.

To ensure performance, the following mode or process will not be limited by the speed limit: 1.
Self-priming at each start
2. Manual self-priming
3. Automatic mode
4. Setting the flow rate in timer mode

5.11 Parameter settings

Factory reset settings	In off mode, hold down both  for 3 seconds.
Check version software	In off mode, hold down both  for 3 seconds.
Enter settings parameters, as is listed below	In off mode, hold down both  for 3 seconds; If no need to set the current address, hold both  or press  to another address.

Parameter Address	Description	Default settings	Setting range
1	PIN3	Speed：100% Flow rate: 28 m³/h	Speed: 30-120%, in 5% steps Flow rate 8-28m³/h (in 1m³/h steps) Note: Press  you switch to flow setting.
2	PIN2	Speed：80% Flow rate: 22 m³/h	
3	PIN1	Speed：40% Flow rate：11m³/h	
4	Returnable flushing	Speed：100% Flow rate: 28 m³/h	Speed: 60-100%, in 5% steps Flow: 8-28m³/h (in 1m³/h steps) Note: Press  you switch to flow setting.
5	Driving mode analog input	0	0: Current control 1: Voltage control
6	Enable or disable self-priming when every start.	25	25: 0: turns off
7	Reserved	0	Cannot be edited

8	System time	00:00	00:00 - 23:59
9	Preset 1 mode skimmer (cycle, duration, speed/flow)	01:00 00:03 100%	Skimmer cycle: 1-24 h, 1 h for each step Skimmer duration: 1-30min, 1min for every step Skimmer speed: 30-100%, in steps 5% each. Skimmer flow: 8-28 m^3/h (1 m^3/h increments) Note: Press  you switch to flow setting.
10	Time period presets 1 mode skimmer	7:00-21:00	Start time: 00:00-24:00 End time: 00:00-24:00
11	Speed limit	Speed：100% Flow rate：28m^3/h	Speed：60%-100%, in 5% steps（100% means not limited）speed) Flow rate: 17-28 m^3/h (1 m^3/h increments) Note: Press  you switch to flow setting.
12	RS485 address	170(0xAA)	160-190 (0xA0-0xBF), each step by 1.
13	Reserved	0	Cannot be edited

For example: How to turn on/off the self-priming function?

1) Enter the parameter settings: In power off mode, hold down both  for a period of time 3 seconds；.

2) Select the parameter address: Press  to address 6；.

3) Enable or disable self-priming at each startup:  , 0=Disable Yes.

6. WIFI OPERATION

1 Download InverFlow APP

Android

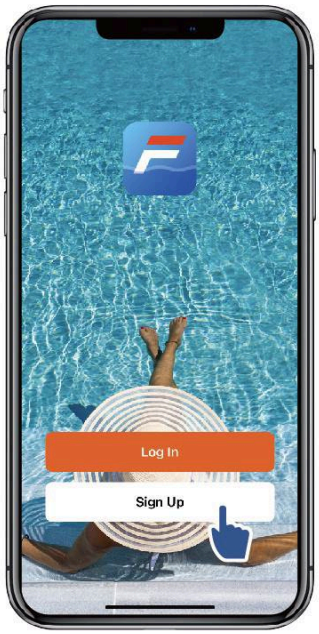
ANDROID APP ON Google play

iOS

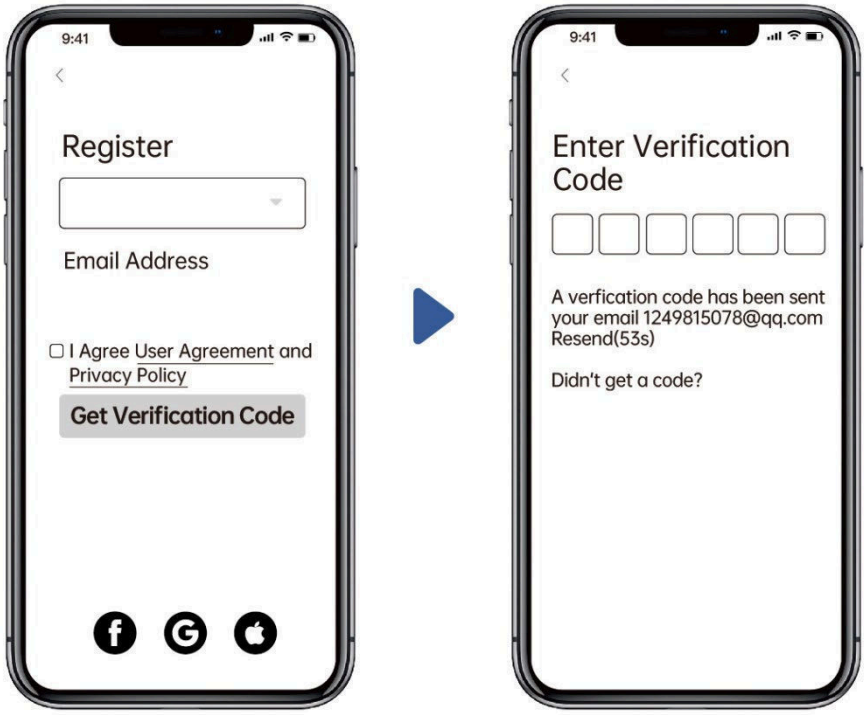
Available on the App Store

2 Account registration

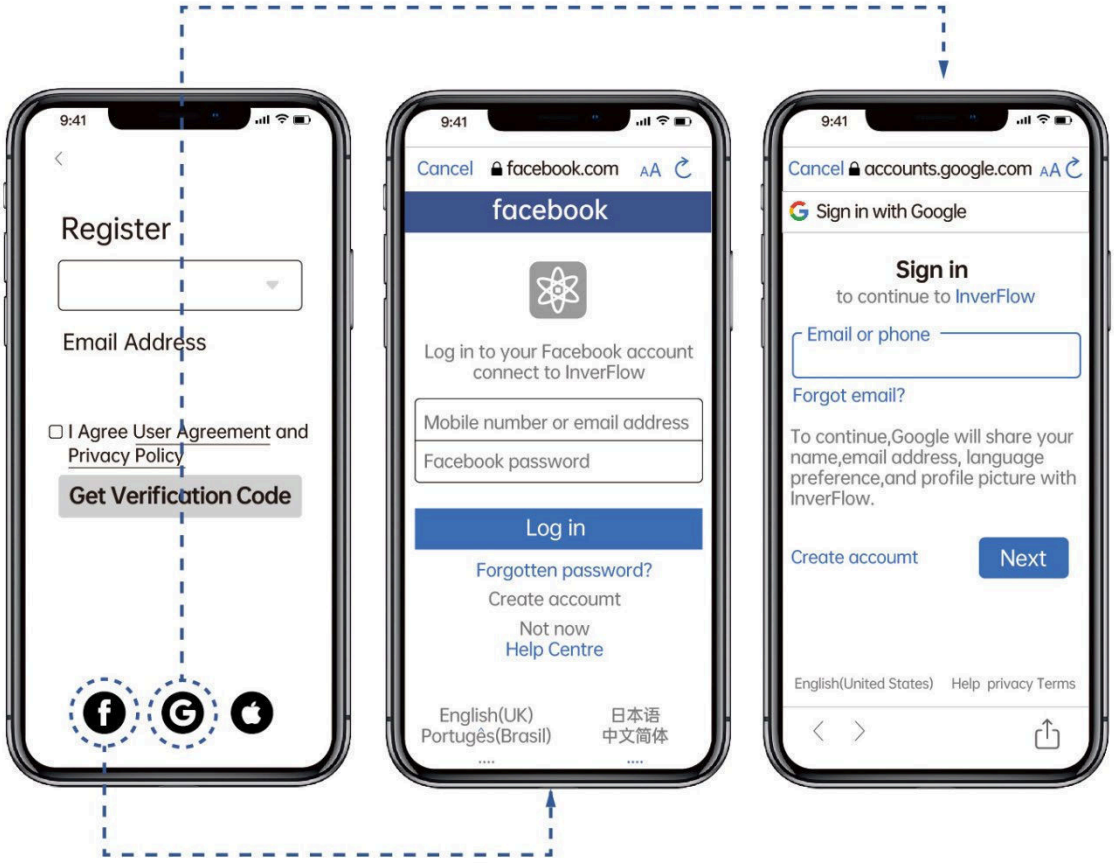
Register by e-mail or third-party application.



a. Registration by email

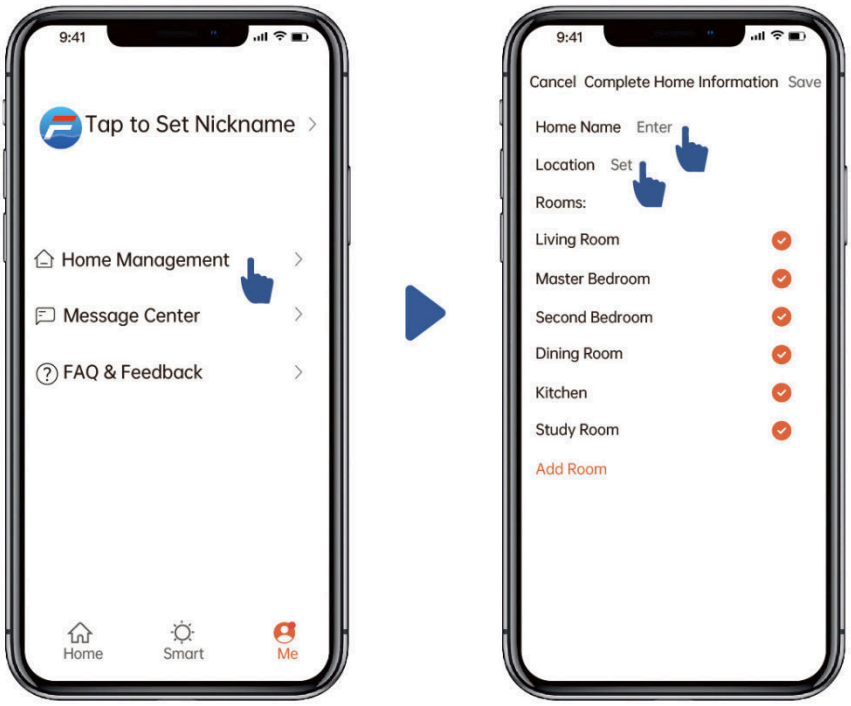


b.**Third-party application registration**



3 Create a homepage

Set the home name and select the device location. (We recommend setting the location so that the app displays the weather for your convenience.)



4 App pairing

Make sure the pump is turned on before starting. **Option 1**

(recommended): With Wifi and Bluetooth

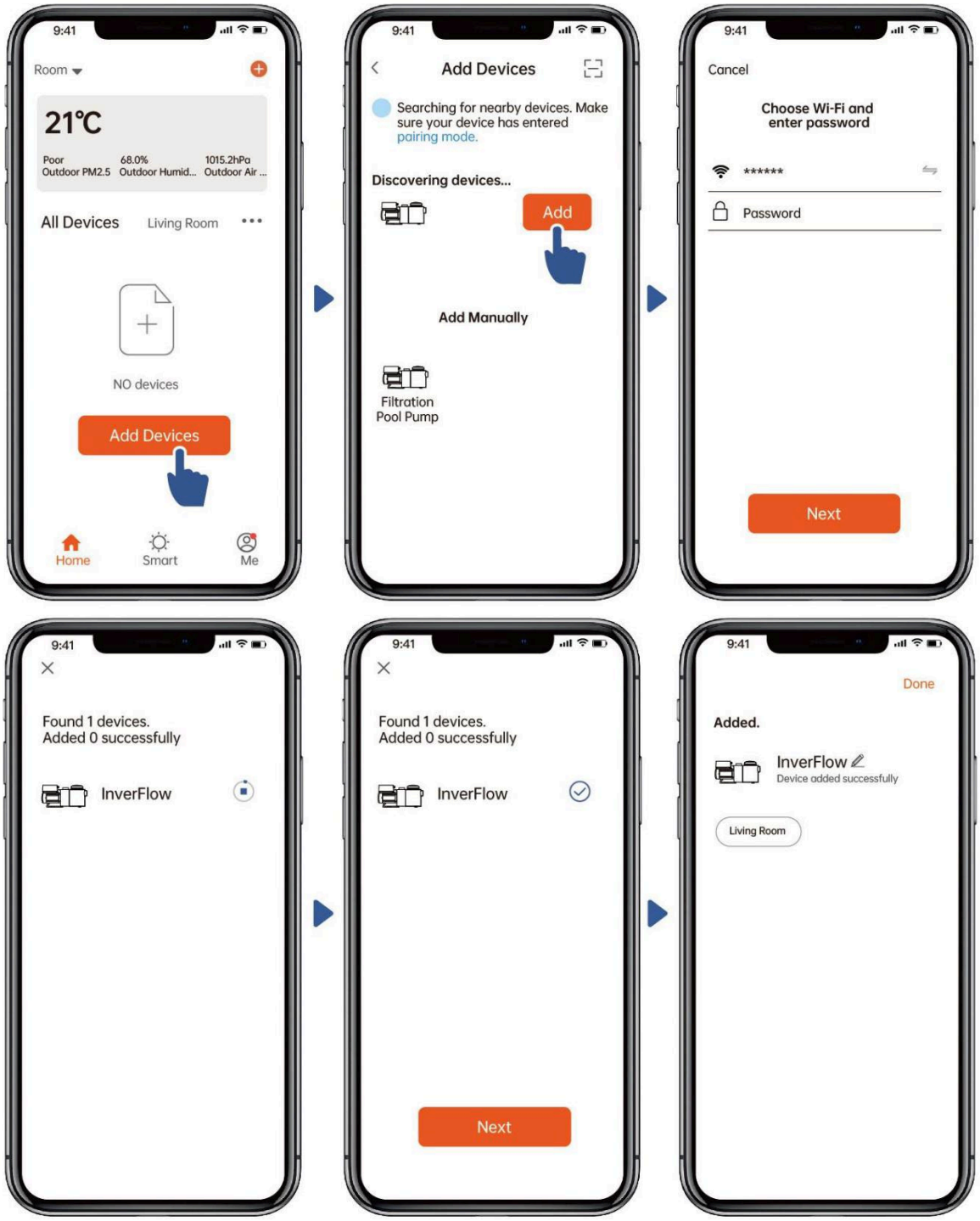
(Network requirement: 2.4GHz; 2.4Ghz and 5GHz in one SSID; but no separate 5GHz network) 1) Check if your phone is connected to Wifi and Bluetooth is turned on.

2) Press the button  for 3 seconds until you hear a "Beep" to unlock the screen.

Press the button  for 5

seconds until you hear a "Beep", and then  release. flashes.

3) Click the "Add Device" button and then follow the instructions to pair the device.



Option 2: With Wifi (network requirement: 2.4GHz only)

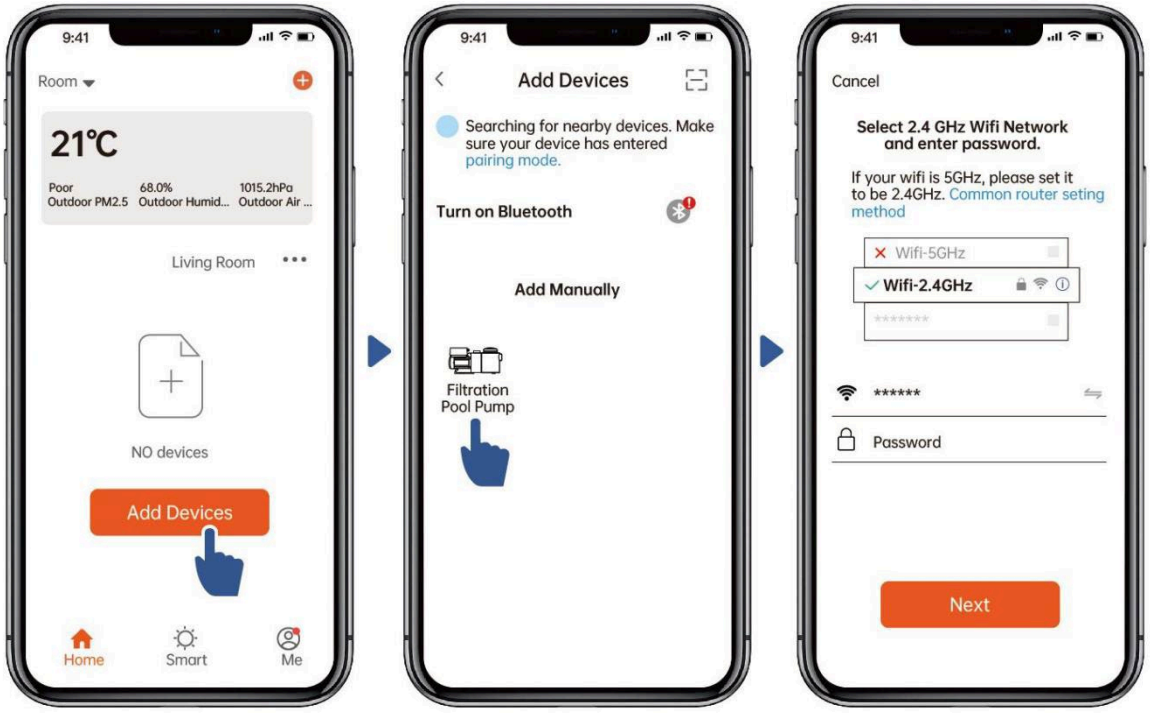
1) Check if your phone is connected to a Wifi network.

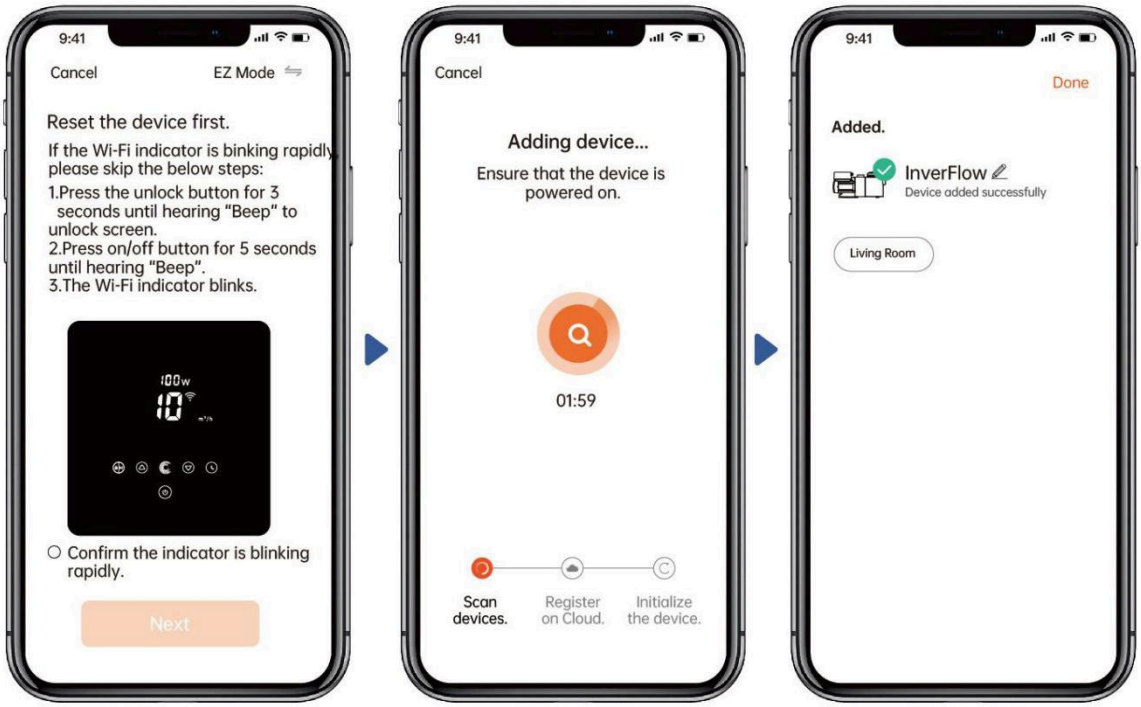
2) Press the button  for 3 seconds until you hear a "Beep" to unlock the screen.

Press the button  for 5

seconds until you hear a "Beep", and then  release. flashes.

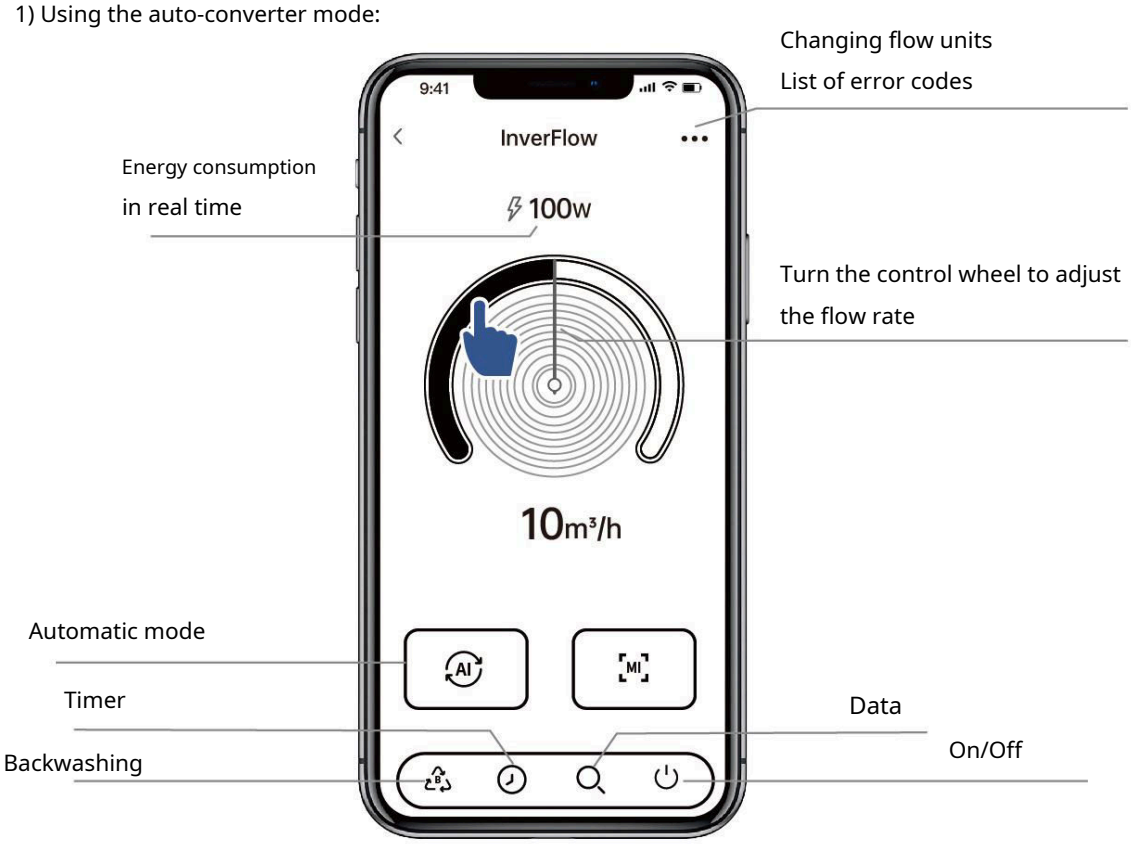
3) Click the "Add Device" button and then follow the instructions to pair the device.



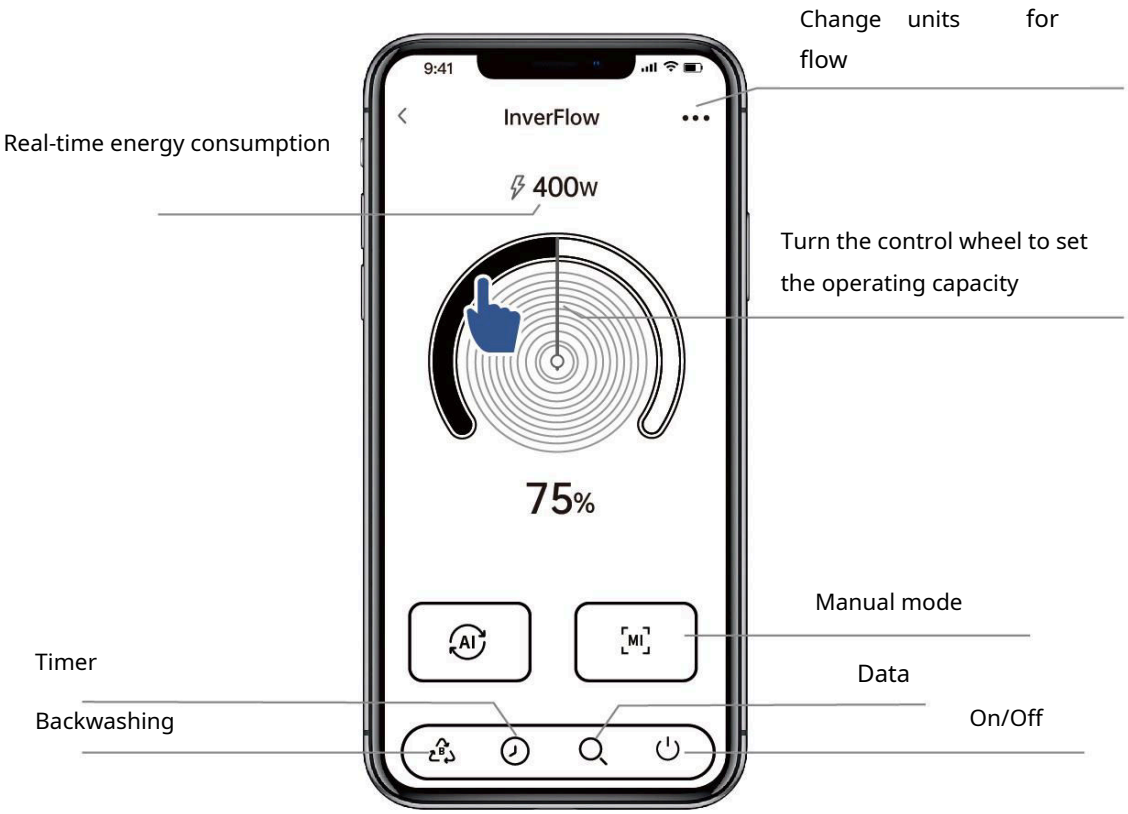


5 Operation

1) Using the auto-converter mode:



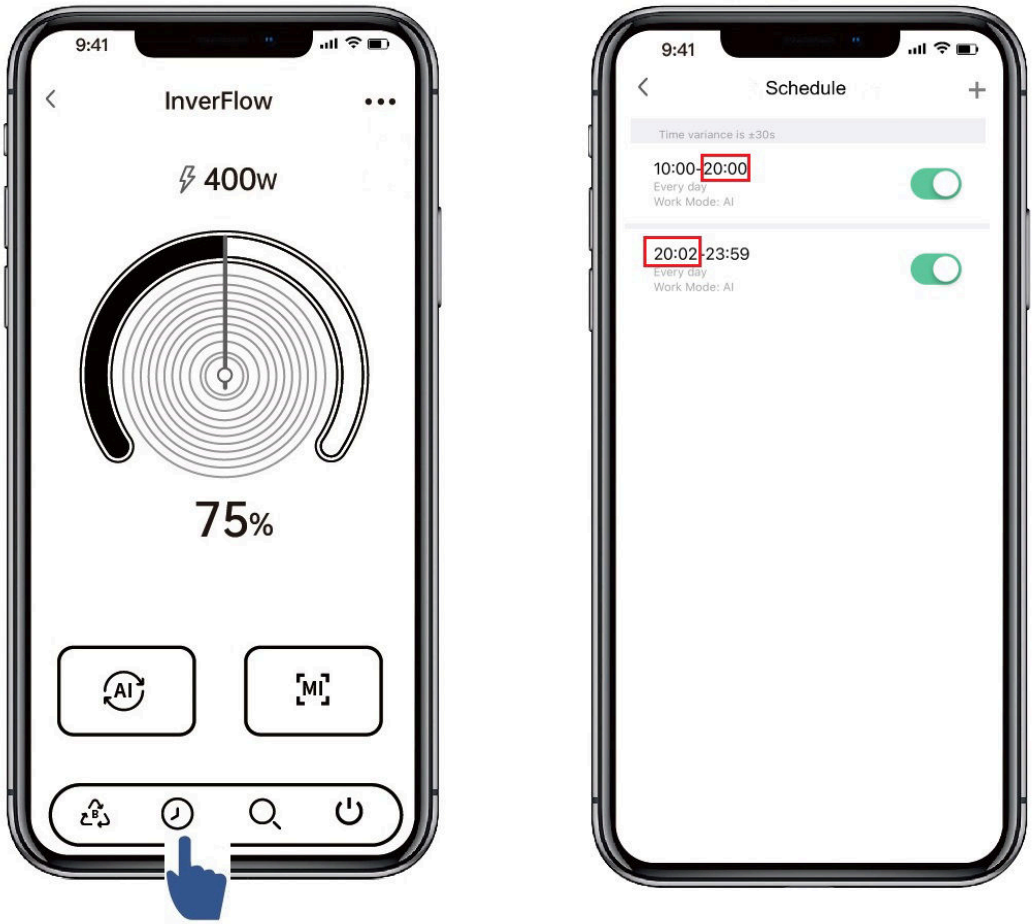
2) Using manual mode:



Reminder for setting timer via APP:

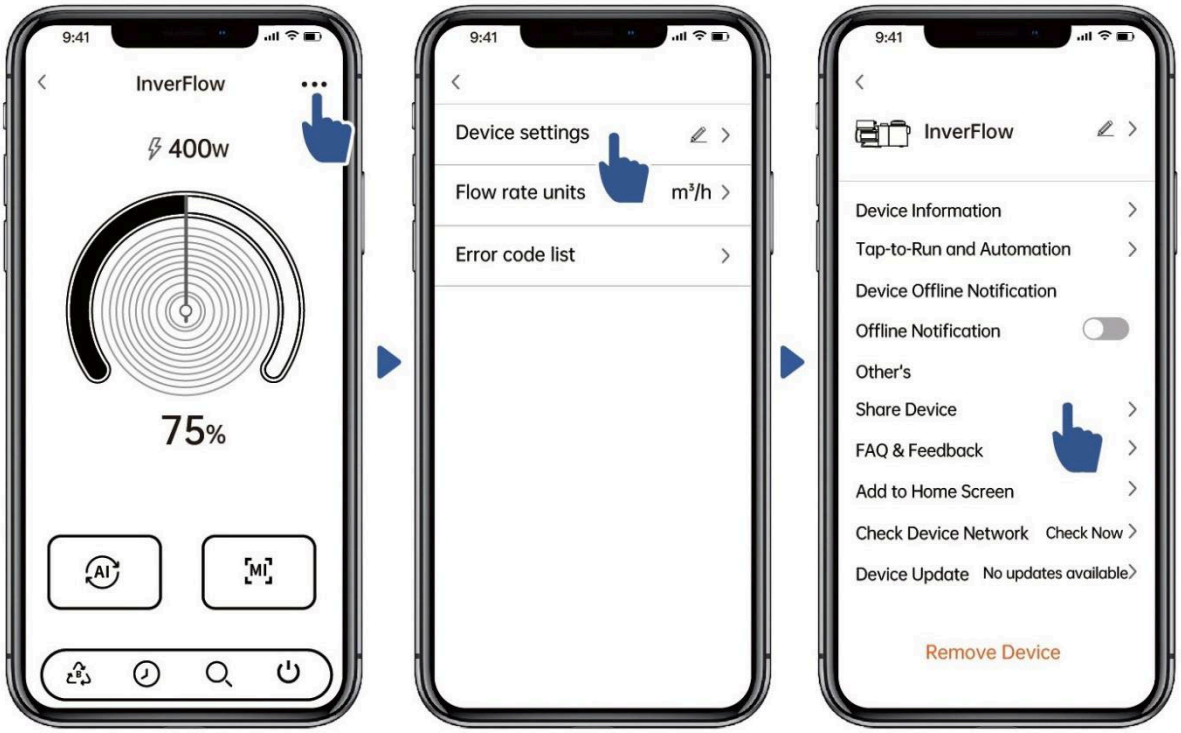
1) The time deviation is ± 30s;

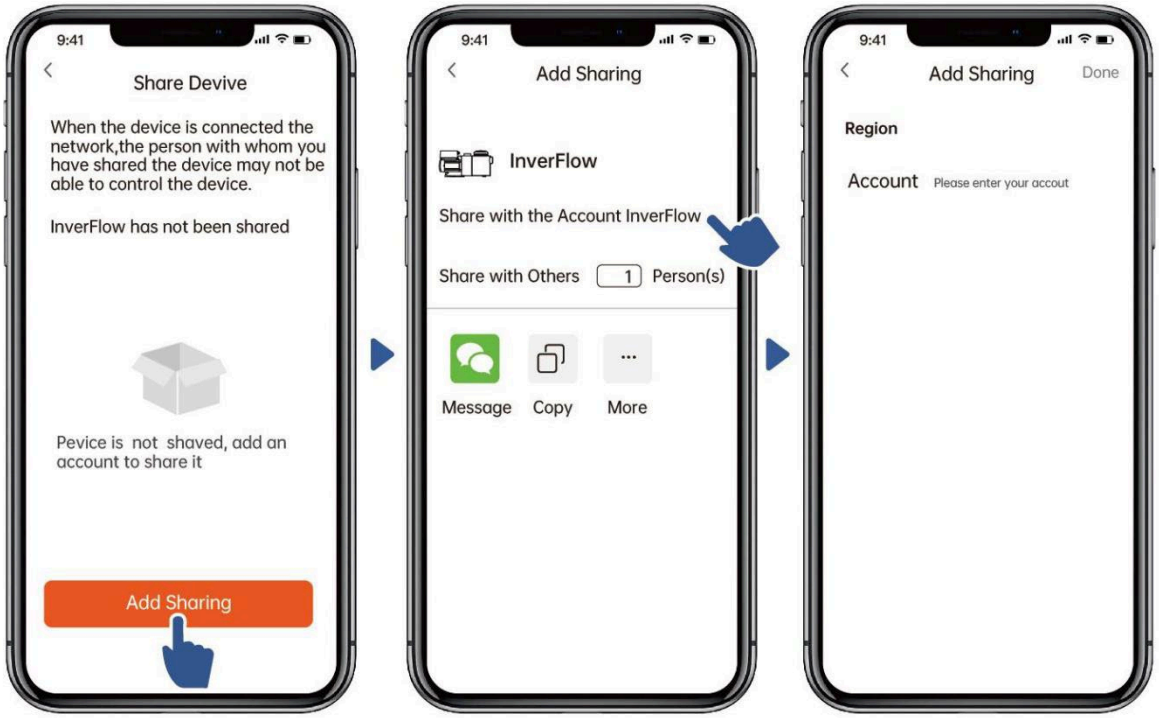
2) To avoid conflicts and invalidation of overlapping time points due to network delays, it is recommended that the end time and start time of the next time period do not overlap and that a sufficient time interval is reserved, such as at least 2 minutes;



6 Sharing devices with family members

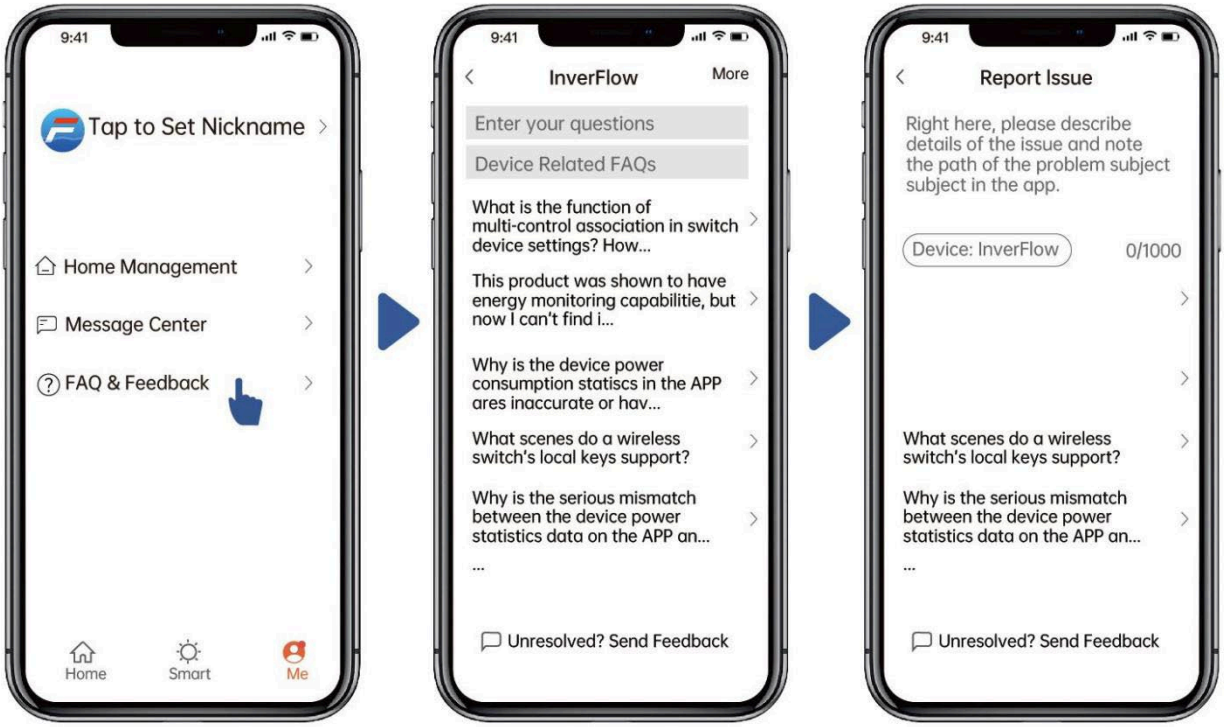
If your family members want to control the device after pairing, please let them register the "InverFlow" device first, and then the administrator can control them according to the procedure below:





7 Feedback

If you have any problem while using it, you can send feedback.



Notice:

1) The weather forecast is for guidance only;
2) Energy consumption data is for guidance only as it may be affected by network problems and calculation inaccuracies.
3) The application may be updated without prior notice.

7. EXTERNAL CONTROL

External control can be enabled using the following contacts. If more than one is enabled one external control, priority is listed below: Digital input > RS485 > Control panel

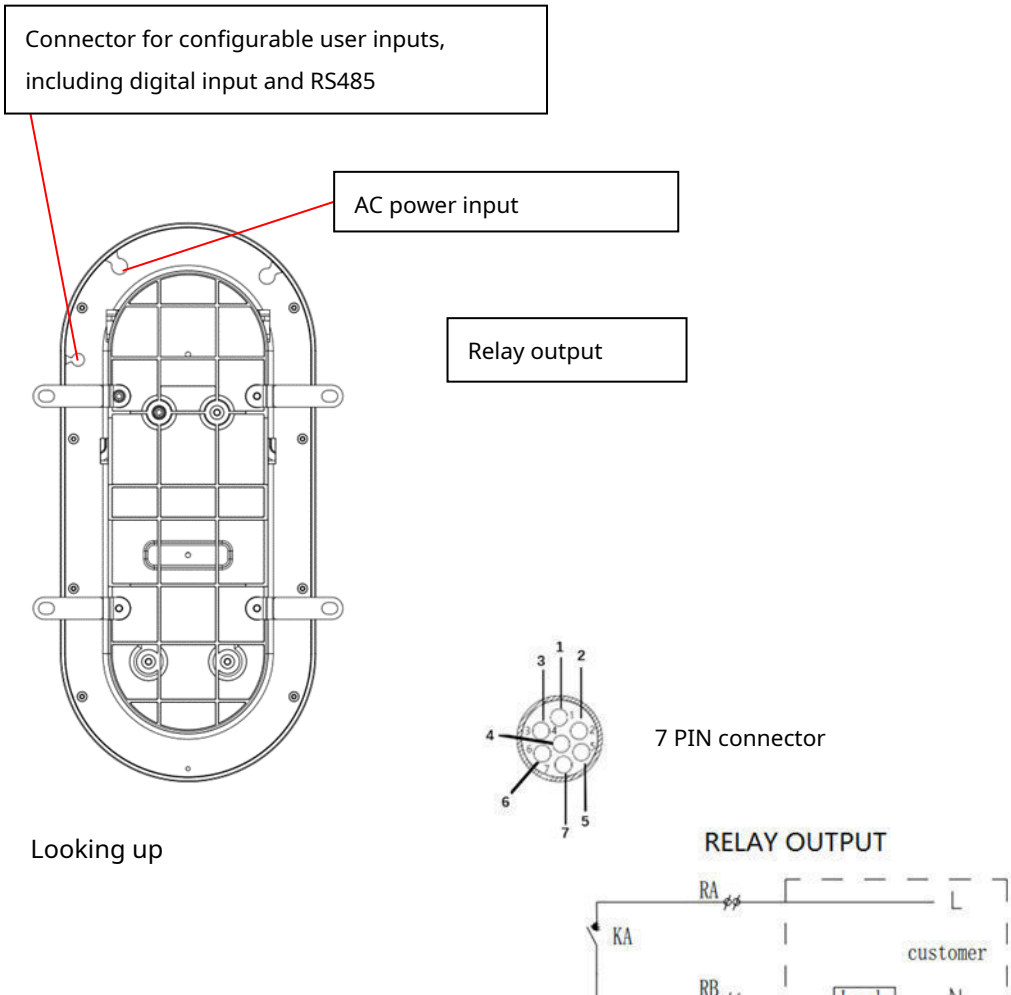


Figure 3

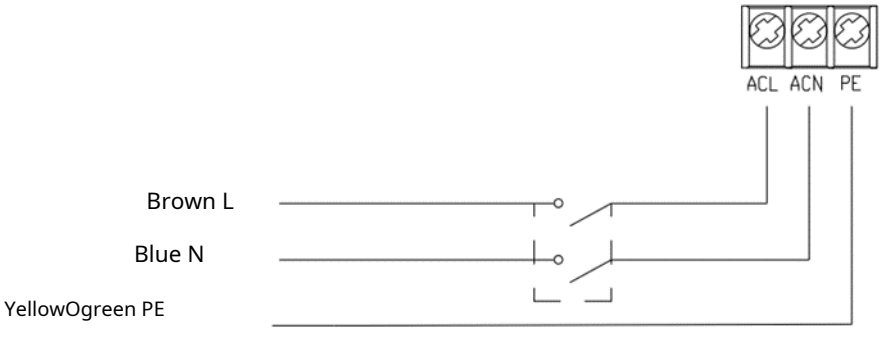


Figure 4

Name	Color	Description
PIN 1	Red	Digital input 4
PIN 2	Black	Digital input 3
PIN 3	White	Digital input 2
PIN 4	Gray	Digital input 1
PIN 5	Yellow	Digital Earth
PIN 6	Green	RS485 A
PIN 7	Brown	RS485 B

a. Digital

The operating capacity is determined by the state of the digital input,

1) When PIN4 connects to PIN5, the pump is forced to stop; if disconnected, the digital control will not be valid;
2) When PIN3 connects to PIN5, the pump will be forced to run at 100%; if disconnected, the control priority will be on the panel again;
3) If PIN2 connects to PIN5, the pump will be forced to run at 80%; if disconnected, the control priority will be on the panel again;
4) When PIN1 connects to PIN5, the pump will be forced to run at 40%; if disconnected, the control priority will be on the panel again;
5) The input capacity (PIN1/PIN2/PIN3) can be adjusted according to the parameter settings.

b. RS485:

For connection using PIN6 and PIN7, the pump can be controlled using the Modbus 485 communication protocol.

C. Relay output:

Connect terminals L and N with RA and RB wire to enable relay output. If the bearing power is higher than 500W (2.5A), additional relay must be used.

8. PROTECTION AND FAILURE

8.1 High temperature warning and speed reduction

IN mode "automatic/manual" and "regime" timers" (besides return flushing/self-priming), when the module temperature reaches the high temperature warning threshold (81℃), it will enter the high temperature warning state; when the temperature drops to the high temperature warning release threshold (78℃), the high temperature warning state will be released. The display area alternates between AL01 and the operating speed or flow rate.

a）If AL01 is displayed for the first time, the operating capacity will be automatically reduced according to the following procedure:

1) If the current operating capacity is higher than 100%, the operating capacity will automatically

will reduce to 85%;

2) If the current operating capacity is higher than 85%, the operating capacity will automatically be reduced by 15%;

3) If the current operating capacity is higher than 70%, the operating capacity will automatically be reduced by 10%;

4) If the current operating capacity is lower than 70%, the operating capacity will automatically be reduced by 5%.

b）If AL01 is activated for the first time, the operating capacity will be automatically reduced as shown below:

1) When the module temperature is lower than 85℃, the controller detects the module temperature every 2 minutes, and for every 1℃ increase in temperature, the operating capacity will automatically decrease by 5%;

2) If the module temperature is higher than 85℃, the controller will detect the module temperature every 2 minutes:.

2.1) if it detects that the module temperature has increased, for every 1℃ increase in temperature, the operating capacity will automatically decrease by 5%;

2.2) if it detects that the module temperature has not changed, it will automatically reduce the operating capacity by 5%;

8.2 Undervoltage protection

When the device detects that the input voltage is lower than 198V, it will limit the current running speed. The display area alternately displays AL02 and the running speed or flow rate.

1) If the input voltage is less than or equal to 180V, the operating capacity is limited to 70%;

2) If the input voltage range is between 180V - 190V, the operating capacity is limited to 75%;

3) If the input voltage range is between 190V - 198V, the operating capacity is limited to 85%.

8.3 Troubleshooting

Problem	**Possible causes and solutions**
The pump is will not start	- Power failure, disconnected or faulty wiring. - Blown fuses or thermal overload. - Check that the motor shaft rotates freely and that there is no obstacle in the way. - Due to long periods of inactivity. Disconnect the power supply and manually rotate the rear motor shaft several times with a screwdriver.
The pump is does not fill	- Empty pump housing/strainer. Make sure the pump housing/strainer is filled with water and the cover O-ring is clean. - Loose connections on the suction side. - The strainer basket or skimmer basket is clogged with dirt. - The suction side is clogged.

	- If the distance between the pump inlet and the liquid level is more than 2 m, the installation height of the pump must be reduced.
Low flow water	- The pump does not prime. - Air entering the intake manifold. - A trash can full of dirt. - Insufficient water level in the pool.
Noise level pumps	- Air leakage in the suction line, cavitation caused by a restricted or undersized suction line or a leak in any joint, low water level in the pool and unrestricted return line. - Vibration caused by improper installation, etc. - Damaged motor bearing or impeller (need to contact supplier for repair).

8.4 Error code

When the device detects a fault (except for capacity reduction strategy and 485 communication fault), it will stop automatically and display the error code. After stopping for 15 seconds, check if it is fault has been removed. If it is cleared, the pump will operate again.

Item	Error code	Description
1	**E001**	Abnormal input voltage
2	**E002**	Output overcurrent
3	**E101**	Radiator overheating
4	**E102**	Radiator sensor error
5	**E103**	Error on the main controller board
6	**E104**	Phase failure protection
7	**E105**	AC power circuit failure
8	**E106**	DC abnormal voltage
9	**E107**	PFC protection
10	**E108**	Motor overload
11	**E201**	Circuit board error
12	**E203**	RTC time reading error
13	**E204**	EEPROM reading error on display board
14	**E205**	Communication error
15	**E207**	No water protection
16	**E208**	Pressure sensor failure
17	**E209**	Loss of primary price

Note:

1) When E002/E101/E103 appears on the display, the device will automatically resume operation.

2) When E002/E101/E103 appears for the fourth time, the device will stop working, to restore operation, disconnect the device from the mains and reconnect it to start it up.

9. MAINTENANCE

Empty the strainer basket frequently. The basket should be checked through the transparent lid and emptied, when there is a visible accumulation of dirt inside. The following instructions should be followed:

1). Disconnect the power.

2). Press the cover plate to spring and open the cover plate. (See Figure 5)

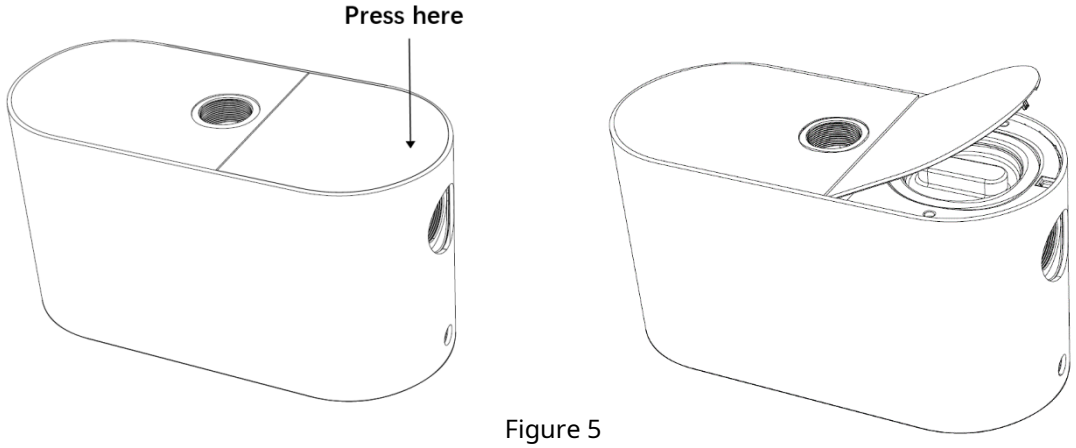


Figure 5

3). Unscrew the filter basket lid counterclockwise and remove it.

4). Lift the strainer basket.

5). Empty the trapped waste from the bin and rinse it if necessary.

Warning: Do not hit the plastic basket against a hard surface, as this could damage it.

6). Check the basket for signs of damage and replace it.

7). Check that the lid O-ring is not stretched, torn, cracked or otherwise damaged.

8). Put the lid back on, just tighten it by hand.

Note: Regular inspection and cleaning of the filter basket helps extend its life.

10. WARRANTY AND EXCLUSIONS

If a defect occurs during the warranty period, the manufacturer will repair or replace such item or part at its option. Customers must follow the warranty claim procedure to obtain the benefit of this warranty.

The warranty is void in the event of incorrect installation, incorrect operation, inappropriate use, unauthorized intervention or the use of non-original spare parts.

The seller will also not accept complaints about mechanically damaged goods, goods that have been used or stored incorrectly, goods that have been significantly worn out or goods that have been used for purposes other than those intended by the manufacturer or seller. The seller will also not accept complaints about goods that have been installed unprofessionally or contrary to the instructions, modified or exposed to non-standard influences, such as increased humidity and dustiness of the surrounding environment. For a proper settlement of a complaint, it is also necessary that the goods are delivered complete and clean.

Device decommissioning

1. Turn off the power.
2. Turn off the power around the pool.
3. Disconnect the power cord.
4.Disconnect the motor cable under the controller.

11. DISPOSITION

When disposing of the product, please separate the waste as waste electrical and electronic equipment.

products or hand it in to your local waste collection system.

Separate collection and recycling of waste equipment at the time of disposal will help ensure that it is recycled in a manner that protects human health and the environment

For information on where you can drop off your water pump for recycling, contact your local office.

MANUFACTURER:

AQUAGEM MANUFACTURING LTD,

Suite 101,Building 15,Suite 401,501,Building 16,No.193,Jinlong Road,Dalong street, Panyu,

Guangzhou, China

www.aquagem.com

Importer:

POOLTECHNIKA sro

Nebovidy 220,Nebovidy , 664 48, Czech Republic

pooltechnika@pooltechnika.cz