# Using Manual Of Solar Pump

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# Solar Panel Selection

## 1.Solar Panel Connection Principle

Solar panel can be divided into mono-crystalline silicon solar cell, polycrystalline silicon solar cell and thin-film photocell. Mono type is the most efficient one but the price is the highest; the thin-film photocell is the cheapest one. Normally, the power of solar cell is 150W per square meter. The open-circuit voltage (Voc) marked on solar cell means the max electromotive force before working. The voltage will decrease when working, its voltage called working voltage (Vmp). Common open-circuit voltage is 21V, 36V, 44V etc., it changes along with the change of area and temperature, the lower the temperature, the higher the voltage. Another important index is power. It is proportional to the panel area. There need some solar cell to connect in series if the voltage is not enough, total voltage equals to adding each panel's voltage.

The working voltage of solar cell need to select according to the controller's working voltage, and then to confirm the open-circuit voltage of solar panel. Then select the solar power according to the pump power after the voltage confirmed. The power of solar water pump is input power and the generating efficiency of solar panel is under 70% usually. In order to ensure the rated working time of 4 hours a day, the solar panel power equals to input power multiply 1.5 which is also the minimum power. If the solar panel power is smaller than this value, the pump can not reach its rated flow and head even through it can still work normally. Using more panels for the pump is better if condition permits, because that is able to ensure more time for the pump to running and reach the rated flow and head.

# Solar water pump introduction

Water is essential to all forms of life. In many remote locations around the world, traditional power is unavailable or unreliable to power a water pump, solar water pumps become a cost-effective and dependable method for providing water. The operation of solar powered pumps is more economical due to the lower operation, maintenance costs, and less environmental impact.

Usually, a solar pump system is composed of solar pump, controller(inverter/regulator), solar panels, and solar panels selection and connection way depends on pump's power and voltage.

FEILI PUMP had studied for solar water pump for years, mainly make DC 24V 48V 72V 90V 110V low voltage solar pumps, also make big power from 2.2KW-45KW solar pumps.

**Advantages of solar pump:**

1.permanent magnet brushless synchronous motor.
2.NSK bearing.
3.Alloy mechanical seal. Longer working life and high reliability.
4.Intelligent water shortage protection.
5.High synchronous motor power density, the weight and volume of the same power pump is smaller than other factory ,it is easy to take.

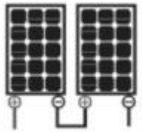
**Advantages of DC SOLAR controller:**

1.MPPT funciton, the solar power utilization rate is higher .
2.Automatic charging function for battery.
3.LED displays the power, voltage ,current, speed etc working condition.
4.Automatically start and stop working.
5.Water proof and leak-proof: double seal effect.
6.Excellent thermostability: withstand 850 C high temperature.
7. Soft start: no impulse current, protect the pump motor.
8.High voltage/ low voltage protection, over-current /over-load protection, the winding won't be burned.

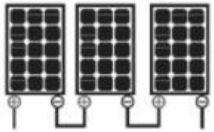


# Solar panel connection way

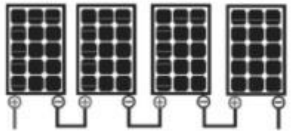
Connect 1pcs panel directly



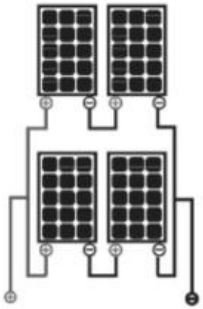
2PCS panels connect in series



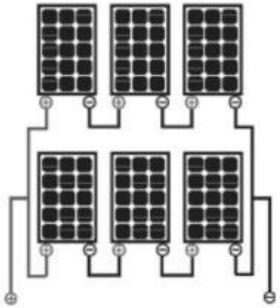
3PCS panels connect in series



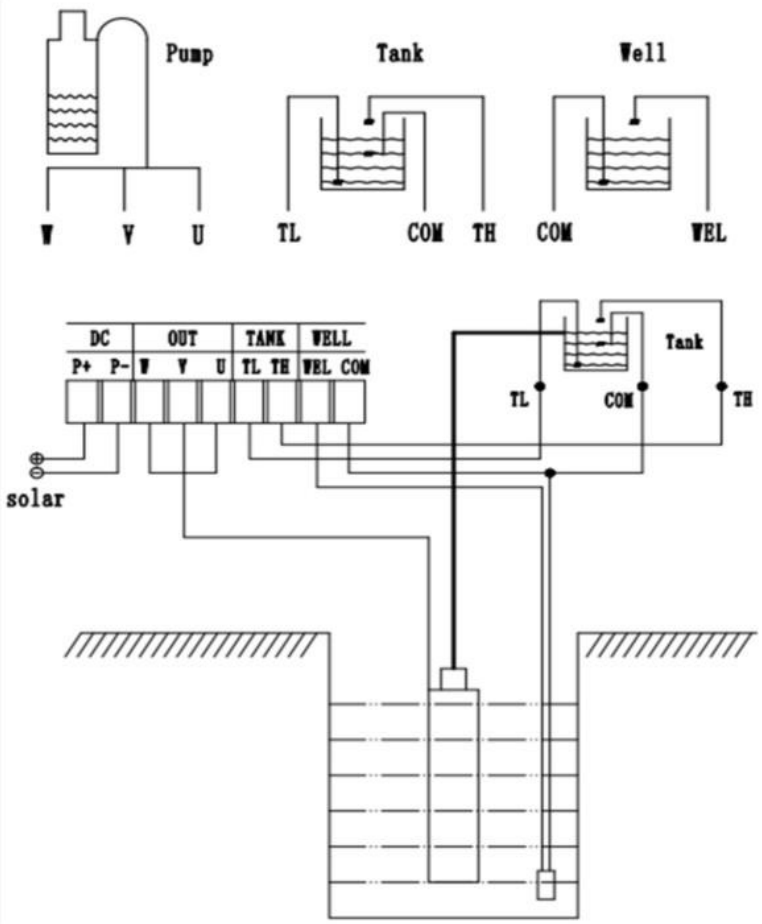
4PCS panels connect in series



2PCS panels in series, another 2PCS in parallel, total 2 groups



3PCS panels in series, another 3PCS in parallel, total 2 groups

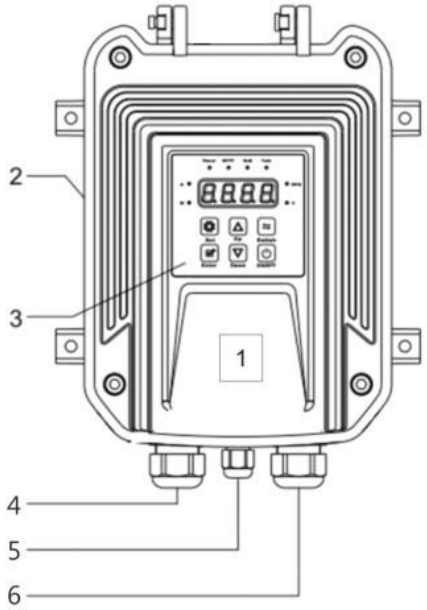



**Internal wiring diagram**

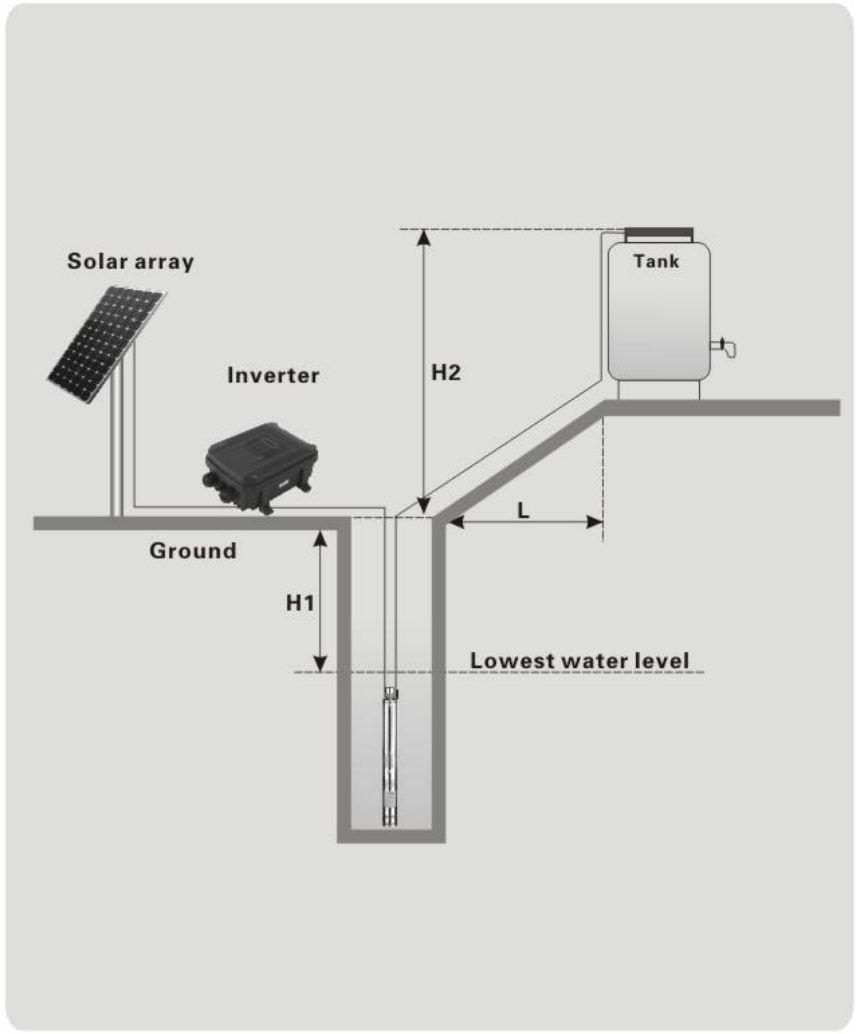
**Tips : Do not reverse the positive and negative of power, otherwise it will not work.**



## ◆Wiring Diagram




1. Company logo.
2. Nameplate and caution.
3. Operation panel
4. DC electric cable entrance.
5. Pump's cable entrance.
6. Water level sensor cable entrance.






## 3 Inch and 4 Inch DC Solar Deep Well Pump

| Model | Rated/ Max Flow ($m^3$/h) | Rated/ Max Head (m) | Pump | | Solar Panels | | Pump Dia (inch) | Outlet Dia (inch) | Pump Height (mm) | Solar Panels Suggestion |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Voltage (V) | Power (W) | Vmp range (V) | Power (W) | | | | |
| 3FLD2.5-15-24-140 | 0.5/2.5 | 9/15 | DC24 | 140 | 21-50V | 200 | 3 | 1 | 480 | 1 pcs of 200w voc44v |
| 3FLD2.7-22-24-180 | 0.8/2.7 | 15/22 | DC24 | 180 | 21-50V | 250 | 3 | 1 | 520 | 1 pcs of 250w voc36v |
| 3FLD3-35-24-300 | 2/3 | 16/35 | DC24 | 300 | 21-50V | 500 | 3 | 1 | 520 | 2 pcs of 250w voc30v in parallel |
| 3FLD3-35-48-300 | 2/3 | 16/35 | DC48 | 300 | 42-100V | 500 | 3 | 1 | 520 | 2 pcs of 250w voc36v in series |
| 3FLD3.2-40-48-400 | 1/3.2 | 30/40 | DC48 | 400 | 42-100V | 600 | 3 | 1 | 520 | 2 pcs of 200w voc44v in series |
| 3FLD3.2-54-48-550 | 1/3.2 | 40/54 | DC48 | 550 | 42-100V | 800 | 3 | 1 | 560 | 2 pcs of 200w voc44v in series, then 2 groups in parallel |
| 3FLD5-35-48-550 | 2/5 | 22/35 | DC48 | 550 | 42-100V | 800 | 3 | 1 | 520 | 2 pcs of 200w voc44v in series, then 2 groups in parallel |
| 3FLD3.2-65-48-600 | 1/3.2 | 48/65 | DC48 | 600 | 42-100V | 800 | 3 | 1 | 600 | 2 pcs of 200w voc44v in series, then 2 groups in parallel |
| 3FLD3.2-80-48-750 | 1/3.2 | 60/80 | DC48 | 750 | 42-100V | 1000 | 3 | 1 | 640 | 2 pcs of 250w voc36v in series, then 2 groups in parallel |
| 3FLD5-50-48-750 | 2/5 | 35/50 | DC48 | 750 | 42-100V | 1000 | 3 | 1 | 560 | 2 pcs of 250w voc36v in series, hen 2 groups in parallel |
| 3FLD3.2-80-72-750 | 1/3.2 | 60/80 | DC72 | 750 | 63-150V | 1080 | 3 | 1 | 640 | 3 pcs of 180w voc44v in series, then 2 groups in parallel |
| 3FLD5-50-72-750 | 3/5 | 33/50 | DC72 | 750 | 63-150V | 1080 | 3 | 1 | 560 | 3 pcs of 180w voc44v in series, then 2 groups in parallel |
| 3FLD3.2-120-72-1100 | 1/3.2 | 80/120 | DC72 | 1100 | 63-150V | 1500 | 3 | 1 | 780 | 3 pcs of 250w voc36v in series, then 2 groups in parallel |
| 3FLD5-72-72-1100 | 3/5 | 50/72 | DC72 | 1100 | 63-150V | 1500 | 3 | 1 | 660 | 3 pcs of 250w voc36v in series, then 2 groups in parallel |
| 3FLD5.4-85-96-1300 | 3/5.4 | 63/85 | DC96 | 1300 | 84-200V | 1720 | 3 | 1 | 660 | 4 pcs of 215w voc36v in series, then 2 groups in paralle |
| 4FLD3.4-50-48-550 | /3.4 | /50 | DC48 | 550 | 42-100V | 800 | 4 | 1.25 | 520 | 2 pcs of 200w voc44v in series, then 2 groups in parallel |
| 4FLD5-36-48-550 | /5 | /36 | DC48 | 550 | 42-100V | 800 | 4 | 1.25 | 480 | 2 pcs of 200w voc44v in series, then 2 groups in parallel |
| 4FLD7-30-48-550 | /7 | /30 | DC48 | 550 | 42-100V | 800 | 4 | 1.25 | 460 | 2 pcs of 200w voc44v in series, then 2 groups in parallel |
| 4FLD10-21-48-550 | /10 | /21 | DC48 | 550 | 42-100V | 800 | 4 | 1.5 | 450 | 2 pcs of 200w voc44v in series, then 2 groups in parallel |
| 4FLD3.4-80-48-750 | /3.4 | /80 | DC48 | 750 | 42-100V | 1000 | 4 | 1.25 | 605 | 2 pcs of 250w voc44v in series, then 2 groups in parallel |
| 4FLD5-54-48-750 | /5 | /54 | DC48 | 750 | 42-100V | 1000 | 4 | 1.25 | 520 | 2 pcs of 250w voc36v in series, then 2 groups in parallel |
| 4FLD7-40-48-750 | /7 | /40 | DC48 | 750 | 42-100V | 1000 | 4 | 1.25 | 460 | 2 pcs of 250w voc36v in series, then 2 groups in parallel |
| 4FLD10-32-48-750 | /10 | /32 | DC48 | 750 | 42-100V | 1000 | 4 | 1.5 | 475 | 2 pcs of 250w voc36v in series, then 2 groups in parallel |
| 4FLD3.4-96-72-1100 | /3.4 | /96 | DC72 | 1100 | 63-150V | 1500 | 4 | 1.25 | 650 | 4 pcs of 200w voc44v in series, then 2 groups in parallel |
| 4FLD5-72-72-1100 | /5 | /72 | DC72 | 1100 | 63-150V | 1500 | 4 | 1.25 | 560 | 4 pcs of 200w voc44v in series, then 2 groups in parallel |
| 4FLD7-60-72-1100 | /7 | /60 | DC72 | 1100 | 63-150V | 1500 | 4 | 1.25 | 460 | 4 pcs of 200w voc44v in series, then 2 groups in parallel |
| 4FLD10-43-72-1100 | /10 | /43 | DC72 | 1100 | 63-150V | 1500 | 4 | 1.5 | 500 | 4 pcs of 200w voc44v in series, then 2 groups in parallel |
| 4FLD18-22-72-1100 | /18 | /22 | DC72 | 1100 | 63-150V | 1500 | 4 | 2 | 525 | 4 pcs of 200w voc44v in series, then 2 groups in parallel |
| 4FLD34-15-72-1100 | /34 | /15 | DC72 | 1100 | 63-150V | 1500 | 4 | 3 | 515 | 4 pcs of 200w voc44v in series, then 2 groups in parallel |
| 4FLD3.4-140-96-1300 | /3.4 | /140 | DC96 | 1300 | 84-200V | 1720 | 4 | 1.25 | 750 | 4 pcs of 215w voc36v in series, then 2 groups in parallel |
| 4FLD5-120-96-1300 | /5 | /120 | DC96 | 1300 | 84-200V | 1720 | 4 | 1.25 | 670 | 4 pcs of 215w voc36v in series, then 2 groups in parallel |
| 4FLD7-95-96-1300 | /7 | /95 | DC96 | 1300 | 84-200V | 1720 | 4 | 1.25 | 580 | 4 pcs of 215w voc36v in series, then 2 groups in parallel |
| 4FLD10-60-96-1300 | /10 | /60 | DC96 | 1300 | 84-200V | 1720 | 4 | 1.5 | 550 | 4 pcs of 215w voc36v in series, then 2 groups in parallel |
| 4FLD18-33-96-1300 | /18 | /33 | DC96 | 1300 | 84-200V | 1720 | 4 | 2 | 590 | 4 pcs of 215w voc36v in series, then 2 groups in parallel |
| 4FLD38-18-96-1300 | /38 | /18 | DC96 | 1300 | 84-200V | 1720 | 4 | 3 | 535 | 4 pcs of 215w voc36v in series, then 2 groups in parallel |

## Solar Screw Pumps

| Model | Max Flow ($m^3$/h) | Max Head (m) | Pump | | Solar Panels | | Pump Dia (inch) | Outlet Dia (inch) | Pump Height (mm) | Solar Panels Suggestion |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Voltage (V) | Power (W) | Vmp (V) | Power (W) | | | | |
| 3FLS1.0/30-D24/80 | 1.0 | 30 | Dc24 | 80W | 21-50V | 150 | 3 | 1 | 420 | 1 pcs of 150w voc44v |
| 3FLS1.3/50-D24/140 | 1.3 | 50 | DC24 | 140W | 21-50V | 200 | 3 | 1 | 420 | 1 pcs of 2000w voc44v |
| 3FLS1.8/80-D24/210 | 1.8 | 80 | DC24 | 210W | 21-50V | 300 | 3 | 1 | 420 | 1 pcs of 300w voc44v |
| 3FLS1.8/100-D24/270 | 1.8 | 100 | DC24 | 270W | 21-50V | 500 | 3 | 1 | 420 | 2 pcs of 250w voc36v in series |
| 3FLS1.8/120-D36/500 | 1.8 | 120 | DC36 | 500W | 42-100V | 800 | 3 | 1 | 420 | 2 pcs of 200w voc44v in series, then 2 groups in parallel |
| 3FLS1.0/30-D24/80C | 1.0 | 30 | DC24 | 80W | 21-50V | 150 | 3 | 1 | 420 | 1 pcs of 150w voc44v |
| 3FLS1.3/50-D24/140C | 1.3 | 50 | DC24 | 140W | 21-50V | 200 | 3 | 1 | 420 | 1 pcs of 2000w voc44v |
| 3FLS1.8/80-D24/210C | 1.8 | 80 | DC24 | 210W | 21-50V | 300 | 3 | 1 | 420 | 1 pcs of 300w voc44v |
| 3FLS1.8/100-D24/270C | 1.8 | 100 | DC24 | 270W | 21-50V | 500 | 3 | 1 | 420 | 2 pcs of 250w voc36v in series |
| 3FLS1.8/120-D36/500C | 1.8 | 120 | DC36 | 500W | 42-100V | 800 | 3 | 1 | 420 | 2 pcs of 200w voc44v in series, then 2 groups in parallel |

## Solar Surface Pumps

| Model | Pump | | Solar Panels | | Max. Flow ($m^3$/h) | Max. Head (m) | Outlet Dia. (inch) |
|---|---|---|---|---|---|---|---|
| | Voltage (V) | Power (W) | Vmp (V) | Power (W) | | | |
| SQB2.0/25-D24/210 | 24 | 210 | 28-36 | 280-380 | 2 | 25 | 1×1 |
| SQB2.2/35-D24/280 | 24 | 280 | 28-36 | 280-380 | 2.2 | 35 | 1×1 |
| SQB3.0/50-D48/550 | 48 | 550 | 60-72 | 720-900 | 3 | 50 | 1×1 |
| SQB3.0/60-D72/750 | 72 | 750 | 60-72 | 1000-1250 | 3 | 60 | 1×1 |

## Solar Surface Pumps

| Model | Pump | | Solar Panels | | Max.Flow ($m^3$/h) | Max. Head (m) | Outlet Dia. (inch) |
|---|---|---|---|---|---|---|---|
| | Voltage (V) | Power (W) | Vmp (V) | Power (W) | | | |
| SCPM6.6/35-D72/750 | 72 | 750 | 60-72 | 1000-1250 | 6.6 | 35 | 1.25×1 |



## Solar Surface Pumps

| Model | Pump | | Solar Panels | | Max.Flow ($m^3$/h) | Max. Head (m) | Outlet Dia. (inch) |
|---|---|---|---|---|---|---|---|
| | Voltage (V) | Power (W) | Vmp (V) | Power (W) | | | |
| SJET2.7/45-D48/550 | 48 | 550 | 60-72 | 720-900 | 2.7 | 45 | 1×1 |
| SJET3.0/55-D72/750 | 72 | 750 | 60-72 | 1000-1250 | 3 | 55 | 1×1 |

## Solar Swimming Pool Pumps

| Model | Pump | | Solar Panels | | Max.Flow ($m^3$/h) | Max. Head (m) | Outlet Dia. (inch) |
|---|---|---|---|---|---|---|---|
| | Voltage (V) | Power (W) | Vmp (V) | Power (W) | | | |
| SJP17/15-D48/500 | 48 | 500 | 60-72 | 650-800 | 17 | 15 | 2×2 |
| SJP21/19-D72/900 | 72 | 900 | 72-80 | 1200-1400 | 21 | 19 | 2×2 |
| SJP31/19-D72/1200 | 72 | 1200 | 72-80 | 1560-1800 | 31 | 19 | 3×3 |


## Free Parts

## Parameters of MPPT Controller

| PCB and Pump Matching Method | | | | | | |
|---|---|---|---|---|---|---|
| PCB Model | Adaptable Pump | Rate Input Power (KW) | Maximum Input Current (A) | Maximum Input Voltage (V) | MPPT Voltage Range (V) | Working Temperature (℃) |
| FL24-FR36 | Rated 24V Pump | 0.36 | 15 | 48 | 18-36 | -15-60 |
| | | | | | | |
| FL48-FR75 | Rated 48V Pump | 0.75 | 15 | 96 | 24-72 | -15-60 |
| | | | | | | |
| FL72-F1R1 | Rated 72V Pump | 1.1 | 15 | 150 | 50-112 | -15-60 |
| | | | | | | |
| FL96-F1R3 | Rated 96V Pump | 1.3 | 15 | 180 | 60-135 | -15-60 |

### Caution:

**Before the power is on, you must use the instrument to detect the open circuit voltage of solar panels, or apply for series, parallel knowledge to calculate the solar panel open circuit voltage. The open-circuit voltage of solar array must be less than the maximum input voltage of the controller, otherwise it will cause irreversible damage.**



## Operation Panel


### 1.LED Indicator Light

- **Voltage(V): Voltage indicator lights.**
- **Speed(RPM): Speed indicator light.**
- **Current(A):Current indicator light.**
- **Power(W): Power indicator light.**
- **Tank: Light when tank is filled with water.**
- **Well: Light indicates no water in well.**
- **MPPT: Solar energy running lights (twinkling).**
- **Power: light twinkles when stop working, light is constant in running.**

## 2. Key Operation

| Key Type | Function |
|---|---|
| Set Key | ➢ Manufacturer parameter setting, not opened. |
| Enter | ➢ Manufacturer parameter setting, not opened. |
| Up | ➢ RPM setting key, Each time you press, the RPM will increase for one grade.<br>➢ In fault state, turn off / on the fault display. |
| Down | ➢ RPM setting key, Each time you press, the RPM will decrease for one grade. |
| Switch | ➢ In the operation status, you can circularly switch the display mode in voltage (V) - > speed (RPM) - > current (A) - > power (W). |
| On/Off | ➢ In the running state, you can turn it off.<br>➢ In the stop state, you can turn it on. |

**Test Running**

**1. Before using, you should check whether the solar water pump is in good condition, such as joint loose, oil impregnate or oil leak and cable damaged, and you should apply megger to check the insulation resistance, which should be larger than 2M when the engine in cold state.**

**2. If the cable length needs to be lengthened, the diameter of extension cable should be larger than the original cable. And the joint need to seal with mackintosh.**



**3. Pump's working direction should be anti-clockwise direction, check whether pump's rotation direction is right, here remind that can only test pump in short time, because submersible pump is forbidden to dry run.**

**4. When installation, the pump should be hung on the rope and it is strictly prohibited to lift the pump through its cable. The submerged depth should one meter more than bottom in case of the sediment suction of sand damage the mechanical seal and impeller.**

**Operation Mode**

◆ **1.Pump Start**

**1)Power on to start**

**Every time it connect with electricity, the system default boot, and pump start immediately without testing water tank (without any Shutdown conditions).**

**2)Button to start**

**In shutdown state, press the button to turn on the pump, without testing water tank (without any Shutdown conditions) .**

**3)Water Shortage to Start**

**If the system boot but the pump stop and water shortage switch is closed, the pump immediately starts. (TL signal terminal of the main control board is shorted to the COM terminal).**

**2.Pump Stop**

**1)Float Switch Mode**

**In running state, when the water full switch is closed, the pump immediately stops. (Float switch' s two cables connect TH and COM terminal, and the Tank light is on)**

**In running state, when the water shortage switch is closed, the pump immediately stops. (Float switch' s two cables connect WEL and COM, and the Tank light is on)**

**2)Dry Pumping Shut Down**

**If the water pump continuous work for a period of time, and the power is less than the set power at the current speed and continues for 20s, the pump will stop immediately and report P48 fault. After 30 minutes, the fault is cleared.**

**3)Button to Stop**

**In running state, press the button**  **to turn off the pump.**

**3.Pump Operation**

**Every time the pump starts, it will recognize the DC (battery) and PV (solar) power supply mode for 10 seconds, and then switch to the corresponding mode to run. The setting speed is invalid during the identification process.**

**1)DC Mode (battery)**

**In DC (battery) mode, the pump speed is adjustable, range of 1000–4000RPM.**

**The default setting speed is 4000RPM. The speed can be set by the**  **or**  **keys, and the speed can be increased (or decreased) by pressing the increment (or decrement) button.**



**When pump keep running for a long time, DC (battery) power's voltage will be lower accordingly. In order to prevent battery over discharge, when input voltage is lower than controller set corresponding Protection Voltage, pump will stop working automatically.**

| Model | Protection Voltage(V) |
|---|---|
| FL24–FR48 | 20 |
| FL48–FR75 | 40 |
| FL72–F1R1 | 60 |
| FL96–F1R3 | 80 |

**2)PV Mode**

**For PV model, pump speed setting is similar as DC mode, maximum speed is also 4000rpm. And Solar power will also influence pump's speed. MPPT controller will track solar panels' power, when sunshine is stronger, the input solar power is increasing, pump speed will be higher, and vice versa.**

**In PV mode, the MPPT indicator flashes. If it flashes faster, it indicates that the current working point is closer to the maximum working point. If the flashing frequency is slower or not, it indicates that the maximum power point is being tracked.**

**If solar power is insufficient, the pump speed will continue to fall, when the speed drop to 600 RPM, pump stops, and report P46 faults after 3 second.**

When solar power is too insufficient to maintain the current system of starting or running, the output voltage of solar panels will drop rapidly.

When the minimum voltage drops to the lowest voltage of system and lasts for 10s, it will report "PL" fault. Try consecutively 5 times to restart, if it still appears "PL" fault, hold this state for 30 min, then try to start again.

4. Reverse connection protect

If the positive and negative of power supply is reversed, the controller will continue to alarm.

5. Dry-run protection

This function refers to the pump pumps out water on well, the system can automatically detect the anhydrous state, pump will stop working automatically by set program. Dry-run protection is effective all working modes, in manual mode, float switch model and solar mode. Pump will Standby for 30 minutes torestart the work (meet the start condition). Start to detect again whether there is water or not, if no water, stop working automatically; there is water, keep working, that cycle repeats.

◆ Servicing and Maintenance

1.After working 3000 hours, the easily damaged parts should be replaced (such as bearing, sealing ring, mechanical seal), or it may cause much more serious damage.

2.If the pump didn't use for long time, please scrub it, place at dry and ventilated place and keeping properly.



## ◆ Fault Information and Troubleshooting Method

| NO | Fault Code | Fault Description | Causes and Solutions of Fault | Recovery Procedure |
|---|---|---|---|---|
| 1 | P0 | Hardware Overcurrent | ★Motor model is mismatch, please choose matching pumps<br>★UVW three-phase short-circuit connection, please rewiring to ensure the normal installation of UVW | Automatically remove after 30s |
| 2 | P43 | Phase Protection | UVW three-phase open circuit, please rewiring to ensure it reliable contact. | Automatically remove after 30s |
| 3 | P46 | Stall Protection | ★Motor model is mismatch, please choose matching pumps<br>★Pump extension cord is too long, please reduce the extension cord<br>★Power is too low, increase the power supply<br>★Pump bearing is stuck, please clean pump bearings | Automatically remove after 30s |
| 4 | P49 | Software Overcurrent | ★Water pump bearing stuck, clean pump bearings<br>★UVW three-phase short-circuit connection, please rewiring to ensure the normal installation of UVW | Automatically remove after 30s |
| 5 | P50 | Low Voltage Protection | The input voltage is too low, please distribute power refer to the electrical characteristics. | Voltage return to normal, remove the fault immediately |
| 6 | P51 | High Voltage Protection | The input voltage is too low, please distribute power refer to the electrical characteristics. | Voltage return to normal, remove the fault immediately |
| 7 | P48 | Dry-run Protection | ★Not all of air in the pump is exhausted, cut off the power, re-power and start the pump drainage after 30 seconds<br>★There is no water in the water tank waiting for water, it will restart | Automatically clear after 30 minutes or re-power to clear |
| 8 | P60 | High Temperature Protection | The temperature of controller MCU is more than 90℃ | Automatically clear after the temperature is normal |
| 9 | E8 | Current Sampling Failure | Cut off the power and restart after 30 seconds | Restart the power |
| 10 | PL | Power Shortage | ★No sunlight, waiting for the sunlight to restart<br>★Solar panel matching error, refer to the recommendation to match correctly | At the first 5 times, it will removal after 30 seconds, and then 30 minutes to removal |
| 11 | ALARM | Reverse connection protect | Exchange the positive and negative wire | Restart the power |
| 12 | P42 | Start fault | 1-7 fault,appear continuously for several times in 10 minute. Check N0.1-7 fault. | Restart power. |