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Chapter 1 Safety and preclusions

	It must be complied with national electrician working instruction strictly
	while install. Don't work with electricity. Install it by specialized electrician,
	otherwise electric shock accident may happen.
	• If the controller without the air switch, please install the air switch yourself,
	otherwise it may cause serious accident.
	• The controller without leakage protector, it may cause serious accident,
	for the safety, please install the leakage protector yourself.
	• The overload current setting must be accorded with the normal working
	current, otherwise it cannot protect the motor effectively.
	• When the motor overload or phase lost, it cannot be restarted until the
	failure is eliminated. If without eliminating the failure, and start the motor,
	both the controller and motor are easy to burn out.
•	• If the motor is started frequently or it always works at overload condition, it
	must select a higher power rating controller than the motor, otherwise the
	motor may burn out or cause accident.
Warning	• In general conditions, the controller will protect the motor effectively (like
	overload, phase failure etc.), to reduce the motor repair ratio. But it not
	means the controller can protect the motor in any case, such as motor
	quality problem or lighting strike.
	• We only guarantee maintenance for the controller, it the motor still has
	failure or burn out, we will not compensate or repair. In addition, we are
	not responsible for the consequence which made by the controller failure,
	such as basement is floored while drained water or other liquids.
	Installation environment:
	It must be installed indoors, keep away from direct sunshine and rain.
	Temperature: -10~40℃,
	Humidity: <90%,
	Altitude: <2000m.





Chapter 2 Product information

2.1 Packing

Pump controller	Operation manual	Probe	Screw and Rubber Plug
1 set	1	1 set	3 for each

2.2 Model Description



2.3 Selection Guide

Inverter Model	Suitable motor	Pump quantity	Breaker
	Single phase	e 220V	
PC1-S2-1500	0.37~1.5kW	1	No
PC1-S2-2200	0.37~2.2kW	1	No
PC2-S2-2200B	0.37~2.2kW	2	Build-in
	Three phase 220V		
PC1-T2-2200	0.37~2.2kW	1	No
PC1-T2-2200B	0.37~2.2kW	1	Build-in
PC2-T2-2200B	0.37~2.2kW	2	Build-in
PC1-T2-4000	1.0~4.0kW	1	No
PC1-T2-4000B	1.0~4.0kW	1	Build-in
PC2-T2-4000B	1.0~4.0kW	2	Build-in



Pump controller user manual

PC1-T2-7500	1.0~7.5kW	1	No
PC1-T2-7500B	1.0~7.5kW	1	Build-in
PC2-T2-7500B	1.0~7.5kW	2	Build-in
	Three phase	e 380V	
PC1-T4-2200B	0.37~2.2kW	1	Build-in
PC2-T4-2200B	0.37~2.2kW	2	Build-in
PC1-T4-4000	1.0~4.0kW	1	No
PC1-T4-4000B	1.0~4.0kW	1	Build-in
PC2-T4-4000B	1.0~4.0kW	2	Build-in
PC1-T4-7500	1.0~7.5kW	1	No
PC1-T4-7500B	1.0~7.5 kW	1	Build-in
PC2-T4-7500B	1.0~7.5kW	2	Build-in
PC1-T4-11000B	2.2~11kW	1	Build-in
PC2-T4-11000B	2.2~11kW	2	Build-in
PC1-T4-15000B	2.2~15kW	1	Build-in
PC2-T4-15000B	2.2~15kW	2	Build-in

2.4 Features of controller

- It works by digital chips, integrated with the upper/lower pool level control and pressure control.
- It is compatible with both manual control and automatic control.
- It has comprehensive protections for the motor, like overload, no-load, under voltage etc.
- ◆ The recovery time of No-load can be adjusted (1~250 minutes).
- ◆ 5 times (10 times for 3AC 220V and 3AC 380V model) failure memory, easy to find out the failure reason.





2.5 Technical Specifications

ltem	Technical Index	Specification
Input	Input voltage	1AC 220V±15%, 3AC 220V±15% 3AC 380V±15%
	Input frequency	50/60Hz±5%
Self-consumed	Standby state	<3.5W
power	Running state	<4.5W
Default setting	Overload current	1AC 220V model: 1.5kW/8A, 2.2kW/15A
		3AC 380V model: Power \times 2, for example, 4kW \times 2=8A
	No-load current	0.0A
	No-load restart time	30 minutes
Control distance	Maximum control distances	500m
Overload protection time	Inverse time limit (\pm 15% time error)	120% / 50s 150% / 30s 200% / 15s 300% / 6s 500% / 1s





Chapter 3 Details of Single phase PC1 models

3.1 Outlook and dimensions



H×W×D: 210×145×75mm

3.2 Installation space for capacitor at the back side



For single phase motor, in order to start the motor smoothly, it's usually installed a start capacitor on the motor.



The pump controller reserved a capacitor installation space on the back side, for some of the pump manufacturers, if they don't want to install the start capacitor on the motor, it can be installed at this space.

Please note, the maximum size of the capacitor is Ø50mm \times 100mm, if bigger size capacitor should be installed, please contact the factory for another pump controller model.

Capacitor installation steps:



Notice: If the motor already has the start capacitor, this installation space is useless.

3.3 Description of the display and operation area



1) Indicators

Functional indicator	Description
Manual	Controller under manual control mode
Auto	Controller under automatic control mode
Over load	Controller under over load status
Water full	The water is at high level
Water lack	The water is at low level

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2) Operation keypad

Button	Function
	Press to check the latest 5 times failure information.
Failure Enquiry	Enquiry methods: press the "Failure Enquiry" button, the voltage display area will show the failures' No., 001 means the latest failure, press again to show the next time failure, the current display area will show the failure information.
	After press the "Failure Enquiry" button:
	(1) If the overload indicator light-on, the current display area will show the overload current.
	(2) If the current display area shows 111, it means the wiring connection somewhere is loose, or power supply voltage is too low, or the motor is started / stopped frequently.
	(3) The enquiry is cycling check, if don't press the button more than6 seconds, it will quit the failure enquiry status automatically.
	★ Notice: while the motor over load happen, please check and eliminate the motor fault firstly, after eliminating, press the "Start" button, the controller will restart and check the failure, if the fault eliminated, the motor will enter into normal running status.
	Switch the control mode between manual and auto.
Manual Auto	 (1) Under the "manual" control mode, the manual indicator will light-on. The controller can only start/stop the pump, and meantime to protect the pump from overload and phase failure. It will not control the water level, and also there is no protection for no-load of pump.
	(2) Under the "Auto" control mode, the auto indicator will flicker, and the pump cannot start automatically, only when customer press the "Start" button, the auto indicator will light-on, and the controller will enter into automatic control mode.
Start	Press to start the controller.
Stop	Press to stop the controller.



3.4 Description of wiring connection and parameters setting area









Over load setting:

- (1) Start the controller, make the pump works normally, record the running current:
- (2) Turn the switch to "Over load setting" position, the indicator will light-on. The voltage display area shows the previous over load setting value.
- (3) To turn the potentiometer, make the current display area shows the just recorded running current.
- (4) Wait the "Over load setting" indicator flickers three times and distinguish. Setting is done.

No load setting:

- (1) Close the water supply, make the pump works at no load condition, and record the current.
- (2) Turn the switch to "No load setting" position, the indicator will light-on. The voltage display area shows the previous no load setting value.
- (3) To turn the potentiometer, make the current display area shows the just recorded no load current.
- (4) Wait the "No load setting" indicator flickers three times and distinguish. Setting is done.

Recovery time of no load setting:

Enable the no load protection, for water drainage system, if there is no water level probe, the controller will restart the pump after the setting time, if the water is there, pump will work, if there is no water, pump will stop. The default setting time is 30 minutes, which is adjustable between $1\sim$ 240 minutes:

- (1) Turn the switch to "Recovery time of no load setting" position, the indicator will light-on. The current display shows the recovery time, the unit is "minute", and voltage display area shows the previous setting value.
- (2) To turn the potentiometer, make the current display area shows the recovery time you need.
- (3) Wait the "No load setting" indicator flickers three times and distinguish. Setting is done.
- ★ Notice: it is suggested to set the recovery time between 30~60 minutes, too short value setting will cause the pump start frequently.



2) Control switches

Button	Function
Pressure Liquid le vel	Turn the switch to the "Pressure" position, to get pressure control function.Turn the switch to the "Liquid level" position (default), to get level control function.Please refer to the next chapter for detailed wiring connection.
Water filling	Turn the switch to the "Water filling" potion, it works at positive logic, the controller starts at low level and stop at high level. It is usually used in upper pool level control. Turn the switch to the "Water drainage" potion, it works at negative logic, the controller starts at high level and stop at low level. It is usually used in lower pool level control (drain off water).





3. 5 Installation and wiring connections

(1) There are three hooks at the back side of the controller, please fix it on the wall or in the control cabinet. Open the terminals box, and connect the power supply and pump correctly as below diagram:



(2) Connect the probes wires correctly, please note, the probe wires cannot be short-circuited, the probe wires cannot connect to the wall of the pool, to extend the probe wires, it is suggested the section area of the extension wires less than 0.75mm², and please use the waterproof adhesive tape to make the joint connected well.



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A. Wiring connection for upper pool water level control



When the water level is lower than the middle level, the controller will start the pump, and it stops while reach to the high level, the low level probe is used to make a close-loop circuit.

B. Wiring connection for lower pool water level control



When the water level is higher than the high level, the controller will start the pump, and it stops while reach to the middle level, the low level probe is used to make a close-loop circuit.

★ While using the controller for the sewerage system, to consider the sewage has strong corrosivity, the probe is easy corroded. It is suggested to use the float switch in this kind of system, it will get better control and protection performance.





C. Wiring connection of float switch for upper pool water level control



The common terminal of float switch connect to the low level terminal of controller, short connect high & middle level terminals of controller and connect to the normal open terminal of float switch.

D. Wiring connection of float switch for lower pool water level control



The common terminal of float switch connect to the low level terminal of controller, short connect high & middle level terminals of controller and connect to the normal close terminal of float switch.





E. Wiring connection of constant pressure control



For constant pressure control system, there must be a pressure gage, please connect the moveable pointer of pressure gage to the low level terminal of controller, meantime, please connect lower limit pointer to middle level terminal and upper limit pointer to high level terminal.

When the water pressure reduces to the lower limit point, the controller will start the pump, and it stops while the pressure reaches the upper limit point.

★ Please select a suitable size pressure tank, if the pressure tank is too small, it will cause the pump starts frequently.



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Chapter 4 Details of three phase PC1 models

4.1 Outlook and dimensions



H×W×D: 310×215×115mm

4.2 Description of the display and operation area







1) Indicators

Functional indicator	Description
Overload	The controller is under overload mode
Phase failure	The input power lost one or two phases
Frequent start/stop	The controller is started/stopped frequently
Err probe	The wring connection of probes are incorrect
Over/under voltage	The controller is over or under voltage
Auto control	The controller is under automatic control mode
Manual control	The controller is under manual control mode
Remote control	The controller is under remote control mode
Overload Amp	The controller is under overload current setting
No load Amp	The controller is under No load current setting
No load restart	The controller is under No load restart time setting
Level	The system is under level control mode
Pressure	The system is under pressure control mode
Anti-rust	The anti-rust function is enabled





2) Operation keypad

Button	Function
	Press to check the latest 10 times failure information. Enquiry methods: press the "Fault check" button, the voltage display area will show the failures' No., 001 means the latest failure, press again to show the next time failure, the current display area will show the failure information.
Fault	 After pressing the "Fault check" button: (1) If the "Overload" indicator light-on, the current display area will show the overload current. (2) If the "Phase failure" indicator light-on, the current display area will show the phase failure details, A—means phase A lost, -b- means
Check	(3) If the current display area shows 111, and the indicator of "Frequent start/stop" light-on, it means the wiring connection somewhere is loose, or power supply voltage is too low, or the motor is started / stopped frequently.
	(4) The faults are cycling checked, if don't press the button more than 6 seconds, it will quit the failure enquiry status automatically.
	★ Notice: while the motor over load happen, please check and eliminate the motor fault firstly, after eliminating, press the "Start" button, the controller will restart and check the failure, if the fault eliminated, the motor will enter into normal running status.
	Switch the control mode between manual and auto.
Manual Auto	(1) Under the "manual" control mode, the manual indicator will light-on. The controller can only start/stop the pump, and meantime to protect the pump from overload and phase failure. It will not control the water level, and also there is no protection for no-load of pump.
	(2) Under the "Auto" control mode, the auto indicator will flicker, and the pump cannot start automatically, only when customer press the "Start" button, the auto indicator will light-on, and the controller will enter into automatic control mode.
Start	Press to start the controller.
Stop	Press to stop the controller.
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4.3 Description of wiring connection and parameters setting area

(1) Build-in the main circuit breaker



(2) Without the main circuit breaker



Description of parameters setting buttons:

	Over load setting:
	(1) Start the controller, make the pump works normally, record the running current:
Overload set	(2) Press the "Over load set" button, the indicator of "Overload Amp" will light-on. The voltage display area shows the previous over load setting value.
	(3) Press the +, - button to change the current to the value of the recorded running current.
	(4) Wait the "Over load setting" indicator flickers three times and distinguish. Setting is done.
	No-load setting:
	(1) Close the water supply, make the pump works at no load condition, and record the current.
No-load set	(2) Press the "No-load setting" button, the indicator of "No-load Amp" will light-on. The voltage display area shows the previous No-load setting value.
	(3) Press the +, - button to change the current to the value of the recorded No-load current.
	(4) Wait the "No-load setting" indicator flickers three times and distinguish. Setting is done.
	No- load restart time setting:
	Enable the no load protection, for water drainage system, if there is no water level probe, the controller will restart the pump after the setting time, if the water is there, pump will work, if there is no water, pump will stop. The default setting time is 30 minutes, which is adjustable between 1~250 minutes:
No-load re star t	(1) Press the "No-load restart" button, the indicator of "No-load restart" will light-on. The voltage display area shows the previous no-load restart setting time.
	(2) Press the +, - button, make the current display area shows the restart time you need.
	(3) Wait the "No-load restart" indicator flickers three times and distinguish. Setting is done.
	\star Notice: it is suggested to set the recovery time between 30~60



	Pressure or level control selection:
Pressure Level	Press the "Pressure/Level" button, if the indicator of "Pressure" light-on, it means the controller under pressure control mode.
	If the indicator of "Level" light-on, it means the controller under level control mode.
	Anti-rust function selection:
	If the pump doesn't run for long time in the water, it will get rusty and damage, anti-rust function is to protect pump from getting rusty.
Anti-ru st	In every 48 hours, if the pump in the water doesn't run, this function will make the pump run for 3~5 second automatically.
	When press the "Anti-rust" button, the indicator of "Anti-rust" will light-on, this function is enabled.
	The default setting of this function is disabled.
	Auto-tuning (one press to set all the parameters):
Auto-	Start the controller and make the pump works normally, you only need to press this "Auto-tuning" button, the controller will set all the overload current, no-load current automatically.
tuning	After the pump works in 1 minute normally, press this "Auto-tuning" button, the indicators of "Overload Amp" and "No-load Amp" will flicker three times and distinguish. Setting is done.
	\star Notice: this setting must under the pump working at normal condition.

4. 4 Installation and wiring connections

- (1) There are three hooks at the back side of the controller, please fix it on the wall or in the control cabinet. Open the terminals box, and connect the power supply and pump correctly.
- (2) Connect the probes wires correctly, please note, the probe wires cannot be short-circuited, the probe wires cannot connect to the wall of the pool, to extend the probe wires, it is suggested the section area of the extension wires less than 0.75mm², and please use the waterproof adhesive tape to make the joint connected well.





A. Wiring connection for upper pool water level control



When the water level is lower than the middle level, the controller will start the pump, and it stops while reach to the high level, the low level probe is used to make a close-loop circuit.

B. Wiring connection for both lower pool and upper pool water level control



Under this mode, the no-load protection value must be set as 0.00A.

When the upper pool water level reaches to middle level, the controller starts the pump, and it stops at the high level of upper pool.

When the lower poor water level reaches to high level, the pump controller will start the pump, and it stops at middle level of lower pool.

Both of the low level probes are used to make a close-loop circuit.

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C. Wiring connection for lower pool water level control



Under this mode, the no-load protection value must be set as 0.00A.

When the water level is higher than the high level, the controller will start the pump, and it stops while reach to the middle level, the low level probe is used to make a close-loop circuit.

★ While using the controller for the sewerage system, to consider the sewage has strong corrosivity, the probe is easy corroded. It is suggested to use the float switch in this kind of system, it will get better control and protection performance.

D. Wiring connection of float switch for upper pool water level control



The common terminal of float switch connect to the low level terminal of controller, short connect high & middle level terminals of controller and connect to the normal open terminal of float switch.





E. Wiring connection of float switch for lower pool water level control



Under this mode, the no-load protection value must be set as 0.00A.

The common terminal of float switch connect to the low level terminal of controller, short connect high & middle level terminals of controller and connect to the normal close terminal of float switch.

F. Wiring connection of constant pressure control



For constant pressure control system, there must be a pressure gage, please connect the moveable pointer of pressure gage to the low level terminal of controller, meantime, please connect lower limit pointer to middle level terminal and upper limit pointer to high level terminal.

When the water pressure reduces to the lower limit point, the controller will start the pump, and it stops while the pressure reaches the upper limit point.

★ Please select a suitable size pressure tank, if the pressure tank is too small, it will cause the pump starts frequently.





Chapter 5 Details of three phase PC2 models

5.1 Outlook and dimensions



H×W×D: 310×215×115mm

5.2 Description of the display and operation area





1) Indicators

Functional indicator	Description
Overload	The controller is under overload mode
Phase failure	The input power lost one or two phases
Frequent start/stop	The controller is started/stopped frequently
Err probe	The wring connection of probes are incorrect
Over/under voltage	The controller is over or under voltage
	The controller is under automatic control mode
	 Two pumps alternate: Under this mode, two pumps will alternate work, A pump works one cycle, and then alternate B pump to work another one cycle. ★ It is suggested to use this mode, to prolong the pump lifetime.
Auto control	A master B standby: Under this mode, A pump is always working, B pump standby. While the failure happens on A pump, B pump will start to work automatically.
	B master A standby: Under this mode, B pump is always working, A pump standby. While the failure happens on B pump, A pump will start to work automatically.
A pump manual	The A pump is under manual control mode
B pump manual	The B pump is under manual control mode
Overload Amp	The controller is under overload current setting
No load Amp	The controller is under No load current setting
No load restart	The controller is under No load restart time setting
Manual no-load protection	Under manual control mode, the no-load protection is enabled, but after arriving the no-load restart time, the controller will not restart. The default setting of this function is enabled.
Anti-rust	The anti-rust function is enabled



2) Operation keypad

Button	Function
	Press to check the latest 10 times failure information. Enquiry methods: press the "Fault check" button, the voltage display area will show the failures' No., 001 means the latest failure, press again to show the next time failure, the current display area will show the failure information.
	After pressing the "Fault check" button:(3) If the "Overload" indicator light-on, the current display area will show the overload current.
Fault Check	(4) If the "Phase failure" indicator light-on, the current display area will show the phase failure details, A—means phase A lost, -b- means phase B lost,C means phase C lost.
	(3) If the current display area shows 111, and the indicator of "Frequent start/stop" light-on, it means the wiring connection somewhere is loose, or power supply voltage is too low, or the motor is started / stopped frequently.
	(4) The faults are cycling checked, if don't press the button more than 6 seconds, it will quit the failure enquiry status automatically.
	★ Notice: while the motor over load happen, please check and eliminate the motor fault firstly, after eliminating, press the "Start" button, the controller will restart and check the failure, if the fault eliminated, the motor will enter into normal running status.
A pump Start/Stop	Press this button to make A pump under manual control mode, the indicator of "A pump manual" will light-on, A pump can be start / stop manually, and meantime to protect the pump from overload and phase failure. It will not control the water level, and also there is no protection for no-load of pump.
B pump Start/Stop	Press this button to make B pump under manual control mode, the indicator of "B pump manual" will light-on, B pump can be start / stop manually, and meantime to protect the pump from overload and phase failure. It will not control the water level, and also there is no protection
Auto Start/Stop	Press this button to make the controller works at auto control mode, the controller will start/stop the related pump based on present working mode and water level situation automatically.





Under automatic control mode, press the "Pump Alternate", the indicator of "A master B standby" will light-on, press again, the indicator of "B master A standby" will light-on, one more press, the indicator of "Two pumps alternate" will light-on.

The related indicator light-on means the working mode is selected.

5.3 Description of wiring connection and parameters setting area



Description of parameters setting buttons:

		Over load setting:
		(1) Start the controller, make the related pump (A pump or B pump) works normally, record the running current:
		(2) Press "A Pump Set" or "B Pump Set" button, the related "A Pump" or "B Pump" indicator will light-on.
Overload set	(3) Press the "Over load set" button, the indicator of "Overload Amp" will light-on. The voltage display area shows the previous over load setting value.	
	(4) Press the +, - button to change the current to the value of the recorded running current.	
	(5) Wait the "Over load setting" indicator flickers three times and distinguish. Setting is done.	



	No-load setting:
	★ Notice: the default setting of no-load protection value is 00.0A. If you want to enable the no-load protection, A pump and B pump should both set a nonzero value.
No-load set	★ If connect the probes for lower pool system, then it is no need to set no-load protection value.
	 Close the water supply, make the pump works at no load condition, and record the current.
	(2) Press "A Pump Set" or "B Pump Set" button, the related "A Pump" or "B Pumps" indicator will light on.
	No- load restart time setting:
	Enable the no load protection, for water drainage system, if there is no water level probe, the controller will restart the pump after the setting time, if the water is there, pump will work, if there is no water, pump will stop. The default setting time is 30 minutes, which is adjustable between 1~250 minutes:
No-load re star t	(1) Press the "No-load restart" button, the indicator of "No-load restart" will light-on. The voltage display area shows the previous no-load restart setting time.
	(2) Press the +, - button, make the current display area shows the restart time you need.
	(3) Wait the "No-load restart" indicator flickers three times and distinguish. Setting is done.
	★ Notice: it is suggested to set the recovery time between 30~60 minutes, too short value setting will cause the pump start frequently.
	Anti-rust function selection:
	If the pump doesn't run for long time in the water, it will get rusty and damage, anti-rust function is to protect pump from getting rusty.
Anti-ru st	In every 48 hours, if the pump in the water doesn't run, this function will make the pump run for 3~5 second automatically.
	When press the "Anti-rust" button, the indicator of "Anti-rust" will light-on, this function is enabled. The default setting of this function is disabled.

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Manu al No-load Protect	Manal No-Load Protect:
	Under the manual control mode, press this button to enable the no-load protection, but while the no-load restart time arrive, the controller will not be restarted.
A Pump Set	Press to enter into A pump set mode.
B Pump Set	Press to enter into B pump set mode.

5. 4 Installation and wiring connections

- (1) There are three hooks at the back side of the controller, please fix it on the wall or in the control cabinet. Open the terminals box, and connect the power supply and pump correctly.
- (2) Connect the probes wires correctly, please note, the probe wires cannot be short-circuited, the probe wires cannot connect to the wall of the pool, to extend the probe wires, it is suggested the section area of the extension wires less than 0.75mm², and please use the waterproof adhesive tape to make the joint connected well.
- (3) If the no-load protection is enabled (no-load current setting is nonzero value), the lower pool probes cannot be connected.
- A. Wiring connection for upper pool water level control



When the water level reaches to the middle level, the controller will start the pump, and it stops while reaches to the high level, the low level probe is used to make a close-loop circuit.









Under this mode, the no-load protection value must be set as 0.00A.

When the upper pool water level reaches to middle level, the controller starts the pump, and it stops at the high level of upper pool.

When the lower poor water level reaches to high level, the pump controller will start the pump, and it stops at middle level of lower pool.

Both of the low level probes are used to make a close-loop circuit.





C. Wiring connection for lower pool (drainage system) water level control



Add pump probe (special for drainage system)

Under this mode, the no-load protection value must be set as 0.00A.

When the water level reaches to the high level, the controller will start the pump, and it stops while reach to the middle level, the low level probe is used to make a close-loop circuit.

If the water level reaches to the add probe level, the second pump will start within 2~3 seconds, only when the water level reaches the middle level, both the pumps will stop.

★ While using the controller for the sewerage system, to consider the sewage has strong corrosivity, the probe is easy corroded. It is suggested to use the float switch in this kind of system, it will get better control and protection performance.

D. Wiring connection of float switch for upper pool water level control



The common terminal of float switch connect to the low level terminal of controller, short connect high & middle level terminals of controller and connect to the normal open terminal of float switch.



E. Wiring connection of float switch for lower pool water level control



Under this mode, the no-load protection value must be set as 0.00A.

The common terminal of float switch connect to the low level terminal of controller, short connect high & middle level terminals of controller and connect to the normal close terminal of float switch.

F. Wiring connection of float switch for lower pool water level control (second pump start control)



Under this mode, the no-load protection value must be set as 0.00A.

It has two float switches in the system, please connect the common terminals of the two switches to Low probe terminal. The normal close terminal of float switch 1 connects with High and Middle terminal of controller, the normal close terminal of float switch 2 connects with the Add terminal of controller.

When the float switch 1 is activated, one pump will work accordingly, while the float switch 2 is activated, the second pump will be started, and two pumps will work. Only when the water level lower than float switch 1, the two pumps will stop.





Chapter 6 Protection functions

Fault name	Description
Phase failure	If any one or two phase of input power lost, the controller will switch off the pump power after 3 seconds.
Under voltage	 single phase and three phase 220V models: lower than 140V, the controller will switch off the pump power after 30 seconds. three phase 380V models: lower than 320V, the controller will switch off the pump power after 10 seconds. ★ After the power recovery, controller restart and works normally.
Over voltage	 single phase and three phase 220V models: higher than 280V, the controller will switch off the pump power after 30 seconds. three phase 380V models: higher than 460V, the controller will switch off the pump power after 10 seconds. ★ After the power recovery, controller restarts and works normally.
Overload	The overload is Inverse time limit (\pm 15% time error), the higher current, the shorter protection time. 120% / 50s, 150% / 30s, 200% / 15s, 300% / 6s, 500% / 1s
No-load	 When the lower poor is lack of water (water level is lower than middle level), or the detected motor current is lower than no-load setting value, the controller will switch off the pump power after 10 seconds. ★ When the water supply recovery, controller restarts and works normally.



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Chapter 7 Fault and Trouble Shooting

Fault Name	Overload
Reason	 The setting of overload value is incorrect Pump has some problems
Solution	 Check the setting value of overload, or set bigger value. Check whether the real working power of pump is bigger than marked power. Or whether there are some mechanical problem happens on the pump.

Fault Name	Phase failure
Reason	 The power supply lost one or two phase The input and output wiring connection is loose.
Solution	 Check the power supply. Check the input and output wiring connection.

Fault Name	Lower pool lack of water
Reason	1. The water in the lower pool is not enough.
	2. The water supply in the pipeline is not enough.
	3. The failure of water level probes.
	4. No-load setting is incorrect
Solution	1. Start the controller while the lower pool has enough water.
	2. Make the water supply to be normal.
	3. Check and reconnect the water level probes, and wash the probes every month.
	4. Check the setting value of no-load, set a smaller value.



Fault Name	Err probe
Reason	The connections of probes on the controller are not match with the probes
	location in the water
Solution	Please check the connections and locations of probes carefully.

Fault Name	The controller cannot start or stop correctly, cannot control the level properly
Reason	 The wiring connection of probes are loose The probes' wires have been prolonged, but the connection point is loose. The probes' wires have been prolonged, but water enters into the connection point. The water level control circuit with fault. The PCB board of controller is damaged.
Solution	 Check and reconnect the probes wires tightly. Check and reconnect the connection point, make it tightly. Check the wires connection points, reconnect it, and put it at a dry place, without any water. Check and reconnect the probes wiring connection, wash the probes every month. Contact factory to get new PCB board.

Fault Name	For drainage system, the two pumps start incorrectly (PC2 model)
Reason	The add pump probe location in the water is not correct.
Solution	Put the add pump probe at the correct location in the water based on the wiring diagram in previous chapter.