AC/DC X type Hybrid Solar Pump Controller User Manual
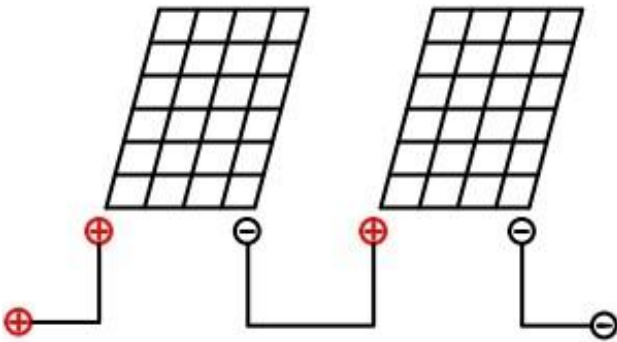
Contents
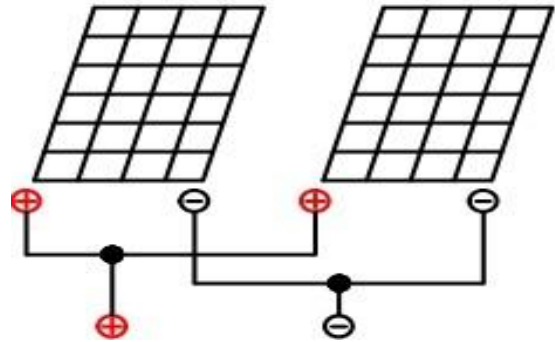
1. Solar Panel Configuration

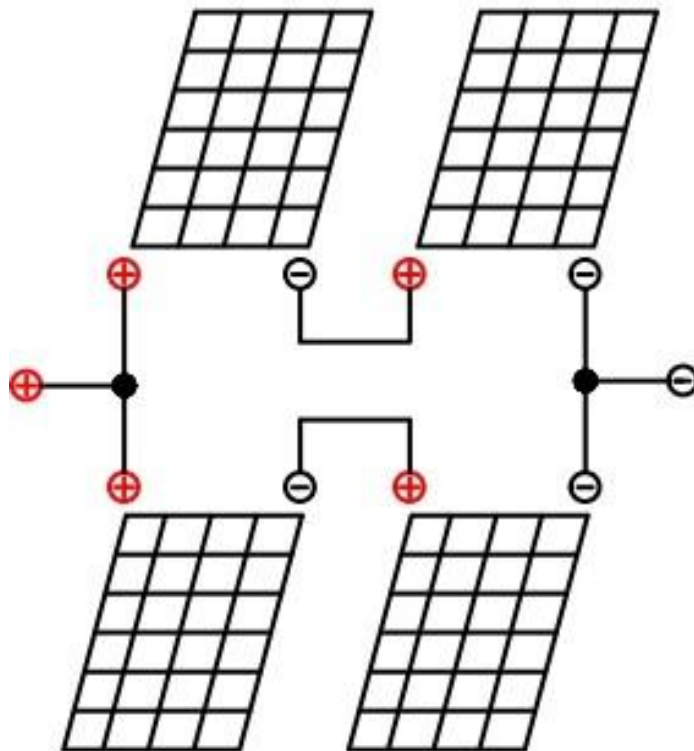series

parallel
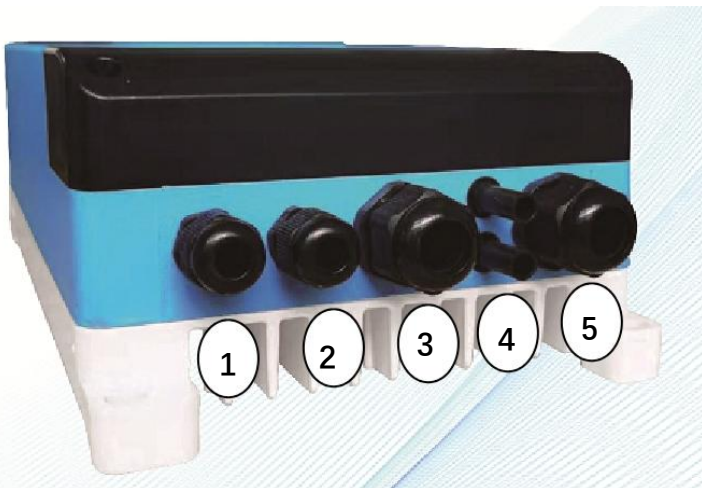
series and parallel

Tips：In series voltage is added, the current unchanged;
   In parallel voltage is unchanged, and the current is added.

2. Wiring Diagram

AC/DC
Solar Pump Controller
Wiring Diagram
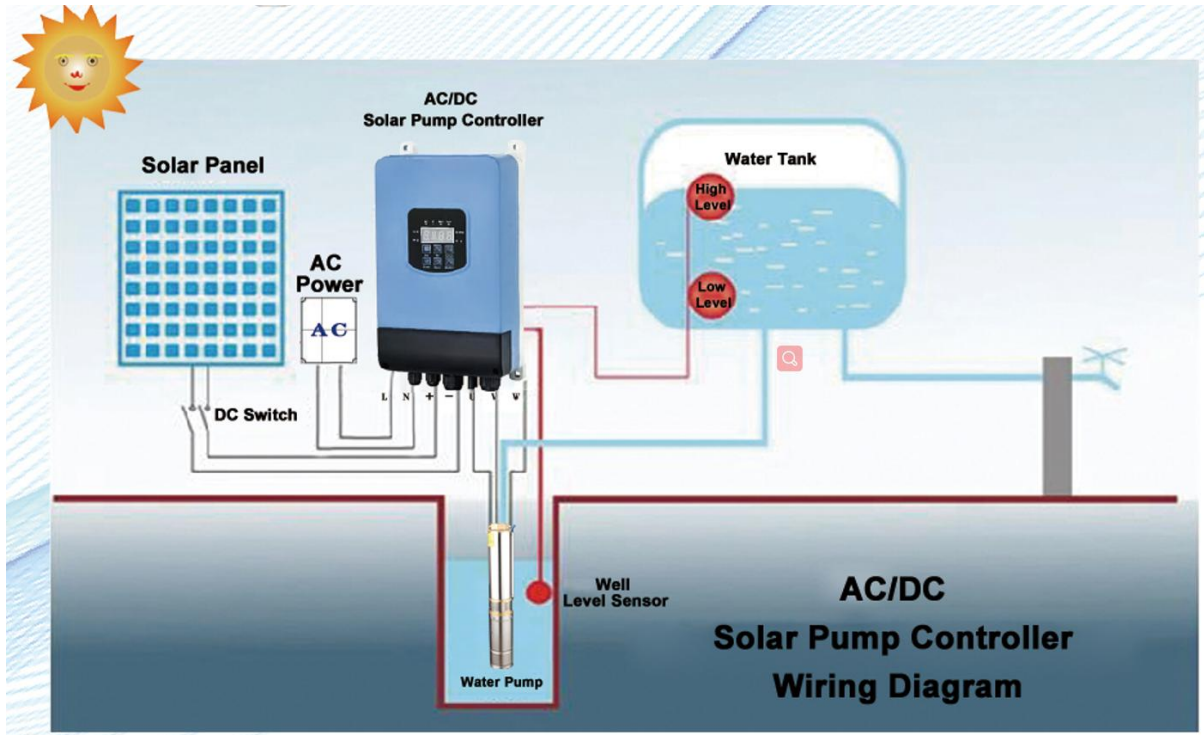
1. Solar Panel Positive & Negative Pole（PV+ & PV-）

2. AC Grid Power Input

3. Water Pump Wire Input

4. Water Tank High & Low Level Sensor

5. Well Level Sensor

3. Operation Panel

LED Display

- Digital display（A）：Current

- Digital display（W）：Power

- Digital display（RPM）：Speed

- Tank Full Indicator Light（Tank）：Light on when tank full

- Well Water Shortage Indicator Light（Well）：Light on when low well water level

- Solar Mode Indicator Light（DC）：Light on when solar mode

- AC Mode Indicator Light（AC）：Light on when AC electricity mode

Button	Function
Set	➤ Hold down for 3 seconds to enter the manufacturer Settings menu
Enter	➤ Enter the setting mode. After modify, press this key to confirm saving
Up	➤ After entering the setting mode, press this key to scroll up or add numbers
Down	➤ After entering the setting mode, press this key to scroll down or decrease the number
Switch	On the running status, switch the display mode. Display mode in voltage (V) -> current (A) -> Power (W) -> speed (r/min) .
On/Off	➤ In the running state, press the button to stop ➤ In shutdown state, press the button to start

4. Technical Data & Characteristic

Technical Data

1. AC voltage range: 88VAC-264VAC, 50Hz/60Hz

2. DC voltage range: 60VDC-330VDC, Max Voc<430V

3. Max AC input current: 15A

4. Max DC input current: 13A

5. Max input power: 2500W

6. Operating ambient temperature.: -15℃~65℃

7. Working environment humidity: 30%~90%

Characteristic

1. AC mode & solar mode hybrid, AIDC, solar mode first

2. Auto switch, switch power point & switch time adjustable.

3. Wide input voltage, current adjustable, good compatibility

4. Quick boot after panel be sheltered momently.

5. Build-in tank water level test, autostop when tank full

6. Autostop when low well water level, auto on when recovery.

7. Build-in photovoltaic leakage protection, safe and reliable.

8. Motor speed adjustable from 1000-5000rpm

9. Adaptive control, MPPT function

No.	AC Voltage	DC Voltage	Max Voc Voltage	Pump Power	Solar Panel Power
1	88VAC-264VAC	60VDC-330VDC	Voc430V	750W	≥1.3 *pump power
2				1100W	≥1.3 *pump power
3				1300W	≥1.3 *pump power
4				1500W	≥1.3 *pump power

5. Pump Operation Mode

(1) Pump Start
1) Power on and start

Every time power on, the system starts up by default and the water pump starts immediately (without any shutdown conditions).

2) Press the button to start

When the system is in the shutdown state (the digital tube display is off), press the ⏻ key to switch to the startup state, and the pump will start immediately (without any shutdown conditions).

3) Start when low water tank level

If the water pump stops because of tank full, short-circuit the TL & COM terminal, the water pump will start immediately.

(2) Pump Operation Mode
1) Single Solar Mode:

The controller can be used in single solar mode with a maximum current limit of 10A and maximum power tracked by MPPT algorithm. The operating speed of the pump is determined by the power of the solar panel, the maximum speed of the pump, the maximum power of the controller, and the temperature of the controller. If any of the conditions are met, the speed of the pump will maintain the current speed or reduce the speed.

2) Single AC Grid Mode:

The controller can be used in single AC mode, and the maximum AC current input is limited to 11A (models vary). The running speed of the pump is determined by the AC input current, the maximum speed of the pump, the maximum power of the controller, and the temperature of the controller. When any of the conditions are met, the speed of the pump will maintain the current speed or reduce the speed.

3) Solar energy & AC electricity auto switching mode:

Solar and AC automatic switching mode, solar and AC input at the same time, default solar energy. The default solar power switching point of the system is 250W, that is, if the input power is lower than 250W, the system will automatically switch to ac (100-900W adjustable). The default ac switching time of the system is 15 minutes. That is, the system will switch to solar power after 15 minutes when solar energy and AC power are detected, (1-60 minutes) adjustable.

(3) Pump Stopping

  1) Water Sensor signal stop

In the running state of the pump, when the water tank full, the switch is closed (TH and COM terminals are short-connected, and Tank light is on), the water pump will stop immediately.

In the running state of the pump, when the water tank short of water, the switch in the Well is closed (the WEL and COM terminals short-connected, and the Well light is on), the pump will stop immediately.

  2) Dry run stop

If the pump works continuously for a period of time, if the current power is less than the set power under the current speed for 20 seconds, it will stop immediately and report P48 fault (dry run protection). After 20 minutes, the fault is rectified.

  3) Press button to stop

In the running state of the pump, press button to stop pump running.

6. Checking Before Using

(1) Before using, checking whether the pump is intact, whether the joints are loose and seepage, oil leakage phenomenon, whether there is any accidental damage such as collision and scratches, and use megohmmeter to measure the insulation resistance of the pump, the cold state should be over 2 Ω.

(2) When the cable length of the water pump is not enough to be extended, the extended wire diameter must be greater than the original wire diameter.The joints should be sealed with waterproof tape

(3) Before install the water pump, firstly power on to check whether the start and operation are as normal. The correct running direction is anticlockwise. Pay attention to turn for a short time). If the running direction is incorrect, adjust any two lines of input power.

(4) When installing and lifting the pump, it should be carried out in string at the hole ring. It is strictly prohibited to pull the cable to lift the pump. It should be more than 1 meter away from the bottom to prevent sediment inhalation and damage to the mechanical seal and impeller and other components.

7. Maintenance

(1) After the electric pump has been running for 3000 hours, the wearing parts must be replaced once (such as bearings, sealing rings, mechanical seals, etc.), otherwise the parts will cause

greater losses after damage。

(2) If the electric pump is not used for a long time, it should be cleaned and dried, and placed in a ventilated and dry place for safekeeping。

8. Factory Settings

(1) Adjust factory Settings: Enter the factory password. After the correct password is entered, the menu content will blink before being allowed to change. Factory Code 003

(2) Restore factory Settings: Enter the factory password to restore the factory Settings. See the table below for details：

		Factory Setting(A version)	
No.	**Default**	**Menu Content**	**Adjustable Range**
P0.0	000	Password (Password 003, factory restore 021)	000-099
P0.1	001	Pump type (1: dry pumping protection; 0: no dry pumping protection)	000-001
P0.2	000	Software version: A201	无
P0.3	038	Dry draw power 1000RPM(W)	005-050
P0.4	090	Dry draw power 1800RPM(W)	010-120
P0.5	150	Dry draw power 2400RPM(W)	010-200
P0.6	220	Dry draw power 3000RPM(W)	010-300
P0.7	310	Dry draw power 3600RPM(W)	100-450
P0.8	400	Dry draw power 4000RPM(W)	120-600
P0.9	250	Head power point (W)	100-900W
P1.0	007	AC current(A)	002-011
P1.1	4000	Set the startup speed RPM	1000-6000
P1.2	003	Motor pole logarithm	001-005
P1.3	000	Motor direction	000-001
P1.4	015	AC to DC switching time (min)	002-060

9. Fault information and Troubleshooting Methods

Fault Type			
Code	**Error**	**Fault causes and solutions**	**Recovery Procedure**
P0	Hardware Overcurrent	➢ The motor model does not match, select a matching pump ➢ UVW short-circuit connection, rewiring, to ensure the installation is correct	Automatically cleared after 2 seconds
P43	Open-phase protection	UVW short-circuit connection, rewiring, to ensure the installation is correct	Automatically cleared after 30 seconds
P46	Stalling protection	➢ The motor model does not match, select a matching pump ➢ The extension line of the pump is too long, reduce the extension line ➢ The power supply is too low. Increase the power supply ➢ Pump bearing stuck, clean the pump bearing	Automatically cleared after 30 seconds
P49	Software Overcurrent	➢ The motor model does not match, select a matching pump ➢ UVW short-circuit connection, rewiring, to ensure the installation is correct	Automatically cleared after 30 seconds
P50	Low-voltage protection	The input voltage is too low, adjust the input voltage as suggested	The voltage will be restored to normal, cleared after 5s
P51	High-voltage protection	The input voltage is too high, adjust the input voltage as suggested	The voltage will be restored to normal, cleared after 5s
P48	Dry-run protection	➢ If the air in the pump is not drained out, cut off the power supply. Power on the pump again after 30 seconds and start the pump to drain water。 ➢ Low water level. Waiting for water recovery and restart	Automatically cleared after 20mi later or power-on again
P60	High temperature protection	The MCU temperature in the controller exceeds 90℃	Automatically cleared when the temperature is normal
PL	Power Less	➢ No light or low light, wait for light, reboot ➢ The wrong solar panel configuration, select right panel as suggested ➢ The pump is stuck or the motor bearing is stuck. It cannot be started. Disassemble the pump head and spin the bearing to check	The first five times are cleared after 30 seconds and later 15 minutes