

# InverPro

Installation & operation manual

 Pollet Pool Group





# Contents

- 1 Important safety instructions
- 2 Technical specifications & overall dimensions
- 3 Installation
- 4 Setting and operation
- 5 External control
- 6 Protection and failure
- 7 Maintenance
- 8 Warranty & Exclusions
- 9 Disposal

Thank you for purchasing our inverter pool pumps. This manual contains important information that will help you in operating and maintaining this product. Please read the manual carefully before installation & operation and retain it for future reference.

# 1 Important safety instructions

This guide provides installation and operation instructions for this pump. If you have any other questions about this equipment, please consult your supplier.

## 1.1 When installing and using this electrical equipment, basic safety precautions should always be followed, including the following:

- Risk of electrical shock. Connect only to a branch circuit protected by a ground-fault circuit-interrupter (GFCI). Contact a professionally trained and qualified electrician if you cannot verify that the circuit is protected by a GFCI.
- This pump is for use with permanently installed in-ground or above-ground swimming pools and may also be used with hot tubs and spas with a water temperature under 50 °F. Due to the fixed installation method, this pump is not suggested to be used on above-ground pools that can be readily disassembled for storage.
- The pump is not submersible.
- Before servicing the pump, please switch off power to the pump by disconnecting the main circuit to the pump.
- Never open the inside of the drive motor enclosure.

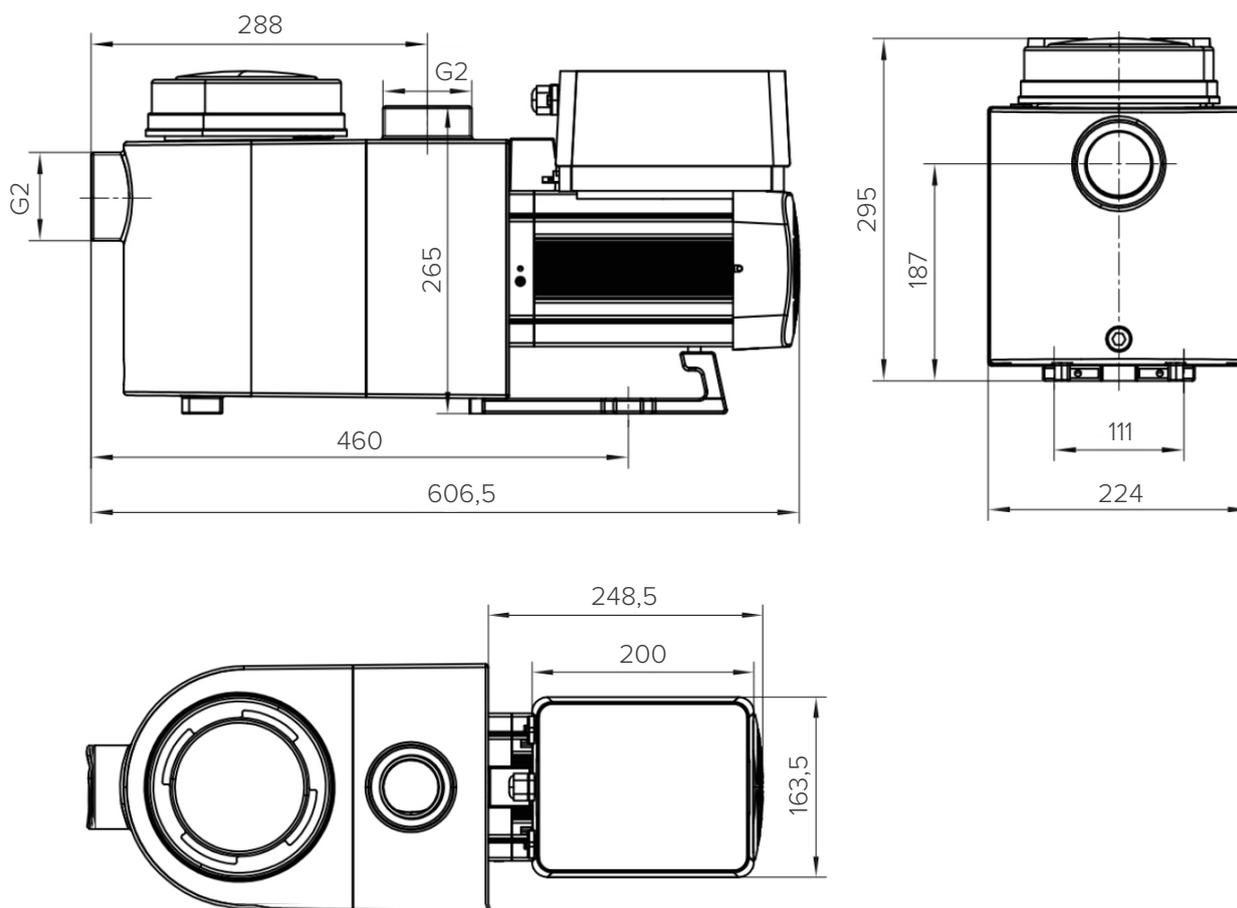
## 1.2 All installations must be fitted with earth leakage or residual current protection devices, having a rated residual operating current not exceeding 30mA.

### Warning:

- Fill the pump with water before starting. Do not run the pump dry. In case of dry run, mechanical seal will be damaged and the pump will start leaking.
- Before servicing the pump, switch OFF power to the pump by disconnecting the main circuit to the pump and release all pressure from pump and piping system.
- Never tighten or loosen screws while the pump is operating.
- Ensure that the inlet and outlet of the pump are unblocked with foreign matter.

## 2 Technical specifications & dimensions (mm)

Model	Advised Pool Volume (m <sup>3</sup> )	P1	Voltage (V/Hz)	Qmax (m <sup>3</sup> / h)	Hmax (m)	Circulation (m <sup>3</sup> /h)	
		kW				At 8m	At 10m
IP20	30 ~ 50	0,07 ~ 0,75	220-240/ 50/60	25	12,5	6,15 ~ 20,5	4,5 ~ 15
IP25	40 ~ 70	0,08 ~ 1,05		27,5	15	7,68 ~ 25,6	6,6 ~ 22
IP30	50 ~ 80	0,09 ~ 1,4		31	18	9,3 ~ 31	8,1 ~ 27
IP40	70 ~ 100	0,11 ~ 1,8		41	17	12 ~ 40	11,1 ~ 37



## 3 Installation

### 3.1 Pump Location

- Install the pump as close to the pool as possible. To reduce friction loss and improve efficiency, use short, direct suction and return piping.
- To avoid direct sunshine, heat or rain. It is recommended to place the pump indoors or in the shade.
- DO NOT install the pump in a damp or non-ventilated location. Keep pump and motor at least 150mm away from obstacles, pump motors require free circulation of air for cooling.
- The pump should be installed horizontally and fixed in the hole on the support with screws to prevent unnecessary noise and vibration.

### 3.2 Piping

- For improved pool plumbing, it is recommended to use a pipe with size of 63mm. When installing the inlet and outlet fittings (joints), use the special sealant for PVC material.
- Piping on the suction side of the pump should be the same or larger than the inlet line diameter, to avoid pump sucking air, which will affect the efficiency of the pump.
- Plumbing on the suction side of the pump should be as short as possible.
- For most installations we recommend installing a valve on both the pump suction and return lines, which is more convenient for routine maintenance. However, we also recommend that a valve, elbow, or tee installed on the suction line should be no closer to the front of the pump than five times the suction line diameter.
- Pump outlet piping system should be equipped with a check valve to prevent the pump from the impact of medium recirculation and pump-stopping water hammer.

### 3.3 Valves and fittings

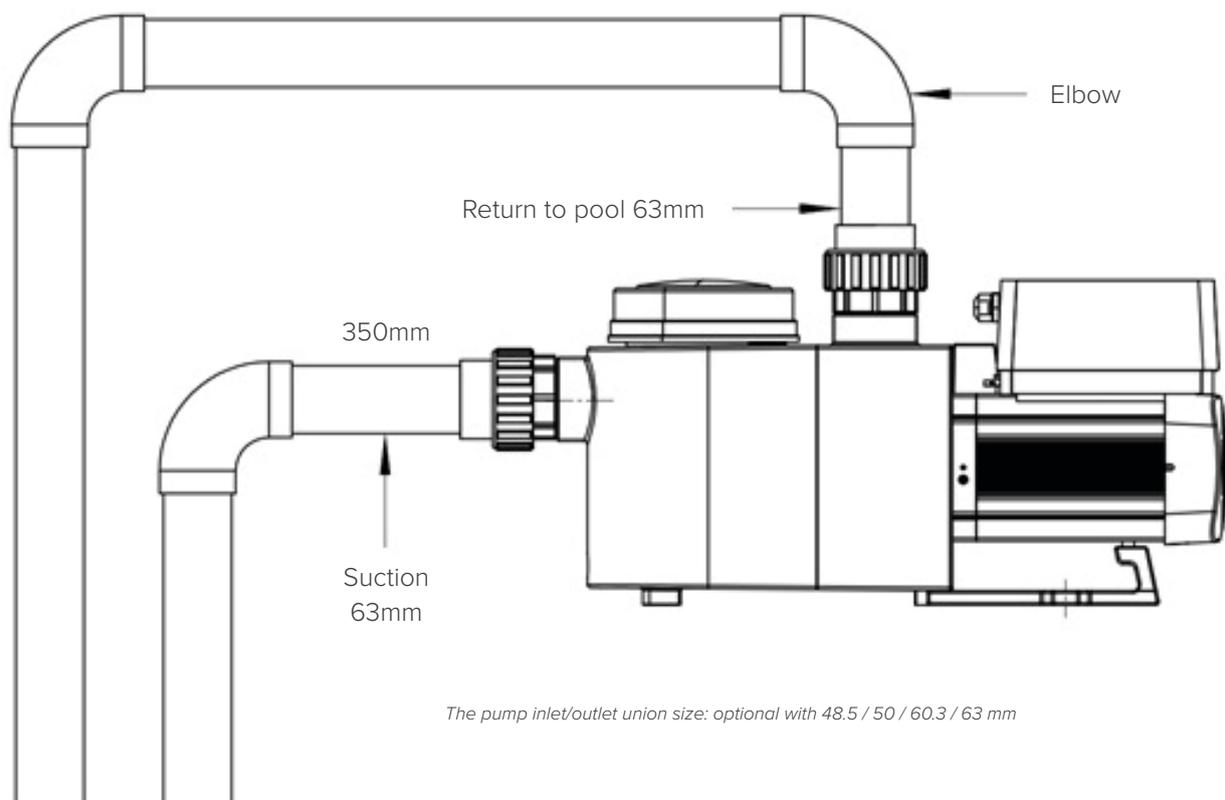
- Elbows should be no closer than 350mm to the inlet. Do not install 90° elbows directly into the pump inlet/outlet. Joints must be tight.
- Flooded suction systems should have gate valves installed on suction and return line for maintenance; however, the suction gate valve should be no closer than seven times the suction pipe diameter as described in this section.
- Use a check valve in the return line when using this pump for any application where there is significant height to the outlet of the pump.
- Be sure to install check valves when plumbing in parallel with other pumps. This helps prevent reverse rotation of the impeller and motor.

### 3.4 Check before initial startup

- Check whether pump shaft rotates freely;
- Check whether power supply voltage and frequency conform to the nameplate;
- Facing fan blade, the direction of motor rotation is clockwise;
- It is forbidden to run the pump without water.

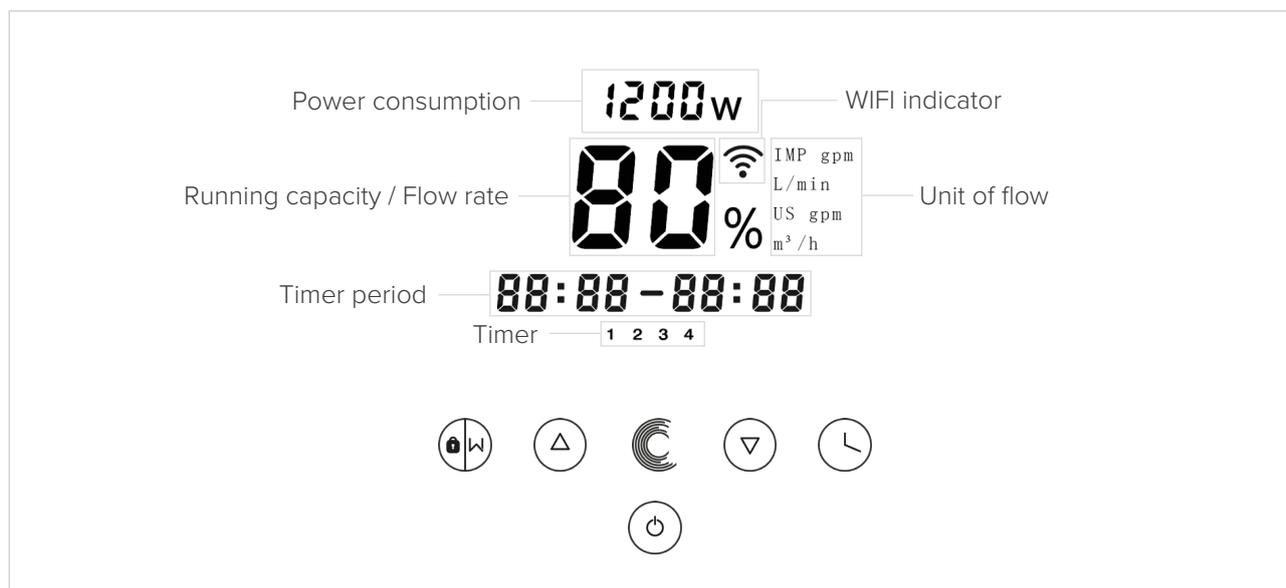
### 3.5 Application conditions

<b>Ambient temperature</b>	Indoor installation, temperature range: -10°C ~ 50°C
<b>Salt pools</b>	No greater than 0.5%
<b>Humidity</b>	≤95% RH, (20°C ± 2°C)
<b>Altitude</b>	Not exceed 1000m above sea level
<b>Suction Height</b>	2m
<b>Insulation</b>	Class F, IP55



## 4 Setting and operation

### 4.1 Display on control panel:



**Backwash / unlock**



**Up: to change the value (capacity / flow / time)**



**Down: to change the value (capacity / flow / time)**



**Timer setting**



**On / off**



**Switch for Auto-Inverter Mode/Manual-Inverter Mode**

- Auto-Inverter Mode: The pump's running capacity be automatically adjusted between 30%-100% according to the setting flow rate to ensure a constant flow.
- Manual-Inverter Mode: The pump's running capacity be set manually between 30%-100%
- The default mode is Manual-Inverter mode.

## 4.2 Startup

When the power is switched on, the screen will be fully light for 5 seconds, the software version will be displayed, and then it will enter the normal working state. When the screen is locked, only the button  will light up; Press and hold  for more than 3 seconds, other buttons will all light up. The screen will automatically lock up when there is no operation for more than 1 minute and the brightness of the screen is reduced by 1/3 of the normal display. Short press  to wake up the screen and observe the relevant operating parameters.

## 4.3 Self-priming

When the pump starts at the first time, the system performs the self-priming procedure to analysis the flow range of customer's pipeline system of actual installation. The running capacity will go up from 30% to 100% by 5% each step, and running for 180 seconds. (The period could be set from 180s ~ 900s). This first-time self-priming is mandatory and only takes effect after the first installation or factory reset. It will not start again when the pump is turned on again. After the first-time self-priming, pump will automatically redefine the adjustable range of the flow range( eg: the default flow range of InverPro IP25 is 5-25 m<sup>3</sup>/h, after the first-time self-priming, the range may be redefined to 7-22 m<sup>3</sup>/h, user still could select the flow rate from 5 to 25 m<sup>3</sup>/h, 3 seconds after the setting is completed, the flow rate will be automatically adjusted to the actual adjustable maximum or minimum value, namely 7-22m<sup>3</sup>/h.

The default flow range for InverPro is as below:

Model	Default flow rate range
IP20	5 ~ 20 m <sup>3</sup> /h
IP25	5 ~ 25 m <sup>3</sup> /h

## 4.4 Backwash

User can start the backwash or fast recirculation in any running state by pressing .

	Default	Setting range
Time	180s	Press  or  to adjust from 0~900s with 30 seconds for each step
Running capacity	100%	80 ~ 100%, enter the parameter setting (zie 4.8)

When backwash is completed or disable by pressing and holding  for 3 seconds, the pump will return to the normal operating state before backwash.

#### 4.5 Manual-Inverter Mode

1	Hold  for more than 3 seconds to unlock the screen;
2	Press the  icon to start. The pump will run at 80% after priming.
3	The running capacity could be adjusted from 30% ~ 100% , by pressing  or  with 5% for each step.
5	Press  , to check the instant flow of the running capacity, and press  again will back to capacity.

#### 4.6 Auto-Inverter Mode

According to the set water flow, the pump could automatically detect the system pressure to adjust the speed of motor, to ensure a constant flow.

1	Unlock the screen, press  to shift from the Manual-Inver mode to Auto-Inverter mode.
2	Press  or  to set the flow rate, each step by 1m <sup>3</sup> /h.
3	Press  again to switch to Manual-Inverter mode.

#### 4.7 Timer mode

The pump's on/off and running capacity could be commanded by timer, which could be programmed daily as needed.

1	Enter timer setting by pressing  .
2	Press  or  to set the current time.
3	Press  to confirm and move to time-1 setting.
4	Press  or  to choose the desired running period and specific capacity or flow.
5	Repeat above steps to set other 3 timers.
6	Hold  3 seconds to save setting
7	 or  Check 4 timers to make sure there is no invalid setting

**Note: Overlap setting of time will be considered as invalid, the pump will only run based on the previous valid setting. During timer setting, if you want to return to the previous setting, hold both  and  for 3 seconds.**

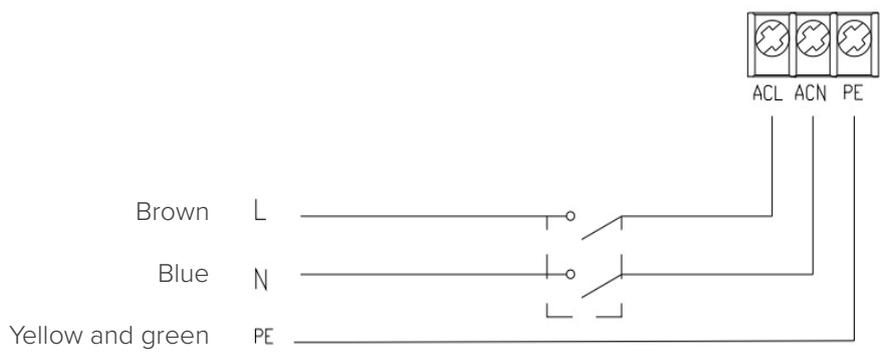
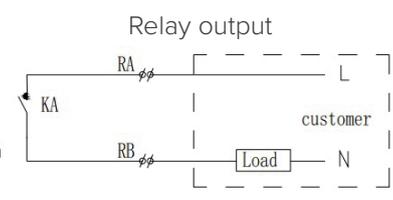
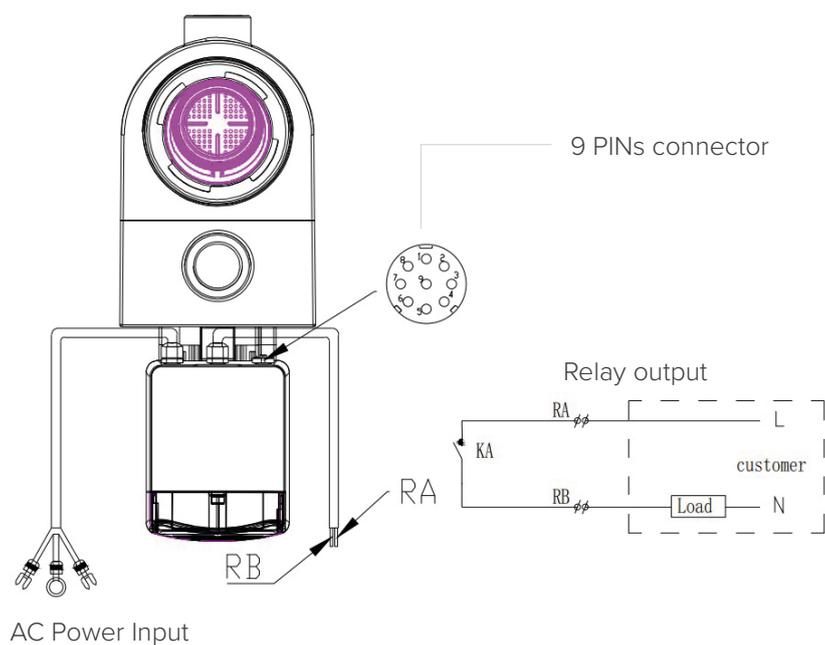
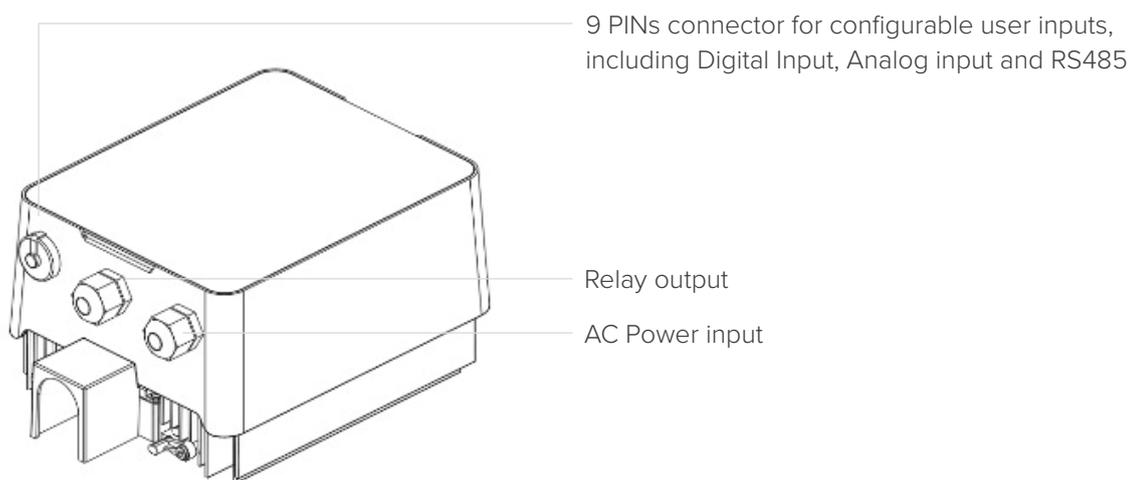
## 4.8 Parameter Setting

<b>Restore factory setting</b>	Under off mode, hold both ⏸ and ⏮ for 3 seconds
<b>Checking the version of software</b>	Under off mode, hold both ⏸ and ⏭ for 3 seconds
<b>Enter parameter setting as below</b>	Under off mode, hold both ⏮ and ⏭ for 3 seconds; If current address does no need to be adjusted, hold both ⏮ and ⏭ to next address

Address	Description	Default Setting	Setting Range
1	PIN3	100%	30 ~ 100%, by 5% increments
2	PIN2	80%	30 ~ 100%, by 5% increments
3	PIN1	40%	30 ~ 100%, by 5% increments
4	Self-priming / Backwash capacity	100%	80 ~ 100%, by 5% increments
5	Control mode of Analog Input	0	0: Current control 1: Voltage control

# 5 External control

External control can be enabled via following contacts. If more than one external control is enabled, the priority is as below: Digital Input > Analog Input > RS485 > Panel control.



Name	Color	Description
PIN 1	Red	Digital Input 4
PIN 2	Black	Digital Input 3
PIN 3	White	Digital Input 2
PIN 4	Grey	Digital Input 1
PIN 5	Yellow	Digital Ground
PIN 6	Green	RS485 A
PIN 7	Brown	RS485 B
PIN 8	Blue	Analog Input 0 (0 - 10V or 0 ~ 20mA)
PIN 9	Orange	Analog Ground

### Digital input

Running capacity determined by the state of digital input:

- When PIN4 connect with PIN5, the pump will be mandatory to stop; if disconnected, the controller will be power off;
- When PIN3 connect with PIN5, the pump will be mandatory to run at 100%; if disconnected, the control priority will be based on panel control;
- When PIN2 connect with PIN5, the pump will be mandatory to run at 80%; if disconnected, the control priority will be based on panel control;
- When PIN1 connect with PIN5, the pump will be mandatory to run at 40%; if disconnected, the control priority will be based on panel control;
- The capacity of inputs (PIN1/PIN2/PIN3) could be modified according to the parameter setting.

### Analog input

- To connect with PIN 8 and PIN 9, running capacity could be determined by 0 ~ 10V analog voltage signal or 0 ~ 20 mA analog current signal.
- The default control mode is by current signal, if you want to change to voltage signal, please enter the parameter setting. (zie 4.8).

### RS485

To connect with PIN6 and PIN7, the pump could be controlled via Modbus 485 communication protocol.

### Relay output (optional)

Connect terminal L & N to enable external control. An additional on-off Relay is necessary while bearing power is greater than 500W (2.5A).

## 6 Protection and failure

### 6.1 High Temperature Warning and Speed Reduction

In “Auto-Inverter/Manual-Inverter Mode” and “Timer mode” (except backwash/self-priming), when the module temperature reaches the high temperature warning trigger threshold (81 °C), it enters the high temperature warning state; when the temperature drops to the high temperature warning release threshold (78 °C), the high temperature warning state is released. The display area alternately displays AL01 and running speed or flow.

1	<p>If AL01 displayed for the first time, please refer below suggestion:</p> <ul style="list-style-type: none"><li>– If current speed is higher than 85%, please reduce the speed by 15%;</li><li>– If current operating speed is higher than 70%, and the speed is reduced by 10%;</li><li>– If current operating speed is lower than 70%, and the speed is reduced by 5%.</li></ul>
2	<p>Suggestion for non-first displayed of AL01: check the module temperature every 2 minutes. Compared with the temperature in the previous period, for every 1-degree Celsius increase, the speed will decrease by 5%.</p> <p><b>Note: Under Auto-Inverter mode, it will automatically start the protection, and the user does not need to manually reduce the speed to solve the problem</b></p>

## 6.2 Error code

When the device detects a failure (except for the running capacity reduction strategy and 485 communication failure), it will power off automatically and display the failure code. After power off for 15 seconds, check if the failure is cleared, if cleared, it will resume to start.

Item	Error Code	Description
1	E001	Abnormal input voltage
2	E002	Output over current
3	E101	Heat sink overheat
4	E102	Heat sink sensor error
5	E103	Master driver board error
6	E104	Phase-deficient protection
7	E105	AC current sampling circuit failure
8	E106	DC abnormal voltage
9	E107	PFC protection
10	E108	Motor power overload
11	E201	Circuit board error
12	E202	Master board EEPROM reading failure
13	E203	RTC time reading error
14	E204	Display Board EEPROM reading failure
15	E205	Communication Error
16	E206	RS485 communication Error
17	E207	Low water level

**Note: When causes for E002/E101/E103 is displayed, the device will resume working automatically, however when it appears a fourth time, the device will stop working, to resume operation, unplug the device and plug in & restart again.**

### 6.3 Undervoltage protection

When the device detects that the input voltage is less than 200V, the device will limit the current running speed.

- When input voltage is less than or equal to 180V, the running capacity is limited to 70%;
- When the input voltage range is 180 to 190V, the running capacity is limited to 75%;
- When the input voltage range is from 190V to 200V, the running capacity is limited to 85%.

Problem	Corrective solution
Pump does not start	<ul style="list-style-type: none"> <li>– Power Supply fault, disconnected or defective wiring.</li> <li>– Fuses blown or thermal overload open.</li> <li>– Check the rotation of the motor shaft for free movement and lack of obstruction.</li> <li>– Because of long time lying idle. Unplug the power supply and manually rotate motor rear shaft a few times with a screwdriver.</li> </ul>
Pump won't prime	<ul style="list-style-type: none"> <li>– Empty pump/strainer housing. Make sure the pump/strainer housing is filled with water and the O ring of cover is clean.</li> <li>– Loose connections on the suction side.</li> <li>– Strainer basket or skimmer basket loaded with debris.</li> <li>– Suction side clogged.</li> <li>– Distance between pump inlet and liquid level is higher than 2m, height of pump installation should be lowered.</li> </ul>
Low water flow	<ul style="list-style-type: none"> <li>– Pump is not primed.</li> <li>– Air entering suction piping.</li> <li>– Basket full of debris.</li> <li>– Inadequate water level in pool.</li> </ul>
Pump being noisy	<ul style="list-style-type: none"> <li>– Air leak in suction piping, cavitation caused by restricted or undersized suction line or leak at any joint, low water level in pool, and unrestricted discharge return lines.</li> <li>– Vibration caused by improper installation, etc.</li> <li>– Damaged motor bearing or impeller (need to contact the supplier for repair).</li> </ul>

## 7 Maintenance

Emptying the strainer basket, the basket should be inspected frequently through the transparent lid and emptied when a build-up of rubbish is evident. The following instructions should be followed:

1	Disconnected the power supply.
2	Unscrew the strainer basket lid anti-clockwise and remove.
3	Lift up the strainer basket.
4	Empty the trapped refuse from the basket, rinse out the debris if necessary. <b>Note: Do not knock the plastic basket on a hard surface as it will cause damage</b>
5	Inspect the basket for signs of damage, replace it.
6	Check the lid O-ring for stretching, tears, cracks or any other damage.
7	Replace the lid, hand tightening is sufficient.

## **8 Warranty & exclusions**

Should a defect become evident during the term of warranty, at its option, the manufacturer will repair or replace such item or part at its own cost and expense. Customers need to follow the warranty claim procedure in order to obtain the benefit on this warranty. The guarantee will be void in cases of improper installation, improper operation, inappropriate use, tampering or using non-original spare parts.

## **9 Disposal**

When disposing the product, please sort the waste products as electrical or electronic product waste or hand it over to the local waste collection system.

The 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. Contact your local authority for information on where you can drop off your waste for recycling



