RS-P Solar Water Pump Controller

User Manual

Safety Precautions

Description of safety marks:

 Danger: The misuse may cause fire, severe injury, even death.

 Note: The misuse may cause medium or minor injury and equipment damage.

■ Use

Danger
● This series of controller is used to control the variable speed operation of three-phase motor and cannot be used for single-phase motor or other applications. Otherwise, controller failure or fire may happen. ● This series of controller cannot be simply used in the applications directly related to the human safety, such as the medical equipment. ● This series of controller is produced under strict quality management system. If the controller failure may cause severe accident or loss, safety measures, such as redundancy or bypass, shall be taken.

■ Goods Arrival Inspection

Note
● If the controller is found damaged or have missing parts, the controller cannot be installed. Otherwise, accident may be caused.

■ Installation

Note
● When handling and installing the controller, please hold the controller bottom. Do not hold the enclosure only. Otherwise, your feet may be injured and the controller may be damaged because of dropping. ● The controller shall be mounted on the fire retardant surface, such as metal, and kept far away from the inflammables and heat source. ● Keep the drilling scraps from falling into the controller during the installation; otherwise, controller failure may be caused. ● When the controller is installed inside the cabinet, the electricity control cabinet shall be equipped with fan and ventilation port. And ducts for heat dissipation shall be constructed in the cabinet.

■ Wiring

Danger

- The wiring must be conducted by qualified electricians. Otherwise, electric shock may happen or controller damage.
- Before wiring, confirm that the power supply is disconnected. Otherwise, electric shock may happen or fire.
- The PE terminal must be reliably grounded , otherwise, the controller enclosure may become live.
- Please do not touch the main circuit terminals. The wires of the main circuit terminals must not contact the controller enclosure. Otherwise, electric shock may happen.
- The connecting terminals for the braking resistor are ⊕2/B1 and B2. Please do not connect terminals other than these two. Otherwise, fire may be caused.
- The leakage current of the controller system is more than 3.5mA, and the specific value of the leakage current is determined by the operation application conditions. The controller and the motor must be grounded to ensure the safety.

■ Wiring

Note

- The three-phase power supply cannot connect to output terminals U/T1, V/T2 and W/T3, otherwise, the controller will be damaged.
- It is forbidden to connect the controller output terminals to the capacitor or LC/RC noise filter with phase lead, otherwise, the internal components of the controller may be damaged.
- Please confirm that the power supply phases, rated voltage are consistent with those indicated by the nameplate, otherwise, the controller may be damaged.
- Do not perform dielectric strength test on the controller, otherwise, the controller may be damaged.
- The wires of the main circuit terminals and the wires of the control circuit terminals shall be laid separately or in a square-crossing mode, otherwise, the control signal may be interfered.
- The wires of the main circuit terminals shall adopt lugs with insulating sleeves.
- The sectional area of controller input and output cables should be selected according to the controller power.
- When the cables between the controller and the motor are longer than 100m, it is suggested to use output reactor to avoid the controller failure caused by the over current of the distribution capacitor.
- The controller equipped with a DC reactor must be connected with a DC reactor between the terminals of +1 and +2, otherwise the controller will not display after power on.

■ Operation

Danger
● Power supply can only be connected after the wiring is completed and the cover is installed. It is forbidden to remove the cover in live condition; otherwise, electric shock may happen. ● When auto failure reset function or restart function is enabled, isolation measures shall be taken for the mechanical equipment, otherwise, personal injury may be caused. ● When the controller is powered on, its terminals are still live even when it is in stop state. Do not touch the controller terminals; otherwise electric shock may happen. ● The failure and alarm signal can only be reset after the running command has been cut off. Otherwise, personal injury may be caused.

Note
● Do not start or shut down the controller by switching on or off the power supply, otherwise, the controller may be damaged. ● Before operation, please confirm if the motor and equipment are in the normal use range, otherwise, the equipment may be damaged. ● The heat sink and the braking resistor have high temperature. Please do not touch such device; otherwise, you may be burnt. ● When the controller is used by crane or lifting equipment, mechanical contracting brake shall also be equipped. ● Please do not change the controller parameter randomly. Most of the factory settings of the controller can meet the operating requirement, and the user only needs to set some necessary parameters. Any random change of the parameter may cause the damage of the mechanical equipment. ● In the applications with power frequency and variable frequency switching, the two contactors for controlling the industrial frequency and variable frequency switching shall be interlocked.

■ Maintenance, Inspection

Danger
● In the power-on state, please do not touch the controller terminals; otherwise, electric shock may happen. ● If cover is to be removed, the power supply must be disconnected first. ● Wait for at least 10 minutes after power off or confirm that the CHARGE LED is off before maintenance and inspection to prevent the human injury caused by the residual voltage of the electrolytic capacitor in main circuit. ● The components shall be maintained, inspected or replaced by qualified electricians.

Note
● The circuit boards have large scale CMOS IC. Please do not touch the board to avoid the circuit board damage caused by ESD.

■ Others

Danger
● It is forbidden to modify the controller unauthorizedly; otherwise, human injury may be caused.

Contents

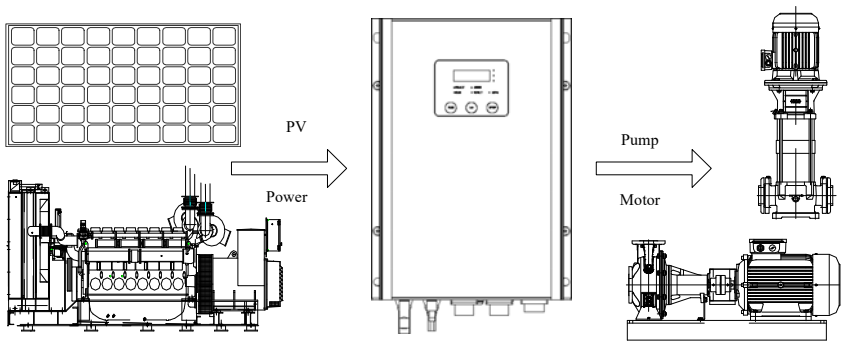
Foreword

RS-P solar water pump controller is electric power product ， which is installed strictly according to <User Manual> and safety precaution by technician . If not , the customer should bear all results .

Chapter 1 System configuration

1.1 system components

The system mainly has 3 parts: power supply, controller and load. The **power supply** is PV (Photovoltaic) array, generator or grid. The **controller** is mainly the RS−P Solar Water Pump Controller. The **load** is 3-phase asynchronous motor or pump. The system **does not need battery** for storing energy, which not only cuts the cost, but also protects the environment. RS−P PV Pump Controller can directly drive various kinds of 3-phase asynchronous motor, with high power integration and less components, which improves the system reliability.



1.2 water pump selection

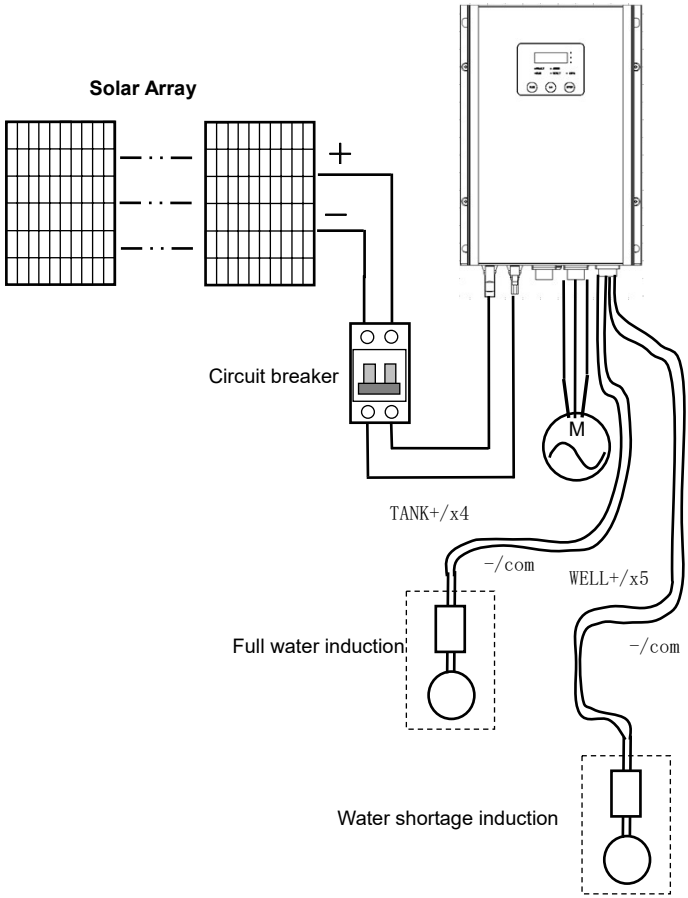
Water pump select based on how many water need per day, and the actual water height .Pump head should be greater than the actual water height. Also can select water pump by the solar panels total power.

Solar panels total power is double size of water pump power is need .In the area solar power is powerful, this scaling relation can be reduce.

Please note solar water pump controller only drive Three Phases AC pumps.

The pumps Operating Voltage can be 3 phase AC 220V or 3 phase AC 380V,and 50Hz ,2850RPM.

1.3 solar panels selection



1.3.1 3PH AC 220v load

The Solar Array Power is as much 1.5-2 times as pump current power ,and the Maximum Power Voltage (Vpm) is above DC310V.

For example:

Water pump used:

Hz	kW	V	A	RPM
50	0.37	220	1.85	2850

Single solar panel:

Maximum Power (Pm)	130W
Open Circuit Voltage (Voc)	155.0V
Short Circuit Current (Isc)	1.28A
Maximum Power Voltage （Vpm）	120.8V
Maximum Power Current (Ipm)	1.08A
Maximum System Voltage	1000V

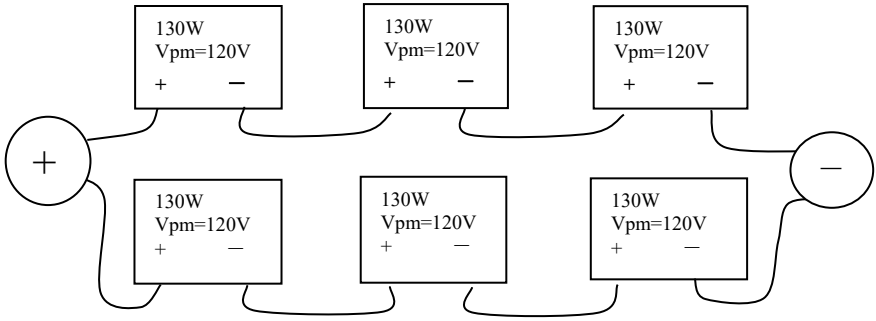
Solar panel total power： 0.37*2*1000=740W （Remark：The power ratio can be1.5 in the place with strong sunshine.)

The number of panel： 740/130=5.69≈6

The number of tandem repeat： 310/120=2.58≈3

The number of parallel： 6/3=2

As follow the picture (1) :



Picture (1)

Solar Array：

Maximum Power (Pm)	780W
Open Circuit Voltage (Voc)	465V
Short Circuit Current (Isc)	2.56A
Maximum Power Voltage（Vpm）	362.4V
Maximum Power Current (Ipm)	2.16A
Maximum System Voltage	----

1.3.2 3PH AC 380v load

The Solar Array Power is as much 1.5-2 times as pump current power ,and the Maximum Power Voltage (Vpm) is from 540V to 650v.

For example:

Water pump used:

Hz	kW	V	A	RPM
50	0.55	380	1.65	2780

Single solar panel:

Maximum Power (Pm)	130W
Open Circuit Voltage (Voc)	155.0V
Short Circuit Current (Isc)	1.28A
Maximum Power Voltage （Vpm）	120.8V
Maximum Power Current (Ipm)	1.08A
Maximum System Voltage	1000V

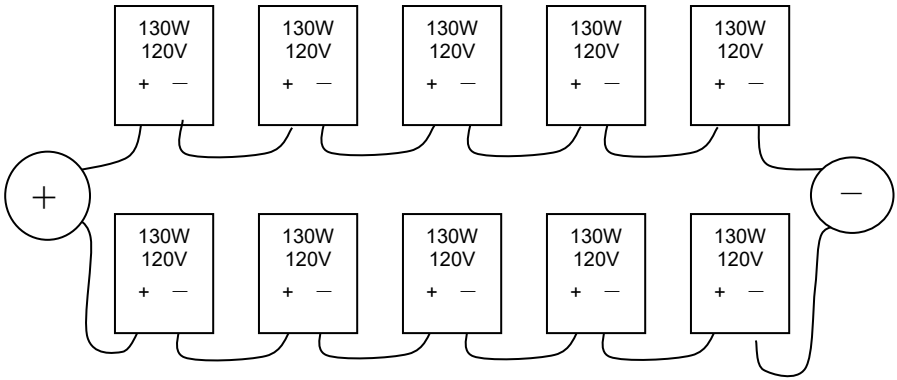
Solar panel total power： 0.55*2*1000=1100W.（Remark：The power ratio can be1.5 in the place with strong sunshine.)

Solar panel total power： 1100/130≈9

The number of tandem repeat： 540/120=4.5≈5

The number of parallel： 9/5=1.8≈2

As follow the picture(2) ：



Picture (2)

the whole solar panels :

Maximum Power (Pm)	1300W	130W*10
Open Circuit Voltage (Voc)	775V	155.0V*5
Short Circuit Current (Isc)	2.56A	1.28A*2
Maximum Power Voltage （Vpm）	604V	120.8V*5
Maximum Power Current （Ipm)	2.16A	1.08A*2
Maximum System Voltage	----	1000V

1.4 solar water pump controller selection

There are too types of solar water pump controllers. One is 2D,the other is 4D.

■ RS-P-2D□□□ Single-phase AC power & PV DC power

Power (W)			600	800	1200	1700	2500
MotorPower (kW)			0.55	0.75	1.1	1．5	2.2
Outpu	Voltage (V)		Three-phase AC 220V (adjustable area 0 ~ Rated Input AC voltage)				
	Rated current (A)		2.9	4.5	6.0	7.5	10
	Overload		150%: 1 minute, 180%: 10 seconds, 200%: 0.5 second, interval: 10 minutes (inverse time lag feature)				
Input	Rated		Single or Three-phase 200~240V 50Hz/60Hz ; PV Area VocDC410V±30V				
	Allowable		AC 180V to 260V, Voltage imbalance: ≤3%, allowable frequency fluctuation: ±5% ; MPPT Area DC300～360V				
	Rated current (A)	AC1/3PH	5.5 / 3.5	9.2 / 5.4	11.4 / 7.2	14.5 / 9	23 / 12
		DC	3.5	5.4	7.2	9	12
Protection class			IP20				
Cooling mode			Natural-cooling		Forced air convection cooling		

■ RS-P-4D□□□ Three-phase AC power & PV DC

Power (W)			600	800	1200	1700	2500	3600	5000	6600	7700	11K	12K	17K	21K	23K	33K
Motor power (kW)			0.55	0.75	1.1	1.5	2.2	3.0	4.0	5.5	7.5	9.2	11.0	15.0	18.5	22.0	30.0
Output	Voltage (V)		Three-phase AC 380V (adjustable area 0 ~ Rated Input AC voltage)														
	Rated current (A)		1.7	2.5	3.5	3.8	5.5	8.5	9.0	13.0	17.0	22.0	24.0	30.0	39.0	45.0	60.0
	Overload		150%: 1 minute, 180%:10 second, 200%: 0.5 second, interval: 10 minutes (inverse time lag feature)														
Input	Rated Voltage/Frequency		Three-phase 380V/ 480V 50Hz/60Hz ; PV Area Voc DC700V±50V Maximum DC800V														
	Allowable		Three-phase 323V to 528V, Voltage imbalance: ⩽3%, allowable frequency fluctuation: ±5% MPPT Area DC520～650V,														
	Rated Current (A)	AC	1.9	2.8	3.9	4.2	6.1	9.4	9.9	14.3	18.7	24.2	26.4	33	42.9	49.5	66
		DC	2.1	3.0	4.2	4.6	6.6	10.2	10.8	15.6	20.4	26.4	28.8	36	46.8	54	72
Protection class			IP20														
Cooling mode			Natural-cooling					Forced air convection cooling									

Power (W)			40K	47K	66K	77K	100K	120K	140K	170K	210K	230K	270K	280K	330K	400K	450K
Motor power (kW)			37.0	45	55	75	90	110	132	160	200	220	250	280	315	355	400
Output	Voltage (V)		Three-phase AC 380V (adjustable area 0 ~ Rated Input AC voltage)														
	Rated current (A)		75	91	112	150	176	210	253	304	380	426	470	520	600	650	690
	Overload		150%: 1 minute, 180%:10 seconds, 200%: 0.5 second, interval: 10 minutes (inverse time lag feature)														
Input	Rated Voltage/Frequency		Three-phase 380V/ 480V 50Hz/60Hz ; PV Area Voc DC700V±50V Maximum DC800V														
	Allowable		Three-phase 323V to 528V, Voltage imbalance: ⩽3%, allowable frequency fluctuation: ±5% ; MPPT Area DC520～650V,														
	Rated current (A)	AC	82.5	99	123.2	165	193.6	231	278.3	334.4	418	468.6	517	572	660	715	759
		DC	90	108	134.4	180	211.2	252	303.6	364.8	456	511.2	564	624	720	780	828
Protection class			IP20														
Cooling mode			Natural-cooling					Forced air convection cooling									

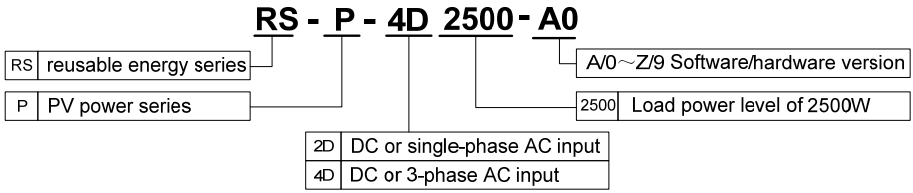
* Above RS−P−4D17K are customized products.

The model of RS-P solar water pump controller should be elected according to requirement and take account of pump's rated voltage 、rated current、rated power、rated frequency and AC power and etc.The AC out voltage should be consistent with rated voltage of pump.

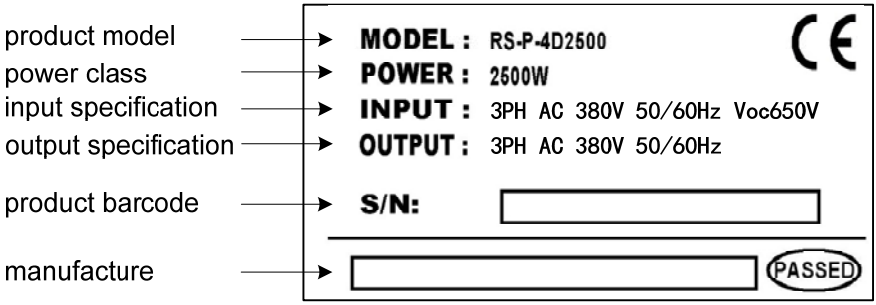
Chapter 2 Use and installation of PS-P Solar water pump controller

2.1 Product Model Description

The digits and letters in the product model field on the nameplate indicate such information as the product series, power supply class, power class and software/hardware versions.



2.2 Product Nameplate Description



2.3 Environment for Product Installation

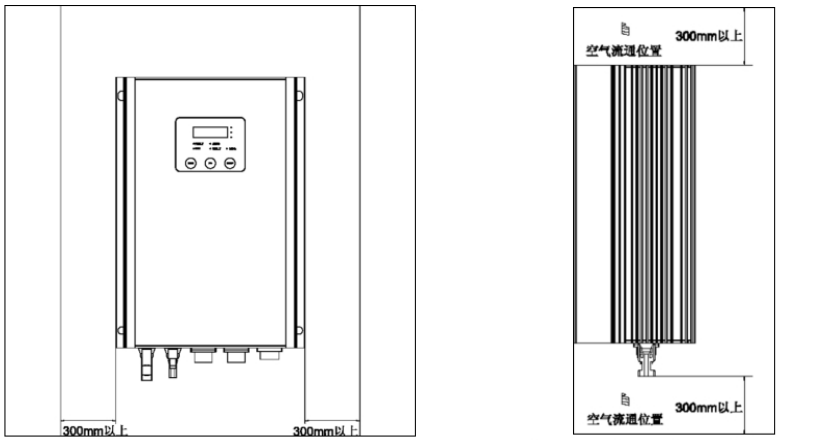
2.3.1 Environment

- Do not install the controller in the sites with oil mist, metal powder and dust.
- Do not install the controller in the sites with hazardous gas and liquid, and corrosive, combustible and explosive gas.
- Do not install the controllers in salty sites.
- Do not install the controller in the sites with direct sunlight.
- Do not mount the controller on the combustible materials, such as wood.
- Keep the drilling scraps from falling into the controller during the installation.
- Mount the controller vertically in the electric control cabinet, mount the cooling fan or air conditioner to prevent the ambient temperature from rising to above 45 ºC.
- For the sites with adverse environment, it is recommended to mount the controller heat sink outside the cabinet.

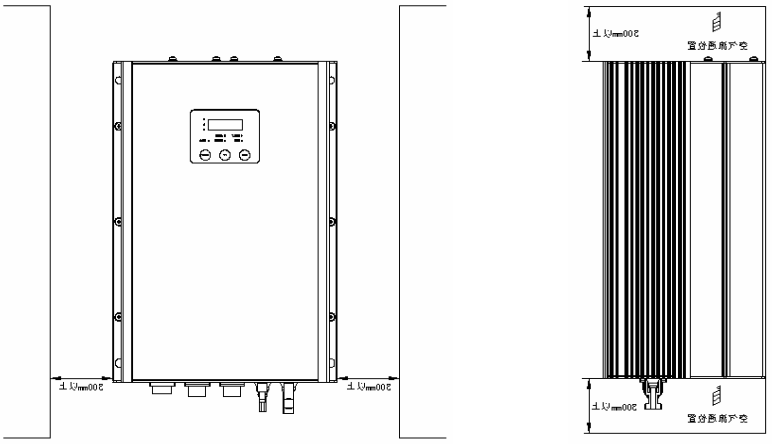
2.3.2 Mounting Direction and Space

Note: For the non-standard unit such as control box, the clearance between the ventilation ports and surrounding building shall be less than 300mm.

Please install vertically as shown in Figure 2−1 and Figure 2−2 so as to keep some clearance.



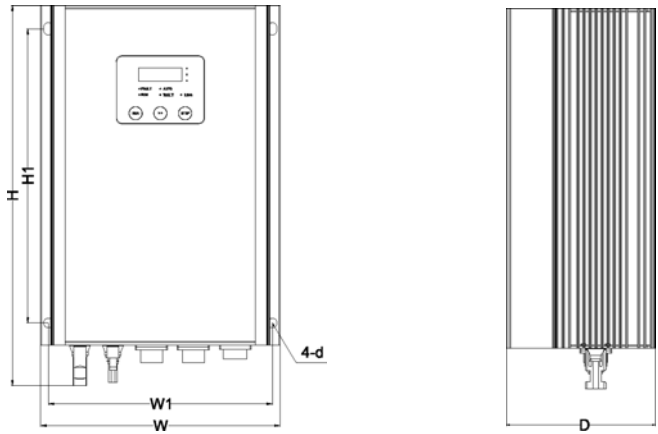
Picture (3) Installation direction and space of RS−P−4D600 to 4D5000



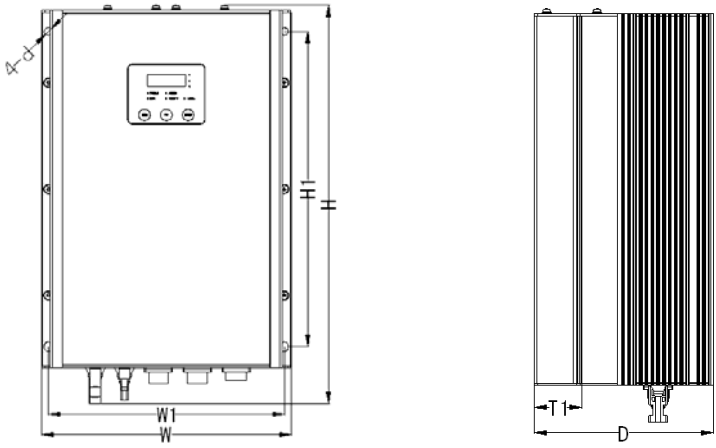
Picture (4)Installation direction and space of RS−P−4D3600 to 4D17k

2.4 Product Outline、Mounting Dimension and Peripheral Devices

2.4.1 Product Outline, Mounting Dimension, and Weight



Picture (5)RS−P−4D5000 and below power class



Picture (6)RS−P−4D3600 to RS−P−4D17k

Product outline, mounting dimension, and weight

Controller model	Outline and mounting dimension (mm)							Approximate weight (kg)
	W	H	D	W1	H1	T1	Installation holes d	
RS−P−4D600 to 4D2500	236	350	160	220	270	4	8.5	6
RS−P−2D600 to 2D800								
RS−P−4D3600 /4D5000	236	350	160	220	270	15.5	8.5	8
RS−P−2D1200/2D1700								
RS−P−4D6600	260	410	186	244	326	30	8.5	10
RS−P−4D7700								
RS−P−4D12k	300	491	216	284	405	60	9	15
RS−P−4D17k								
RS−P−4D21k to 4D450k	Customized according to user requirements							

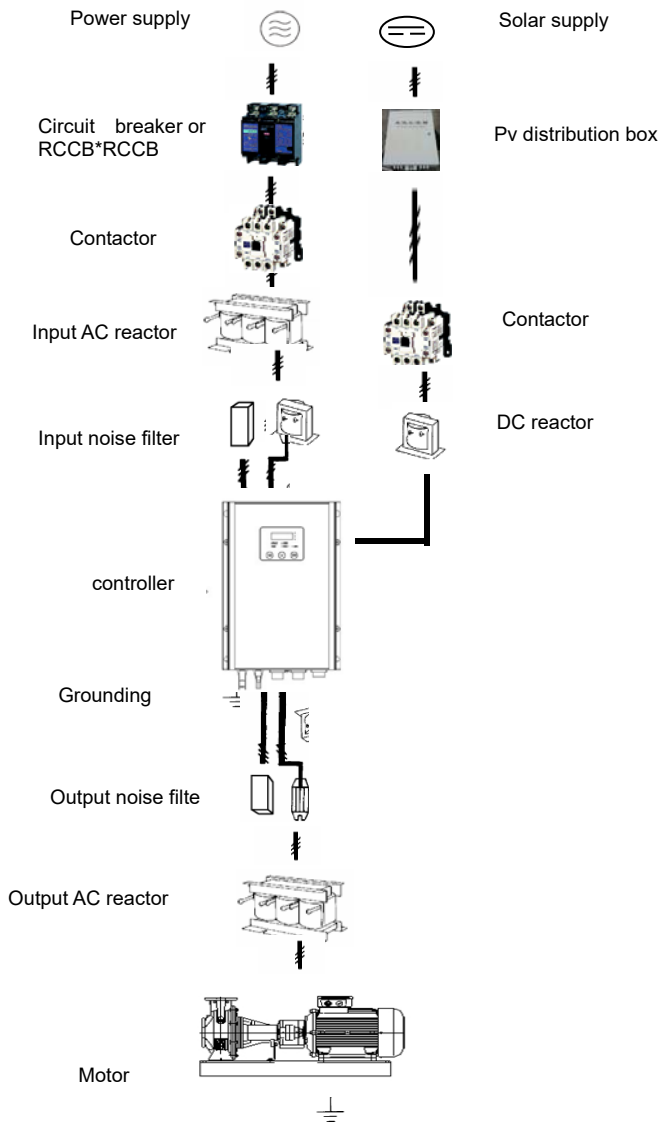
2.4.2 Wire connection

1. Parts of installation specification:

The specification is fixed with screws GB9074.13-88-M8x25 Cross recessed hexagon bolt, spring washer and plain washer assemblies, a total of four sets of assembly

2. Connection of the controller and Peripheral Devices：

The customer can select devices with “* ” according to the site condition



Picture (7)

Description of Peripheral Devices for Main Circuit

* PV distribution box	PV distribution box can reduce connectiong ware between PV array and controler , improve reliability and maintance .
Circuit breaker	The circuit breaker capacity shall be 1.5 ~ 2 times of the controller rated current. The time features of the circuit breaker shall fully consider the time features of the controller overload protection.
* RCCB	Because the controller output is the high-frequency pulse, there will be high-frequency leakage current. Special RCCB shall be used when installing RCCB at the controller input side. It is suggested that B type RCCB be used, and the leakage current value shall be set to 300mA.
* Contactor	Frequent contactor tripping will cause controller failure, so the highest frequency for contactor tripping shall not exceed 10 times/min. When a braking resistor is used, to avoid the overtemperature damage of the braking resistor, a thermal protection relay with braking resistor overtemperature detection shall be installed to disconnect the contactor at the contact control power side of the thermal protection relay.
* Input AC reactor or DC reactor	The controller power supply capacity is more than 600kVA or 10 times of the controller capacity. If there is switch type reactive-load compensation capacitor or load with silicon control at the same power node, there will be high peak current flowing into input power circuit, which damages the rectifier components. When the voltage imbalance of the three-phase power supply of the controller exceeds 3%, the rectifier component will be damaged. It is required that the input power factor of the controller shall be higher than 90%. When the above situations occur, install the AC reactor at the controller input side or DC reactor to the DC reactor terminal.
* Input noise filter	The noise input from the power end to the controller and output from the controller to the power end can be reduced.
* Thermal protection relay	Although the controller has motor overload protection function, when one controller drives two or more motors or multi-pole motors, to prevent the motor over temperature failure, a thermal protection relay shall be installed between the controller and each motor, and the motor overload protection parameter P9.16 shall be set to “2” (motor protection disabled).
* Output noise filter	When the output of the controller is connected with noise filter, the conduction and radiation interference can be reduced.
* Output AC reactor	When the cable connecting the controller and the motor is longer than 100m, it is suggested to install AC output reactor to suppress the high-frequency oscillation to avoid damaging motor insulation, large leakage current and frequent controller protective action.

2.5 Operation Panel Outline

Picture (8) Standard 3-button operation panel
（RS−P−4D7700 and below power class）

picture (9) Operation panel
（ RS−P−4D21K and above power class）

For the end users the product provide standard three key panels, this panel is a function limited version of Control panel. It can set controller run or stop, can reset controller from FAULT, can monitor running frequency, current, voltage, power, and total energy.

Control panel is more complex, and for the technician to use. Can modify parameter of the solar water pump controller.

To use Control panel need take off controller's front cover, and put the Control panel ware in the JACK on the control board. For the safety, power offs the controller before the operation. And don't touch any other things.

LED Indicator on control panel:

Indicator		name	meaning	color
Unit indicator light	Standard three key panel			
	Hz	Frequency indicator	Bright: display running frequency. Flash: display preset frequency.	green
	A	Current Indicator	Bright: display current.	green
	V	Voltage Indicator	Bright: display voltage.	green
	W	Power Indicator	Bright: display power.	red
	kWh	Energy Indicator	Bright: display energy generated by the solar panel.	red
	Control panel			
	Hz+A	Rotation rate Indicator	Bright: display rotation rate. Flash: display preset rotation rate.	green
	Hz+V	Percent Indicator	Bright: parameter is in percentage terms.	green
	Hz+A+V	Time Indicator	Bright: parameter is time.	green
		No unit Indicator	Dark: parameter is no unit value.	-
State Indicator light	Standard three key panel			
	FAULT	Fault Indicator	bright：in fault state Dark: normal operation	red
	AUTO	Running mode Indicator	Bright: automatic running mode. Dark: manual operation mode.	green
	RUN	Running state Indicator	Bright: is Running. Dark: has Stopped. Flash: is stopping running.	red
	Control panel			
	MULTI	Multifunction key Indicator		red
	MON	Running command Source Indicator	Bright: given by control panel. Dark: given by terminal input. Flash: given by computer.	red
	FWD	Forward Indicator	Bright: in stop condition, controller has forward rotate command. In running condition, controller is in foreword rotate direction. Flash: is turning from forward rotate to reverse rotate.	red
	REV	Reverse Indicator	Bright: in stop condition, controller has reverse rotate command. In running condition, controller is in reverse rotate direction. Flash: is turning from reverse rotate to foreword rotate.	red

Control panel function keys:

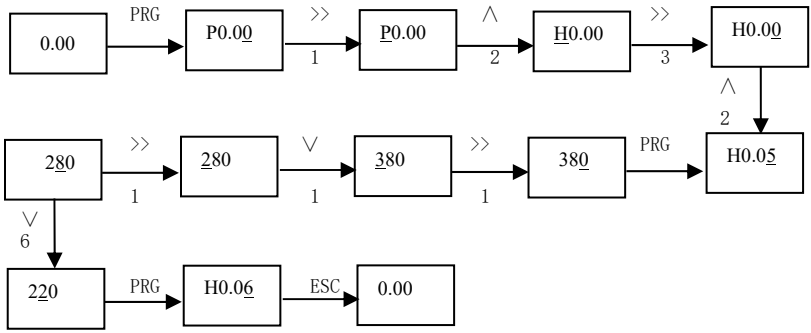
Logo		name	function
Key type	Rotate type		
		Programming key PRG	1.into sub menu 2.Conform data store. 3.check parameters by sequence 4.Change running command source assist With **M key**.
		Escape key ESC	1.When is in second level menu, back to first level menu. When is in first level menu, back to standby state or running state or fault state. 2.After change the value, abort data store. 3.Keep press for 5 seconds, back to basic menu mode. When can not display all the function code,use this method to display all the function code. 4.After use **>> key** switch FALUT display mode to stop/run parameter display mode, push **ESC key** can switch back to FALUT display mode.
	Turn+  Turn-	Up key ∧	1.When is in first menu, parameter PX.YZ increase at the edit bit. 2.When is in second menu, parameter's value increase. 3. When is in STOP/RUN state, preset frequency or preset closed loop increase.
		Down key ∨	1. When is in first menu, parameter PX.YZ decrease at the edit bit. 2. When is in second menu, parameter's value decrease. 3. When is in STOP/RUN state, preset frequency or preset closed loop decrease.
		Shift key>>	1.When is in first menu, use Shift key>> change PX.YZ edit bit. 2.When is in second menu, use Shift key>> change parameter's value edit bit. 3.When is in STOP/RUN state, use Shift key>>change display parameters, e.g. frequency, current, voltage, etc. 4.When is in FALUT state, use Shift key>> change display from FALUT display to STOP/RUN parameter display.
		Run key RUN	1.When running command source is Control panel, run key Start controller to run. 2.When set auto learning parameters, Run key Start auto learning.
		Stop/reset key STOP/RST	1. When Running command source is Control panel, Stop/reset key stop controller running. 2. When only display FALUT message not Stop, Stop/reset key stop controller running. 3. When FALUT occur and controller stopped, Stop/reset key function as reset key, reset FALUT message.
		Multifunction key M	
		Forward/Reverse key FWD/REV	When running command source is Control panel, use to control controller's rotate direction.

Note:

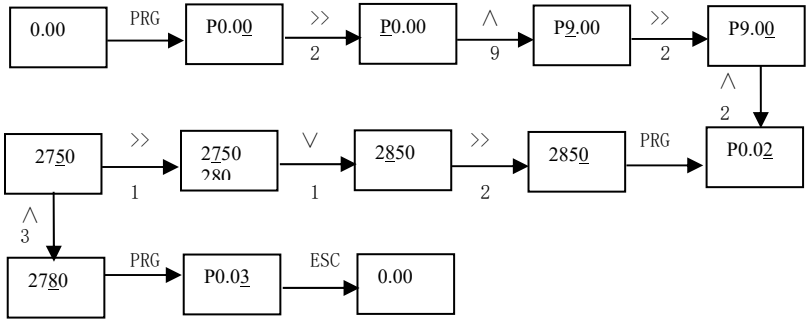
- The ENTER key of shuttle type operation panel is equivalent to PRG Key.
- Using PRG key continuously can realize fast browse of all function codes.

Set parameter with Control panel examples:

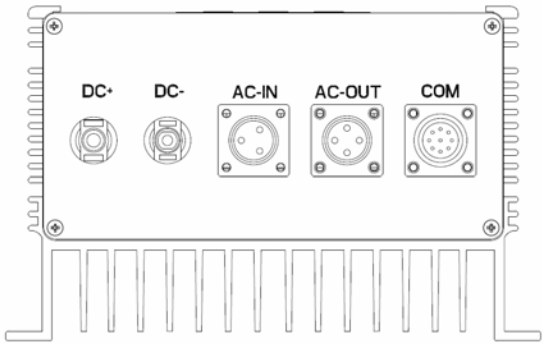
1.Set H0.05=220



2.Set P9.02=2780



2.6 Terminal functions



Picture (10) Wiring of terminals

Terminal symbol			Terminal name and function description	Technical specifications
Power supply	AC-IN		Three-phase or single phase AC input terminal	Three-phase 380V or single phase 220V AC input terminal
	DC+ DC-		DC input +	DC 340Vdc or 650Vdc input
	AC-OUT		Three-phase AC output terminal U / V / W/PE	Three-phase 0 to 220V or 0 to 480V
	AC-IN*		Three-phase input terminal, any two phases	Single phase 220V input
	⏚		PE	Controller and motor must be grounded
COM terminal	DI	X4 / X5/ Com	Water level protection sensing terminal	X4: sensing terminal of water tower; X5: sensing terminal of well; Com: common terminal
		*X1 to X7/DI	Multi function input or pulse input	Input specification: 24VDC ±20%,5mA,0 to 200Hz,
	External RS485	*CN7	RS485 for operation panel	Max cable length between the host computer and RS485is 15m.
		*RS485+ / - / GND	Shielded layer of COM RS485+/- is grounded.	Baud rate: 4800/19200/38400/57600bps
	AI	*+10V	AI reference voltage	10V±3%; 10mA maximum output current; overload and short circuit protection
		*AI1/AI2/AI3	AI 1, 2, and 3	0 to 20mA 500Ω / 0 to 10v 20kΩ / -10v to 10v 20kΩ
	DC power	*+24V / Com	+24V power	24V ± 10% maximum load: 200mA, overload and short circuit protection
	Relay	*RA/RB/RC	Relay output	RA - RB: NC; RA - RC: NO; Contact capacity: 250VAC/1A,30VDC/1A

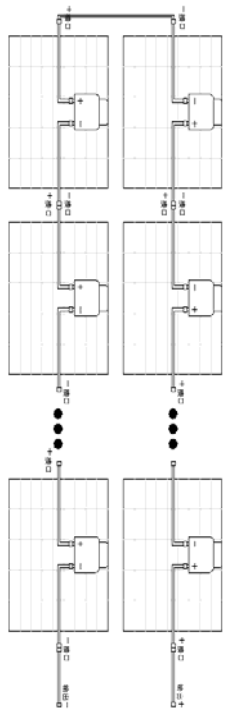
Note: The item marked with "*" is the customized item and some models do not have all the functional terminals, and please confirm this with local dealer.

2.7 Installation process

Step 1 Prepare accessories of solar AC pump system.

Solar panels, visor,solar stands, AC 3-phase pump inverter, AC 3-phase 380V pump, wires, ※DC breaker, ※AC breaker and installation tools.

Note: ※Accessories are optional, you can either buy from us or yourself.



Step 2 Connect PV panels in series and parallel like below:

Before connecting wires , the customer should cover all solar panels with visor for safe. The PV Array is of N pieces of solar panels.then PV+ of panel No.1 connects PV- of panel No.2 →

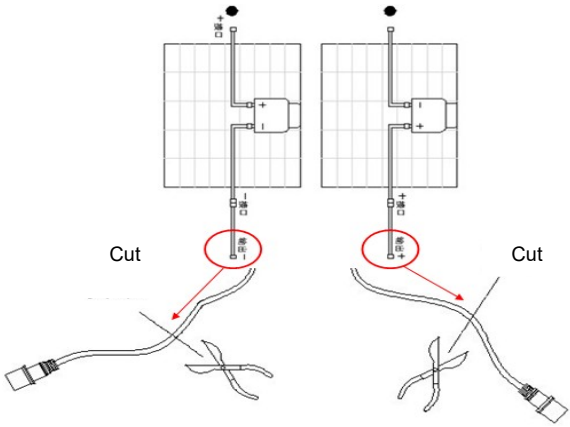
PV+ of panel No.2 connects PV- of panel No.3;

……

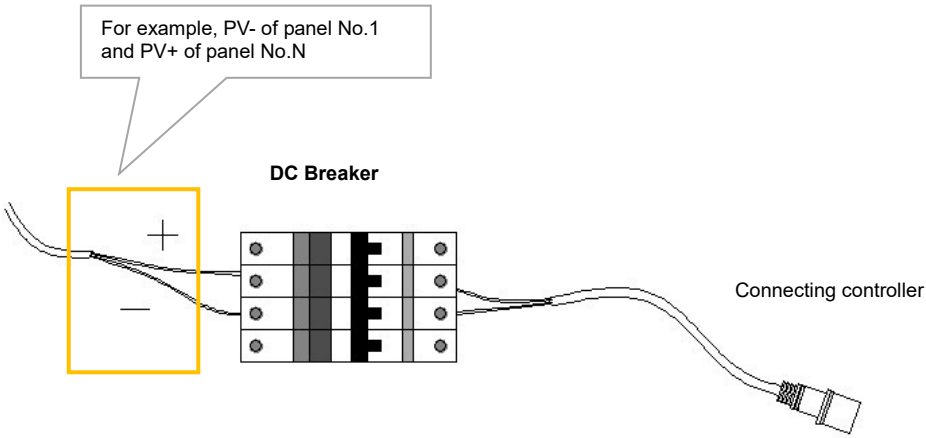
Then rest two cables PV- of panel No.1 and PV+ of panel No.N See step 4.

Step 3. Cut the black outer plastic protective layer of the rest two cables from PV panel.

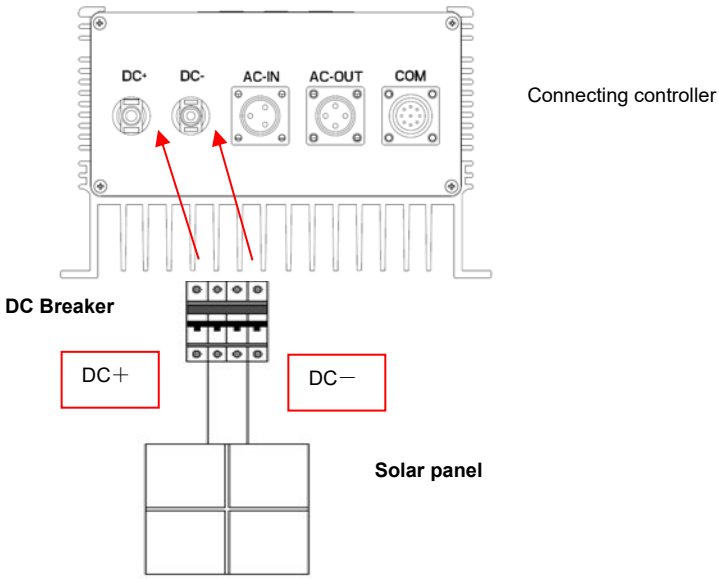
(For example, PV- of panel No.1 and PV+ of panel No.N) And then connects long wires respectively.



Step 4. Connect the rest two cables with circuit breaker



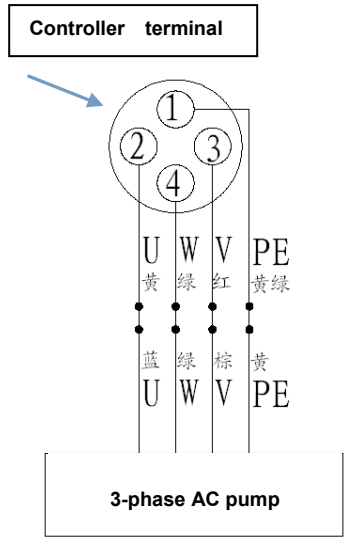
Step 5. Connect circuit breaker and solar pump controller



Step 6. Connect solar pump controller and solar pump

There are four wires inside the AC cable from pump and pumpcontroller, the colors of the wires below will be probably different in actual on site condition, examples below is just for the reference.

Connect PE wire of pump and PE cable of pump controller;
→
Connect V wire of pump and V cable of pump controller;
→
Connect W wire of pump and W cable of pump controller;
→
Connect U wire of pump and U cable of pump controller.



Step 7. Re-check wiring connection of solar pump system. If everything is ready (correct wiring, enough output power of PV arrays, and etc.), then switch ON DC breaker and AC breaker (if available). And the system runs and user can see operating data on LCD screen after 1 minute.

Chapter 3 Wells water towers working mode

Once the controller is powered, it would automatically delay 10s, and run automatically according to light and water level。

On and off ：

On ：COM external connection terminal is inserted, open water tower well protected mode；

Off ：Unplug external COM terminal connection, turn water tower well protected mode.

Line instruction as follow:

Line symbol	TANK+ / x4	- / com	WELL+ / x5	- /com
function	Filled with water sensing cable, close is full of water effectively (yes), other is inactive (No)；		Dry state sensing lines, short for the dry state is invalid (NO), off to the dry state valid (yes)；	

The controller can run only under the condition of no full in tower and no short in well .

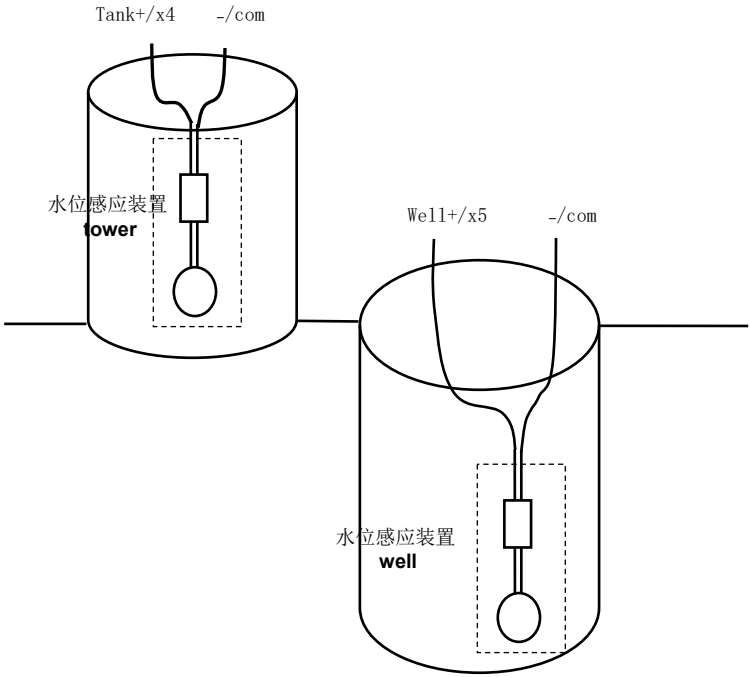
Remark:

1.The controller can automatically run delay of 30s under the condition of run .

2.The controller can automatically off delay of 30s under the condition of off.

3.2 kinds of restart after off : first , the people can start under the condition of effective tower water level ; second , repower after no signal of controller under off.

Wells water towers work mode diagram:



picture（11）Wells water towers work mode diagram

Water level sensing device can be selected according to need. Use a variety of mechanical float or reed device, as long as they follow the water level fluctuation, but the water level sensor disconnected or short signal can be. Note that the selected sensors and wiring should meet the level sensor logic setting.

Using only one set of level sensor device case (alone tower or water wells sensing function). Another group level sensor function is not, and should be handled according to the logic. When used alone tower water level sensors, Well + and Well-wire shorting should be in the state on behalf of the wells do not dry. When used alone wells water level sensors, Tank + and Tank-wire should be in the OFF state, the water is not pumped full of representatives towers.

the pump dry dry run protection

Open the tower well protected mode control RS-P solar water pump controller startup and shutdown according to the water level ,that is the pump dry dry run protection.

Under certain circumstances, such as: do not use the tower well protected mode, or the failure to protect water tower well into the dry-running state when anhydrous, anhydrous pumps run dry protection will play a role, avoid prolonged dry running pumps damaged.

Chapter 4 Routine Repair and Maintenance

The application environment (such as temperature, humidity, dust and powder, wool, smoke and oscillation), burning and wearing of internal devices and other factors may increase the possibilities of controller failure. To reduce the failures and prolong the service life the controller, it is necessary to conduct routine repair and periodic maintenance.

Note:

1. Only the personnel receiving professional training can dismantle and replace the controller components.
2. Prior to inspection and maintenance, please make sure that the power supply to the controller has been disconnected for at least ten minutes or the CHARGER indictor is OFF, or there may be risks of electric shock (the controller with power level of RS-P-4T11G/15L or above has CHARGER indicator).
3. Do not leave metal components and parts in the controller, or it may damage the controller.

4.1 Routine Maintenance

The controller shall be used under the allowable conditions as recommended in this manual and its routine maintenance shall be conducted as per the table below.

Item	Inspection Contents	Inspection Means	Criteria
Operating Environment	Temperature	Thermometer	-10 ~ +40° C Derated at 40 to 50° C, and the rated output current shall be decreased by 1% for every temperature rise of 1° C.
	Humidity	Humidiometer	5 ~ 95%, no condensing
	Dust, oil, water and drop	Visual check	There are no dust, oil, water and drop.
	Vibration	Special test instrument	3.5m/s2, 2~ 9Hz; 10m/s2,9~ 200Hz; 15m/s2,200~ 500Hz
	Gas	Special test instrument, smell check and visual check	There are no abnormal smell and smoke.
controller	Overheat	Special test instrument	Exhaust normal
	Noise	Listen	There is no abnormal noise.
	Gas	Smell and visual check	There are no abnormal smell and smoke.
	Physical appearance	Visual check	The physical appearance is kept intact.
	Heatsink fan ventilation	Visual check	There are no fouling and wool that block the air duct.
	Input current	Amperemeter	In the allowable operating range. Refer to the nameplate.
	Input voltage	Voltmeter	In the allowable operating range. Refer to the nameplate.
	Output current	Amperemeter	In the rated value range. It can be overloaded for a short while.
	Output voltage	Voltmeter	In the rated value range.
Motor	Overheat	Special test instrument and smell.	There are no overheat fault and burning smell.
	Noise	Listen	There is no abnormal noise.
	Vibration	Special test instrument	There is no abnormal oscillation.

4.2 Periodic Maintenance

It needs to perform periodic inspection on the controller once every three to six months according to the application environment and work conditions.

Item	Inspection Contents	Inspection Means	Criteria
controller	Main circuit terminal	Screwdriver/sleeve	The screws are tightened and the cables are intact.
	PE terminal	Screwdriver/sleeve	The screws are tightened and the cables are intact.
	Control circuit terminal	Screwdriver	The screws are tightened and the cables are intact.
	Reliability of internal connections and connectors	Screwdriver and hands	Connection is firm and reliable.
	Expansion card connector	Screwdriver and hands	Connection is firm and reliable.
	Mounting screws	Screwdriver/sleeve	The screws are tightened.
	Cleaning the dusts and powders	Cleaner	There are no dusts and wools.
	Internal foreign objects	Visual check	There are no foreign objects.
Motor	Insulation test	500VDC megameter	Normal

4.3 Component Replacement

Different types of components have different service lives. The service lives of the components are subject to the environment and application conditions. Better working environment may prolong the service lives of the components. The cooling fan and electrolytic capacitor are vulnerable components and shall be conducted routine inspection as per the table below. If any fault occurs, please conduct immediate replacement.

Vulnerable Components	Damage Causes	Solutions	Items for Routine Inspection
Fan	Bearing wear, blade aging	Change	The fan blade has no cracks and rotates normally. The screws are tightened.
Electrolytic capacitor	Ambient temperature is relatively high and electrolyte volatilizes.	Change	There are no electrolyte leakage, color change, crack and shell inflation. The safety valve is normal. Static capacity is equal to or higher than the initial value times 0.85.

Note:

When the controller is stored for a long period of time, power connection test shall be conducted once within two years and last at least five hours. It can use voltage regulator to gradually increase the value to the rated value when power connection is performed.

Appendix I. Fault and Fault Information List

controller is equipped with complete protection functions to provide efficient protection while utilizing its performance sufficiently. Some failure instructions may be displayed during operation. Compare the instructions with the following table and analyze, decide the causes and solve failures.

For damages on units or questions that can't be resolved, please contact with local distributors/agents, service centers or manufacturer for solutions.

No.	Failure code	Failure description	Potential causes	Solutions
1	E.oc1	Over current protection when acceleration operation	Low grid voltage	Check proper input voltage and power supply
			Startup too fast during motor operation	Restart after the motor stops rotating
			Rotating inertial of load is very large and shock load is very heavy	Increase the acceleration time and reduce the occurrences of sudden change of load
			Improper setting of motor parameters	select proper power or controller
			Set start-up frequency too high	Decrease start-up frequency
			Acceleration time is too short	Prolong acceleration time
			Set V/F curve ratio too large	Adjust V/F curve setting and torque boost
			Power level of controller is small	Replace with controller with proper model
2	E.oc2	Over current protection when deceleration operation	Low grid voltage	Check proper input voltage and power supply
			Too big rotating inertial of load	Choose appropriate energy braking components
			Improper setting of motor parameters	select proper power or controller
			Deceleration time is too short	Prolong deceleration time
			Power level of controller is small	Replace with controller with proper model
3	E.oc3	Over current protection when operation with constant	Sudden change of load during operation	Decrease load's abrupt frequency change and amplitude
			Improper setting of motor parameters	select proper power or controller
			Power level of controller is small	Replace with controller with proper model
4	E.oV1	Over voltage protection when acceleration operation	Motor short to ground	Check motor wiring
			Abnormal input power supply voltage	Check input power supply
			Fast start-up again when motor operates with high speed	Start again after the motor stops rotating
5	E.oV2	Over voltage protection when deceleration operation	Motor short to ground	Check motor wiring
			Too big rotating inertial of load	Choose appropriate energy braking components
			Deceleration time is too short	Prolong deceleration time
6	E.oV3	Over voltage protection when operation with constant speed	Motor short to ground	Check motor wiring
			Abnormal input power supply	Check input power supply and voltage
			Too big rotating inertial of load	Choose appropriate energy braking components
7	E.PCU	Interference protection	Severely Interfered by exterior signal	Ask professional technicians to maintain

No.	Failure code	Failure description	Potential causes	Solutions
8	E.rEF	Abnormal comparison benchmark	Loose connection of connectors inside the controller	Ask professional technicians to maintain
			Abnormal internal switching power supply	Seek for technical support
			Abnormal signal sampling and comparison circuit	Seek for technical support
9	E.AUt	Auto-tuning failure	Enable auto-tuning function during motor spining	Perform auto-tuning after the motor stops to rotate
			Auto-tuning overtime	Check whether motor wirings are well connected Length of motor wiring within 100m
			Incorrect setting of motor parameters in group P9	Please reset the parameters according to the nameplate parameters on the motor.
10	E.FAL	Module protection	Output over current	Check whether the motor and the output connection is short circuited, whether the ground is short circuited and whether the load is too heavy.
			DC terminal overvoltage	Check the mains power supply and whether the large inertia load has no function of quick stop at energy consumption brake.
			Loose connection of connectors inside the controller	Ask professional technicians to maintain
11	E.oH1	Heat sink 1 over temperature protection	Ambient over-temperature	Lower the ambient temperature and strengthen ventilation and heat dissipation.
			Blockage of air duct	Clean the dusts, wools and other foreign objects in the air duct.
			Fan failure	Check whether fan wirings are well connected. Replace a new fan of the same model.
			controller module failure	Seek for technical support
			Temperature detection circuit failure	Seek for technical support
12	E.oH2	Heat sink 2 over temperature protection	Ambient over-temperature	Lower the ambient temperature and strengthen ventilation and heat dissipation
			Blockage of air duct	Clean the dusts, wools and other foreign objects in the air duct
			Fan failure	Check whether fan wirings are well connected. Replace a new fan of the same model
			Rectifier module failure	Seek for technical support
			Temperature detection circuit failure	Seek for technical support
13	E.oL1	controller overload protection	Input power under voltage	select proper power or controller
			Fast start-up when motor operates with high speed	Start again after the motor stops rotating
			Keep overloading for a long period of time	Shorten the overloading time and reduce load
			Too short acceleration and deceleration time	Prolong the acceleration/deceleration time
			Too big V/F curve ratio	Adjust V/F curve setting and torque boost
			Power level of controller is small	Replace with controller with proper model
14	E.oL2	Motor	Input power under voltage	select proper power or controller

No.	Failure code	Failure description	Potential causes	Solutions
		overload protection	Motor rotation is blocked or load mutation occurs	Prevent the motor rotation from blocking and reduce the load mutation
			Common motor maintains running under heavy load for a long period of time	Replace the common motor with variable frequency motor or improve the running frequency
			Motor overload protection time is set too small	Increase the motor overload protection time
			Too big V/F curve ratio	Adjust V/F curve setting and torque increment
			DC braking current is set too high	Reduce the DC brake current
15	E.oUt	Peripheral protection	External failure terminal enable	Check the external failure terminal status
			Stall over voltage or over current and the time lasts for more than one minute	Check whether the external load is normal
16	E.CUr	Current detection fault	Current detection circuit failure	Seek for technical support
17	E.GdF	Output to ground short circuit	Wrong connection	Correct the connection error as per the user’s manual
			Motor failure	Replace the motor after performing ground insulation test
			Invert module failure	Seek for technical support
			Too big ground-leakage current at the controller output side	Seek for technical support
18	E.LV1	Abnormal power failure during running	Mains power fluctuation or momentary power failure	Check the local mains power
19	E.ILF	Input power failure	Abnormal connection, missing connection or disconnection at the power terminal of the controller	Check the power connections as per the operational regulations and eliminate the errors of missing connection and disconnection
			Serious imbalance of input power at three phases	Check whether the imbalance of input power at three phases comply with the requirements
			Burning of capacitor of the controller	Seek for technical support
			The power-on buffer circuit of the controller is faulty	Seek for technical support
20	E.oLF	Abnormal output phase loss	Abnormal connection, missing connection or disconnection at the output side of the controller	Check the power connections at the output side of the controller as per the operational regulations and eliminate the errors of missing connection and disconnection
			Imbalance of output three phases	Check whether motor is kept well Shut down the power supply to check whether the terminal characteristics both at the output side and DC side of the controller are consistent
21	E.EEP	EEPROM failure	EEPROM reading and writing failure	Seek for technical support
22	E.dL3	Relay contact failure	Loose connection of connectors inside the controller	Ask professional technicians to maintain
			The power-on buffer circuit is faulty	Seek for technical support
23	E.dL2	Temperature sensor taking sample anomaly	Ambient under temperature	Check whether the ambient temperature complies with the requirements
			The temperature sampling circuit inside the controller is faulty	Seek for technical support
24	E.dL1	Encoder cable disconnection	Encoder connection is incorrect	Change the encoder cable connection
			Encoder has no signal output	Check whether the encoder and power supply are normal.

No.	Failure code	Failure description	Potential causes	Solutions
			Encoder cable disconnection	Reconnect
			Abnormal function code setting	Confirm that the relevant function codes of the encoder are set properly
25	E.P10	+10V power output abnormal	+10V power overload	Increase +10V power load impedance Utilize externally independent power supply
			+10V power supply and GND is short circuited	Eliminate the short circuit failure
			+10V power terminal circuit failure	Seek for technical support
26	E.AIF	Analog input abnormal	Too high analog input voltage	Check whether the analog input voltage complies with the requirements
			Analog input circuit failure	Seek for technical support
			Analog input circuit signal interfered	Increase the P6.22 and P6.24 AI filtering time
27	E.Ptc	Motor over temperature(PTC)	The motor temperature signal reaches the alarm setting value	Strengthen ventilation and heat dissipation
			Thermistor resistance failure	Check the thermistor
			The sensor protection threshold of the motor is set improperly	Adjust the sensor protection threshold of the motor
28	E.SE1	Communication abnormal 1 (Operation panel 485)	The communication of operation panel RS485 is disconnected	Check the connection of the equipment communications
			Communication failure of operation panel RS485	Check whether the data receiving and transmission complies with the protocol, whether the check sum is correct and whether the receiving and transmission interval complies with the requirements
			The controller is set to master mode	Set the controller to slave mode
29	E.SE2	Communication abnormal 2 (RS485 terminal)	The communication of RS485 terminal is disconnected	Check the connection of the equipment communications
			The baud rate is set improperly	Set compatible baud rate
			The communication of RS485 terminal is faulty	Check whether the data receiving and transmission complies with the protocol, whether the check sum is correct and whether the receiving and transmission interval complies with the requirements
			The communication of RS485 terminal is time-out	Check whether the communication timeout is set properly and confirm the communication cycle of the application program
			Improper setting of failure alarm parameters	Adjust the failure alarm parameter
			The controller is set to master mode	Set the controller to slave mode
30	E.VEr	Version compatibility abnormal	Incompatible software version of the operation panel	Seek for technical support
31	E.CPy	Copy failure	The data error occurs when copying the controller parameters to the operation panel	Check the connections of the operation panel
			The data error occurs when copying the parameters from the operation panel to the controller	Check the connections of the operation panel
			The parameters are directly downloaded without undergoing copy and upload operations.	Perform download before uploading the parameters
			Control board software version incompatible	Check if d1.09 is consistent
32	E.dL4	Expansion	Expansion card connection is loosened	Ask professional technicians to maintain

No.	Failure code	Failure description	Potential causes	Solutions
		card connection abnormal	Expansion card failure	Seek for technical support
33	E.IoF	Terminal mutual exclusion check failed	The functions of X1 to X7, AI1, AI2 and DI terminals are set in a repeated manner	Modify the settings of X1 to X7, AI1, AI2 and DI terminals and ensure the setting functions are not repeated (excluding null function)
34	E.oL3	Hardware overload protection	Load failure	Check whether motor is blocked Replace controller with proper model
			Input failure	Check whether there is phase loss
			Output failure	Check whether there are phase loss or short circuit
35	nULL	Pump protection against running without water	Pump runs without water, motor cable connection is abnormal	Check water level or pipes and check cable connection
		Motor protection against zero load	Motor load disconnected, motor cable connection is abnormal	Check load status and check cable connection
36	-LU-	Power under voltage	The power supply voltage is lower than the minimum operating voltage of the equipment	select proper power or controller
			Abnormal internal switching power supply	Seek for technical support

Appendix Ⅱ :FAQ

1. Why the controller runs abnormally?

A: (1) Please check the parameters of solar array or pump ;

A: (2) whether do the external connection right.

2. Why was the operating frequency of the controller kept at 0Hz?

A: (1) Whether solar array total power and voltage is consistent with rated voltage of controller (please check out Chapter one)

A: (2) please check tower well protected function and water level.(please check out Chapter three)

3、why the controller to E.AIF analog input abnormal fault?

A: (1) please check the analog input type and control panel of jump line is correct, please corresponding analog input voltage channel side, jump to jump line V analog current input ,please jump to the corresponding passage I end of jump line

A: (2) Please check whether the analog input is more than 11V

A: (3)Use the +10V supply to the controller on the control panel, please check whether the controller panel +10V below 9V or above 11V,if the controller after power off completely check +10V to GND connection between Ω resistance value is less than 5K.

4、why controller E.P10 abnormal faults?

A:please check whether the controller panel +10V below 9Vor above 11V,if the controller is completely power down after check +10Vto GND connection between Ω resistance value is less than 5K.

5、485 why PLC and controller communication is not normal?

A: (1)Please check the controller and PLC data format, address and tabard rate are consistent.

A: (2) Please make sure the PLC address whether need to add 1 operation.

A: (3) Please confirm whether PLC in Modbus RTU format;

A: (4) Please make sure the PLC register address is converted to hexadecimal；

A: (5) Please make sure the connection cables, 485 is correct

6. Why the keyboard sometimes “8.8.8.8” or no show?

A: (1)Operation panel and the controller panel directly connection ,each other is plugged in；

A: (2)Homemade keyboard extension cord for connection to the operation panel and controller board, please make sure cable signal is one to correspondence；

A: (3)Using the standard Internet cable connection operation panel and controller board ,please make sure the operation panel and the controller panel cable is plugged in.

7、How to change the drive motor rotate in the direction of the controller?

A: (1)The FWD/REV key operation panel can change direction in real time

A: (2)The operation panel of the UP/DN key (shuttle operation panel and knob adjustment) can change direction in real time;

A: (3)Operation panel control and compound control frequency after operation of positive and negative value will eventually change direction in real time

A: (4)Terminal control ,please confirm whether the positive and negative terminals and PLC and other control equipment

A: (5)Can’ t show ,please confirm whether the controller operation panel to lock

8、Why some Dianzhuan fan power level controller, some don’ t turn?

A:15KW or less power lever controller fan is not controlled, the electricity is running ;18.5KW to 45KW power level controller fan run by radiator temperature control, when the temperature is lower electric an does not run on the controller ,55KW~75KW power level controller fan is not controlled, the electricity is running; power of 90KW and above level controller fan operation is running commands radiator temperature controller and common control, the electric fan does not run at low temperature controller, but when the controller or the radiator at high temperature fan running

9、Control panel CN1 ribbon cable loosening or damage of what would happen?

A:Control panel CN1 ribbon cable is loose or damaged will cause the controller cannot work or multiple faults ,such as the controller may show-LU-,relay/contactor does not suck, submitted to the fault such as E.oc1,E.FAL.E.oH1,E.oH2,ec ,with our fabrication ur,E.dL3.etc

10. Why “-LU-” is reported and the controller stop/restart happens frequently when the frequency is rising?

A: (1) Check if the H0.02 open circuit voltage is set correctly, and the voltage should be set to the value that is sum of the Voc marked on the nameplate of the PV panel.

A: (2) Check if the low limit of the maximum power tracking is set too low, and you can increase the setting gradually to a suitable value, but the value can not be greater than the high limit of the maximum power tracking.

After-sales Service Regulation

1. Maintenance Limits

1.1 Within the limit

Any product failure cause by quality in the warranty period which belongs to maintenance limits.

A: The warranty period is of 18 months from the date of exit ; the period of product maintained or parts maintained is reminder of warranty period.

B: Beyond the warranty period , the warranty period of parts is 6 months after product was maintained by new parts .

1.2 Beyond the limit

Beyond the warranty period or failure cause by the follow reasons , which are beyond the limit.

A: The customer does not operate and install the controller according to < The User Guide>

B: The customer does maintain without connecting with the manufacture or failure cause by restructure ;

C: The customer used the product outside of the standard condition which leads to the fault.

D: The use condition is not fit for the product which lead to abnormal , aging of the part or fault.

E: The reason of earthquark ,fire , wind , abnormal voltage , salt corrosion ,gas corrosion or nature destroy or other force majeure reasons lead to the fault.

F:The damage happens during the installation or delivery .

G:Without the authority of the manufacture , the customer disconnect the parts or change the constructure or circuit.

H: The fault happens because of the wrong maintain , etc, deformation , destroy , scoring and so on.

I :Tear up or destroy the identification ,etc , nameplate , bar code , maintain logo or other identification.

J:The parameters of the product lead to problem or the fault .

2. The application

2.1. If the customer do not deal with the problem during the use , please dial the hotline 0755-29810021 for technology or service.

2.2 .Please get the information as follows before application for service :

The model : RS-P-4D2500

The code : 110168065711311000001

2.3 Once the application is accepted , the manufacture will arrange technician to direct by telephone within 1 hour . If the problem can not be resolved , the manufacture shall make service on site.

2.4 product sent to the manufacture : the manufacture will maintain as soon as possible and send to the customer .

On-site service: the manufacture technician will rush to the scene within24 hours under the certain condition.

3. Notice

3.1 The product which not caused by the customer or during the warranty period is maintained free by the manufacture (back manufacture or on scene) , and the customer can directly connect with the manufacture . While the product which beyond warranty limit or the warranty period is provided paid service by the manufacture .

3.2 The date of exit is subject to the product file of the manufacture , meanwhile the failure t reason shall be confirmed by the manufacture service department and only provide the whole product fixing service .

3.3 Solar Water Pump Controller Service Connection:

Tele: 0755-29810021;

Mobil: 086-18923879928;

E-mail: service@vtsolar.com

Address: 4F, XinFeng Building B , YangGuang Community , XiLi Town, NanShan District , Shenzhen ,China

3.4 Outside of fix period , the product can be repaired by the manufacture with fix fee or by the customer with parts that the manufacture can sale by favorable. Once the customer sign the contract about maintenance,confirm with signature and understand maintenance clause .

3.5 Maintenance freight

A: During the warranty period , the customer should bear the fright of sending to the manufacture , and the fright of back will be borne by the manufacture .

B: If the customer require urgently delivery through express , coach ,or air-express or send to the assigned address , the cost should be borne by the customer. Once outside of the warranty period , the customer should bear the cost of fixing and freight.

C: The product with maintenance require outside of the Mainland China should be sent to the manufacture , and the come and go freight should be borne by the customer .

3.6 The packaging of the product which is sent to the manufacture must be played a part in protection.If the product happens to deformation,destroy or torn packing,the manufacture have the right to reject repairing.

3.7 The customer should fill in < Product Quality Feedback> for application so that the manufacture could provide after-sales service in time and confirm fault quickly.

3.8 The customer should provide product code,warranty card and invoice with the

manufacture when the product is maintained .

4. Maintenance Standard

4.1 Pay for on-site service

A: The manufacture shall arrange on-site service for the customer.

B: If the product is confirmed for the reason of the customer on scene , the customer should bear the maintenance fee and the service bill.

C: In the fix limit , the customer only prepay for car fare , board and lodging expenses, personnel subsidies .

D: Beyond the maintenance limit , the customer should prepay for car fare, board and lodging expenses, personnel subsidies and maintenance fee.

Mark:

a, Personnel subsidies: 450 RMB /person/ day in Mainland China , 900 RMB/person/day beyond Mainland China.

b, Interpretation for prepaid expenses : 10days expenses for the manufacture should prepaid by the customer , and will notice for supplement to the customer before using up . If not , on-site servicer have the right to back ,and do not take the responsibility ; meanwhile the manufacture have the right to reject on-site aftersales service for the customer again.

E:Validity of on-site service : The manufacture service staff will go to the site of the Mainland Chinese by public transport within 48 hours . But the place beyond the Mainland China , the manufacture will consult with the customer.

4.2 The fee scale and standard

The product which is both beyond the warrant period or damaged by the customer should be maintained with fee . etc , personnel expenses ,maintenance fee , freight and other fees should be borne by the customer.

If the customer require on-site service , the customer should prepay expenses according to the prepaid standard for the manufacture.

The back product without mark or code or other identification should be charged for fixing. While the product will be sent back to the customer under the condition of pay .

5. Enclosed : < Product Quality Feedback>Shenzhen V & T Technologies Co., Ltd

Remark：

the After-sales Service Regulation to the final interpretation of the manufacture all;

The manufacture only take the obligement for the provision of the After-sales Service Regulation .

V&T ShenZhen V&T Technologies Co.,Ltd

RS-P Solar Water Pump Controller

Package List

No.	item	Unit	Number	Remark
1	Controller	piece	1	
2	Cable	set	1	
3	User Manual	piece	1	
4	Warranty card	piece	1	
5	Certification	piece	1	
6	Package material	set	1	

REMARK

For the safety of your propriety , please check the association according to package list , and operate before read <User Manual> and safety precaution . If you have any problem ,please contact the manufacture.

RS-P Solar Water Pump Controller
Quality Feedback

No.: urgency degree: □fast □urgent □normal

Customer Name :		Feedback time:	day Month year
Customer Connector:		Connector telephone:	
Marketing staff:		Confirming time:	

Description :（simple and answer the follow three problems ）

1、What is happen to the Controller , and is it the first time ?（If not ， please descripte the ex-service）:

2、Mchine mold and code:

3、Main Problem :

4、Connection :

Department Check: Time:

Company Introduction

Shenzhen V&T Technologies Co.,Ltd .was certificated as a “National Hi-tech and Double-Software Enterprise ”engaged in Variable Frequency Drive ,Servo Drive ,Electric Vehicle Controller ,Inverter and other power electronics product with independent intellectual property rights covering R&D ,manufacturing ,marketing,with the profound drive know-how,we has won the technical innovation prize,the most competitive brands prize,Champions of National Hybrid Electric Vehicle competition and one of Top Ten Variable Frequency Drive Enterprises in China and etc.

Industrialized Platform Series

- Electric vehicle motor driver series
- Tension control curl special inverter
- Tool servo drive
- Port crane special inverter
- Hybrid electro-hydraulic servo driver
- Air compressor inverter
- Mine winch special inventer
- Integration drive injection molding machine
- Paper industry special inverter
- Water supply special inverter
- Stone processing industry-specific inverter
- Textile spinning special inverter
- Ceramic industry special drive
- 3200Hz high frequency special inverter
- Printing industry special inverter
- High energy saving ball mill special inverter
- Centrifugal machine special inverter with torque control
- Explosion-proof special inverter (690/1140V)

Shenzhen V&T Technologies Co., Ltd.

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